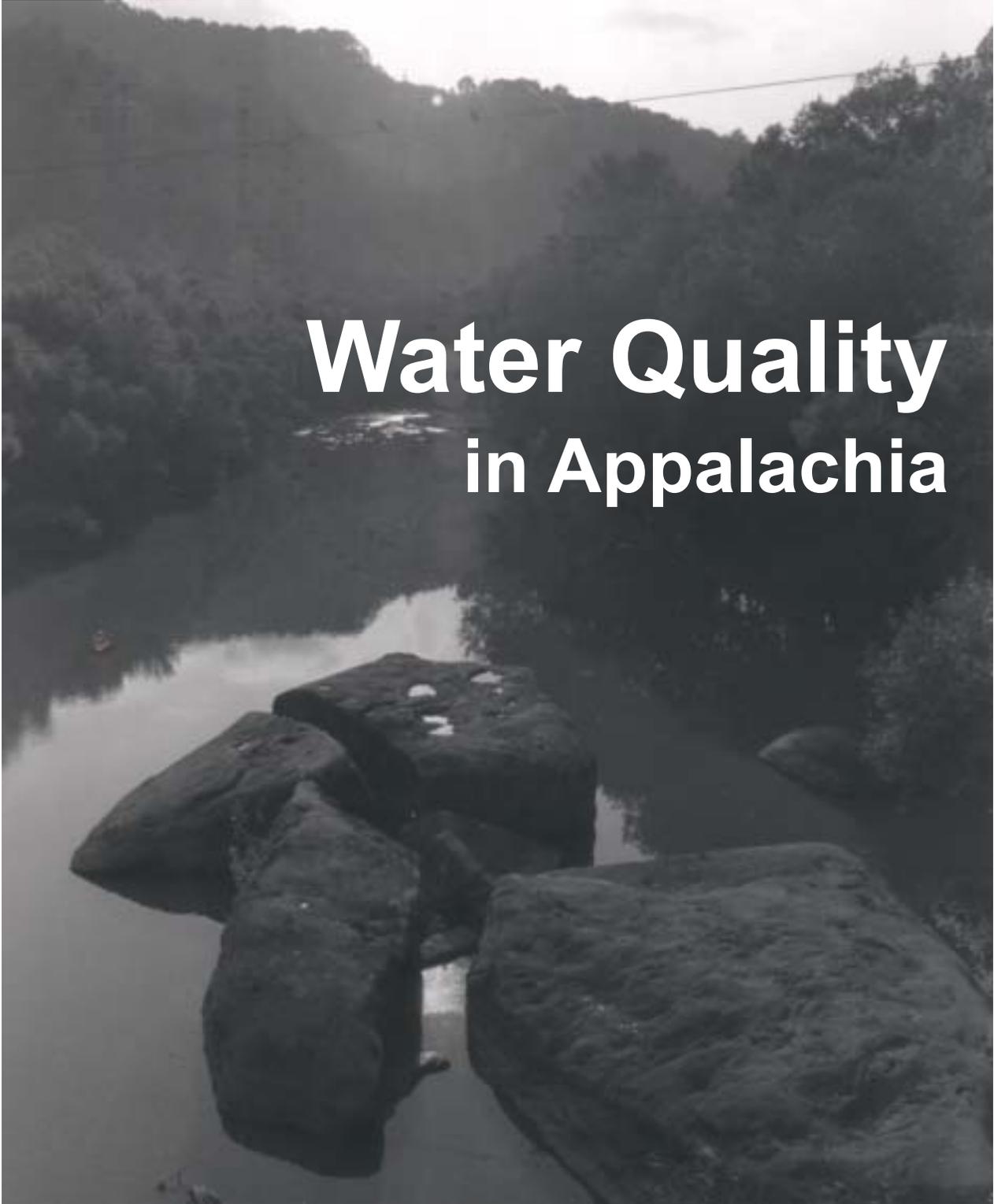


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Water Quality in Appalachia



Appalachian Leadership and Development

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Mission of Brushy Fork

For more than one hundred years, Berea College has served the people of Appalachia.

The Brushy Fork Institute carries forward this commitment by working to develop strong leadership in the mountains.

Working with both existing and emerging leaders, we draw on local understanding and vision to help communities build for tomorrow.

Cover photo by
Annalisa Lewis Raymer

a message from the editor

Dear Readers:

Brushy Fork Institute has been producing *Mountain Promise* for 14 years now. What started as a small newsletter has evolved into a publication that strives to cover timely issues for people living in rural communities throughout central Appalachia. Together we have explored prisons and economic development, sustainable agriculture and medicine, and many other topics. Our summer issue will address the state of nonprofits during our nation's economic downturn. Many organizations are facing cuts. Brushy Fork is among them.

In the past, we have been able to offer *Mountain Promise* free of charge to anyone who has requested a subscription. Our mailing list stands 1600 readers strong and continues to grow. As our list expands, so do the costs of producing *Mountain Promise*.

Even as we watch our resources decrease in some areas, we want to continue offering a high quality publication for you. Beginning with the summer issue of *Mountain Promise*, we will request a voluntary subscription fee of \$15.00 to help offset the cost of production. In June, we will send our current subscribers a letter requesting this donation.

If you would like to express your support for *Mountain Promise* now, we have included on page 23 a subscription form you may clip and mail, along with your check. Your \$15.00 will go a long way to helping us produce a publication that strives to meet the needs of grassroots leaders.

If you have questions or comments, please feel free to call me at (859) 985-3860 or drop an email to donna_morgan@bera.edu. I would be glad to hear from you.

Sincerely,

Donna Morgan

Donna Morgan
Editor, *Mountain Promise*

topic this issue

Water Quality in the Region

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Water is both a social good and an economic good; so where do we find a balance?

The New Economy of Water

by Donna Morgan, Brushy Fork Staff

As local and state governments find themselves strapped for the money required to provide services to the community, officials are looking for ways to alleviate the financial strain. Short of raising taxes, finding ways to shift the costs of providing essential services seems a possible answer. Some communities investigate the privatization of services—that is, selling the resources and infrastructure to deliver these resources to a company that will operate the utility. Water services are one area where privatization is becoming a commonly researched solution.

Among the core issues with privatizing water supplies is that water is both a social and an economic good. As a social good, water serves in various community contexts, from the basic human right to access this necessity of life to the spiritual and religious significance water holds in some societies. As an economic good, water drives and is driven by the financial implications of supply and demand.

This article was summarized from the report “The New Economy of Water: The Risks and Benefits of Globalization and Privatization of Fresh Water.”

The report was produced by Peter H. Gleick, Gary Wolff, Elizabeth L. Chalecki, Rachel Reyes of The Pacific Institute for Studies in Development, Environment and Security and can be found online at <www.pacinst.org/reports/new_economy_overview.htm>.

Privatization has its pros and cons. Authors of the report “The New Economy of Water” explore the implications of privatization of the world’s water resources. They identify privatization as “one of the most important – and controversial – trends in the global water arena.” Privatization treats water as an economic good, which can be sold and traded based on market values. Private owners handle the production, distribution and/or management of water or water services.

Private ownership of water utilities is not a new idea. The authors of the report point out: “Private entrepreneurs, investor-owned utilities, or other market tools have long provided water or water services in different parts of the world.” What is new, they contend, is the extent of privatization efforts underway today, and the growing public awareness of, and attention to, problems associated with these efforts.

Privatization of water can consist of various arrangements from partnerships between private and public entities to the total elimination of public ownership. In any case, the private sector has growing responsibilities that often are poorly understood. Private owners must balance their economic interests with the social implications related to ensuring the well-being of humans and ecosystems. When water is considered an economic good, it is “subject to the rules and power of markets, multinational corporations, and international trading regimes.”

Moving water services into the realm of economics, with priorities placed on monetary value, raises many concerns about whether purely private markets can address the many different social aspects

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of water. For example, can a market-driven system meet basic human needs, or should there be non-market mechanisms, such as Public Service Commissions, to monitor whether social obligations are being met? Community members often worry about the trustworthiness of corporate players and about the transfer of profits and assets outside of a community or even a country. They find themselves asking whether economically weaker communities and individuals will fall prey to privately owned water utilities.

Risks of Privatization

The report identifies several risks of privatization of water utilities due to loss of control in the local community. Among the risks indicated are:

Bypassing Under-Represented and Under-Served Communities: Under-represented communities, such as those outside urban areas, can suffer from neglect by privately owned water companies that are seeking to serve more populated areas that may provide an easier profit.

Worsening Economic Inequities and the Affordability of Water: While proponents of privatization argue that private management or ownership of water systems can reduce the water prices paid by consumers, one of the greatest concerns of local communities is that privatization will lead to higher costs. In reality, both results have occurred.

Failing to Protect Public Ownership of Water and Water Rights: When privatization leads to the loss of local ownership of water systems, neglect of the public interest (such as water quality and availability) can become a problem. Communities express concerns about who would control water rights and allocations following privatization.

To ensure the success of privatization, the local government and the private company must share responsibility for monitoring water quality, protecting the public interest, and providing acceptable service.

Failing to Include Public Participation and Contract Monitoring:

Public participation is essential to providing oversight and monitoring public interest issues. To save money, a private company might try to replace guidelines for governmental or other

public access and oversight. Weaknesses in monitoring can lead to poor service provision, discriminatory behavior, or violations of water-quality protections.

Ignoring Impacts on Ecosystems or Downstream

Water Users: Privatization that encourages the development of new water supplies must balance ecological needs with water supply, hydroelectric power, and downstream uses of water. Companies must involve many stakeholders who are affected by the development and use of water systems.

Neglecting the Potential for Water-Use Efficiency and Conservation Improvements: If improvements in efficiency reduce water sales, they may lower revenues; therefore, utilities or companies that provide utility services may have little or no financial incentive to encourage conservation.

Lessening Protection of Water Quality: Strong regulatory oversight is crucial if privatization is to lead to improvements in water quality. Otherwise, private suppliers of water have few economic incentives to address long-term health problems associated with low levels of some pollutants.

May Be Irreversible: When governments transfer control over their water system to private companies, the loss of management expertise, engineering knowledge and other assets may be irreversible, or nearly so. Many private management contracts span ten to twenty years, along enough period of time for local experience and expertise to be lost.

Principles and Standards for Privatization

After pointing out these risks, the authors note that they “believe that the responsibility for providing water and water services should still rest with local communities and governments, and that efforts should be made to strengthen the ability of governments to meet water needs.” Privatization is most appropriate where weak governments have failed to meet basic water needs. On the other hand, when strong governments are able to provide water services effectively and equitably, who don’t see private ownership as a better option.

Unfortunately, a paradox exists with this model. Privatization presents higher risks where governments are weakest and likely are unable to provide the oversight and management functions necessary to protect public interests. In light of this contradiction, the authors offer a set of Principles and Standards to guide privatization of water-supply systems and infrastructure.

Continue to Manage Water as a Social Good

As a distributor of a social good, water companies must strive to meet basic human needs for water: All residents in a service area should be guaranteed a basic water quantity under any privatization agreement. Contract agreements to provide water services in any region must ensure that unmet basic human water needs are met first, before more water is provided to existing customers. In cases involving extreme poverty, rates should be subsidized for specific groups of people affected by the poverty. In addition to the human needs, companies must meet the basic needs of natural ecosystems and allow for oversight by the local government.

Use Sound Economics in Water Management

Water and water services should be provided at fair and reasonable rates. To encourage efficient and effective use of water resources, services should not be free. If rates must be increased, the increase should accompany improvements in service. Experience has shown that water users are often

Privatization presents higher risks where governments are weakest and likely are unable to provide the oversight and management functions necessary to protect public interests.

willing to pay for improvements in service when such improvements are designed with their participation and when improvements are actually delivered.

Subsidies, if necessary, should be economically and socially sound; that is, they should serve an appropriate

social purpose. For example, subsidies to low-income users that do not reduce the price of water for every user are more appropriate than those that do because lower water prices encourage inefficient water use.

Private companies should be required to demonstrate that new water-supply projects are less expensive than projects to improve water conservation and water-use efficiency before they are permitted to invest and raise water rates to repay the investment. Investments for water efficiency can earn an equal or higher rate of return than investments in new water supplies. Rate structures should permit companies to earn a return on efficiency and conservation investments.

Maintain Strong Government Regulation and Oversight

Governments should retain or establish public ownership or control of water sources. Permanent public ownership of water sources provides the public the strongest single point of leverage in ensuring an acceptable balance between social and economic water concerns.

Public agencies and water-service providers should monitor water quality, and governments should define and enforce water-quality laws. These government agencies or independent watchdogs should also provide information for the public. In situations where governments are weak, formal and explicit mechanisms to protect water quality must be even stronger.

Part of ensuring strong oversight is having a contract that lays out the responsibilities of each partner. Contracts must protect the public interest and include provisions ensuring the quality of service. The contract should also specify a regulatory system that is accessible and accountable to the public.

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Communities Fight for Local Ownership of Water Utilities

by Donna Morgan, Brushy Fork Staff

Privatization of water utilities has arisen as an issue in several states, including Kentucky and West Virginia. In these situations, there is a movement to place the privately run water systems back into public ownership. American Water Company, a private company with subsidiaries that operate water utilities in and around Lexington, Kentucky, and Charleston, West Virginia, was recently bought by a German-owned company called RWE-AG.

In Lexington, residents of the local community who oppose the sale of Kentucky-American Water Company have formed an action group called FLOW (For Local Ownership of Water). The group contends that the community would be better served if the water company were taken out of private hands and run by the local government.

Recently elected Mayor Teresa Isaac supports the efforts for local, municipal ownership of the water company. In late March the Lexington-Fayette Urban County Council agreed that Mayor Isaac should begin negotiations for purchase of the company. According to a March article in the *Lexington-Herald Leader*, a “good faith” negotiation is a required legal

Water promises to be for the 21st century what oil was to the 20th century...

Fortune magazine

taking the company through condemnation should negotiations fail. If condemnation remains the only option, the process could take five to seven years and cost

\$1 million as it works its way through the court system. On the other hand, the city could stand to make the investment worth the fight because of the company’s assets, which include Jacobson Park, the water company’s reservoir worth an estimated \$10 million.

In a communication with an executive from Thames Water, a subsidiary of the German RWE, Mayor Isaac learned that the company has a number of business arrangements with its subsidiaries. Among these is a situation where a utility is publicly owned but privately run. Isaac has called this arrangement a “possible open door” to what could happen in Lexington.

In late 2002, Jay Goldman, the mayor of Charleston, West Virginia, announced that city’s plans to explore a possible city buyout of water utilities. Spurred by a rate hike request by West Virginia-American Water Company, the mayor confirmed the plans in March, 2003. Meanwhile, officials from the water utility stress firmly that the company is not for sale.

An article in the *Charleston Gazette* indicated far-reaching concerns about the purchase of West Virginia-American by the RWE subsidiary Thames Water. Fred Stottlemeyer, president of the state rural water association and general manager of

step before the city can take over the water utility through legal condemnation.

City officials have not ruled out

Will Lexington’s water needs be better served by the local government?

South Putnam Public Service District, sees the purchase as a “real threat to wastewater systems in West Virginia.”

Stottlemeyer’s point stems from the fact that Thames Water has largely been a wastewater company. When the company buys American-Water, it allegedly plans to recoup some of the purchase cost by providing sewage services to communities already served by water.

West Virginia-American Water Company had also worked with wastewater in partnership with the Culloden Public Service District. The company experienced troubles early in the partnership when the overloaded facility discharged too much sewage into Indian Creek, a tributary of Mud River, which serves as the drinking water source for the nearby town of Milton, West Virginia. The problem was caused by too many customers being connected to the system.

On the other hand, Chris Jarrett, president of West Virginia-American Water Company, said that the company is still interested in other water or sewer

utilities in the state. He explained that savings per consumer would result quickly from expanding a customer base after taking over a wastewater system.

According to the article, a 2000 issue of *Fortune* magazine reported: “Water promises to be for the 21st century what oil was to the 20th century: the precious commodity that determines the wealth of nations.”

Stottlemeyer agrees: “[West Virginia] would be far ahead if it managed its own water resources—our most important natural resource.” He believes the state is on the brink of casting off a unique economic development tool.

Meanwhile, cash-strapped cities and towns continue to struggle with the debate of whether the expertise of an outside private company is worth trading local control of water systems.

Is West Virginia on the brink of casting off a unique economic development tool?

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PRIDE Begets Pride in Southern and Eastern Kentucky

by Tina Rae Collins, Brushy Fork Staff

Not all is sad news regarding water problems in Appalachia. In southern and eastern Kentucky communities are working to alleviate many of the concerns and the government has taken great strides in the past few years. One such initiative is PRIDE.

Congressman Hal Rogers and the late General James Bickford, former Secretary of the Kentucky Natural Resources and Environment Protection Cabinet, launched PRIDE in 1997. PRIDE, or Personal Responsibility In a Desirable Environment, serves 38 counties in southern and eastern Kentucky. PRIDE's vision is to restore the natural beauty of the region, to help encourage citizens to take responsibility for protecting their environment, and to provide the resources needed to accomplish these goals.

PRIDE unites volunteers with resources of federal, state, and local governments. PRIDE's first aim is to focus attention on the pollution problems of the region and then to look for ways to fix the problems. By cleaning up waterways, ending illegal trash dumps, and promoting environmental awareness and education, citizens gain renewed pride in southern and eastern Kentucky. PRIDE's success is dependent upon residents' working together to make Kentucky a better place to live and more inviting to tourists and businesses.

Kentucky's mountains and rocky ground make it expensive and difficult to have sewage collection lines from homes to wastewater treatment plants. Consequently, raw sewage from straight pipes and failing septic systems is a major source of water pollution in the region. Community cleanups do not help much unless everyone works together because communities are connected by hundreds of creeks, streams, and rivers. Approximately 36,000

Approximately 36,000 homes in the 38-county PRIDE area rely on failed septic systems or straight pipes for wastewater disposal.

homes in the 38-county PRIDE area rely on failed septic systems or straight pipes for wastewater disposal. Division of Water inspectors are trying to locate all straight pipes and failed septic systems.

Owners are issued a Notice of Violation and instructed to stop the discharge. They are then directed to the local health department for on-site septic system or the municipality for sewer hookup, and they are assisted with seeking funding from PRIDE.

Sewage-related pollution is severe in some areas of Kentucky, so severe that the Division of Water and the Department for Public Health have issued swimming advisories for several Kentucky rivers. Most of the fecal material in these rivers is caused by straight pipes and failed septic systems. Nearly half of the private drinking wells tested by the Cabinet for Health Services contained fecal coliform bacteria. According to the U.S. Environmental Protection Agency (EPA), more than 40 percent of Kentucky homes use septic systems or other on-site means of sewage disposal. PRIDE wants to eliminate straight pipes and failed septic systems from the region. Many homes in Kentucky have poor conditions—high water, small lot size, shallow soil, steep slopes—that do not work with conventional septic systems. In these situations alternative treatment systems must be used.

Alternative systems are mechanical systems (aerators), media filters (sand filters, peat filters, fabric filters), and natural systems (wetlands). Alternative systems treat the water before it enters the disposal field in an attempt to overcome the limitations that prevent the use of a conventional septic system. Alternative systems are more expensive and require greater operation and maintenance requirements. PRIDE helps fund these

alternative systems, and the Division of Water is also working to try to decentralize wastewater systems to be eligible for funding.

Unfortunately, some sites are not suitable for any on-site sewage system, whether alternative or conventional. In such cases residents can install a holding tank and have it routinely pumped. These tanks are expensive and are only temporary solutions until means can be found to install a sewer line connection or on-site system. Sometimes the wastewater solution is more expensive than the value of the property. In these cases it might be advisable for residents to vacate the property and find more suitable living arrangements.

PRIDE has instituted several programs that aid in cleaning up waterways and assuaging problems with waste. Not only homeowners but entire communities benefit from the work that Congressman Rogers and General Bickford envisioned.

PRIDE's Project Clean Streams provides resources for teachers to help students understand the importance of clean water. Teachers receive free training in water quality assessment and stream monitoring. They also receive free water testing equipment. Once trained, they take their students to local creeks and streams, collect water samples, and test the samples. Professional laboratories analyze the fecal coliform content of the samples, and these samples are posted by PRIDE on their web site. This keeps everyone informed as to the status of the work being done in communities.

PRIDE offers grants to assist cities, counties and utilities to build wastewater infrastructure to eliminate water pollution problems. The PRIDE Wastewater Construction Grant Program funds sewer line extensions from existing treatment plants to communities without sewer service. More than 3,400 homes will be serviced by the \$19.9 million grant that was established in 2001.

The Community Grant Program funds environmental improvement projects. This program awards grants for local cleanup activities, appliance buy-back programs, recycling programs, equipment purchase, and other projects that help restore the

environment. These grants are awarded once a year to city and county governments, other public entities, and nonprofits.

PRIDE's SuperGrant program assists communities in cleanup of large illegal dumpsites that are hazardous and detract from the region's natural beauty. The Environmental Education Grant Program promotes education and awareness of environmental problems in the region. This program grants funds to educational institutions and environmental education organizations for education projects. These grants provide money for outdoor classrooms, recycling programs, curriculum materials, and other environmental education projects. To date the grants have resulted in 173 outdoor classrooms, 19 nature trails, and 20 school-wide recycling projects.

PRIDE has helped many communities in southern and eastern Kentucky to improve water supply and clean up their environment. In Estill County alone approximately 100 homeowners have received conventional and alternative septic systems. The Estill County Conservation District and Cumberland Valley RC&D Council received a 2001 Governor's Environmental Excellence Award for Community Environmental Leadership in recognition of the work done to rid the county of straight pipes and failed septic systems.

Since 1997, Congressman Rogers has helped provide more than \$66 million in federal funding for the PRIDE initiative through National Oceanic and Atmospheric Administration grants. With this money PRIDE provides a way for people to become involved in cleaning up their communities. PRIDE also offers grants to local governments, teachers, nonprofits, and homeowners who want to pursue PRIDE's goals. For information on how to apply for a homeowner's grant, please contact your local ADD Office, RCD Office, local health department, or the PRIDE Office. To qualify for a grant, a homeowner must meet the HUD poverty guidelines, be the deed holder, and have existing electricity at the home.

For further information see <kywatersheds.org/straight_pipe_dilemma.htm> and <www.kypride.org/new/clean.htm>.

PRIDE offers grants for low-income families that need to upgrade existing septic systems or install a new system.

When Your Well Produces Alphabet Soup Knox County, Tennessee Community Fights Water Contamination

by Ronda Stansberry

Ronda Stansberry lives in the Burnett Creek Community of Knoxville, TN, with her husband, four-year-old son and an assortment of critters. She is an active member of the Burnett Creek Clean Water Task Force.

For more than a year now, I have been unable to turn on my taps and use my well water for cooking or drinking. I have been unable to rest easy about my family showering or watering our animals or garden. I've had to tell my 4-year-old "no" when he wants to take a sit-down bath—which is more like play time to him. During this year, I've learned more than I ever really wanted to know about things like karst terrain, industrial contaminants, sinkholes, fill dirt and politics.

The groundwater in my community in South Knoxville, Tennessee, has been contaminated with lead, arsenic, trichlorethene (TCE), diesel fuel, PCBs, and possibly as many as 300 other industrial pollutants, including dioxin. In October 2001,



Residents of Burnett Creek don't know the effects of the water contamination on their livestock and produce. The Stansberrys aren't comfortable eating eggs laid by their chickens.

concrete debris and soil from a former railroad yard known as the Coster Shop were dumped into an enormous sinkhole on some property a few miles from my home. The Coster Shop repaired railroad tanker cars, which had to be emptied before any work could be done. In most cases when the valves on these cars were opened, the tanker's contents were allowed to spill freely onto the ground, thus polluting the surrounding soil.

While my neighbors and I aren't certain how those contaminants ended up in our water, we do know that, were it not for concerned people working together, we might be drinking contaminated water to this day. The discovery happened that October when one man in Knoxville became curious about the number of dump trucks going in and out of a county residential area and followed an empty truck till it stopped at a local convenience store. When the man asked the driver what he'd been hauling, the trucker said he didn't know what exactly was in the load, but that he wouldn't want it in his back yard—it came from the Coster Shop.

The concerned man contacted the Tennessee Department of Environment and Conservation (TDEC), who sent representatives to investigate. The person who had been letting the company dump on her property suggested that the TDEC check another site in South Knoxville because she'd mentioned the availability of the fill to an acquaintance there. The second person had also allowed the fill to be dumped into a large sinkhole on his property. Like the other property owner, he had felt that bringing in fill would make his yard more usable. Both property owners had received information that the material was simply concrete debris. Imagine their shock when they discovered

their yards contained numerous industrial contaminants from a known Superfund site. The first property owner's two small children had played in their "new" yard, particularly enjoying some of the wooden blocks they found in the soil. These blocks were later found to contain dioxin. The children have also tested positive for lead and arsenic exposure.

Meanwhile, residents in the area started noticing changes in their water—funny smells, changes in taste, an oily feel, and oily sheens in their coffee pots and toilets. Along with a few of my other neighbors, I learned by word of mouth that we might have contaminants in our water. Some people had been advised not to say anything, but I decided to contact TDEC to see if I could get further information. I found that a public meeting had been scheduled that week at a local church.

Emotions ran high at this meeting as my neighbors and I found more confusion than answers. Most of us signed up to be informed of further developments, and several of us volunteered to set up a meeting of people who were interested in taking action on the situation. Thus, the Burnett Creek Clean Water Task Force was formed.

The Task Force includes residents of the Burnett Creek Area, as well as other concerned citizens. The

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Suspect water problems? Here are some hints:

Don't take changes in your water for granted. If you depend upon well water in your home, have it checked at least once a year. Water testing is available through many county health departments. In Knox County, this test was less than \$30.

Be safe. If you notice any changes in your water—how it looks, tastes, smells or feels—use bottled water for cooking and drinking until you can find out what caused the change. Had we relied on official notification about our unsafe water, we would have been drinking contaminated water for almost a year.

Talk to your neighbors. Had a concerned neighbor not mentioned this to us, we would have used our water for several more months.

Keep up with local news. Had we not heard from a neighbor, we would have missed the first public meeting because we had not been reading the papers or watching the news.

Know the area you live in. Find out if sinkholes in your area have been filled or if any of your neighbors have used their property as a dump. Sinkholes are direct conduits to the groundwater. What goes in comes out somewhere, and if you're on a well attached to the same water system, the contaminants might be coming out your tap.

Report any suspicious dumping to the local Department of Environment and Conservation or Environmental Protection Agency (EPA). Check the government listings of your phone book.

Speak out. If you've discovered a problem with water or with illegal dumping, speak out. You can make a difference if you work together for a common goal. If you find frustration in the political sector, keep trying. Remember, your vote really does count.

Ask questions, but don't take just one answer as gospel. Arm yourself with knowledge. Early on, my community received inaccurate information, through public meetings, in private conversation, and through the media. Research Internet sites that offer water safety information. Also, your local library's reference personnel can assist you.

Remember your water affects not just your home but your livestock, produce and property. Check with your local health department or agricultural extension agent to see if the contaminated water can make your livestock or produce unsafe. Contaminants such as mercury can become even more dangerous as they progress through the food chain.

Get your story out there. We were fortunate to have one local news station and one local paper "break" our story and continue covering it. Don't be discouraged if local media seems uninterested or presents your concerns as invalid. Be aware of hidden agendas.

Get legal counsel. If you cannot afford a lawyer, find out if you have a Legal Aid office in your area. Legal counsel doesn't necessarily mean that you will have to go to court, but it can help assure that your interests are addressed.

West Virginia University Programs Advance Ideas to Restore and Protect Water

By Christi Duffer, WVU School of Journalism Intern, and Trina Karolchik Wafle, Associate Director, National Research Center for Coal and Energy

The National Research Center for Coal and Energy at West Virginia University does more than its name implies. Because energy and the environment are intimately intertwined, the Center has long promoted research and related programs on the quality of water.

Since its beginnings in 1979, the NRCCE has supported WVU researchers seeking techniques for improving acid-tainted streams and rivers throughout Appalachia. Concern for water quality goes beyond the impacts of coal mining to include treatment of wastewater from people's homes. Many people simply "straight piped" their wastewater into the nearest stream, consequently putting their health and the health of the environment at risk.

Today, the NRCCE offers a broad range of research and informational programs to address these issues, described below.

Helping America's Small Communities Meet Their Water Needs

How clean was the water you drank today? Where do you find affordable wastewater treatment? How do you minimize your water pollution? These are questions that may concern you, but getting the answers may not top your list of "things to do." The NRCCE offers several programs where you can get answers quickly. While the programs are often national in scope, they are also sensitive to water issues in Appalachia.

The **National Environmental Services Center (NESC)** provides information and technical assistance about drinking water, wastewater, solid waste management, and environmental training. Programs include: the National Small Flows Clearinghouse (NSFC), the National Drinking Water Clearinghouse (NDWC), the National On-site Demonstration Program (NODP), and the National Environmental Training Center for Small Communities (NETCSC).



The National Small Flows Clearinghouse provides wastewater management information to help protect the health of the nation's families.

Having trouble with your septic tank? Don't think a septic tank will work for your home? The **National Small Flows Clearinghouse (NSFC)**, directed by NESC, helps people in small communities solve their wastewater problems. Their goal is to protect public health and the environment. The NSFC can help you find the best way to collect, treat, and dispose of wastewater that is the most suitable for your situation, whether it be through a septic tank or other alternative wastewater treatment technology.

The NSFC is the only national source dedicated to helping small communities with their wastewater infrastructure needs. The clearinghouse provides information about on-site wastewater collection and treatment systems, so called "small flows" technologies. Technical experts can help you understand which technology will work best to help ensure your wastewater is handled safely and affordably.

The NSFC provides a full range of services including a technical assistance hotline (1-800-624-8301), educational products, computer databases containing lists of small system manufacturers and consultants, innovative and alternative treatment

facilities, wastewater regulations, and lists of appropriate referrals.

The NSFC publishes the *Pipeline* newsletter and the *Small Flows Quarterly* magazine. NSFC information is available free or for a very low fee. For more information, contact Peter Casey, NSFC Program Coordinator, at (304) 293-4191 ext. 5575.

Want to see alternatives to septic tanks in action? The **National On-site Demonstration Program (NODP)**, directed by NESFC, encourages the use of alternative, on-site, wastewater treatment technologies by hosting demonstration sites around the country. The NODP assists communities in funding, installing, monitoring, and using management models that are cost-effective and viable alternatives to full central sewage systems. Seven on-site demonstrations currently focus on communities in environmentally sensitive areas, helping them find solutions to their specific wastewater treatment problems.

For information about the nearest demonstration site or for consultation, use the NESFC toll-free number (1-800-624-8301). NODP also offers products for educators and managers, and articles, reports, and case studies. For more information, contact Clement Solomon, Program Coordinator, at (304) 293-4191.

Do you rely on well water? The **National Drinking Water Clearinghouse (NDWC)**, directed by NESFC, helps people with private wells find the information they need to ensure clean, safe drinking water and helps operators of rural drinking water systems by providing technical assistance. The NDWC's engineers, researchers, and technical writers and editors develop information about drinking water treatment technologies, source water protection issues, water system operation and management strategies, regulatory updates, and funding sources for small community water treatment infrastructure. Other water-related issues include groundwater protection, water system design, water treatment processes, water conservation, drinking water regulations, water quality, and financing options for drinking water systems.

The NDWC offers toll-free consultation at 1-800-624-8301, more than 340 educational products,



The National Environmental Training Center for Small Communities offers courses on wastewater treatment and alternative technologies. Courses include tours of treatment facilities.

referrals to other assistance organizations, and conferences, workshops, and seminars. Current publications are the *On Tap* magazine and the NDWC *Outreach Resource Guide*. Both publications are free. For more information, contact Sanjay Saxena, NDWC Program Coordinator, at (304) 293-4191 ext. 5512.

The **National Environmental Training Center for Small Communities (NETCSC)**, directed by NESFC, focuses on developing and delivering training for trainers and managers responsible for protecting the public health in the areas of wastewater, drinking water, and solid waste. NETCSC offers the Training Resource Center, a collection and distribution point for environmental training material and activities, environmental organizations, and environmental trainers.

Other services include a toll-free number (1-800-642-8301) to the Training Resource Center, training assistance, free or low-cost environmental training resources, low-cost educational resources and products, five databases about small community environmental training, and curriculum development.

NETCSC publishes the *E-train* newsletter, the *Environmental Training Resources Catalog*, and periodic reports of current national needs and trends. Again, services and information are available free or for a low fee. For more information, contact John

continued on page 14

West Virginia University Programs continued from page 13

Hoornbeek, NETCSC
Director, at (304) 293-4191
ext. 5579.

For more information
about NESC, contact Richard
Phalunas, NESC Managing
Director, at (304) 293-4191
ext. 5514.



Research Dedicated to the Preservation and Restoration of the Natural Environment

The **West Virginia Water Research Institute (WVWRI)**, a program of the NRCCE, serves as a statewide vehicle for performing research related to water issues in West Virginia. It is the premier water research center in the state and, within selected fields, is recognized as an international leader.

WVWRI is dedicated to the development and delivery of the technologies needed by West Virginia's agencies, industry, and the public to remedy pollution resulting from pre-1977 mining activities, before laws were passed to prohibit such pollution. They strive to develop techniques to minimize new sources of water pollution while maintaining economic competitiveness.

WVWRI expanded its research mission in 2003 to include water resource management, environmentally related economic development, water supply security, and industrial site rehabilitation. The program serves as the coordinating body for programs such as the Appalachian Clean Streams Initiative (ACSI), the Acid Drainage Technology Initiative (ADTI), the State Water Institute (SWI), and the Monongahela Basin Mine Pool Project.

WVWRI works with researchers at WVU and universities nationwide to develop research teams, to develop and release requests for proposals to support environmental research projects, and to work with watershed groups to develop proposals for addressing local watershed issues. Focused efforts include watershed remediation, coal mining, power generation, industrial site decontamination, and groundwater protection.

WVWRI offers on-site technical support, cost-effective project management, project development for large-scale environmental research programs, and

outreach through reports, publications, web sites, and workshops and conferences.

For more information, contact Paul Ziemkiewicz, WVWRI Director, at (304) 293-2867 ext. 5441.

The Appalachian Clean Streams Initiative (ACSI),

directed by WVWRI, works to eliminate acid mine drainage from abandoned coal mines. Through projects in 11 Appalachian states, the ACSI makes acid mine drainage cleanup a governmental priority. The initiative focuses ongoing efforts to develop state, local and federal partnerships to clean up polluted streams using watershed-based planning efforts, and focusing the energies and resources of citizens, communities, and corporations.

A major goal of the cleanup plan is to increase information exchanged among state, local, and federal government agencies working in this arena. For more information, contact Jennifer Simmons, Program Coordinator, at (304) 293-2867 ext. 5442.

The Acid Drainage Technology Initiative (ADTI), directed by WVWRI, promotes technical advances in acid mine drainage technology and watershed restoration. The ADTI was largely developed through the National Mine Land Reclamation Center (NMLRC), which gave rise to the successful ongoing Appalachian Clean Streams Program (ACSP). ACSP provides states and citizen watershed organizations the funds to clean up local watersheds damaged by historic acid mine drainage.

The ADTI provides technical support to these watershed groups and their state partners, monitors and reports on the results, and tests and demonstrates innovative mine drainage technologies. The acid mine drainage from abandoned coal mines is the most important water quality problem in the northern Appalachians.

The ADTI serves the abandoned mine land programs and citizen watershed associations of Alabama, Indiana, Kentucky, Maryland, Pennsylvania, Ohio, Tennessee, Virginia, and West Virginia. Approximately \$3 to \$5 million worth of construction projects were carried out last year. For

example, the projects supported by this program improved watersheds in rural West Virginia creating fisheries and other recreational opportunities while improving the quality of the water for human use.

The ADTI also helps citizens and state agencies across the Eastern and Midwest coalfields to restore watersheds damaged by pre-1977 coal mining. For example, the NMLRC has developed large-scale restoration projects for entire watersheds (versus individual discharges) returning fisheries to once dead streams. The ADTI documents the performance of the remediation methods and develops ways to improve reliability and efficiency.

For more information, contact Mark Hoffman, Interim Director, at (304) 293-2867 ext. 5446.

The **State Water Institute (SWI)**, directed by WVWRI, focuses on improving the quality of West Virginia's streams and water supplies. The SWI provides the only source of seed money to study water research issues in the state. It also provides SWI's staff with the ability to give technical advice and support for citizen watershed groups and state agencies.

Healthy waterways ensure the availability of clean water for flora, fauna, and human habitation and economic activity. Projects have focused on mining-related issues in coal counties and agriculture and water supply issues in the eastern panhandle of West Virginia.

Research priorities for fiscal year 2003 include aquatic ecosystem integrity, uses for mine water discharge, and industrial processes and urban spread.

For more information on the State Water Institute, contact Tamara Vandivort, Program Coordinator, at (304) 293-2867 ext. 5448.

The **Monongahela Basin Mine Pool Project**, directed by WVWRI, is a regional program affecting the upper Ohio and Monongahela River basins. This mine flooding program has become a key component in Pennsylvania's and West Virginia's efforts to protect the Monongahela River from the

effects of acid mine drainage as mine closings and bankruptcies threaten the viability of current mine water treatment.

At risk are the recent investments in waterfront development occurring along the Monongahela and Ohio Rivers. The project incorporates the expertise of researchers from three major universities: West Virginia University, University of Pittsburgh, and Carnegie Mellon University.

The objectives for Phase I include mapping underground mine pools, monitoring mine water levels, water chemistry, and rates of water rise and differences between shallow cover near outcrops versus the central basin. Phases II and III of the project focus on the abandoned mine pool flooding of the Pittsburgh, Ohio, and Irwin Basins.

Objectives include investigating the long-term impacts of flooding on surface water ecosystems; modeling the flow and geochemical evolution of mine-water discharges; conducting pilot field simulations to define and quantify technologies and design parameters for treatment of mine discharges; quantifying economic values, both costs and benefits, related to water quality changes in the Monongahela River; and expanding geographic information system (GIS) support for the project.

The Monongahela Basin Mine Pool Project supports the transition from a coal economy to tourism and other commercial and industrial development. The project helps by predicting where flooded mines in the Monongahela basin may discharge, allowing state agencies to institute protective measures to prevent massive fish kills or water system problems along the Monongahela River.

Over the previous three years, the Monongahela Basin Mine Pool Project has mapped all of the mines of the basin, placed their outlines on a GIS platform and begun the process of monitoring flood levels while identifying upcoming breakout points.

For more information on the Monongahela Basin Mine Pool Project, contact Tamara Vandivort, Program Coordinator, at (304) 293-2867 ext. 5448.

For more information about any NRCCE program, visit www.nrcce.wvu.edu.

Eyewitness Account

Journal from the Martin County Coal Spill

by David Cooper

David Cooper, a member of Kentuckians for the Commonwealth and the Sierra Club, made several trips to Martin County, Kentucky, in the months following the October 2000 blackwater spill. A sludge impoundment had failed and dumped 250 million gallons of coal waste into Wolf Creek and Coldwater Creek. Following Cooper's trips, he made reports of what he saw and heard. The following paragraphs are excerpts from those reports.

First Visit:

October 22, 2000

I was totally unprepared for the extent of the damage. This is a major environmental catastrophe. The Big Sandy is black all the way from Catlettsburg to the headwaters. There is a goo ranging from several inches to several feet thick along the entire length of the two smaller Martin County streams. Authorities are blocking the road so that no "outsiders" including the news media can have access and see the extent of the devastation.

A few observations: It would not be an overstatement to state that every living thing in the two smaller streams is now dead. Don't know about the Big Sandy, I would guess it's in serious trouble. A cleanup worker (vacuum truck operator) got trapped in the creek bed earlier this week and was buried up to his chest; it's like quicksand. He got stuck and was yelling for help and some other workers pulled him out. He said his feet never touched the bottom and he would have sunk in the quicksand if he hadn't been rescued....

Homeowners do not appear to be organized yet or have any idea what to do. Supposedly damage is much worse on Coldwater Fork, but they wouldn't let us back there. Martin County Judge Executive has closed the two roads leading to spill....

Second Visit:

November 2000

After Martin County Coal was ordered to remove their illegal roadblock last week, we decided to go back to the site of the coal sludge spill....

As we traveled the narrow, winding road up the hollow, we were awe-struck by the size and scope of the cleanup, which operates twenty-four hours a day,

seven days a week. There were dump trucks, bulldozers, backhoes, and cranes up and down the road, and our car caravan wove slowly in and out of the heavy equipment....

We passed many temporary holding pits along the road that were hastily dug to hold some of the waste sludge.

...We noticed about ten of these pits, some of them two to three acres in size....

We walked along a new ATV trail through the woods that some of the homeowners had built to get to their houses. Apparently their driveways out to the main road were all buried under the sludge.... As we came out of the woods, the trail wound past a huge field of sludge where the material had been piled in heaps, like the lava fields in Hawaii. The sludge had started to harden in the sun, like clay. In a cornfield bordered by the sludge, we noticed a number of deer and raccoon tracks sunk deep in the mud. I wondered again how the wildlife was able to survive.

We passed a small white frame house, and walked down a gravel road, which gave us our most incredible view of the day—a square mile of devastation. Sludge as far as the eye can see. A bridge that was normally ten feet above the creek, now buried a foot deep in sludge. Homes surrounded by sludge. A basketball hoop only a few feet above the pooled sludge. Our jaws hung open in amazement at the sight....

Everywhere you looked there were dump trucks and bulldozers furiously working to scoop up the sludge or push it around. I read in the paper that after nearly a month of round-the-clock, seven-day work weeks, with 350 men working, they had cleaned up ten percent of the spill....

In 2001, American Rivers proclaimed the Big Sandy River one of America's most endangered rivers due to the Martin County spill.

Third Visit:

January 2001

[On Coldwater Creek,] the good news is that the sludge has been mostly removed, and the barren ground covered with hay. The bad news is that the "soil" that has been trucked in to replace the topsoil is a very poor quality, rocky material that you would expect to find on a reclaimed strip mine - not a fertile creek bottom. The soil has been extremely compacted by all the heavy equipment driving around in backyards for the past two months—bulldozers, backhoes, dump trucks, and so on....

Along the creek bank, which has been badly damaged by the scraping of the sludge scoopers, we noticed quite a bit of erosion and what Greg called "scarps"—a fault line indicating the imminent failure of the bank into the creek. Looking at the scarps you can see a thin layer of sludge about six inches below the topsoil. Martin County Coal did install some rip-rap along a few portions of the creek, but the erosion was widespread along the entire creek bank....

[W]e decided to spend the rest of the afternoon looking at Wolf Creek, the other stream that was affected by the spill. Wolf Creek, which is in a different watershed, got mostly blackwater during the spill, while Coldwater Creek got mostly the heavier sludge. Still, as we journeyed up Wolf Creek from the junction with Kentucky Route 2032, we were surprised to see that the creek still looked exactly the same as it did when we first visited in October, only with a little bit of snow and ice: Banks coated with sludge, the creek bottom solid with sludge. This creek flows for about 20 miles from the coal company property to the Big Sandy

River at Lovely, Kentucky. Apparently they are just getting started on cleaning up Wolf Creek, and they've got about 20 miles to go.

Fourth Visit:

May 2001

...It was nice to finally see Martin County on a beautiful warm spring day. The trees were in full bloom, the sky was clear blue, the air was crispy and the mountains looked spectacular....

... I wasn't too surprised to hear that a government agency has finally admitted the presence of toxins in the coal slurry. People in Martin County have been told that "it's just mud" and "you could eat it" for so long that most residents have just stopped raising the issue.

[A] report dated March 28 from the Agency for Toxic Substances and Disease Registry (ASTDR), an agency of the US Dept. of Health and Human Services, [listed] the presence of heavy metals "above the level of health concern...." According to the ATSDR analysis, "in some samples of the source coal slurry material, copper, vanadium, manganese, barium, arsenic, and cobalt were above levels of health concern." The report also indicated a slightly elevated level of copper in the raw (untreated) water at the Martin County Water Plant in Inez.

The report also states "in some forms, barium, arsenic, and vanadium can produce health effects by skin contact. In most cases, these effects can occur after prolonged exposure lasting a year or more. Like most heavy metals, all of these compounds affect the digestive system, the kidneys (except manganese), and the liver (except vanadium). Many of these compounds produce effects on the central nervous system and some of them produce effects on the cardiovascular system...."

Numerous residents have complained of skin rashes since the slurry spill, and as I reported in my last trip report, there is still a considerable amount of sludge left in the "reclaimed" backyards and the creeks....

Knox County Water Contamination continued from page 11

group set two goals—to get water lines run into our community and to have the contaminated fill removed from the sinkholes. We composed a list of people to contact, including local county commissioners, city councilmen and state representatives. We formed committees to make sure that we maintained contact with the media and with the neighborhood as a whole.

County utilities informed us that the cost of running water lines would be exorbitant. None of us, as individuals, could afford to have the lines run, so we organized a benefit to try to raise a financial base for getting the water lines established. Local entertainers provided a sound system, music, tents, and supplies. Our group solicited donations of both money and goods, including silent auction items from local businesses and individuals. We advertised the fundraiser with fliers, in the papers and on the news. We also personally invited local political officials to show their support for the community.

While we didn't come close to raising the money needed for the water lines, we did raise awareness of our serious water situation. Local news crews broadcast parts of the event, and local politicians attended and provided support. By the end of the day, we received an announcement that an agreement had been reached by involved parties to clean up the dump sites.

Meanwhile, we still had to contend with contaminated water. With a small fund in the bank and news of our struggle being brought to state level attention, we resolved to continue our efforts. Our water had been tested only once by TDEC, and many of us felt that a single test (which was conducted during one of the driest seasons on record) was not adequate.

My well had tested positive for lead and arsenic, which show no visual evidence; yet during heavy rains the previous March, I noticed an oily sheen in my water. Technicians said that the oily sheen was probably diesel fuel or another petroleum product, yet

Unpredictable: In karst terrain, which contains many channels in which water travels, contaminants can reappear in days, weeks or years.

the test did not show it. We received letters from representatives of the City of Knoxville telling us water had tested negative for contaminants at several homes. Based on this finding and the fact that some of our homes were several miles from the dump sites, city officials assured us that our

water was safe. Thus, some residents continued using their water. Meanwhile, many of us had started buying bottled water, going to homes of friends and family to get municipal water, or using bottled water donated by the local church and community groups.

Members of the Task Force, through a law firm that agreed to take our case on a contingency basis, consulted with a regional geological consulting firm about our situation. The hydrogeologists explained that we live in an area of karst terrain. The groundwater runs through a network of channels—some large, some microscopic. Contamination can be pushed into the matrix of these channels and sit there for years, and come out today, next week, next year, or 20 years from now.

Groundwater isn't entirely predictable. A heavy rain can cause the groundwater to back up and go in an entirely different direction. This means that a well that tests negative today could test positive tomorrow. We wanted straight answers in the form of testing, but we found that water tests are simply "snapshots," showing the state of water only at a specific time. Tests do not address past or future contamination, and results can change on a daily basis. Some of my neighbors, whose wells originally tested negative for contamination, now have levels of petroleum so high that state health officials advised them to use the water only for flushing toilets.

Many of the contaminants, such as the PCBs and the PAHs, normally aren't mobile in water UNLESS they attach to clay or silt. Our water has a very high turbidity rate (meaning it is full of silt) even on a good day. During heavy rains or a lot of use,

continued on back page

Alphabet soup defined

PCBs: Polychlorinated Biphenyls (found in coolants and lubricants)

PAHs: Polycyclic Aromatic Hydrocarbons (found in tar products)

West Virginia Groups Release Report on Coal Mining and Water Quality

In April, 2003, the West Virginia Rivers Coalition and the Appalachian Center for the Economy and Environment released a report titled “Why Regulated Coal Mines Still Pollute West Virginia’s Streams.” The report documents both positive changes and persistent problems with coal permitting practices in West Virginia.

The report states that permitted coal operations and older abandoned mines release toxic pollutants that impair more than 2,000 miles of the state’s rivers and streams. According to the authors, regulations and practices on how these contaminants are released tend to be weaker for coal mining than those regulations issued to other industries.

Permits are weak for a variety of reasons. Federal guidelines include a complex set of exemptions known as alternative storm limitations. Through these exemptions, surface mines are made exempt during rains, when discharges can be the greatest. Federal permitting guidelines also exclude toxic metals. The Environmental Protection Agency uses iron and manganese to gauge whether water discharges might contain other metals, which can often be found in significant amounts in coal mining operations.

In West Virginia, water quality standards tend to be weaker than federal guidelines. For example, coal mining companies are exempt from turbidity measurements unless they discharge pollutants into trout streams.

Federal guidelines also require state agencies to write stringent permits as necessary to protect water quality. However, these permit writers don’t always follow more stringent guidelines than the minimum requirements laid out at the federal level.

While federal and state regulations ban using streams for waste transport and assimilation, permits often allow mining operations to build sediment ponds directly in stream beds. While trout streams in West Virginia receive special protection from pollution, this regulation recognizes only those

Permitted coal operations and older abandoned mines release toxic pollutants that impair more than 2,000 miles of West Virginia’s rivers and streams.

streams currently inventoried by the West Virginia Division of Natural Resources as native brook trout habitat.

Permits require self-monitoring of discharges. This monitoring generally occurs as end-of-pipe monitoring that measures actual discharges and as instream monitoring, which measures water quality in receiving streams.

The Department of Environmental Protection generally requires end-of-pipe monitoring twice a month. This monitoring is not required to measure some parameters for exemptions that are granted during periods of rainfall. Therefore, data about peak load discharges may not exist. The exemptions related to alternative storm limitations also affect instream monitoring in that there is no data focused on water quality after a rainfall event.

The report offers several recommendations for dealing with stream quality and coal mining. The Department of Environmental Quality should strengthen permits by removing alternative storm limitations and assigning discharge limits for toxic metals. They should require more frequent monitoring of discharges, with daily measurements required for large operations.

All West Virginia water quality criteria should comply with federal guidelines or give sound scientific reasons why other criteria are appropriate for West Virginia. The EPA should review federal guidelines for coal mining and remove alternative storm limitations.

Meanwhile, citizens groups should gather background information on coal mining permits in their communities, including acid mine drainage cleanup plans and permits for new operations. They should make sure permits limit the discharges into local streams. Citizens should also participate in the permitting process by commenting on new, reissued or modified local permits.

The full report can be downloaded at www.wvrivers.org/reports.htm.

A Role for Everyone

Protecting Our Watersheds

from the web site of Kentucky Watershed Management: <<http://kywatersheds.org>>.

What is a watershed?

No matter where you live, work, or play, you are in a watershed. A watershed is a geographic area where all water running off the land drains to a specific location. This location may be a stream, river, lake, wetland, or ocean, or the water may drain underground into the groundwater.

You may live on a creek, which is considered a small watershed. Your creek may join a river, which is a larger watershed. The river may have many smaller creeks, known as tributaries, that drain into it, and each of these tributaries has a small watershed associated with it. Each is part of the larger watershed of the river.

Why should I care?

First of all, we all live in a watershed. And that affects our quality of life. How? Everything we do on the face of the land affects watershed health. Storm water runoff can contain pollutants such as silt, metals, pesticides, and fertilizers that will contaminate our drinking water supplies. These contaminants may kill fish and other organisms that live in our lakes and streams, and even affect our ability to swim or participate in other recreational water activities.

In addition to affecting the quality of water runoff, watershed health even affects the amount of water that runs off the land. This means that water may run off too rapidly, resulting in lost water supplies for our drinking water. It may also mean water running off too rapidly following a big rain storm, resulting in flooding.

Loss of vegetation and natural areas along streams and lakes means a loss of habitat for wildlife. While some people rely on wildlife for sport, biodiversity is vital to human existence; without the web of life, we would not be able to survive.

Finally, water is vital to the life and growth of our communities. Your watershed is not only the

source of your community's drinking water but is essential to the local economy through use in industry and agriculture. Water provides scenic beauty and areas for recreational activity.

If a watershed is not managed properly, these uses of water can be threatened by pollution, drought or flooding, which cost money and can cost lives. All these things affect our livelihood and quality of life.

What functions do watersheds play?

Watersheds collect water from rainfall and snowmelt, storing some of this precipitation in wetlands, soils, trees, and other vegetation, and underground in aquifers. The floodplain along the banks of a river serves as an important storage site for water. The natural storage sites help eliminate contaminants as suspended particles settle out and as water infiltrates into the soil where biological and chemical reactions break down impurities. This stored water eventually flows into streams, rivers, and lakes during dry periods.

Watersheds provide critical habitat for many plant and animal species. Watersheds provide water for drinking, cleaning, recreation, navigation, hydroelectric power, and manufacturing.

How do we impact watersheds?

Human activities, both on the land and in the water, have impacts on a watershed. The creation of buildings, parking lots, and roads; the draining of wetlands; mining; deforestation; and agriculture can all affect the quality and quantity of water flowing over the land and through the soil.

Changes can alter watershed functions by eliminating critical water storage, and by contributing additional sediment and chemicals to runoff. Critical ecological habitat can also be eliminated by human activities.

What to do to protect your watershed

1. Determine the nearest stream to your home and learn more about the watershed. To do so, visit <http://epa.gov/surf>.
2. Prevent pollutants in storm runoff from your home or farm by reducing or eliminating the use of chemicals and fertilizers in your lawn or on your land.
3. Study and use alternatives to household chemicals. If you must buy chemicals for your home, buy only in the amount you expect to use and apply them only as directed. More is not better. Never dispose of chemicals, waste oil or radiator fluids in your sewer system or pour them on the ground.
4. Maintain your septic system if you have one. Pump every 3-5 years and do not use septic system additives.
5. Protect stream bank vegetation, which plays an important role in stream bank erosion control, food supply for aquatic life, and the maintenance of cooler water temperatures necessary for aquatic species.
6. Conserve water by using low-flow faucets and showerheads and by being aware of your water use.
7. Do not divert storm gutters or basement sumps into your sewer system, these waters should flow onto your yard or into rain barrels for later use.
8. Reduce the amount of lawn and impervious pavement you have with plant beds to minimize runoff. Use native plants that have low requirements for water fertilizers and pesticides.
9. Clean up your pet's waste which contains nutrients and pathogens. Employ practices to manage animal waste on farms to prevent water contamination.
10. Get involved in local planning and zoning decisions, and encourage your local officials to adopt erosion and sediment, storm water control, and source water protection ordinances.
11. Become a volunteer water quality monitor to collect data and learn more about your neighborhood stream. In Kentucky, see <http://water.nr.state.ky.us/watch>.

Summer Issue Topic:

Communities and Nonprofits in the Economic Downturn

The nation's economic downturn has taken a toll on nonprofits and other community groups. What issues are organizations and communities facing? What approaches have nonprofits taken to survive tough financial times? Are there untapped resources to help communities overcome funding crises? If you have a story or an idea, contact us using the information on page 2. Deadline for the summer issue is July 15, 2003.

Acid Mine Drainage and Mountaintop Removal Coal Mining and Water Quality

Coal mining, while having been a mainstay of the economy in parts of Appalachia, presents a myriad of problems for water in the mountains. In addition to the sludge impoundment failures like the Martin County disaster described in Dave Cooper's travel report excerpts on page 16, acid mine drainage and mountaintop removal have impacts on water quality.

The EPA identifies acid mine drainage as the number one water quality problem in Appalachia.

hundreds of feet high, thus destroying the entire surrounding ecosystem.

According to the Citizens Coal Council, aerial inspections show that mountaintop removal mines have already

leveled between 15 and 25 percent of southern West Virginia's mountains. The mines in West Virginia alone are burying more than 1,000 miles of streams and have cut more than 300,000 acres of hardwood forests.

Acid Mine Drainage

The Environmental Protection Agency (EPA) identifies acid mine drainage as the number one water quality problem in the Appalachian states. In 2000, the agency released figures estimating that Appalachia contains more than 1.1 million acres of abandoned coal mines, over 9,000 miles of streams polluted by acid mine drainage.

Acid mine drainage is formed when pyrite, an iron sulfide, is exposed and reacts with air and water to form sulfuric acid and dissolved iron. Some or all of this iron can precipitate to form the red, orange, or yellow sediments in the bottom of streams containing mine drainage. The acid runoff further dissolves heavy metals such as copper, lead, and mercury into ground or surface water.

This metal laden, acidic water can cause problems in several areas. Communities in mining areas may have to deal with contaminated drinking water. The drainage also disrupts growth and reproduction of aquatic plants and animals. The acid also has corroding effects on parts of community infrastructures such as bridges.

Mountaintop Removal

Mountaintop removal takes place in many states, including Ohio, Kentucky, Virginia and West Virginia. In this process, entire peaks, hillsides, and mountaintops are blown off in order to reach the coal seams below. The resulting millions of tons of waste rock, dirt, and vegetation are dumped into the valleys and streams below. These valley-fills bury streams and aquatic habitat under piles of rubble

A legal and political battle ensues over the effects of mountaintop removal mining on water quality. Under the Clean Water Act, the Army Corps of Engineers could authorize permits for dredge and fill materials to be disposed of in waterways. Because the Congress didn't clearly define "fill material," there was no shared understanding of what could be deposited into the nation's streams.

In May 2002, the Bush administration revised a Clinton-era plan to rewrite the rules of the Clean Water Act to specifically allow fills under Section 404 of the act. During that same month, the group Kentuckians for the Commonwealth sued to block new valley fill permits, saying that the fills were waste. U.S. District Judge Charles H. Haden ruled that the fills were indeed waste and should not be deposited into streams despite the rewritten regulations. He said that valley fills should be approved only if they were proposed with a constructive primary purpose.

However, Haden's ruling was overturned by the 4th U.S. Circuit Court of Appeals in January 2003. In response to this ruling, several members of Congress have introduced a bill to support what they see as the original intentions of the Clean Water Act—to protect the nation's waterways from being used as a dumping ground for industrial waste by preventing mining waste as being defined as "fill material."

The Clean Water Authority Restoration Act will provide protection for all waters of the United States, not just "navigable waters" as portions of the Clean Water Act did. See the February 2003 bill at www.theorator.com/bills108/s473.html.

New Economy of Water continued from page 5

Contracts should also clearly define dispute-resolution procedures that have been developed prior to privatization. It is necessary to develop practical procedures that build upon local institutions and practices, are free of corruption, and are difficult to circumvent.

To avoid situations where weaker governments might be forced to accept an undesirable contract, independent technical assistance and contract review should be standard. Many of the problems associated with privatization have resulted from inadequate contract review or ambiguous contract language. In principle, many of these problems can be avoided by requiring advance independent technical and contract review.

Finally, negotiations over privatization contracts should be open and include all affected stakeholders. Numerous political and financial problems for water customers and private companies have resulted from arrangements that were perceived as corrupt or not in the best interests of the public. Stakeholder participation is widely recognized as the best way of avoiding these problems.

The report on privatization holds that the trend toward globalization and privatization of fresh water

cannot be stopped, nor do the authors propose that it must be stopped. They acknowledge that in some places and in some circumstances, control of water resources by private companies may provide millions of poor people with access to basic water services.

However, the authors conclude: "any efforts to privatize or commodify water must be evaluated far more carefully than they have been. Privatization efforts should be accompanied by guarantees to respect certain principles and support specific social objectives. Among these are the need to provide for the basic water needs of people and ecosystems, permit equitable access to water for poor populations, include affected parties in decision making, and improve water-use efficiency and productivity."

The authors recommend the creation of public advisory committees with broad community representation to advise governments proposing privatization. Privatization should include a process for formal public review of contracts in advance of signing agreements. The authors also state that the public should be educated in advance regarding any transfer of public responsibilities to private companies.

The full report on the "New Economy of Water" is available online at: http://pacinst.org/reports/new_economy.htm.

clip and mail

Support production of *Mountain Promise*. See letter from the editor on page 2.

I want to support Mountain Promise. I have enclosed my check for \$15.00 to cover the cost of my subscription for one year.

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Return to Brushy Fork Institute, CPO 2164, Berea College, Berea, KY 40404. **Thank you!**

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Knox County Water Contamination continued from page 18

our water is downright muddy. Could these toxins be hitching a ride on the silt and mud? Our under-sink filters remove normal amounts of mud, enough for drinking purposes, but they aren't rated for these types of industrial contaminants.

As I write this, our water lines are under construction, cleanup of one of the sites has begun, and plans are in place for cleanup of the debris from the sinkhole. Representatives from the state and county have told us they support us in our time of need and have backed up their words with positive action. The state has provided bottled water for affected residents in some 70 to 90 households. While there is a light at the end of the tunnel, our struggle continues.

We still do not know if it will ever be safe to eat produce from our garden or from the fruit trees by the creek. We don't know if it's safe to eat the eggs

from our chickens or drink the milk from our cows. We don't know how our property values have been affected. We don't know if our hot water heaters and water pipes will contain residual contamination, even after the water lines are run. Perhaps the biggest mystery and the biggest concern relates to what effects, if any, this situation will have on our health—today, tomorrow, or years from now.

Many of the pollutants discovered in our water are known carcinogens (cancer-causing substances). For the rest of our lives, we will wonder if any health problems that develop could be a result of the contamination. By continuing to work together, I hope that the Task Force, community leaders, and some of our government agencies can get real answers to these questions. Perhaps, we might be able to create some changes in the system to prevent this from happening to another community. Maybe that would be the best result of all.

Mountain Promise needs your support.
See letter on page 2.

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