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# The Highlands Voice

The Monthly Publication of the West Virginia Highlands Conservancy

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## Hydraulic Fracturing: What to do with the Waste Water

By John McFerrin

With hydraulic fracturing, it's all about the water. The word hydraulic itself has its roots in the Greek word for water. It is about pumping water, which is mixed with chemicals and picks up other contaminants along the way, into the ground in order to break rock and extract oil and gas.

One facet of the use of water is what we do with that water once it has been used to break rock and become contaminated in the process. A recent study indicates that one of the common methods for disposing of this water has its problems.

**The basics**

In spite of our occasional use of terms such as "pools" of gas or oil under the ground, it doesn't exist in big lakes or flowing streams. It is all soaked up in rock formations.

In earlier times, we drilled for gas and oil in formations where the rock was relatively porous. Once the well reached the formation, the oil or gas would flow out. Drilling companies would often use some technique, including an earlier version of hydraulicA fracturing, to make the formations more porous and force oil or gas toward the well bore.

This is what gas industry spokesmen mean when they say that they have been doing hydraulic fracturing for decades so we shouldn't be so concerned about it. These statements are nominally true but grossly misleading. It is like saying that, because farmers once scratched a few bushels of coal out of the hillside, we have

been mining for centuries so mountaintop removal is nothing new and certainly nothing to be worried about.

Current drilling is different. The oil and gas is found in shale formations (such as the Marcellus shale) that are not porous. Although the oil or gas is present, it will not come out until the rock is fractured. To do this, drilling companies take water, mix it with chemicals to make it more effective, and pump it into the ground. They pump until the pressure is great enough to crack the rock. When it does the oil or gas is released.

The problem is what to do with the water after the rock cracks. It started out as fresh water. After being used for hydraulic fracturing, it has had chemicals added to it and has picked up contaminants along the way. Since the tainted water could not be just dumped into streams, we have to have a way to deal with it.

**The scope of the problem**

Although each well is different, the average Marcellus Shale well takes 4.5 million gallons of water. The West Virginia Department of Environmental Protection reports that over two thousand Marcellus wells have been permitted in West Virginia since 2012. Not all of these have been completed.

There is also the water that was in the formation along with the oil or gas. Something has to be done with it as well.

(More on p. 3)

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## Ramblin' the Ridges

By Cynthia D. Ellis

# Here Come The Brides!

We got the idea from a line of a poem. "I was a bride married to amazement..." This comes from an unflinching look at death, but a friend and I were captured by the phrase and applied it to ourselves... to the fun we were having in the outdoor world.

So we took to calling ourselves The Brides of Amazement, especially when we wanted to tell one another about a moment of daily discovery. Our surveys of birds had led to curiosity about plants, and insects, and mushrooms, and mammals...well, all of it. This enthusiasm for nature's joys could have happened earlier in life, and was not entirely new to us. But it can be a special pleasure to be able to make time to enjoy fields and forests, and to know kindred spirits who revel in such encounters too.

June is an opportune month to grab those moments. The West Virginia mountains are notably suited for sampling familiar scenes and for seeking new spots. A memorable trip for me and my "Bride" friend was our visit to the Sinks of Gandy. Here, a meandering creek--- flanked by high meadows--- flows into the broad mouth of a rocky cave-like grotto, wanders farther back into a narrowing darkness and then travels underground. We didn't happen to go inside, that day, but the journey to The Sinks, and looping back out to "the hard road" was quiet and serene, and flower-filled and memorable.

That friend and I realize we are in good company with many others who savor mountain discoveries. This age of electronic communication allows us to see and hear from folks who share delights that range from experiencing Dolly Sods, to watching a short video of a toddler finding a mud puddle to stomp at an outdoor family reunion. Folks who fish share scenes of their favorite stream and hold up the one that didn't get away. The superb Core Arboretum, championed by some in our own group, was noted as it hosted a Cicada Fest, focusing on fun facts of an intriguing insect.

For me, real discoveries continue away from the cyber world. A coyote

feasted on a deer carcass on a hillside across from our front porch. Later that day, in a new nature park, a different friend and I stopped when we noticed a coyote watching us. Then it melted away into the green background. Those critters are often audible near my home, but two visual observations in one day is a first.

The aforementioned new park is the Forks of Coal Nature Area, adjacent to the Corridor G highway south of Charleston. A generous couple donated the land; one feature is an historical sign stating that the site had been home to Kanawha County's first Girl Scout Camp in the 1940's.

Another new park in the Kanawha Valley is the tiny Esther and Norman Walter Park in Putnam County. Once more, a generous duo wanted others to experience their woodsy spot, and have opportunities to be amazed.

Mr. and Mrs. Walter knew the happiness of watching a plot; of noticing small or day-to-day changes in an unassuming Appalachian parcel. Over one ridge, at my place, I've been tracking the cicada invasion. On one path there lay 13 cicada wings in one location---something had enjoyed a buggy feast. About the same number of wings littered a meadow path; in the early morning they shone with many raindrops. And, on a more musical note, one evening at dusk there was the sound of a jazzy saxophone solo from down the road. The Whip-poor-wills were undeterred. But the Purple Martins, already

in the nest boxes and gourds for the night, grew restive and twittered disapproval.

As our fellow WVHC member, you too may fit in a "wedding party" for any who are open to amazement. Mary Oliver said, "...I don't want to end up simply having visited this world..." Neither do we.

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[p.s. Here's a special "Hi" to my friend Phyllis Mingo---a longtime supporter, and very faithful reader of The Highlands Voice! Native plants are of special amazement to her.]

### Send Us a Post Card, Drop Us a Line, Stating Point Of View

Please email any poems, letters, commentaries, etc. to the VOICE editor at [johnmcferrin@aol.com](mailto:johnmcferrin@aol.com) or by real, honest to goodness, mentioned in the United States Constitution mail to WV Highlands Conservancy, PO Box 306, Charleston, WV 25321.

## Disposing of drilling water (Continued from p. 1)

Some of the water that is pumped into the formation to crack the rock stays in the ground. Adding together the water that was injected and the water encountered along with the oil or gas and subtracting the water that stays in the ground, the average well producing from the Marcellus Shale yields approximately 1.3 million gallons of wastewater over its lifetime. This is what has to be disposed of in some way.

### What we are doing

Some of the water is recycled, cleaned up and used to hydraulically fracture other wells. Another very popular option is underground injection wells. It involves pumping the water deep underground. While the injection wells may have originally been used to produce oil or gas, they are drilled deeper or otherwise modified to take wastewater from hydraulic fracturing and keep it deep underground.

While this sounds like a good idea, the data shows that it is not always effective in keeping drilling fluids out of streams.

The United States Geological Survey has done a study of the water and sediments found upstream and downstream of an injection well in Fayette County, West Virginia. The study found increased levels of lithium, sodium, chlorine, barium, bromine, and strontium as well as higher levels of dissolved solids and specific conductance in the downstream water. In sediments they found higher levels of iron and radium. The presence of these and other pollutants were affecting the stream quality, including the biological community that lives there.

The researchers made no determination of how the hydraulic fracturing waste water got from the disposal well to the stream: "Potential pathways for wastewater to enter surface

water or groundwater include: (1) releases from pipelines or tanker trucks transporting fluids, (2) leakage from wastewater storage ponds through compromised liners and overflows from the ponds, or (3) migration of the fluids through the subsurface at the injection depth or through failed injection well casings." They only determined that an underground injection well was allowing Marcellus Shale water to enter the area streams.

The site of the investigation was the well owned by Danny Web Construction Company. It has been controversial since at least 2004. When it was seeking to renew its Department of Natural Resources permit for the site in 2013, the West Virginia Highlands Conservancy objected and suggested that the permit renewal be denied. See the April, 2013, issue of *The Highlands Voice*.

## More Worries About Water

The possibility that wastewater might escape from injection wells is not, of course, the only water related worry. A chronic fear is that some of the water that is pumped into the well under pressure might find its way to fresh water, including water supplies. This could happen through a breach in the well casing (pipes that surround the hole that takes the fracking water down to the Marcellus formation). This system is supposed to protect any fresh water that the drilling might pass through.

Fresh water supplies could also be contaminated if cracks from the fracturing penetrated a formation where fresh water was found.

The oil and gas industry had always insisted that the Marcellus formation was so deep that it was virtually impossible for the fracking water to make it back to the surface or to any fresh water.

In spite of the industry's assurances, the United States Environmental Protection Agency was worried enough about the possibility of groundwater pollution that it commissioned a study.

In June, 2015, the result came back. The researchers found that there was no "widespread, systemic" impact on drinking water. The industry breathed a collective sigh of relief, announced that they were free of any suspicion of damaging drinking water, and went off to pour a tall glass of lemonade and toast their good fortune.

That was not, however, the end of the story. In early 2016 the Environmental Protection Agency's Science Advisory Board review panel looked at the report and concluded that the phrase is too vague and ambiguous to serve the public.

The Science Advisory Board is EPA's method of providing peer review and other advice in scientific matters. It is supposed to review EPA research programs and advise the agency on scientific matters.

The Board had extensive discussions, heard from outside experts, and concluded that the June, 2015, report should not be the final word on threats to drinking water posed by hydraulic fracturing. It noted that there were other case studies that EPA could study and that more could be done to clarify the extent of the threat.

So stay tuned. The question of the extent to which hydraulic fracturing is a threat to groundwater is still not completely answered.

# Yew Mountain Center: the old and the new meet for fun, education, and a special place

She follows the creek upstream, carefully placing her footprints between the blue cohosh and the violets. Reaching into the water she pulls out a plate sized rock and turns it over. ‘Here we are,’ she says “mayfly larvae.” A short discussion follows confirming this little creature’s presence as one of the indicators of clean water. The amiable party of four continues its deliberate meander through the spring woodland enjoying all manner of fresh phenomena from the American Redstart to the *Viola canadensis*.

Erica Marks has been finding mayfly larvae and otherwise closely observing nature since her early days. She currently is a teacher of the gifted for the Pocahontas County School System and has spent much of her spare time for the last four months as the prime organizer for a proposed educational center in Pocahontas County. The organization is currently filing for 501(c)(3) status under the name Yew Mountain Center (YMC), so they can protect this special place and serve the community surrounding it.

The property includes a small lodge and the best swimming pond around. For years the place had unofficially served the community as a site for gatherings, a room for meetings and, of course, the place to swim. It also happened to have 500 acres of ground, mostly wooded and mostly on the mountain and mostly left alone by man.

In January of this year when Erica and her neighbors learned that this property was coming up for sale they went into action. Potlucks were held, discussions were had and a plan emerged. The plan is rooted in three realms: the responsibility of environmental stewardship, the promotion of sustainable local economy and the appreciation of local history and arts.

## A Special Place

The simple fact that the region has been spared major industrial activity elevates the environment to its rightful place as the primary force to respect. The remote neighborhood is eight miles and one mountain away from the town of Hillsboro (population 250). Most of the neighbors inhabit small family farms. From almost any

place in the community one can simply walk into the woods behind the house to enter one of the largest areas of undeveloped land in the east, the Yew Mountains. Outside of the Smokey Mountains in North Carolina, Pocahontas County has the highest average elevation east of the Mississippi. On a clear night one enjoys a view of thousands of stars accompanied by the sublime sounds of breezes through trees.



Photo by Asa Marks

The hum of the highway is conspicuously absent. One of the amiable four hikers remarked “Unspoiled beauty such as is seen in Pocahontas County is rare and is getting rarer.”

## A Creative Economy

Creating a local economy has long been a collaborative activity. For generations the inhabitants of such remote places have necessarily learned, as a community, to do everything that needs to be done. Although mobility is much improved these days it is still a 40 minute trip to the nearest hardware store. Many skills that were essential in the 19<sup>th</sup> century have survived into the 21<sup>st</sup> century in such remote places.

In this Lobelia/Jacox neighborhood skills such as timber framing, beekeeping, mid-wifery, quilting, foraging, organic farming (essential in the 19<sup>th</sup> century, coming back in the 21<sup>st</sup> century), organic beef, pork and poultry production, tool making, instrument making, root cellaring and wood lot management are alive and well. Sharing of tools and equipment

and work days to help with someone’s big project are commonplace. These skills that pre-existed the industrialization of Appalachia offer hope for tightly-knit communities to move forward. Modern realizations of energy efficiency, passive solar heating and appropriate use of technology are helping this community align the lifestyle with a sustainable focus.

As one of the community’s born and bred millennials, Molly Must said, “I want to be a part of a paradigm shift in Appalachia, and be part of a producer based economy.”

## A Vibrant Culture

The Yew Mountain Center organizers believe that an essential part of any healthy community is respect for local history and local arts. For example, weekend “Short Courses” will include opportunities for participants to enjoy live, local music and to even join in. Some of the courses will focus on the arts specifically, allowing participants to draw inspiration from the surrounding nature for drawing, painting, and crafting. Local history and lore will be woven into the key presentations of all weekend courses.

The YMC aims to draw paying participants from nearby cities and use this income to provide free or low-cost experiences for local residents. Their plan includes three products: 1) Present a series of Short Courses on weekends From April through November, 2) Sponsor Special Seasonal Events and 3) Offer rooms or the entire lodge for rent when not scheduled for Yew Mountain Center programs.

When asked how the Yew Mountain Center will serve local youth, Erica Marks said “We plan to write an outdoor education curriculum tied to state standards to make it very easy and justifiable to get students learning outside. By creating a series of field trips for area schools we hope to improve student engagement and pride in their local environment as well as create enthusiasm for academics taught in a new way. Though we live in one of the most beautiful places in the planet, we sadly

## Big Fun at the Sustainability Fair

The rain held off as 45 vendors and participants welcomed everyone to the 2nd annual Huntington Sustainability Fair on May 21. The goal was to "...host a fair centered around building a more sustainable community, with local musicians, artisans, farmers, restaurants, businesses, organizations, and government... to better inspire all to live a more locally based lifestyle."

And to have fun. Which we did!

The setting was the "Old Central City" in the western part of Huntington, WV, which features a gazebo and a variety of small shops, including "The Wild Ramp." There were solar displays, native plant sales, recycling projects and much more. Our own solar bird bath---symbolic of the potential for sun power here---was a big hit, especially with some pre-schoolers.

About 400 people passed by our West Virginia Highlands Conservancy booth, including Dave Cooper, "Kentucky Pallet Artist." A number of them signed on for our free trial membership. It was quite a good day, down in the foothills, to share information about saving the mountains.



## More About Yew Mountain Center (Continued from previous page)

have too many children with "nature deficit disorder." We think that if we get them outside of their classrooms and homes more often we will have smarter, healthier, and happier children. Our children thrive outside!" Marks has been involved with science education for 20 years including leading outdoor educational experiences in places from the White Mountains of New Hampshire to the Peruvian rainforest, and in the last 10 years, here in West Virginia.

Erica Marks and her associates have high confidence that their energetic and creative approach to programming will be successful. Successful, meaning that people will come, will like the programs, and will come back with others. The YMC has worked out a budget that has fee collection covering all program related costs by year two.

The great challenge for YMC is finding a person or foundation that would purchase the property and permit the YMC to do their programs thereupon. The new owner, in addition to having the satisfaction that they are supporting a healthier future for the community and region, would have options for tax deductions and tax credits. Why would someone or some organization want to support the YMC? Marks replies,

"Investors who are interested in preserving wild habitat, supporting the arts and research, and promoting a cultural shift to living sustainably will want to know about the YMC."

Meanwhile the current owner is permitting the YMC organizers to dip their toes into running programs on the premises. The very first YMC event is happening on May 31 and is daylong field trip for the local elementary school with science activities and games. YMC will have about a dozen volunteers on hand to guide children through several stations of experiential science and fun.

In addition to all the above, the chair of the biology department at a nearby college has expressed enthusiasm for using the 450 acres of upland hardwood forest as a site for low impact field research and for a freshman orientation camp.

With the exception of a few events this summer most of this good potential is on hold till purchase of the land is arranged. The YMCers hope that a conservation-minded buyer is found before a non-conservation-minded one finds it.

Another one of the amiable party of four hikers is a representative

of a foundation that seeks to support environmental projects. She is impressed with the land and the engagement of the surrounding community. She would love to see her board take on this project.

There is hope.

For more information about the Yew Mountain Center please visit: [yewmountain.weebly.com](http://yewmountain.weebly.com)



**American Redstart**

Is Virginia up to the task?

## Controlling Erosion from Pipeline Construction

As Dominion presses ahead with plans to build an interstate natural gas pipeline across Virginia, state officials vow to have new regulations and staffing in place to limit the massive project's environmental impact.

Secretary of Natural Resources Molly Ward said the state will ensure that the construction of the Atlantic Coast Pipeline does not add to the sediment fouling the Chesapeake Bay and its tributaries. A spokesman for the Department of Environmental Quality said new rules should be in place before construction begins.

Some environmentalists remain skeptical, though, contending that the state has done little to ride herd on such projects to date. Though the state's erosion and sediment control regulation already applies to pipeline construction, environmental activist Rick Webb asserted that the DEQ has failed to enforce it, other than to approve variances from the rules.

Moreover, Webb, coordinator of the Dominion Pipeline Monitoring Coalition and a retired University of Virginia environmental scientist, said that he believes current erosion and sediment control best management practices are ineffective, particularly on the steep mountain slopes the pipeline would traverse in western Virginia.

The route has not been finalized but as currently proposed, the 42-inch diameter pipeline would transport gas about 550 miles from the Utica and Marcellus Shale deposits in Ohio and West Virginia to southeastern Virginia and North Carolina. Most of Virginia's portion of the project would be in the James and Potomac watersheds.

The \$5 billion project is led by Dominion, with three other partners: Duke Energy, Piedmont Natural Gas and AGL Resources.

Dominion spokesman Aaron Ruby said the pipeline is essential because his company and Duke Energy are closing coal-fired power plants throughout Virginia and North Carolina and replacing them with facilities fueled by cleaner-burning natural gas.

Contracts have been signed for gas supplies that will use 96 percent of the pipeline's capacity for 20 years, according to Dominion.

Environmentalists, though, contend that the forest loss and construction would produce significant detrimental impacts. Construction would require



**This photo shows the construction of a 12-inch gas pipeline in 2014. The Atlantic Coast Pipeline would be a 42-inch pipeline. (Dominion Pipeline Monitoring Coalition)**

extensive land disturbance, much of it on hilly or mountainous terrain, which environmentalists fear could produce major sediment pollution. If construction coincides with unusually heavy wet weather, they warn, the project could reverse Virginia's progress toward meeting the sediment reduction requirements of the Bay cleanup blueprint.

Ward dismissed those fears.

"After all Virginia has done to reduce sediment pollution, we're not going to let that happen," the natural resources secretary said while attending the 27th annual Environment Virginia Symposium in Lexington.

Gov. Terry McAuliffe supports the pipeline. He has touted natural gas as a cleaner, more climate-friendly alternative to coal for power generation.

Dominion formally proposed the Atlantic Coast Pipeline project to the Federal Energy Regulatory Commission last year

and had hoped to have it up and running by the end of 2018.

Numerous comments, pro and con, have been filed, and FERC staff are studying the proposal. FERC action beyond that — including the release of a proposed environmental impact statement — awaits finalization of the proposed route, according to commission spokeswoman Tamara Young-Allen.

A major hurdle involves the proposed route through the mountains of the George Washington National Forest. The Forest Service blocked a stretch of pipeline that would have cut through the habitat of endangered salamanders. Dominion has proposed rerouting that portion, adding about 30 miles to the overall length. The Forest Service is reviewing the change, and recently allowed surveys of the alternate route, Dominion spokesman Ruby said.

Construction of the pipeline would require clearing trees and vegetation from a corridor generally 125 feet wide, and excavating a ditch 7–10 feet deep.

Wherever and however it is built, some environmentalists said they're convinced, based on past pipeline construction in Virginia, that it will result in large amounts of sediment runoff.

Regulation of pipeline construction was handled by the state Department of Conservation and Recreation until 2014, when the General Assembly moved the jurisdiction to the DEQ. Both agencies are part of the natural resources secretariat.

Neither the DEQ to date nor the DCR before has scrutinized sediment and erosion control plans for any proposed pipeline, nor have the agencies inspected the construction sites for compliance, according to Webb, whose coalition represents 14 environmental groups. That's contrary to regulatory requirements and the agency's practice with other types of construction, he said.

**(More on the next page)**

# Climate Smart Restoration of Appalachian Forests

Posted by Aurora Cutler and William Shoutis, U.S. Forest Service,

As the climate changes, and our forests are affected, the need to reclaim impacted areas and restore native species becomes more important than ever. The U.S. Forest Service's Monongahela National Forest is at the forefront of not only forest restoration, but also helping those landscapes adapt to climate change.

The red spruce forests of the Appalachian highlands are an integral part of the regional biodiversity, providing habitat and food for the northern flying squirrel and the Cheat Mountain Salamander, and the ecosystem supports 240 rare species in West Virginia alone. Additionally, the forests blanket the headwaters of five major river systems upstream of millions of people living and working in the Charleston, West Virginia; Pittsburgh, Pennsylvania and Washington D.C. regions.

"Different soils have the ability to store different amounts of carbon, and Appalachian soils have potential to store carbon for the long-term if managed correctly. There is evidence of this in the soil profiles under the historic red spruce ecosystem," said Stephanie Connolly, Forest Soil Scientist on the Monongahela forest.

Most of the soil carbon in the world is found in the cool, moist conifer forests of the north. There is more carbon in the soils than in the atmosphere and the vegetation

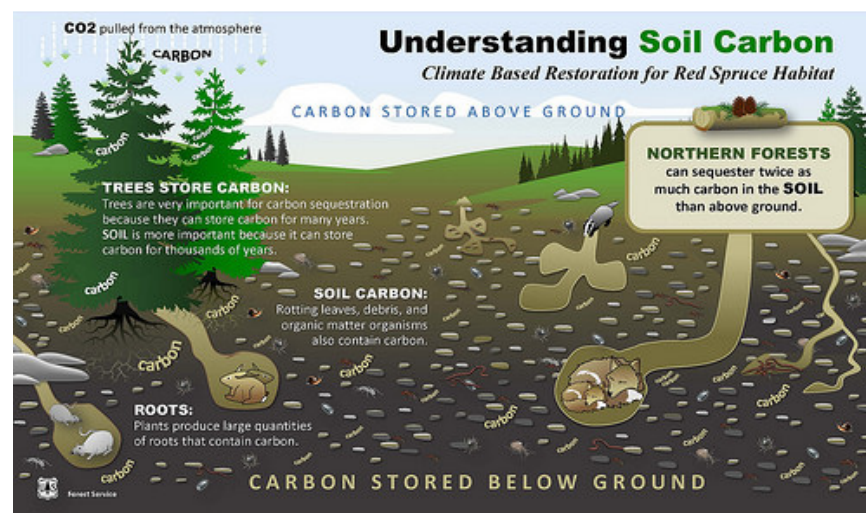
combined. Historically, timber harvesting of red spruce has resulted in large losses of soil carbon into the atmosphere. Forest Service scientists are helping figure out how to better manage these forests long term to restore lost soil carbon.

The restoration of red spruce to its historic range could restore much of the lost soil carbon within a century, improve wildlife habitat, and protect water resources. In West Virginia alone, recent data suggests that carbon—equivalent to 56.4 million barrels of oil—could be taken out of the atmosphere and incorporated in the forest floor within 80 years.

One example of this work is the work of Monongahela National Forest staff and their partners at The West Virginia Highlands Conservancy and The Nature Conservancy who are working to restore historic red spruce forests on lands that were previously strip-mined for coal. The Lambert Run lands were mined in the 1970s and 1980s resulting in heavy soil compaction and the introduction of non-native plants. While earlier restoration efforts stabilized the land for erosion control, many areas remain in a condition scientist term "arrested succession."

The partnership uses machinery to break soil compaction and allow water to infiltrate the ground making it healthier to support the native spruce and reestablish critical habitat. Wetlands are being constructed to retain water and support native plant systems. Hardwoods and Norway pine are being removed from the Lambert Run in preparation for the planting of red spruce seedlings.

After this kind of restoration work prepares the soil, the Monongahela forest staff work with climate change specialists to create adaptation management plans to enhance long-term resiliency of the newly restored forests. Together partnerships like this return forested areas into living tools that benefit all of us now and for generations to come.



## Controlling erosion from pipeline construction? (Continued from previous page)

"The only thing DEQ does is grant variances from the state's 500-foot (length) limit on open trenches," he said. In one case, the state allowed a ditch excavation 15 miles in length without a break. About the only time the agency does inspect, he added, is when a citizen files a complaint about stream contamination during pipeline construction.

As evidence of his concerns, Webb supplied a photo of pipeline work, taken by a coalition photographer in 2014, that shows a mountainside stripped bare. There appear to be no erosion control devices in place, which Webb said are required every 20 feet on such steep grades. According to the activist, the photo is of a 12-inch pipeline that Columbia Gas of Virginia was laying outside the Bay watershed.

The DEQ spokesman, Bill Hayden, declined to discuss the photo or Webb's allegations.

"DEQ has enforced and will continue to enforce the erosion and sediment control regulations in Virginia. That's as direct as I can make it," he said.

But Hayden added that "Virginia fully expects to have appropriate measures in place to properly oversee pipeline

construction. That means we expect the regulatory situation to change."

Dominion spokesman Ruby said the company is committed to environmental protection and compliance with all state and federal requirements. He added that the company has extensive experience installing pipelines in a variety of landscapes, including mountainous terrain made up of karst, a highly erodible landform that's common throughout western Virginia.

**Note: This is an abbreviated version of an article that appeared in The Bay Journal, a publication dedicated to informing the public about issues and events that affect the Chesapeake Bay. To read the whole thing or to subscribe, go to [www.bayjournal.com](http://www.bayjournal.com).**

**The West Virginia Highlands Conservancy is a member of the Dominion Pipeline Monitoring Coalition.**

## The Whippoorwill Festival - Skills for Earth-Friendly Living

It's time once again for the annual Whippoorwill Festival. The goal of the Whippoorwill Festival is to promote sustainable living in Appalachia by sharing earth-friendly living skills with one another in a joyful, healthy, family-friendly atmosphere. 2016 is the sixth year for the festival.

We have a great new location for the Whippoorwill Festival near Kentucky's Red River Gorge at Lago Linda Hideaway. The dates are Thursday-Sunday July 7-10. This is a family-friendly festival with tent camping and meals provided in a gorgeous location. RV Sites available. Evening music and entertainment.

### Workshops for the 2016 festival:

Appalachian Paranormal Traditions \* Ballads and Songs of Appalachia \* Bark Basket Making \* Basic Book Binding \* Basic Canoeing \* Basic Survival Skills: Firebuilding \* Basics of Everyday Fermentation \* Basics of Wilderness First Aid \* Bluebirds \* Developing a Community Care Network \* Cloth Diapering 101 \* Egyptian Bowdrill & Tinderless Fire Starting \* Field Trip to the Highlands \* Five Plant Allies \* Foraging 'Round \* Forest Alchemy: Form, Function, and Transformation in the Forest Ecosystem \* Forest Watch 101: How to Monitor and Protect Your National Forest \* Fracking and Pipelines in Kentucky: New Threats to the Commonwealth \* Friction Fire Free for All \* From Fatigued to Fantastic: Balancing Stress with Herbs \* \* Ginger Bug & Other Ferments \* Ginseng Planting & Native Medicinal Plant Walk \* Green Woodworking \* How to Build a Basic Guitar \* How to Make a Basic Salve \* Human Scale Farming \* Hummingbirds \* Insects in Kentucky \* Introduction to Herbalism \* Introduction to Pasture-raised Pigs \* Join the Circus \* Lacing Buckskin Bags \* Let's Build a Worm Bin \* Lichen Biomonitoring for Air Quality \* Make Your Own Field Guide \* Make Your Own Hot Sauce \* Making Drawing Charcoal \* Making Grain Leather \* Making Park Benches from Pallets \* Natural Cordage \* Nature's Color Wheel \* Organic Beekeeping \* Raising Backyard Chickens & Ducks \* RELAZENSHIPS Yogic Communication \* Simple Rocket Stoves \* Skills for Earth Friendly Dying \* Solar Cookers 101 \* Solar Electricity 101 \* Songwriting for Social Causes \* Survival Shelters \* Thai Massage \* Traditional Appalachian Herbs Walk \* Weaving Place-based Culture Through Storytelling \* Writing Your Place \* Yoga for Anatomical Empowerment \* Yoga for Self Care \* More TBA

### Bands and evening entertainment:

Restless Leg String Band \* The Coteries \* Saro \* The Local Honeys \* Nicholas Penn \* Laura Thurston

For more information: [www.whippoorwillfest.com](http://www.whippoorwillfest.com)

**Note: The Whippoorwill Festival is organized, at least in part, by Dave Cooper whom many of us remember as the proprietor of The Mountaintop Removal Road Show**

## Roster of Officers, Board Members and Committee Chairs, and Board of Directors

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*The Highlands Voice* is always printed on recycled paper. Our printer uses 100% post consumer recycled paper when available.

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If you have a friend you would like to invite to join the West Virginia Highlands Conservancy just fill out this form and send it to West Virginia Highlands Conservancy, Box 306, Charleston, WV 25321.

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Filling out the form, etc. is, of course, the old school way of doing things. If you prefer, just email the information to Beth Little at [blittle@citynet.net](mailto:blittle@citynet.net).

The way it works: Anyone you refer gets *The Highlands Voice* for six months. At the end of the six months, they get a letter asking if they want to join. If they join, we're happy. If not, then maybe next time.

The West Virginia Highlands Conservancy is a non-profit corporation which has been recognized as a tax exempt organization by the Internal Revenue Service. Its bylaws describe its purpose:

The purposes of the Conservancy shall be to promote, encourage, and work for the conservation—including both preservation and wise use—and appreciation of the natural resources of West Virginia and the Nation, and especially of the Highlands Region of West Virginia, for the cultural, social, educational, physical, health, spiritual, and economic benefit of present and future generations of West Virginians and Americans.

## A Small Remembrance for a Good Friend

Many of us have known and appreciated Elizabeth Zimmermann in her lifetime for her support of the Highlands Conservancy as well as the issues we hold dear. In her lifetime we knew her for sparkling personality. “Extraordinary” “vivacious” and “luminous.” are the first words which come to mind in describing her. But even they do not do her justice.

When describing the things she was involved in, it is tempting to take the shortcut and just say, “everything”, or at least everything that was joyous and life affirming. She organized her friends to lead school children on birding adventures. She introduced people to Dolly Sods and the Christmas Bird Count. She was a President of Mountain State Audubon. She supported the West Virginia Raptor Rehabilitation Center, which stayed on her property for twenty eight years.

She owned and operated Walnut Farm, a beautiful property that started the West Virginia Land Trust. She was always there to support any local or state environmental campaign.

These are only some of the issues that are of direct interest to West Virginia Highlands Conservancy members. She also enriched the lives of those around her with things such as a beautiful “house concert,” when she invited a noted pianist to play for friends in her living room. Her interests were so varied and her commitment to improving the community so steadfast. She is missed by so many she touched with her beautiful spirit.

Since her death in 2015 we have yet another reason to remember her. She has made a generous bequest to the Highlands Conservancy, just another way that she supported our work and made it possible for us to continue. Thank you, both for the bequest and for being you.



**Elizabeth Zimmermann With Dr. Jesse Fallon, Avian Conservation Center of Appalachia. Photo by Dave Saville.**

## Another Good Friend, Gone Too Soon

We are saddened by the death of Mae Ellen Wilson, longtime Highlands Conservancy friend, supporter, and advisor. We first came to know her as the wife of long time Board member and surviving spouse Julian Martin. We got to know her better as she did us a great service by whipping our endowment fund into shape. She will always be remembered for her ability to present information that had “boring” stamped all over it in an entertaining and engaging way.

Mae Ellen favored pastels over bright colors and dressed with style—she always looked good. For some classmates at Parkersburg High School, her nickname was “Liz” for her resemblance to Elizabeth Taylor.

She loved nature and native flower gardening and was a certified West Virginia Master Naturalist. She enjoyed hiking and visiting state and national parks and forests. She served as an officer or finance committee member in the West Virginia Native Plant Society, the Kanawha State Forest Foundation, and the West Virginia Highlands Conservancy.

Mae Ellen presented programs promoting the preservation of Blackwater Canyon and helped gather 5,000 signatures on the Save Blackwater Canyon petition. She walked with Larry Gibson in his Walk for the Mountains which was sponsored by the Ohio Valley Environmental Coalition. Mae Ellen was a driving force in getting legislation passed to protect Kanawha State Forest from more ravages of gas well drilling.

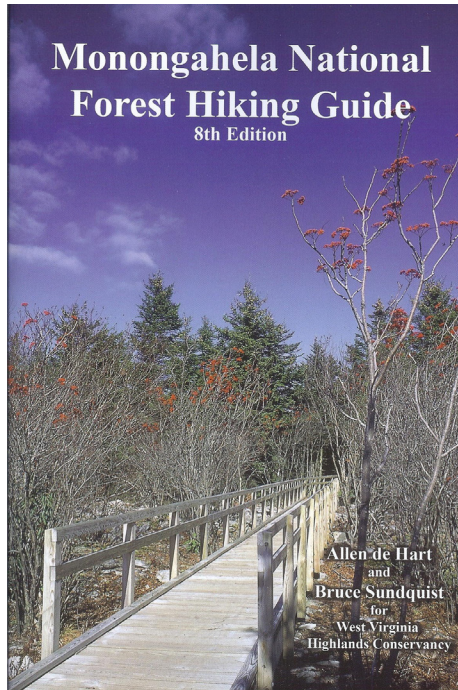
Mae Ellen was a feminist. She served on the board of the Girl Scouts Black Diamond Council. For women, Mae Ellen was a pioneer in the banking industry. She began her career at Kanawha Valley Bank as a switchboard operator in 1963. She accepted a challenging job offer from Kanawha Banking and Trust to become West Virginia’s first female correspondent banker. Mae Ellen retired in 1996 as a Senior Vice-President at United National Bank. She earned a diploma from the Stonier Graduate School of Banking at Rutgers University. At age 54, she graduated from the University of Charleston—a persistent goal that began when it was Morris Harvey College. All this while raising four children.

Mae Ellen listened to opera on the radio for some fifty years. She was not at all pleased with public radio when they removed it from her Saturday afternoons.

Mae Ellen died in the morning of May 23, at Hubbard Hospice House West. She would have been 82 on May 27.

Mae Ellen is survived by her husband, Julian Martin; sister, Shirley Gay (Cliff); brother, Fred (Karen); children, Teri Wildt (Meg Mazzone) of Nashville, Tenn., Debbie Harper (Harry) of Nitro, Jay Wildt (JoAnne) of Charleston and Joe Wildt (Glenna Dean) of Columbia, S.C. She is survived by step-children, Bess McKay, Elizabeth Pellegrin, Luke Martin and Jason Stephenson. She has grandchildren, Bobby, Marie, Ellen, Louise, Sarah, Hadley, Henry; and great-grandchildren, Elizabeth, Miah, Haley, Madison and Landon.





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WV Highlands Conservancy proudly offers an Electronic (CD) version of its famous Monongahela National Forest Hiking Guide (8th Edition), with many added features.

This new CD edition includes the text pages as they appear in the printed version by Allen deHart and Bruce Sundquist in an interactive pdf format. It also includes the following mapping features, developed by WVHC volunteer Jim Solley, and not available anywhere else:

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- ☐ All new, full color topographic maps have been created and are included on this CD. They include all points referenced in the text.
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### BUMPER STICKERS

To get free **I ♥ Mountains** bumper sticker(s), send a SASE to Julian Martin, 1525 Hampton Road, Charleston, WV 25314. Slip a dollar donation (or more) in with the SASE and get 2 bumper stickers. Businesses or organizations wishing to provide bumper stickers to their customers/members may have them free. (Of course if they can afford a donation that will be gratefully accepted.)

Also available are the new green-on-white oval **Friends of the Mountains** stickers. Let Julian know which (or both) you want.



# EPA Responds to WV Dirty Streams List

By Cindy Rank

In the April 2016 issue of *the Highlands Voice* John McFerrin wrote about efforts by the West Virginia Highlands Conservancy (WVHC) and others to make the United States Environmental Protection Agency (EPA) complete its long overdue but legally required review of West Virginia's list of streams that are not clean enough to be used for designated uses.

EPA finally responded to the West Virginia Department of Environmental Protection (WVDEP) on May 11, 2016, partially approving and partially disapproving the list. At the heart of the matter is what is known as the 303(d) list of impaired streams and how the state assesses, evaluates and lists streams that are biologically impaired.

## The Process to Date

The Clean Water Act (CWA) Section 303(d) requires states to identify "Water Quality Limited" segments of streams for which action plans [TMDLs] are needed to clean-up the identified "dirty" streams. It's an ongoing process and states are required to submit updated lists to EPA every two years.

A DRAFT of WV's 2014 303(d) list was issued in June 2014 and comments were received until the end of July. EPA, WVHC and others submitted comments. WVDEP considered the input and sent a FINAL list to EPA nearly a year later on April 13, 2015. By law EPA was to review and approve or disapprove the list within 30 days.

It didn't --- for over 10 months.

On March 7, 2016 WVHC, WV Rivers Coalition, Sierra Club, and Ohio Valley Environmental Coalition represented by the Appalmad legal team filed a 60 day Notice of Intent to sue EPA if it didn't get its act together and fulfill its legally mandated duty to approve or disapprove WVDEP's list of impaired streams.

Whatever role our legal action played in getting the ball rolling, EPA finally responded to WVDEP on May 11, 2016. The agency's 26 page response document includes a 2 page cover letter summarizing the agency's findings, a 16 page decision rationale, a 4 page explanation of how and why EPA proposed to add 61 streams to the list, and a 3 page chart indicating the names and locations of the individual streams to be added.

## **What EPA Said**

EPA "partially approved and partially disapproved" WV's 2014 Section 303(d) list.

The major portion of the list was approved: "WVDEP has appropriately identified 1,157 WQLs (Water Quality Limited segments) (1,142 streams and 15 lakes) requiring TMDLs" [clean-up plans].

On the other hand, EPA is disapproving in part the 2014 303(d) list to the extent that WVDEP omitted some biologically impaired streams because it failed to evaluate all existing data and information readily available to WVDEP.

To identify the 61 additional streams, EPA used the "Genus Level Index of Most Probable Stream Status" (GLIMPSS) to evaluate existing data collected by West Virginia to identify those streams that have suffered biologic harm from pollutants.

That list of additional streams will be published in the Federal Register in the coming weeks and the public will have 30 days to comment before the list is revised if appropriate and finalized.

## **The Underlying Controversy**

It's important to note that the additional streams EPA has proposed to list as biologically impaired are primarily located in areas heavily impacted by coal mining pollution, some in areas where WVHC and other citizen groups have actively challenged mining permits and operations.

Fundamental to the debate about how, why and when to identify streams as biologically impaired is a portion of the Water Quality Regulations known as Narrative Standards. Although narrative standards have always been part of the CWA and federal and state implementing regulations they were rarely taken too seriously in coal mining permits --- that is, until the federal EPA, and citizens through our court actions, attempted to enforce those standards at mining operations.

Beginning in the early 2000s an increasing number of scientific studies revealed significant harmful impacts to streams and aquatic life below discharges from coal mining operations throughout Appalachia. EPA raised a ruckus in 2010 when it issued reports suggesting high levels of total dissolved solids and conductivity

caused by an undefined mix of pollutants in coal mine discharges were responsible for the pollution. The agency also issued guidance recommending limits be imposed on the amount of total dissolved solids and conductivity allowed to be discharged into sensitive Appalachian headwater streams where most of the damage was being documented.

Then too were those uppity citizen groups and their sharp legal teams who kept pushing for better, more inclusive and more protective permitting. Several successful court actions and knowledgeable experts demonstrated how the specific numeric standards for individual pollutant such as iron and aluminum were not sufficient to prevent pollution from coal mines. Expert testimony shone light on the urgent need for including additional narrative standards to effectively reduce the toxic soup of pollutants responsible for harming the aquatic ecosystem of sensitive headwater streams.

True to form the West Virginia State Legislature decided it was time to stand up for industry and force the regulatory agency to take a closer look at these standards and assessments that had begun giving industry additional headaches and heartburn. In 2012 the legislature enacted Senate Bill 562 (SB 562) directing WVDEP to develop a new methodology for determining how to define and apply these bothersome narrative standards.

With marching orders to develop better (read more beneficial to the coal industry) WVDEP improperly relied on this SB 562 as a pretext for failing to evaluate whether streams -- particularly those impacted by coal mining pollution -- violate the state's narrative water quality standards for biological impairment.

In its rationale for the earlier 2012 303(d) impaired streams list WVDEP insisted that the need for a legislatively approved assessment methodology for evaluating biologic impairment in streams prevented them from including hundreds of streams known to be biologically impaired. During that go-round it fell to EPA to correct the situation by adding back to the 2012 list some 248 of these waters and clearly advising WVDEP to move away from the

**(More on the next page)**

# Trails Don't Just Happen

By Adam Casseday

As spring finally begins in West Virginia, the weekends become sacred time for outdoor activities, play – and sometimes necessary work. I played hooky from the April Board of Directors meeting during one of those sacred weekends dedicated to work (and a bit of play) in our hallowed mountains.

Each year, a hearty group of volunteers from the West Virginia Mountain Trail Runners take to the trails of Dolly Sods to prepare the way for runners to compete in the club's marquee event – the Highlands Sky 40-Mile Trail Run. This June will mark the fourteenth year that runners have toed the line in this rugged race from Laneville - through the rugged plains and picturesque sods - ultimately crossing the valley to finish at Canaan Valley State Park. This is not an event for the faint of heart; yet, the race historically fills in a matter of days with runners from across the nation.

Highlands Sky is one of a select few races in the country that passes through a Wilderness Area. The Wild Monongahela Act recognizes the race and its prior existence and gives special permission for the race to continue to be held. A foot race such as this certainly serves to showcase one of the most beautiful locations in our state in a unique way with minimal impact. Many of the runners would most likely never experience the splendor of what is the West Virginia Highlands any other way. I believe they exit the valley changed by her beauty and charmed with the prospect of returning and ultimately protecting this newly found love.

In the spirit – and regulations – of Wilderness, our group took to the trails with sharp crosscut saws, powerful axes, and a flurry of loppers to make the annual improvements. With four crews (totaling nearly 20 people) we were able to clear the Flatrock Plains Trail, Roaring Plains Trail, Boar's Nest Trail, and South Prong Trail over the course of a day. It was a glorious spring day with the ramps reaching high and wild flowers abounding.

My crew had the longest section, clearing the beautiful and remote Flatrock and Roaring Plains Trails. In the midst of the



. Photo by Michael LeMaster.

hiking toward the next downed tree, the clamp of loppers, and the pull of a crosscut, I internally reflected on the fact that trails simply *don't just happen*. Trails require thought, planning, advocacy, and continual diligence. We have to give each trail annual attention or Mother Nature slowly takes back her real estate. Having a clear and established path through the woods only encourages folks to stay on the path and helps protect fragile plant life and the trails themselves.

For good measure, we all camped out and gave the freshly cleared trails a good running the next morning. I encourage you to get out and give back to the trails by doing some trail work this year; I am sure you will not regret the time spent outside. Happy trails!

## West Virginia and EPA scrapping over which streams to clean up (Continued from page 12)

older less precise family-based evaluation process (i.e. the WV Stream Condition Index or WVSCI) to the genus-based GLIMPSS (Genus-Level Index of Most Probable Stream Status) methodology which is a more inclusive, more refined tool for evaluating the structure and function of aquatic ecosystems, and assessing damage to those ecosystems

Now, four year later WVDEP continues to work on the legislative mandate to adopt by rulemaking a new biological assessment methodology. Without having completed that process, and for the purpose

of the compiling the 2014 303(d) list, the agency relied on the same old rationale for not including many streams that according to its own data are known to be biologically impaired.

While applying the GLIMPSS methodology to the genus-level data collected and assembled by WVDEP from July1, 2011 – June 30, 2013 EPA acknowledged there may be multiple methodologies that could be used to assess the relevant readily available data but also concluded that that relying on GLIMPSS does not pre-empt the methodology

development process currently being undertaken by WVDEP pursuant to SB 562.

Bottom line, EPA is exercising its legal mandate under the CWA to fill in any gaps when it finds the state 303(d) list to be lacking important stream segments.

For other opinions about EPA's actions and the addition of 61 streams we'll have to wait for comments submitted in response to the forthcoming Federal Register notice.

# EPA, NPDES Permits, and WV Senate Bill 357

By Cindy Rank

It seems strange and maybe a bit ironic to be writing articles about coal and coal mining at a time when much of the country seems to think coal itself is a thing of the past.

Wishful thinking as that may be, and as good for the earth as ending our use of and dependency on fossil fuels will be, the reality of coal is still with us.

Whether it's the impact of industry's bankruptcies, or the long-term legacy of community health problems, environmental pollution, and dire economic straits, or how to manage and regulate current mining operations throughout the state and region, ongoing challenges of minimizing damage continue to haunt communities and regulatory agencies alike.

As is our wont, we often subject readers of *the Highlands Voice* to situations which are far less than headline grabbing and rife with more mind-numbing detail, but nonetheless demand our attention and involve our participation with the nitty-gritty of the regulatory maze of permitting and enforcement issues.

Which brings us to another merry-go-round process that involves the Environmental Protection Agency (EPA), the West Virginia Department of Environmental Protection (WVDEP), the West Virginia Legislature, the West Virginia Highlands Conservancy (WVHC) and our citizen and environmental group partners.

In early 2015 Senate Bill 357 (SB 357) was passed by the West Virginia Legislature and signed into law by Governor Tomblin. SB 357 sets out modifications to the West Virginia National Pollutant Discharge Elimination System (NPDES), water discharge permitting program that are favorable to the coal industry looking for more relief from their friends in the legislature.

On July 10, 2015 the WVDEP submitted these revisions to EPA for review and approval.

WVHC and partner groups believe these revisions are substantial and harmful enough to undercut the basic program itself and should be disapproved. At the very least the modifications are substantial enough for EPA to review them as major modification to the approved state program and include a requirement for public notice and comment during that review.

Allow me to quote sections from a letter sent to EPA on behalf of WVHC and our partner groups that set forth our position in the matter:

*These revisions are substantial for three reasons. First, WVDEP's goal with these changes is to eliminate the current NPDES program requirement, which is included as a condition in all NPDES permits for coal mines in West Virginia, that mines must comply with all water quality standards—both numerical and narrative.... WVDEP's proposed modifications would eliminate required compliance with narrative water quality standards, and allow mines to achieve compliance solely by complying with numerical standards and effluent limitations. ... Because West Virginia has refused to adopt criteria to establish limits for ionic pollution below coal mine sites this change will necessarily lead to permits which are not protective of narrative water quality standards.*

*Second, WVDEP has refused to enforce its narrative water quality standard that prohibits biological impairment of streams, because it knows that coal mines with valley fills are consistently violating that standard by discharging high levels of ionic pollution. WVDEP's proposed modifications would excuse those violations and allow widespread noncompliance with that narrative standard*

*affecting scores of headwater streams in West Virginia. Three recent federal court decisions identify such violations by mining companies [in several streams in central WV] [This] NPDES permit modification would have the effect of excusing widespread violations of narrative water quality standards, and rendering these violations unenforceable by citizens, the state or EPA.*

*Third, WVDEP's proposed modifications would eliminate its discretion to include narrative conditions in NPDES permits requiring compliance with narrative water quality standards in cases where there are likely or proven violations of those standards. Thus, even though a federal court has already identified five headwater streams where violations of narrative water quality standards are occurring, WVDEP would be powerless to do anything about those violations. [This] NPDES permit modification ties the hands of a state agency and prevents the correction of violations of water quality standards.*

## Bottom line

The Legislature modified the law in an attempt to immunize the coal industry from its liability for impairing hundreds of streams in the state and to quash successful citizen enforcement of the existing requirements. And WVDEP is now seeking to undermine and evade three federal court rulings that found that mines are violating water quality standards.

But that's our opinion.

The question before EPA is whether or not these modifications constitute a substantial revision that require federal EPA review including public notice and comment as well.

In letters to WVDEP Division of Mining and Reclamation and Division of Water and Waste Management dated April 13, 2016, and to the WV Environmental Quality Board dated May 12, 2016, EPA has posed some basic questions to assist them in their determination. EPA lists a series of questions about the anticipated effects SB 357 and its companion HB 2283 will have on applications, issuance and enforcement of mining and non-mining NPDES permits; what permit conditions will ensure compliance with WV water quality standards, numeric or narrative; effect on existing permits, on provisions to protect receiving streams, reopener clauses, and other provisions that appear to be in conflict with or at least affected by these modifications.



## Leer - Longwall Legacy in the Making

By Cindy Rank

Each month I try to write an update about the Leer longwall mine in Taylor County just outside of Grafton, adjacent to the east side of Tygart Lake.

And each month I find myself unable to put words to what is going on above that 6,000 acre deep mine.

There is little room for mirth or pithy comments. Though what is going on there is so devastating that a person might laugh just to avoid crying.

I've attended meetings with folks from the area and have heard stories about damage to homes and property that take my breath away.

I've seen what is happening and it's difficult to believe that it can be legal.

The outward effects are not as visible as what mountain top removal does to the land and water, but the damage being done is more like death by a thousand cuts, to the earth and water patterns as well as to the people.

Homes that are no longer level and have multiple cracks in the foundation, windows that no longer close, cabinet doors that no longer stay closed, living room floor that slants down more than a foot toward one corner, water that is gone or has turned ugly and awful.....

There are no words to adequately describe the alteration of the land – seen and unseen – on the surface and within the geology and hydrology that once was.

Nor can I find words to fully convey the personal suffering and unbelievable inconvenience that is foisted upon people not wanting or not able to move away.

A few people are willing to talk about their damage, but many are not – perhaps mostly for fear the company won't help them as much as they need.

But the story should be told before this area becomes just one more community in the long list of communities that have suffered permanent damage from longwall mining, adding just one more string of individuals to the names of families who suffer the consequences of mining methods that have improved production but have surpassed the constraints of laws written to protect the environment and people as the black gold is taken from the bowels of the earth.

So with thanks to Larry and Beth Baldwin for opening their hearts and home to anyone who wants to see longwall mining is doing to their lives and home, I offer a mildly edited version of their words from a message sent after the farm was undermined several weeks ago. They, and many others, continue to experience the ever shifting ground under their feet as the land settles back down into the void created when the coal was removed.

*"This pond took about a week to go dry when the mine went under. Now that rain has set in it took one night to come back - black and smelling like rotten eggs. I noticed the fish in it last night - even the carp I asked the company to remove. They sent guys down from the mines. They could not recover the fish which must*

*have gone down into the mud to survive. But now the water came back poison and contaminated killing the fish. Is this what is going to happen to my big pond with about a ton of fish in it still ... now that the warm weather has come back and they are coming out of the mud.? All my other animals drink from this pond, including other wildlife and community animals, including my cows and horses that will be drinking from this water as it comes back. The mine has installed city water lines but not the meter to supply the water. How many fish and livestock do I have to lose before the DEP corrects this and makes the mine abide by the law? It is not my job to sit and monitor my property when the DEP gave the mines this permit to destroy my property and make me live in a house 19 inches out of level and mosquito pits for water cisterns and a swamp for a yard. We are suffering everyday living in these stressful conditions. There are many things that need to be taken care of that seem not to be important to the mines sitting back in their homes laughing at the people of the community while the DEP sides with the mine, and elected officials make statements in the Taylor County Statesman paper that the mine is working with the people, and there are*

*no problems without talking to the people. The reporters need to meet with the people and have an open meeting with the mine and not rely on the closed CAP propaganda meeting with the mine's chosen few.*

*"Please tell me how we are going to correct these problems."*



### New Board Member Appointed

When Dave Fouts needed to step back from his Board position (see the January, 2016, issue of *The Highlands Voice* to see the nice things Cindy Ellis had to say about him and his service), that left a vacancy on the Board. Cindy has appointed George Hack to finish out that term. George is a longtime member with homes in Maryland and in Harman, WV. A number of us met him at the April meeting; we all look forward to working together with him.

# HIGHLANDS CONSERVANCY BOUTIQUE



- The baby shirts are certified organic cotton and are offered in one infant and several toddler sizes and an infant onesie. Slogan is “I ♥ Mountains Save One for Me!” Onesie [18 mo.]---\$25, Infant tee [18 mo.]---\$20, Toddler tee, 2T,3T,4T, 5/6---\$20
- Soft pima cotton adult polo shirts are a handsome earthtone light brown and feature the spruce tree logo. Sizes S-XL [Shirts run large for stated size.] \$ 25.00, 2XL \$26.50

To order by mail [WV residents add 6 % sales tax] make check payable to West Virginia Highlands Conservancy and send to West Virginia Highlands Conservancy, Online Store, PO Box 306, Charleston, WV 25321-0306

The same items are also available at our on-line store: [www.wvhighlands.org](http://www.wvhighlands.org)

## T- SHIRTS

White, heavy cotton T-shirts with the **I ♥ Mountains** slogan on the front. The lettering is blue and the heart is red. “West Virginia Highlands Conservancy” in smaller blue letters is included below the slogan. Short sleeve in sizes: S, M, L, XL, and XXL. Long sleeve in sizes S, M, L, and XL. **Short sleeve** model is \$18 by mail; **long sleeve** is \$22. West Virginia residents add 6% sales tax. Send sizes wanted and check payable to West Virginia Highlands Conservancy ATTEN: Online Store, WVHC, P.O. Box 306, Charleston, WV 25321-0306.



## HATS FOR SALE

We have West Virginia Highlands Conservancy baseball style caps for sale as well as I ♥ Mountains caps.

The WVHC cap is beige with green woven into the twill and the pre-curved visor is light green. The front of the cap has West Virginia Highlands Conservancy logo and the words West Virginia Highlands Conservancy on the front and I (heart) Mountains on the back. It is soft twill, unstructured, low profile, sewn eyelets, cloth strap with tri-glide buckle closure.

The I ♥ Mountains The colors are stone, black and red.. The front of the cap has ♥ MOUNTAINS. The heart is red. The red and black hats are soft twill, unstructured, low profile, sewn eyelets, cloth strap with tri-glide buckle closure. The stone has a stiff front crown with a velcro strap on the back. All hats have West Virginia Highlands Conservancy printed on the back. Cost is \$20 by mail. West Virginia residents add 6% tax. Make check payable to West Virginia Highlands Conservancy and send to West Virginia Highlands Conservancy, Atten: Online Store, P.O. Box 306, Charleston, WV 25321-0306