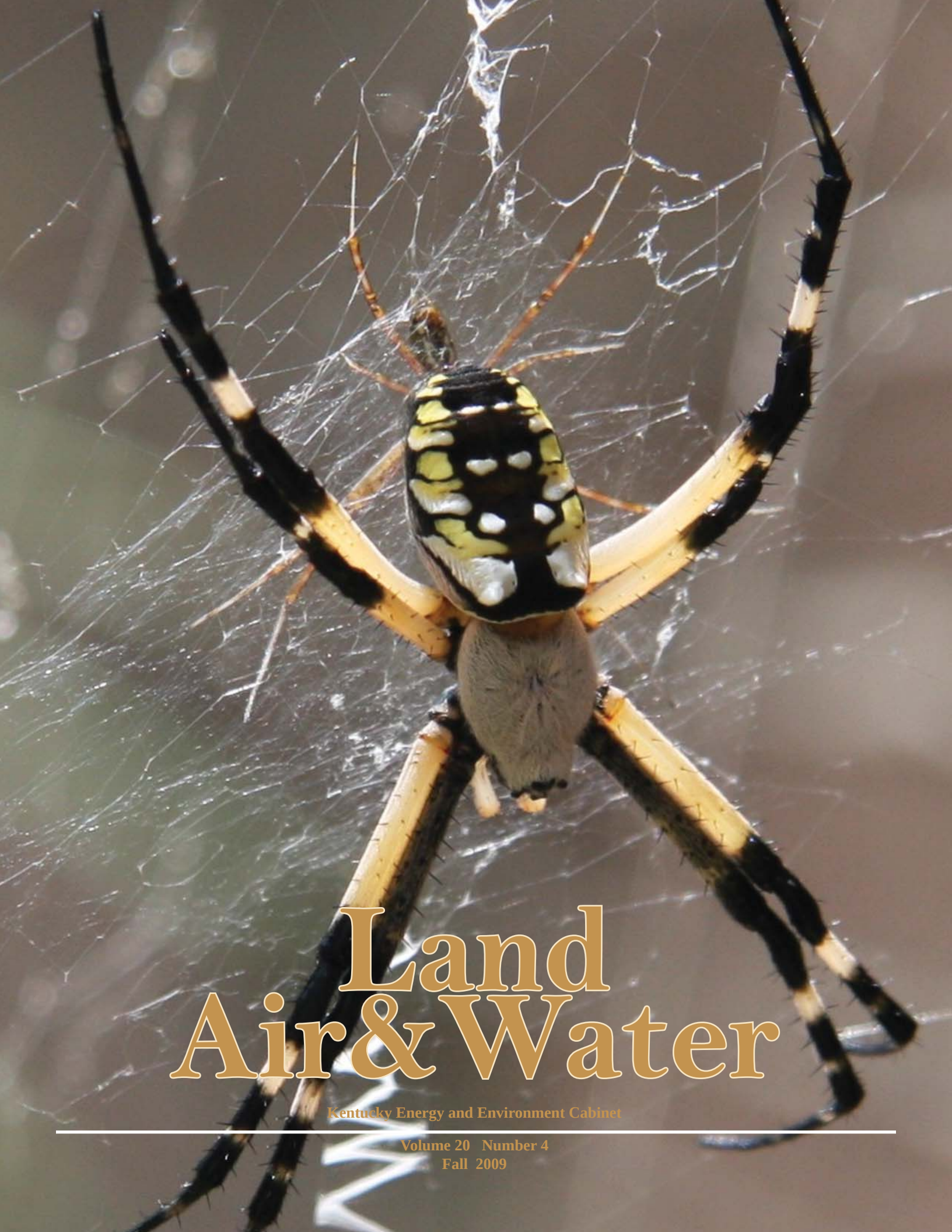


Land Air & Water

Kentucky Energy and Environment Cabinet

Volume 20 Number 4
Fall 2009

Land Air&Water

since 1988

Commonwealth of Kentucky
Steven L. Beshear, *Governor*

Energy and Environment Cabinet
Dr. Leonard Peters, *Secretary*

Department for Environmental Protection
R. Bruce Scott, *Commissioner*

Department for Natural Resources
Carl Campbell, *Commissioner*

Department for Energy Development and Independence
Dr. Leonard Peters, *Acting Commissioner*

Editor and Graphic Designer
Cynthia Schafer

Agency Coordinators
Lynn Brammer
Lee Colten
Allison Fleck
Mary Jo Harrod
Leslie Isaman
Linda Potter
Kimberly Richardson
Elizabeth Robb Schmitz

Land, Air & Water is published quarterly by the Energy and Environment Cabinet. Subscription to this publication is free.

E-mail: Cynthia.Schafer@ky.gov or telephone 502-564-5525 to have your name added to the mailing list. Address changes and deletions should also be addressed in this manner.

State survey stresses importance of streams, wetlands

Respondents say more education, protection needed

The state Stream and Wetland Conservation Plan survey recently released by the Kentucky Division of Water (DOW) reveals the majority of respondents believe that Kentucky's streams and wetlands are of critical importance and need to be protected from the effects of development and resource extraction.

The survey was conducted by Eastern Kentucky University (EKU) with funding from the U.S. Environmental Protection Agency and administered by DOW. The 800-plus persons surveyed statewide included environmental professionals, federal and state regulators, farmers, homeowners, coal industry representatives, stream restoration engineers, foresters and sportsmen.

Dr. Stephanie McSpirit, an associate professor in EKU's Department of Anthropology, Sociology and Social Work who oversaw the survey, said respondents also emphasized the need for more environmental education and improved coordination and partnerships among agencies, universities and other stakeholders.

"While survey respondents agreed that concerted efforts have been made over the past five years to better protect Kentucky's water resources, they also stressed the need for more education, outreach and research," said McSpirit. "They feel the general public and certain other stakeholder groups—for example, landowners and local officials—lack accurate knowledge, scientific understanding and technical information to make informed land-use and water resource planning decisions."

McSpirit added that many respondents also recognized the tradeoffs and conflicts between economic activity and environmental protection, specifically the problems associated with residential growth, sewage and storm water. Much of the critical advice centered on reversing trends of wetland and stream loss.

The survey results can be found online at www.water.ky.gov/permitting/wqcert.

Clarification

An article in the summer issue on Page 13, *Rolleigh Peterson Education Forest to become public park*, omitted funding for the purchase of the property, which came from the Kentucky Heritage Land Conservation Fund, Kentucky Division of Forestry, Louisville Metro Parks and a private donation by David and Betty Jones.

Visit Land, Air & Water online at http://www.eec.ky.gov

Printed on recycled paper with state and federal funds.

Land Air&Water

Volume 20 Number 4
Fall 2009

Features

Members 'excel' at environmental efforts 2
KY EXCEL members share their results from environmental projects that protect the Earth and save money.

EAB spreads to Kentucky 6
Know how to identify and treat this insect that threatens the state's ash population.

Alternative energy 14
As Kentucky looks for ways to produce more sustainable energy sources, the issue of finding or building adequate infrastructure can be a costly barrier. Reclaimed brownfields could be the answer.

Our Cover

This black and yellow garden spider *(Argiope aurantia)* was photographed in Owen County by Lori Terry of the Division of Waste Management.

Printed by Post Printing
Lexington, Kentucky

Contents

State survey stresses importance of streams, wetlands.....Inside cover
Kentucky tigers 1
The value of trees 3
Operation transformation 5
New employees hit the ground running 7
House approves cap-and-trade bill 9
Storm water permit protects water quality 10
Rains bring flood of inspections at DMRE 11
Trees, bees and restored streams 13
EPA awards $2 million for Kentucky clean diesel emission projects 16
Rock Creek restoration 17
Communities draw their future 18
Awards 20
Grant will improve natural areas in Harlan County ..... Back cover

Kentucky tigers

By Ellis Laudermilk
Kentucky State Nature Preserves Commission

The pine barrens and pine oak ridge tops in eastern Kentucky are home to one of the state's most stunning "tiger" species. This secretive predator is beautiful with a striking pattern of white or cream colored lines on its back and an iridescent-green body.

Sounds unusual for a tiger, but many Kentucky species exhibit a variety of iridescent colors and line patterns. These tigers are insects known as northern barrens tiger beetles (*Cicindela patruela*) and they are harmless to humans. They are called tiger beetles because of their voracious predatory habits. After all, if you are a small ant scampering across the ground a tiger beetle is just as ferocious as its furry namesake. All species are carnivorous in the adult and larval stage.

Over 2,600 tiger beetle species have been described in the world with about 109 species known from North America north of Mexico. Recent field surveys across the state and visits to museums by tiger beetle enthusiasts have revealed species previously undocumented from Kentucky, including the Appalachian tiger beetle (*Cicindela ancocisconensis*) and Pan-American big-headed tiger beetle (*Tetracha carolina*). Kentucky is home to at least 21 species. A few, such as the northern barrens and Appalachian tiger beetles, are uncommon and considered globally vulnerable to extinction.

Tiger beetle species have the same basic appearance in terms of body size and shape and they exhibit similar behavior. Colors, patterns on the hardened forewings (elytra) and size of individuals are the primary ways to distinguish species in the field. Kentucky's species range in size from about 0.2 inches to 1.0 inches. Transparent hindwings used for flight are hidden beneath the elytra. Since tiger beetles can run fast, the wings are mainly used for short escape flights, but some species can also fly to new habitats. However, the flight wings are reduced or even absent in a few species that have become adept at running. In fact, according to Dr. Thomas Merritt of the University of Florida, an Australian tiger beetle (*Cicindela hudsoni*) is the fastest running insect in the world, attaining speeds of 5.6 miles per hour.

Several characteristics distinguish tiger beetles from other ground beetles, but some of the most obvious are the long, thin legs that are well equipped for running; long, sickle-shaped mandibles used to devour prey; long body form with the eyes and head together wider than the thorax; prominent eyes used to spot potential prey or danger; and tunnel-building behavior of the larvae, along with a peculiar hump on the back of larvae that has a set of forward facing hooks. The hooks help larvae maintain their position inside burrows when they attack prey. When an ant or other small insect approaches, larvae launch out of their burrows and pounce on the unsuspecting prey pulling it back inside the burrow.

Tiger beetles are found in a variety of habitats, but soil type is very important to each species. For example, the big sand tiger beetle (*Cicindela formosa*) prefers sandy areas with little or no low vegetation. The splendid tiger beetle (*C. splendida*), is often found in association with open areas and red clay soils. Many readers probably have seen the widespread, iridescent-green six-spotted tiger beetle (*C. sexguttata*) while walking trails or dirt roads throughout the state. This common species occasionally is even found on sidewalks or patios. The one-spotted tiger beetle (*C. unipunctata*) is normally found in woodlands where it forages under leaf litter. In fact, no matter where you wonder outside in Kentucky, a tiger beetle could be nearby. You may not have seen it or even been aware of its presence, but at some point you likely have been in the eye of the tiger.

TOP LEFT: ***The six-spotted tiger beetle is often seen on trails or dirt roads throughout Kentucky.***
ABOVE: ***The Appalachian tiger beetle is considered uncommon in our area and vulnerable to extinction.***
LEFT: ***The splendid tiger beetle is often found in association with open areas and red clay soils.*** Photos by Ellis Laudermilk

BELOW: ***Volunteers representing Aisin Automotive Casting stand beside the trash they collected at a cleanup at Cumberland Falls.***
Photo courtesy of Aisin Automotive Casting

Making a difference

By Mary Jo Harrod
Division of Compliance Assistance

KY EXCEL members are never short on ideas that benefit the environment and to educate others about doing the same. From hosting seminars to planting trees to conserving energy, KY EXCEL members are creative leaders setting the bar for the rest of the state.

Aisin Automotive Casting LLC in London is a partner member of KY EXCEL and works aggressively to reduce, reuse and recycle to eliminate any waste going to a landfill. The plant, which employs approximately 450 people, creates engine-related functional parts and die-cast parts for vehicles.

Tammy Patterson, environmental specialist at Aisin, says, "Currently, only 5 percent of our waste goes to the landfill. Our goal is zero waste. A contact person in each department of the plant ensures that things are being recycled or reused, including paper, cardboard, Styrofoam and more. Our mop heads and absorbents are sent out to be washed and then returned and used again. The aluminum scraps from the die-cast machines are melted in the melt furnaces and reused."

Aisin strives to repair water and air leaks and conserve natural gas usage. The company also provides bins in the parking lot for cans and plastic bottles since they cannot be brought into the plant. Cans and printer cartridges are sold, and the money is used for environmental projects.

This year, Aisin employees participated in planting trees on the company grounds to recognize Earth Day. Often, Patterson recruits volunteers for community cleanup projects, such as gathering trash at Wood Creek Lake and Cumberland Falls.

"I am focused on these cleanups," explains Patterson. "Our employees enjoy doing the cleanups and can't believe the things they find. We have removed water heaters, full beds with box springs and mattresses, batteries, tires and cans. You want these places to be beautiful and be able to enjoy them with your family."

Continued on Page 4

Seven reasons people give for NOT being environmental leaders

We've heard many excuses, but here are the top seven reasons people say they aren't involved in environmental leadership:

1. I don't have time. Being an environmental leader does not mean that large blocks of time are required. Placing your soft drink cans or plastic bottles in a recycle bin rather than a trash can and turning out lights in empty rooms benefit the environment.

2. My management doesn't care about the environment. Most employers care about saving money, which can be an added benefit of efforts to protect the environment. Replacing regular lightbulbs with compact fluorescent lights (CFLs) will save on energy costs, and the CFLs last about 10 times longer.

3. My employees are too busy for special projects. Providing a recycle box for used office paper does not require more time on the part of your employees. But, it may save you money on trash pickup fees.

4. The economy is too bad. Regardless of the economy, small, inexpensive projects are doable. They may even offer a savings in energy used or a reduction in garbage pickup costs.

5. Money is too tight. You don't need to spend money to be an environmental leader. An aluminum can recycling project will even earn you some cash. Educating your children about protecting the environment is free, but will go a long way toward ensuring a brighter, healthier future for everyone.

6. My employees have too much to worry about, much less the environment. A Saturday morning tree planting or participating in a river cleanup may ease your employees' stress and promote camaraderie. Caring about the environment may bring employees closer together as they unite for a worthy cause.

Continued on Page 8

The value of trees

By Lynn Brammer
Division of Forestry

Prospect residents and local officials gather information on the location, size, age and type of trees for the tree inventory. Photo courtesy of the city of Prospect Forestation Board

Software helps communities determine benefits, maintenance costs associated with their trees

Ask the residents of Prospect, Ky., how much a tree is worth and you may get a science-based, calculated answer based on a comprehensive study of their coummunity trees. More than 25 dedicated community members and local officials from a suburban city in the Louisville metropolitan area recently completed an inventory and analysis of public trees. The accomplishment made them the first city to partner with the Kentucky Division of Forestry (KDF) and complete a tree inventory to be analyzed in a software program known as *i-Tree.*

The innovative *i-Tree* was developed by the U.S. Forest Service and numerous cooperators for the purpose of quantifying the environmental value of trees. In other words, the program can translate the significance of a tree into real dollars and cents.

Most of us are aware that trees provide environmental and economic benefits for our communities. They beautify our surroundings, act as sound barriers, purify our air, provide us with oxygen, prevent soil erosion, protect water quality and help us save energy through their cooling shade in summer and their wind reduction in winter. However, because the benefits can be both direct and indirect, determining the monetary value of a community tree can be challenging.

So, how do we convince cities to take more interest in protecting and managing their trees? The answer is in providing policy makers with hard data to justify planting and maintenance costs.

The first step is to conduct a tree inventory to gather information on the location, type, size and age of each tree. A tree inventory also assesses tree health, pruning needs, hazardous trees and the percentage of canopy cover. The second step is to analyze the inventory data using the various tools and programs within *i-Tree* to determine benefits, costs and maintenance needs.

For example, the city of Prospect's inventory of 1,478 street trees showed the monetary benefits related to energy conservation, air quality improvement, storm water control and property value to be $126,746 annually. The total annual costs for planting, pruning, removal and other maintenance was calculated at $18,949. Basically, the city saves nearly $7 in benefits for every $1 spent on tree care.

In addition to providing information on money matters, the analysis tools within *i-Tree* can provide valuable information for any individual, arborist or forester who takes an active role in caring for and managing urban trees. Using information collected in the inventory, a comprehensive forest management plan can be developed to address concerns such as tree health, tree diversity and storm damaged trees. The plan can even recommend the placement of trees with respect to utility lines and sidewalks while determining the type of tree that is best suited for intercepting storm water runoff, removing air pollutants and/or providing shade and wind protection.

Forestry officials say one of the best features of *i-Tree* is that it can provide replacement values for trees. This will be particularly useful for homeowners and communities who want to protect Kentucky's ash trees from emerald ash borer, a highly destructive insect pest that was recently confirmed in northern and central Kentucky. (Read more about the emerald ash borer on Page 6 of this issue.)

"Ash trees are the third most common species in the city of Prospect, and the replacement value for ash would be over $100,000," said Peter Barber, urban forester for the Kentucky Division of Forestry. "Prospect city officials will take this into consideration when making decisions about protecting and managing the ash in their community," he added.

Barber, along with Robert Bean, chief forester for the

Continued to Page 19

Making a difference

Continued from Page 2

Future scheduled projects include the installation of energy-efficient lighting with motion sensors to reduce energy usage and a glove reclamation program to wash thousands of pairs of gloves used daily by employees, rather than trashing them.

Tokico (USA) Inc. is a leader member of KY EXCEL and manufactures shocks, struts and brake systems for major auto makers. As part of its 2009 projects, the company, which has been in Berea for 21 years, chose to adopt the Waco Bridge on Highway 52 in Madison County, which spans Muddy Creek. The area around the bridge had accumulated a large amount of trash, so a cleanup day was scheduled for April 24, in honor of Earth Day.

Lauren Reno, environmental coordinator for Tokico, says, "The company wanted to clean and preserve a local waterway, so Muddy Creek, which was the most impaired stream in Madison County, was chosen because our company had the most resources to clean the area."

Volunteers spent one hour cleaning one-fourth of the area. In that time, they removed a toilet; truck seat; soda, oil and paint cans; two cars and a variety of litter.

Volunteers were surprised by the amount and type of trash they collected.

"It became like a treasure hunt," says Reno, who is scheduling a second cleanup day. "I'm glad we got out there and did something about the trash."

In conjunction with the Muddy Creek project, Tokico bought a seed bin dryer to enable local environmental groups to collect, dry and store native grass seed to be sown in an area that had been impacted.

Another Tokico project was a paper recycling program. Reno said the goal was to recycle five tons of newspapers, office paper and magazines by August 2009, but the goal was met in May, three months early.

"It is so easy to recycle, and there is no reason not to do it," explains Reno.

The company's third project concerns energy reduction. In 2008, the company hired an energy consultant to identify problem areas. After checking half of the plant, the consultant located 196 leaks in the air compressors. As a result, a maintenance person now spends every Saturday looking for and repairing air leaks. Tokico has saved $200,000 a year and eliminated a 50-horsepower air compressor, which had been running constantly. In addition, engineering changes have been made in the BLOMOLD line at the plant, and all lightbulbs are being replaced with CFLs as they burn out. Tokico's goal for 2010 is to reduce energy usage by 5 percent.

Advocate member **Wyatt, Tarrant & Combs LLP**, a community-minded law firm in Lexington, chose to host the Annual Environmental Update seminar for its KY EXCEL project. The seminar is free and open to the public to acquaint participants with recent developments and issues that may affect environmental compliance and enforcement, particularly in Kentucky. Held in Frankfort, the seminar focuses on air, water and waste issues, with an overview on what is happening on the regulated side.

Lesly A.R. Davis, an attorney in the firm's environmental group, says, "The attendance figures typically range from 115–130 for the one-day event. With so many things being expensive to attend, it's good that this seminar is free. There is a lot of activity in this field, and we want people to know that we are accessible and to feel free to call us with questions."

Seminar speakers from Wyatt, Tarrant & Combs and state agencies discuss current issues of interest. Recent topics include "Criminal Enforcement of Environmental Laws—How to Minimize Your Exposure," "Recycling and Reworking the Definition of Solid Waste," "American Clean Energy and Security Act of 2009: Overview and Implications" and "Spill Prevention, Control and Countermeasure Rule 2008 Amendments."

Continued to Page 8

TOP: ***Tokico volunteers cleaned up the Waco Bridge area and stream banks of Muddy Creek in Madison County as one of their voluntary environmental projects for KY EXCEL.***

ABOVE: ***Among the trash collected was a toilet, tires, cans and an old truck seat.***
Photos courtesy of Tokico USA Inc.

Operation Transformation

Lexington structure gets a makeover; provides community with economic opportunities

By Mary Jo Harrod
Division of Compliance Assistance

The Third Street Exchange, which is located at 560 E. Third Street in Lexington's central business district, is a former brownfield and the crown jewel in an area that was once blighted, riddled with crime and empty storefronts and was an environmental mess. A brownfield site means real property, the expansion, redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. These properties include abandoned factories, former dry cleaning establishments, vacant gas stations, illegal drug labs, old dumps and mine-scarred lands.

Built in the 1940s, the two-story building was constructed with heavy steel and served in many capacities. At one time, it was used as a dairy cooler depot, and during World War II, Kentucky Utilities stored metal cable in the structure.

At least six years ago, Community Ventures Corp. (CVC) began acquiring adjoining properties that had served as a salvage company, auto repair building and paint shop, and had considerable environmental hazards associated with them. These hazards were so great that private-sector businesses had no interest in locating there, resulting in the area losing its economic base.

An assessment of the area's situation revealed that residents wanted not only more employment and business opportunities to be available in their neighborhood, they also wanted better lives for themselves and their children.

Partnering with government agencies, area churches, financial, educational and medical institutions, CVC began working with the Kentucky Superfund Branch and the U.S. Environmental Protection Agency to design this redevelopment project to address environmental issues, revitalize a set of properties that had the potential to contribute significantly to Lexington's downtown and provide services that the area's residents so desperately needed. Other project goals were to increase educational and economic opportunities for families and children living in the area and to revitalize and stabilize the neighborhood.

The building was gutted, all mechanical systems replaced and the interior redesigned to create the business incubator and learning center areas. The original wood floors were refinished and sound-absorbing ceilings were used to create a quiet atmosphere. Downstairs, the lobby area was painted in energizing bright colors, and glass blocks were used in some office areas to allow light to flow into the lobby.

Continued on Page 8

ABOVE: ***This two-story building on Lexington's Third Street was designated a brownfield site.***

RIGHT: ***Community Ventures Corp. addressed environmental issues and remodeled the building to attract new businesses to the area.*** Photos by CVC

LEFT: EAB larvae chew their way through the inner bark leaving galleries (tunnels).
RIGHT: Traps have been placed in various locations throughout Kentucky in an effort to locate infested areas.
BELOW: The adult stage of EAB is a half-inch elongated, metallic-green beetle. Photos by KDF

Emerald ash borer

Insect a serious threat to Kentucky's ash trees

By Lynn Brammer
Division of Forestry

Kentucky Division of Forestry and University of Kentucky officials confirmed the first cases of emerald ash borer (EAB) infestations in Kentucky earlier this year. Since May, the insect has been found in Campbell, Fayette, Franklin, Jefferson, Jessamine, Kenton, Owen and Shelby counties. The discoveries were the result of investigations of dying ash trees reported by homeowners and woodland owners.

Identifying the Pest

EAB, an invasive insect native to Asia, was first discovered in southeast Michigan in 2002 and has since destroyed more than 25 million ash trees in urban, rural and forested settings. The adult stage of EAB is a small, metallic-green beetle that lays eggs on the bark of all species of ash trees. Although the beetle may be seen feeding on ash leaves, the larval stage is far more destructive. EAB larvae create galleries, or tunnels, while feeding on the inner bark. This activity damages the vascular system of the tree and reduces the flow of nutrients. Symptoms of EAB activity include canopy dieback, sprouts from the trunk and stems, and D-shaped exit holes in the trunk. Despite visible signs, infestations generally go undetected until the tree dies.

Preventing the Spread of EAB

EAB infestations spread rapidly as a result of human activities, and it is now known to be present in 13 states and two Canadian provinces. Firewood movement has been a major factor in the spread of EAB; therefore, restrictions and quarantines have been initiated. Currently the entire states of Illinois, Indiana and Ohio are under federal quarantines that restrict the movement of ash trees, branches, logs and firewood out of those states. Kentucky is cooperating with the Animal Plant Health Inspection Service—Plant Protection and Quarantine (APHIS-PPQ) personnel to enforce this federal quarantine. In June, state officials worked with APHIS-PPQ to quarantine 20 Kentucky counties. The quarantine prohibits "regulated articles" from being moved outside of a restricted area without a certificate or limited permit except under certain conditions. Regulated articles are defined as the emerald ash borer, hardwood firewood, ash nursery stock, green ash lumber, other ash material and any other materials that could potentially spread infestation. The counties under quarantine include Boone, Bourbon, Campbell, Carroll, Fayette, Franklin, Gallatin, Grant, Harrison, Henry, Jefferson, Jessamine, Kenton, Oldham, Owen, Pendleton, Scott, Shelby, Trimble and Woodford.

Tracking Infestations

Traps have been placed in various locations throughout Kentucky in an effort

Continued to Page 15

New employees hit the ground running

DMP uses aggressive training efforts to educate new reviewers and inspectors

By Evan Satterwhite and Linda Potter
Department for Natural Resources

This year the Kentucky Division of Mine Permits (DMP) found itself overflowing with permit applications from small and large coal operators in Kentucky. In addition, the rising price of coal spurred an even larger increase in applications to mine coal in the state.

At a time when the division needed a substantial number of employees to process these applications, it was actually dealing with the loss of 28 people as a result of retirements. Nearly 330 years of combined experience walked out the doors, including supervisors and experienced permit reviewers. Aggressive efforts by DMP have been made to replace the retirees, and new-hire training has been intense and practical.

"The hiring process focuses on technical knowledge and background to ensure that we get the very best," says Department for Natural Resources Commissioner Carl Campbell. "We are aggressively working to fill all vacancies, and training is going very well. We are extremely proud and encouraged by the new people that are on board. We are committed to issuing permits accurately and timely and determined to give the best assistance to the industry that we can, while protecting the public and the environment."

Every permit application is different in terms of technical issues and complexity. It takes time for a new permit reviewer without previous mining experience to gain the confidence and knowledge to review a complete application of average complexity. During the learning process, the new reviewer works closely with his or her supervisor to acquire the knowledge of regulatory requirements as they apply to a variety of different mining methods.

To facilitate the process, the DMP implemented a three-day, in-house classroom training called Permit Reviewer Boot Camp that addresses general application review topics (see box at right).

Permit Reviewer Boot Camp is followed by a two-day field trip to observe typical mining methods and permitted sites in eastern Kentucky. Participants observe contour/highwall mining, area mining, a deep mine, a coarse refuse impoundment and a reclaimed mine site.

Allen Lutrell, (center) assistant director of the Division of Mine Permits, explains mining methods during a site visit for new permit reviewers. Photo by Paul Rothman

Permit Reviewer Boot Camp includes:

- Overview of the federal Surface Mining Control and Reclamation Act of 1977
- Threatened and Endangered Species/ Critical Resources Review
- Differences in mining methods
- Hollowfills, subsidence and contemporaneous reclamation
- Different types of mine permit applications
- Mountaintop removal/approximate original contour / post mining land use
- Reforestation
- Blasting

Inspector training includes:

- Basic inspection techniques
- Contemporaneous reclamation
- Backfilling and grading
- Excess spoil disposal
- Water quality and Clean Water Act permits
- Certifying and inspecting structures
- Citizen's requests for inspection
- Blasting

Future visits to view mining methods in western Kentucky are anticipated.

In addition twice-monthly, two-hour training sessions called Reviewer Roundtables are held for all permit reviewers on general or specific topics such as the geology of Kentucky, acid-forming materials and the right to mine. These roundtables provide information to new reviewers as well as promote discussion and ensure consistency among all reviewers.

Continued to Page 15

KY EXCEL (continued)

Seven reasons people give for not being environmental leaders *Continued from Page 2*

7. I do my part for the environment at home. Why should I do more at work? Demonstrate your willingness and determination to be an environmental leader by setting an example at work for your fellow employees. It doesn't take much effort to make a difference, and you may plant the seed in others to be an environmental leader. What you do today may have a profound effect tomorrow.

Is your excuse really worth keeping you and your organization from becoming an environmental leader? KY EXCEL can help remove the barriers and provide you with a path to leadership. Staff members are available to answer your questions and help you fill out the application form. View the application at http://www.dca.ky.gov/kyexcel/Levels+of+Membership.htm.

For more information about KY EXCEL and the benefits associated with becoming a member, visit http://www.dca.ky.gov/kyexcel/ or call 800-926-8111.

New KY EXCEL members

Advocate

AMEC Earth and Environmental Inc.—Louisville
Clark Dorman Family—Shelbyville
Community Farm Alliance—Frankfort
Kentucky Ready Mixed Concrete Association—Frankfort

Leader

Tennessee Valley Authority Paradise Fossil Plant—Drakesboro

Master

Progress Rail Services Corp., Ashland (Mansbach) Recycling—Ashland
Toyota Motor Engineering and Manufacturing North America Inc.—Erlanger

Making a difference *Continued from Page 4*

The seminar provides participants with access to employees of the Energy and Environment Cabinet and gives them a feel for the focus of the cabinet. Feedback from participants at previous seminars has been positive, and sometimes ideas of topics for future events come from the public.

George L. Seay Jr., another environmental attorney with the firm, says, "The field is always changing, so we interpret legislation and provide information on what the U.S. Environmental Protection Agency has on schedule in its five-year plan. We are trying to educate people, especially our industrial clients, to help them meet their environmental obligations as they run their business."

The law firm, which has approximately 200 attorneys and six locations in Kentucky and other states, also sponsors scholarships for students to attend the Governor's Conference on the Environment each fall.

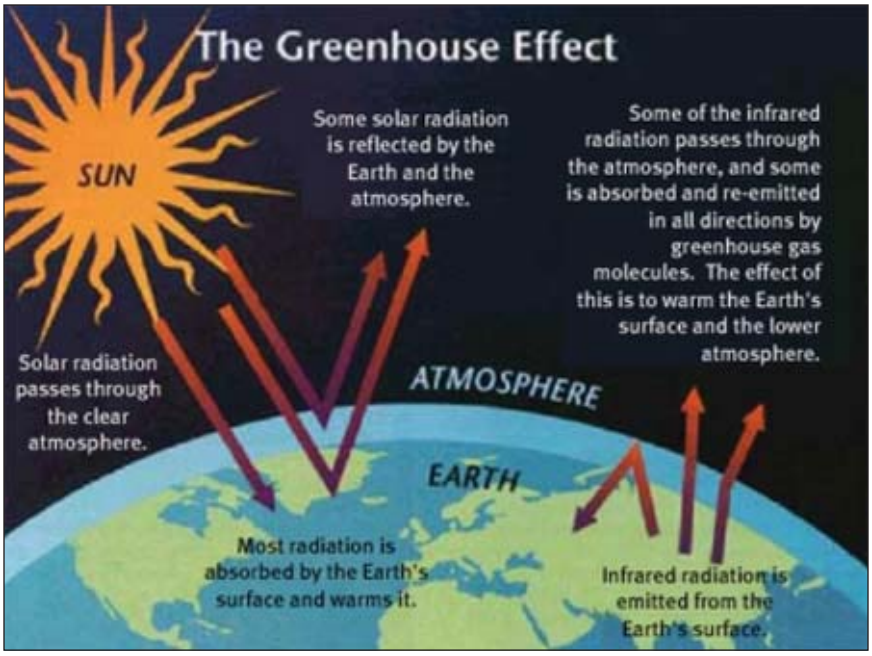
Operation Transformation *Continued from Page 5*

Outside, more than 120 tons of soil contaminated with lead, arsenic and PCBs were removed from the parking area. Today, canopies cover the walkway from the parking lot providing an excellent area for a farmers' market or festival event. Since the structure was not demolished, the architectural element that was a part of the area's history and aesthetic was saved.

After the revitalization project was complete, other businesses relocated to the area, creating excitement in the community. Now, the Third Street Exchange is a multi-purpose facility with a business incubator, the Douglas Community Learning Center and job development opportunities. The site offers conference rooms, copier, high-speed Internet and facsimile access. Businesses located in the building have free parking, kitchen facilities and lease rates starting at $600 per month. The Third Street Exchange is fulfilling its intended purpose for the neighborhood in offering educational services and increasing incomes, asset accumulation and jobs for families through business ownership and self-employment.

The Kentucky Brownfield Program is available to help communities, nonprofits and prospective purchasers with their brownfield projects. The program offers a variety of services to those who are interested in turning problem properties into economic and community development opportunities. Services include assessments, tax incentives, a help desk, information and education and a voluntary brownfield inventory program. For more information about the Kentucky Brownfield Program, call 800-926-8111, e-mail Amanda.Lefevre@ky.gov or visit http://www.dca.ky.gov/brownfields/.

The American Clean Energy and Security Act (ACESA) of 2009, sponsored by Reps. Markey and Waxman, passed the U.S. House of Representatives on June 26, 2009, by a narrow margin of 219 to 212. The bill requires nationwide greenhouse gas emissions reductions through a cap-and-trade program. While federal climate change bills have been discussed in recent years, the Waxman-Markey bill is the first to pass a chamber.



Source: USDA Forest Service/U.S. Global Change Research Information Office

House approves Cap-and-Trade bill

The American Clean Energy and Security Act presents new challenges and opportunities for Kentucky's consumers, industries and energy providers

By Elizabeth Robb Schmitz
Division for Air Quality

Key Provisions of ACESA

The major provision of the act is the cap-and-trade program for reducing greenhouse gases (GHG) emissions. Cap-and-trade systems are market-based; this system would establish an absolute cap on the amount of air emissions from regulated sectors and would allow trading of emissions permits, also known as "allowances." It's not a new scheme for emissions reductions, having been used successfully as part of the Clean Air Act's program to reduce acid rain pollution for a number of years.

Beginning in 2012, the ACESA establishes annual GHG emissions reductions from large sources such as electric utilities and oil refineries. The ACESA calls for a 17 percent reduction in emissions from 2005 levels by 2020 and 83 percent by 2050. The bill also includes provisions to prevent tropical deforestation (a major contributor to GHG emissions).

Eighty-five percent of all pollution allowances are given at no cost for various purposes, including compensating energy-intensive industries, state governments, oil refiners and low-income households. In its current form, the Waxman-Markey bill gives 35 percent of free allowances to the electric utility industry in 2012 and 2013, with 15 percent going to energy-intensive industries that have international competition, and another 10 percent going to states for investments in renewable power sources and energy efficiency.

"The issues facing our energy future are complex—one single solution will simply not meet our energy needs, and the range of possible solutions will require some tradeoffs."

Secretary Len Peters

In addition, the bill contains a number of other key provisions, including energy efficiency, renewable energy and smart grid development. One of the key provisions is a nationwide renewable and efficiency portfolio standard whereby electric utilities would be required to meet 20 percent of their electricity demand through renewable energy sources and energy efficiency by 2020.

Challenges and opportunities for Kentucky

Kentucky is the third largest coal-producing state, accounting for roughly one-tenth of total U.S. coal production. Kentucky is also a heavily industrialized economy—it is the third largest in automobile manufacturing and ranks sixth in the nation in the percent of the state's gross domestic product attributable to manufacturing. This industrial development has in large part occurred due to relatively low electricity rates, afforded through oversight from the Public Service Commission and coal-fired power generation.

In 2006, Kentucky ranked 13th in overall carbon dioxide (a major greenhouse gas) emissions and seventh in per capita emissions, nationally. Kentucky's

Continued to Page 12

Problems related to erosion runoff:

• **Sedimentation**—Sedimentation can destroy aquatic habitat, and high volumes of runoff can cause stream bank erosion. Polluted storm water runoff can harm or kill fish and other wildlife and damage recreational areas. Debris can clog waterways and potentially reach the ocean where it can kill marine wildlife and impact habitat. Inflow of sediment can cloud water, blocking sunlight from submerged plants.
• **Chemicals**—Nutrients, such as phosphorus and nitrogen, from fertilizers promote unusually rapid algae growth. As algae dies, its decomposition reduces or eliminates oxygen needed by fish, shellfish and other aquatic life for survival.
• **Post-construction runoff—** Roof tops, roads, parking lots and other impervious surfaces prevent rainfall from soaking into the ground. The increase in storm water can be too much for the existing natural drainage system to handle resulting in the natural drainage system being altered to collect runoff and quickly convey it away (using curb and gutter, enclosed storm sewers and lined channels). The storm water is subsequently discharged to downstream waters such as streams, reservoirs, lakes or estuaries.

Basic principles of erosion prevention:

• Preserve existing vegetation.
• Mulch or seed bare soil immediately for erosion protection.
• Use silt fences, brush barriers or other approaches to pond and filter sediment from runoff.
• Install silt check dams to prevent ditch erosion and remove sediment.
• Protect inlets and outlets.
• Settle out soil particles in sediment traps and basins.

Storm water permit protects water quality

By Allison Fleck
Division of Water

The Division of Water is working to protect water quality in Kentucky with the reissuance of the Storm Water General Permit for Construction Activities.

Because construction sites can be a significant source of pollutants, all construction site operators that disturb one acre or more of land are required to obtain permit coverage for their construction storm water discharges. The permit is also required for smaller sites that are part of a larger, common plan of development.

During the course of site preparation, the removal of trees, meadow grasses and agricultural crops causes erosion. Natural depressions that temporarily pond water are often graded to a uniform slope, causing rapid runoff. Consequently, clearing and grading results in compaction, which greatly reduces water absorption capabilities.

The resulting storm water runoff from these activities can have a significant impact on water quality. As storm water flows over the disturbed land of a construction site, it picks up pollutants like sediment, debris and chemicals and transports them to a nearby storm sewer system or directly into a river, stream or lake where fish and other wildlife can be harmed or killed.

The permit requires operators of construction sites to implement storm water controls and develop storm water pollution prevention plans that prevent pollutants from being discharged

Continued to Page 19

ABOVE: ***Erosion blankets are used to protect steep slopes and encourage vegetative growth.*** Photo courtesy of Allied Landscape

LEFT: ***Rock-filled gabion baskets help prevent debris from washing into storm drains and damaging water quality.*** Photo courtesy of Boone County Public Works

Rains bring flood of inspections at DMRE

By Kristin Gale
Division of Mine Reclamation and Enforcement

This year has been particularly busy at the Division of Mine Reclamation and Enforcement (DMRE). The eastern region of Kentucky, including Breathitt, Floyd, Knott, Magoffin, Perry and Pike counties, received above-average rainfall between May 1-15. Many areas received 9 inches of rain, and some as many as 15 inches, in as little as 24 hours, an event that is predicted to happen only once every 100 years. The resulting floods and landslides created devastation—and an avalanche of citizens' requests for inspections filed at the DMRE.

Excessive rainfall caused a sediment structure from a nearby coal mine to be overtopped and a previous slide reactivated, depositing material off-site at the Office of Mine Safety and Health Administration in Phelps, Kentucky. Photo by Arlen Paul Carty

The Surface Mining Control and Reclamation Act of 1977 revolutionized coal mining and included provisions for citizen participation in many aspects of permitting and enforcement. One avenue is the right for citizens to request an inspection of any mine site believed to be in violation of any mining regulation. DMRE personnel are also responsible for conducting investigations into allegations of environmental and property damage by coal companies. Common investigations include sampling of water wells, seismic monitoring of blast vibrations and documentation of site conditions such as fugitive dust and subsidence.

Following the spring rains, DMRE received 124 citizen requests for inspection during the month of May. To put this in perspective, during the last five years there was an average of 745 requests per year, or 62 requests per month. To handle the large number of requests, inspectors and technical specialists worked long hours and weekends to respond to each citizen complaint. An especially difficult task was distinguishing between environmental impacts caused by the severe flooding and impacts contributed by mining hazards, like slides and breaches of sediment control structures.

The DMRE works closely with other state agencies, such as the Environmental Response Team, to respond quickly to "imminent danger" situations like blackwater discharges, often in 30 minutes or less. Regulations require that all inspection requests be handled within 10 days.

Despite the large number of investigations, most cases are unrelated to mining. In 2008, of the 860 investigations performed only 124 resulted in the issuance of a citation. However, when a coal company is in violation, it is responsible for repairing any damages the violation may have caused, including the replacement of a citizen's water supply if the quality or quantity of the water source is affected.

If you experience any problems associated with coal mining, contact the DMRE at their central office in Frankfort or any of their five regional offices in Madisonville, Middlesboro, Prestonsburg, Pikeville or London. You may also visit www.dmre.ky.gov

New maps put wealth of information at fingertips

By Allison Fleck
Division of Water

The Kentucky Division of Water is collaborating with the Kentucky Geological Survey (KGS) at the University of Kentucky (UK) in creating new maps of the seven major river basins of Kentucky that integrate multiple layers of information. Each will include a topographic map depicting the major rivers and streams, lakes, highways, counties and cities in the basin. Surrounding that map, however, will be additional information in text, tables and illustrations, including resources, activities, terrain features, water supply and much more.

Maps of the Kentucky, Licking, Upper Cumberland and Green River basins have already been published. Work is still underway on remaining maps for the Four Rivers, Salt and Big Sandy/Little Sandy/Tygarts Creek river basins.

Dr. Len Peters, secretary of the Energy and Environment Cabinet, said the maps provide a valuable integrated overview of the major river basins.

"The maps should be of interest to planners, environmentalists, educators, boaters, fishermen and anyone who lives in or has an interest in a particular basin," said Peters.

To view and download the maps, visit www.uky.edu/kgs and click on "recent publications." Paper copies are available from the KGS Public Information Center at the Mining and Mineral Resources Building on the UK campus for $10 each ($15 for laminated copy) plus shipping. Place orders by calling toll free 877-778-7827.

House approves Cap-and-Trade bill *Continued from Page 9*

electric power industry emits roughly 93 million metric tons of carbon dioxide.

Kentucky policymakers and government officials have been anticipating federal climate change legislation for a number of years. In a climate-changed world, it is imperative that Kentucky and other states meet reduction targets in a timely and cost-effective manner. For existing coal-fired electricity generation, for example, necessary equipment to capture carbon dioxide emissions and technology to sequester or store those emissions must be in place. These carbon capture and sequestration technologies are not currently available at commercial scale; however, the Kentucky Legislature has taken a number of important steps to provide necessary funding resources to further research and development.

Gov. Steve Beshear's comprehensive energy plan, *Intelligent Energy Choices for Kentucky's Future*, is built upon the solid foundation established by the Kentucky General Assembly and establishes a seven-point energy strategy to help Kentucky reduce its carbon dioxide emissions, develop our renewable energy resources, improve overall energy efficiency, reduce our reliance on imported oil and natural gas, and grow our economy.

Energy and Environment Cabinet Secretary Len Peters recognizes the challenges and uncertainties associated with climate change and that greenhouse gas emissions, such as carbon dioxide, contribute to global warming.

"One of our goals in the cabinet is to reduce emissions of carbon dioxide and other air pollutants in order to reduce or mitigate negative environmental and human health consequences. The issues facing our energy future are complex—one single solution will simply not meet our energy needs, and the range of possible solutions will require some tradeoffs," said Peters.

"In Kentucky, a primary challenge that we face is to develop clean, reliable, affordable energy sources that help us to reduce our carbon dioxide emissions, provide economic prosperity and allow us to continue to use our state's traditional domestic energy resources," he continued.

Energy at a glance

Gov. Beshear's energy plan: http://www.energy.ky.gov/energy-plan2008/

25x25 Web site: www.25x25.org

Waxman-Markey CRS Report for Congress: http://opencrs.com/document/R40643/

"As the third largest coal producer and as a state that relies on coal to generate more than 92 percent of our electricity, Kentuckians have much at stake in a carbon constrained world."

Greater energy efficiency and conservation are the fastest, most affordable ways to reduce carbon emissions. Ironically, despite the state's low electricity rates, Kentuckians generally use about the same percent of their income for electricity as Americans with higher per kilowatt costs. Perhaps this is because Kentucky's consumption of electricity per capita is among the highest in the United States. In other words, Kentucky's low electricity cost per kilowatt has, to some degree, allowed us to be wasteful of this vital resource.

Under a business-as-usual scenario, Kentucky's energy use is projected to grow by slightly more than 40 percent by 2025. With a concerted effort to improve energy efficiency in our homes, schools, office buildings, industries and transportation system, 60 percent of our new energy requirements could be satisfied with energy efficiency measures rather than new sources of energy production.

Division of Carbon Management Assistant Director Talina Mathews notes that it is difficult to predict the exact cost impacts to Kentucky under a carbon dioxide cap-and-trade scheme. However, we do know, she says, that "costs will increase under any type of climate legislation or any legislation that imposes mandates on generating electricity from renewables. Even efforts to improve and reinforce the nation's aging electric transmission infrastructure will impose costs—whether in terms of smart grid technology or expanding the grid to support development of renewable projects in remote areas of the country."

Kentucky's comprehensive energy plan has several parallels to the Waxman-Markey bill. The plan incorporates recommendations to improve energy efficiency; provides a framework from which we can begin to increase our use of renewable resources, including biomass; recommends initiation of an aggressive carbon capture and sequestration program; and seeks to diversify the state's energy portfolio. Developing Kentucky's biomass resources offers great potential to enhance the state's agricultural economy while reducing overall carbon dioxide emissions.

The first three strategies of the energy plan encompass what is proposed as a Renewable and Efficiency Portfolio Standard for the Commonwealth, in which 25 percent of Kentucky's energy needs in 2025 will be met by energy efficiency, conservation, and alternative and renewable resources. As is noted in the plan, leading with these strategies enables us to implement actions to reduce energy use and carbon dioxide emissions in a timely and cost-effective manner. The Waxman-Markey bill also contains a renewable energy standard – originally mirroring the 25 percent by 2025 described above, but scaled down in the current version to 12 percent to 15 percent by 2020.

Kentucky has great potential for renewable energy sources on a distributed generation basis. Distributed generation means that energy is generated from several small sources, rather than a large centralized source. Today, renewable energy accounts for only about 3 percent of the state's entire energy portfolio—including use of biodiesel and ethanol. A conservative estimate from Kentucky's Department for Energy Development and Independence is that we can triple our current use of renewable energy sources between now and 2025 simply by relying on our domestic renewable energy resources. Further, Kentucky can increase its biomass

Continued on Page 15

Trees, bees and restored streams

By Evan Satterwhite and Linda Potter
Department for Natural Resources

Jenny Wiley State Park provided a scenic backdrop of eastern Kentucky for this year's convening of Appalachian Regional Reforestation Initiative (ARRI) members and partners at the ARRI conference. Conference attendees, transformed to students, were busy taking notes during thought-provoking discussions and photos of the demonstrations held at various venues during the three-day event. The presentations, through outdoor classrooms

and indoor panel discussions, demonstrated various ways to reclaim mined lands through reforestation, wildlife restoration, wetland construction, beekeeping and adventure tourism.

The University of Kentucky (UK) and the Department for Natural Resources (DNR) have been partners in research in reforestation techniques at the Starfire mine site in Perry County since 1996. They were soon joined by the states of Maryland, Ohio, Pennsylvania, Tennessee, Virginia and West Virginia along with the federal Office of Surface Mining to form the Appalachian Regional Reforestation Initiative (ARRI).

The group works together to promote and encourage the planting of economically viable Appalachian hardwood trees on active and abandoned coal mined lands using current Forestry Reclamation Approach (FRA) technology.

LEFT: UK *associate professor Chris Barton talks about reforestation research done by the university.*
ABOVE: *A breakout group listens to a presentation about the transplanted elk of eastern Kentucky.*
RIGHT: Dr. Tammy Horn talked about beekeeping research in relation to sourwood trees that are planted on surface mine sites in eastern Kentucky. Photos by Paul Rothman

"This year's conference, challenged with drizzling rains, provided more than 200 attendees from 20 states the opportunity to see various research projects conducted by the UK on surface mines and enabled them to get an up-close look at the results of this research," said ARRI core member and conference co-coordinator Paul Rothman. Rothman is an environmental scientist with the DNR.

Day one began with the first of two field trips. Loaded in large chartered busses, the group ventured to the ICG mine where "cells" of various reclamation techniques were demonstrated for post-mined land use. Dr. Tammy Horn, of Eastern Kentucky University, talked about the beekeeping research she has been conducting on mine sites, which illustrates the positive impact of bees on the environment, along with the production of their own unique brand of eastern Kentucky honey. The bees have a natural affinity to the nearby sourwood trees, planted for their pollinator-friendly effect. Significant results at combating mites that nearly demolished honey producing bees in the 1980's have also been achieved without using pesticides.

The group then visited a large plot planted with various grasses to attract elk, as well as quail and other birds. Kentucky, with the help of the Rocky Mountain Elk Association, transplanted around 1,500 elk (mostly from Utah) in 1997. While only one elk of the now 11,000 was sighted, evidence supports that they are thriving, opening up many possibilities for raising livestock in the otherwise mountainous terrain of eastern Kentucky.

Across the hill on the same property, UK has created a large stream restoration project in an attempt to develop reclamation techniques that can be used when constructing excess spoil disposal areas or hollowfills. Collaborating professors Chris Barton, Don Graves and Rick Sweigard explained the progress of this latest endeavor. The field trip provided an educational experience showcasing the various ways to reclaim land in different stages of growth, all in one location—a surface mine in Perry County.

Continued to Page 16

Alternative energy in Kentucky

Brownfields offer suitable locations for potential energy projects

By Herb Petitjean and Amanda LeFevre
Division of Compliance Assistance

Renewable energy plays a major role in Kentucky's energy plan, as referred to in the *Intelligent Energy Choices for Kentucky's Future —Kentucky's 7-Point Strategy for Energy Independence*, which was released by Gov. Steve Beshear last November. Renewable energy resources are naturally replenishing and virtually inexhaustible.

The plan utilizes innovative forms of traditional energy sources, as well as diversification through alternative energy strategies. Renewable or alternative energy can include solar and wind energy, biofuels and landfill gas. Because the state's goal is to provide 25 percent of its energy needs through energy efficiency, renewable energy and biofuels by 2025, Kentucky could begin to see the development of a variety of power production facilities. However, where can we locate these facilities? Fortunately, some of the least desirable properties in the Commonwealth have exactly the criteria that energy developers are wanting.

Brownfields are often old factories, mine-scarred lands and other buildings that have been abandoned due to real or perceived contamination. Brownfields are promising as sites for alternative energy because they often have roads, railway and electrical transmission lines already in place, so no new infrastructure is required.

While residents living near farms and forestland may oppose new development on those green spaces, residents living near brownfields are likely to welcome the cleanup and revitalization of these abandoned properties. As an added bonus, the operation can also return employment opportunities to a community that has experienced job losses.

Alternative energy is good for brownfields, too. It can provide a viable reuse for properties that might not otherwise have much development demand and helps preserve the state's scenic farms and forestland.

Some renewable energy is already being generated in Kentucky. The Commonwealth has the fifth largest hydro power production east of the Mississippi. In addition, the state's utilities have started generating energy by burning methane captured from landfills—a definite example of green energy from a brownfield.

Kentucky's richest source of renewable energy is biofuels. With mounting concerns about the use of grain on food and feed prices, energy producers are looking at alternative raw materials. There are several processes that use materials, such as crop residues and waste from the wood and paper industries, to produce

Continued on Page 16

Alternative energy sources

TOP: ***This gas well at the Laurel Ridge Landfill in Lily is one of five landfill gas-to-electric plants operated by East Kentucky Power Cooperative (EKPC) in Kentucky. The five plants are located in Boone, Greenup, Laurel, Hardin and Pendleton counties. Collectively, the five power plants generate 15 megawatts of electricity, enough to power approximately 10,000 homes in Kentucky.*** Photo by EKPC
ABOVE: ***Electricity generated from wind power is becoming one of the least costly and most readily deployed options for new generation. Kentucky is believed to have the capacity to generate 34 megawatts of wind energy power.***
RIGHT: ***Solar panels capture sunlight and produce electricity.***

Emerald ash borer *Continued from Page 6*

to locate other infested areas. The bright purple triangular traps are baited with a manuka and phoebe oil beetle attractant and glue to lure and capture adult EAB that might be active in the area. Most of the traps are concentrated in areas north of I-64 as well as at campgrounds and other locations with high tourist traffic, including Land Between the Lakes, Bernheim Arboretum, Mammoth Cave National Park and Lake Cumberland.

Protecting Ash Trees

Efforts to contain EAB are ongoing; however, there is only one option to protect infested trees—treating them with an insecticide. Systemic insecticides containing imidacloprid and emamectin benzoate are the most effective. The common methods of treatment are trunk injection, soil injection and soil drenching. Although many treatment options require a certified applicator, there are insecticides available to the public containing imidacloprid. It is important to realize that many factors, including the level of infestation and timing, contribute to the success of the treatment.

Unfortunately, controlling EAB is not foolproof and treatments can be expensive; however, it is possible to slow the spread of infestation through quarantines and the help of the public. Kentuckians are encouraged to become familiar with the signs and symptoms of this pest and to report suspected infestations to the Division of Forestry at 1-800-866-0555 or call the EAB hotline at 1-866-322-4512. For the latest on EAB in Kentucky, visit http://pest.ca.uky.edu/EXT/EAB/welcome.html. More information about EAB is available online at http://www.emeraldashborer.info/

New employees hit the ground running

Continued from Page 7

The DMP is not the only division to experience significant losses due to retirements. The Division of Mine Reclamation and Enforcement (DMRE) found itself with fewer experienced environmental inspectors that regularly perform inspections at mining operations once the permits are issued. Thirty-eight newly hired inspectors attended training sessions that included a crash course in handling situations that can occur on a daily basis in their respective regions.

Perhaps one of the most memorable segments of training deals with a moot court, complete with video for playback and critique. Inspectors prepare and give testimony in a mock hearing about enforcement actions created for them by a legal team. Each inspector receives a copy of their testimony so that they can review and find ways to improve in preparation for the "real world."

Inspectors also receive a lesson in technology as a majority of activities and documentation are prepared and filed electronically in a central database. Inspectors use "tablets" that accept electronic signatures and come equipped with air cards that allow for easy connection to the state network. The resulting savings in vehicle expenses has been significant and inspectors are able to spend more time at mine sites rather than in the office doing paperwork.

Commissioner Campbell began his career as an inspector, and he knows the importance of a well-trained inspection staff.

"These positions require technical expertise and on-site experience. The loss of institutional knowledge seriously impacted DMRE, but all enforcement personnel took on additional responsibilities to fill the void. Again, we have made the hiring and training of well-qualified individuals a top priority in order to assist the mining industry while protecting the citizens of Kentucky," he said.

House approves Cap-and-Trade bill

Continued from Page 12

resources tenfold, without negatively impacting food crop production.

Electricity generation emissions are not the only target of the carbon dioxide emissions problem being tackled by the Waxman-Markey bill. Fully 40 percent of the carbon dioxide emissions in the United States are from the transportation sector. Increased fuel economy standards passed by Congress on May 20, 2009, require all automakers to increase fleet fuel efficiency by 5 percent per year starting in 2012. Provisions of the Waxman-Markey bill would require states to stabilize transportation-related GHG emissions in a year designated by each state independently (2010 is recommended), and to reduce emissions in the years following. These requirements could help establish better infrastructure for alternative modes of transportation in Kentucky, such as more sidewalks and bike lanes, or alternative fuels, such as biodiesel.

Waxman-Markey's cap-and-trade provisions are just one legislative or regulatory approach for reducing carbon dioxide emissions. Multiple strategies, such as a direct carbon tax, or mandatory reduction of emissions on an industry-by-industry basis, could also be explored. The latter strategy would act similarly to the current structure of the Clean Air Act, under which emissions of particulate matter, sulfur dioxide, and nitrogen oxide have been significantly reduced.

Division for Air Quality Director John Lyons noted that, "Any policies that are put in place to reduce carbon dioxide emissions will reduce emissions of currently regulated pollutants, such as particulate matter. Reducing these pollutants in Kentucky will benefit the health of every man, woman, and child in the Commonwealth."

The next step for the act is a vote in the Senate, although it is important to note that in the Senate, the debate may be taking place on a companion bill, rather than this particular one.

EPA awards $2 million for Kentucky clean diesel emission projects

Energy and Environment Cabinet Secretary Len Peters presents a ceremonial check to board members of the Kentucky Association of General Contractors. Standing from left to right are Richard Vincent, executive vice president; Secretary Peters; David Jackson, president; John Brazel, assistant executive director and grant author; and Ellis Hefner, chairman of the executive committee.
Photo by Ricki Gardenhire

The Kentucky Association of General Contractors (AGC) received $2 million to retrofit and repower 87 units of diesel-powered construction equipment. The project will result in a reduction of 72.55 tons per year of nitrogen oxides, particulate matter, hydrocarbons and carbon monoxide. This move will also create jobs and bolster local economies.

The funds originate from the American Reinvestment and Recovery Act of 2009 National Clean Diesel Funding Assistance Program.

AGC of Kentucky overcame stiff competition for the dollars. The Environmental Protection Agency's Region 4 alone received more than 98 grant applications requesting more than $140 million to fund clean diesel emissions projects.

Trees, bees and restored streams

Continued from Page 13

Days two and three included panel discussions and another field trip to an Appalachian Fuels surface mine to observe additional UK research projects. The hydrology research project demonstrates variations of the FRA in the planting of trees in loose compacted material. Historically, compaction not only limits seedling growth and increases mortality, but potential off-site environmental impacts (decreased water infiltration, increased runoff, and export of sediment) have been observed.

Statistics show coal companies and landowners are embracing reforestation in their reclamation plans. According to Rothman, during calendar years 2007-2008, DNR issued 192 permits (new, amendments and revisions) containing 52,309 acres with a post-mining land use where the permittee committed to planting trees. The FRA techniques are incorporated into the backfilling, grading and revegetation plans for these permits. When reclaimed, 35,570,120 trees will be planted on these sites. In addition, Phase III bond release (where the land has been totally reclaimed) was granted on 9,654 acres planted to trees. This translates to an additional 6,564,720 established and growing trees on Kentucky surface lands.

"I am extremely proud of DNR's pioneering efforts in reforestation," said DNR Commissioner Carl Campbell. "Its extension now into stream restoration offers exciting opportunities for the coal industry and DNR to work together to minimize the environmental impacts of mining."

Alternative energy in Kentucky

Continued from Page 14

ethanol. Research is also being conducted on the viability of producing biofuels, such as switchgrass, on reclaimed mine lands. This would provide a feedstock for the ethanol without reducing the production of food and feed.

As solar and wind energy evolve, they will play larger roles in electric generation. Only a small section of southeastern Kentucky is suitable for large wind systems using current technology. However, wind projects in this area, plus smaller systems elsewhere, could provide 34 megawatts of wind power for the state.

In 2007, Germany produced 1,328 megawatts of grid-tied photovoltaic solar energy, which clearly demonstrates that solar energy isn't limited to desert regions. Reports suggest that Kentucky could produce 940 megawatts of solar electric energy by 2025. These figures do not include solar water heating and passive and active solar space heating.

Whether a proposed brownfield project is viable for utility-scale production of energy or for a project that provides energy for on-site operations, the Kentucky Brownfield Program stands ready to help. We can help locate suitable properties and identify brownfield and energy incentives that can assist in making a project viable. If you have any questions, please contact Herb Petitjean at 800-926-8111 or Herb.petitjean@ky.gov.

Rock Creek restoration

Project yields improved water quality, vegetative growth

By John Webb
Division of Water

Rock Creek is a beautiful, meandering stream that flows across the Tennessee line into McCreary County, Kentucky. After crossing the state line, it flows for 21 miles before entering the South Fork of the Cumberland River, known locally as Big South Fork.

Eighteen miles of the upper portion of Rock Creek is typified by magnificent boulders, riffles, glides and pools. It is a major recreational attraction and has been recognized nationally as a Blue Ribbon trout stream. Upper Rock Creek has also been designated a state Wild River and an Outstanding State Resource Water by the state of Kentucky.

A decade ago, the same could not be said, however, for portions of the creek below its juncture with White Oak Creek, where acid mine drainage from abandoned mine lands had killed most of the vegetation and aquatic life. In the years preceding the Surface Mining Reclamation Act of 1977, this three-mile stretch of Rock Creek had been harmed to the point that the Division of Water, in 1990, had listed it as "non-supporting for aquatic life and swimming" in the 303(d) list of impaired state waters and began developing a Total Maximum Daily Load to limit pollutants entering the stream.

Then in 2000, the Rock Creek Task Force watershed group developed the Rock Creek Clean Water Action Plan Project to tackle the job of restoring the unhealthy stream portion. Twelve state and federal agencies and conservation organizations obtained $970,000 in funding for Phase 1 of the project (see box at right).

The Kentucky Division of Abandoned Mine Lands led implementation of Phase 1 in the spring of 2000. Innovative wetlands were constructed to treat the mine flow

Continued to Page 19

ABOVE: The Lower Rock Creek watershed was stocked with fish after limestone was used to treat acid mine drainage from abandoned mines and coal processing refuse piles.

LEFT: Prior to the limestone treatments, the streambed appeared to flow red from acid mine drainage. Photos provided by Abandoned Mine Lands

Funding for Phase I

- $200,000 in a Clean Water Action Plan grant from the U.S. Environmental Protection Agency through the Kentucky Division of Water.
- $280,000 in grants from the Appalachian Clean Streams Initiative.
- $250,000 in a Personal Responsibility in a Desirable Environment grant from the National Oceanic and Atmospheric Administration.
- $160,000 in a Kentucky Abandoned Mine Land grant.
- $80,000 in an U.S. Geological Survey cost share grant.

Rock Creek Task Force

- Kentucky Division of Abandoned Mine Lands (Department for Surface Mining Reclamation and Enforcement)
- Kentucky Division of Water (Department for Environmental Protection)
- Kentucky Department of Fish and Wildlife Resources
- U.S. Department of the Interior Geological Survey
- U.S. Department of the Interior Office of Surface Mining
- U.S. Department of Agriculture Forest Service
- U.S. Department of Agriculture National Resources Conservation Service
- U.S. Army Corps of Engineers
- U.S. Department of the Interior Fish and Wildlife Service
- U.S. Department of the Interior National Park Service
- Trout Unlimited

Communities draw their future

Creative exercise encourages leaders to act on their vision and apply it at community and township levels

By Amanda LeFevre
Division of Compliance Assistance

TOP: ***This sketch of a pocket park was one of the concepts derived from the Covington visioning session.***
RIGHT: ***Covington residents use markers and paper to draw their community concepts.***
ABOVE: ***Fleming County Judge-Executive Larry Foxworthy shares his visions.***
Photos by Amanda LeFevre

Imagine what you would like your community to be like in the future. Now, draw it.

That was the order of the day at a recent set of visioning sessions sponsored by the U.S. Environmental Protection Agency (EPA) Region 4 Brownfields Program and the U.S. Army Corps of Engineers.

"Vision to Action" is an exercise that has proven successful in other communities in the south, and through funding provided by Region 4, the process was recently brought to Covington and Flemingsburg. Retired Army Corps employee Jim Wadell, along with a professional artist, led the sessions.

Session participants were given markers, crayons and paper and asked to draw how they wish to see their community, based on their visions.

"We ask people to visualize what their vision inside their head is of sustainability," said Wadell. "In other words, 'I live in this community, what's it look like when I'm being sustainable?' That's their personal vision of sustainability, what they're going to do."

Even the least likely of artists became engrossed in this activity and all drawings were welcome, from stick figures to Picasso-like designs. After rendering their communities, participants were given an opportunity to speak about their visions. Each 8 ½ x 11-inch picture was scanned into a computer and miniature 3 x 2-inch versions were printed. These images were placed alongside other images depicting community activities and places like parks, farmer's markets, outdoor activities, etc.

Participants then glued their original drawings, along with the smaller sketches, on a blank poster to help bring their visions to life. Participants often chose the drawings of other community members to magnify their own vision, therefore connecting common elements or themes of sustainability.

The professional artist sketched all the commonalities and finalized a completed vision packet, with renderings of the ideas. After the exercise, attendees talked about financial aid and resources available to get them closer to their visions. They also discussed how they can move their communities to action and use their drawings to market their ideas.

The professional renderings can be used as educational and communication tools for their plans that will help people buy into their goals and dreams. After all, a picture is worth a thousand words. For more information on Vision to Action, visit http://www.epa.gov/ciconference/previous/2007/myvision.htm

Rock Creek restoration

Continued from Page 17

Mark Carew, of Abandoned Mine Lands, holds a brown trout caught in Rock Creek. The watershed now supports aquatic life and is safe for swimming. Photo by Abandoned Mine Lands

heading into the stream. Coal refuse materials totaling 20,000 to 30,000 tons was removed, treated and relocated to designated storage locations. Limestone rock was placed along the channels to boost alkalinity. Water in the creek was then treated with monthly applications of limestone sand to continue to reduce acidity.

Activities to date have dramatically improved the water quality in the Lower Rock Creek watershed. Acid loading into the South Fork of the Cumberland River from Rock Creek has decreased from a monthly average of 110 metric tons to near zero.

Removal of the coal refuse from streamside areas and revegetation of the creek banks have reduced the amount of sediment entering the stream by 500 tons annually. Fish populations are improving in the lower Rock Creek watershed, and the number and diversity of fish species are increasing. Monitoring stations that once found no fish are now supporting fish.

The aesthetic improvements to Lower Rock Creek are obvious. More importantly, monitoring of Lower Rock Creek has shown dramatic improvements in water quality. By 2004, watershed assessments indicated that water quality had improved sufficiently to partially support primary contact recreation (swimming). By January 2008, DOW assessments listed Rock Creek as fully supporting its use for swimming.

The value of trees

Continued from Page 3

division's Central District, has worked extensively with Prospect officials since 2008 to assist the city in becoming a certified Tree City U.S.A., organize an Arborfest celebration, locate and record the state champion Kentucky coffeetree, and write and develop a forest stewardship plan for one of the city's natural areas.

Mayor Todd Eberle noted the importance of partnering with KDF and expressed appreciation for support and assistance from the two KDF foresters.

"Small cities have a cost-effective, unique capacity to manage their environment and quality of life simply through their management of trees and forest lands," said Eberle. "The technical assistance and guidance from KDF has been indispensable to our community and Forestation Board."

Other communities who care about their urban trees can easily model the city of Prospect. *i-Tree* software is available free of charge and can be downloaded from the *i-Tree* Web site at www.itreetools.org. For more information about urban forestry assistance, contact KDF at 1-800-866-0555 or visit http://www.forestry.ky.gov/programs/urban/.

Storm water permit protects water quality

Continued from Page 10

in storm water runoff. The permits are implemented based on best management practices such as diversion, detention, erosion control, sediment traps, gravel construction entrances, covered storage, spill response, stream buffer zones and good housekeeping. These techniques help control nonpoint source pollution by intercepting surface runoff from disturbed areas, filtering and treating it, and then discharging it at a controlled rate.

Documentation and accountability are also important aspects of the permit. Permittees are required to conduct weekly inspections and the day after any rainfall event resulting in runoff. They must maintain on-site copies of written inspection reports and any associated enforcement actions. In a move to further protect the waters of the Commonwealth, certain construction projects are ineligible for coverage under the 2009 general storm water permit that:

- discharge to an impaired water listed in the 2008 305(b) Integrated Report as impaired for sediment and for which an approved Total Maximum Daily Load has been prepared.
- discharge into a Cold Water Aquatic Habitat, Exceptional Water or Outstanding State Resource Water (Outstanding National Resource Waters were already protected from discharges).

For more information, go to www.water.ky.gov or call the Division of Water at 502-564-3410.

Awards

DOW scientist receives prestigious award

Roney expert in drinking water supply

By Allison Fleck
Division of Water

Julie Roney, an environmental scientist with the Kentucky Division of Water (DOW), has been named the recipient of a George Warren Fuller Award for distinguished service to water utilities by the Kentucky-Tennessee Section of the American Water and Wastewater Association (AWWA). She is only the third woman to be selected for the award by the Kentucky-Tennessee Section since 1938.

The George Warren Fuller Award is presented annually to 43 members of the AWWA nationwide in recognition of "sound engineering skill, brilliant diplomatic talent and constructive leadership" that characterized the life of Fuller, according to the AWWA Web site.

In presenting the award, AWWA Vice President Dean Fritzke praised Roney for her dedication and expertise.

"Julie Roney is one of the most respected water professionals in the state of Kentucky because of an impressive level of knowledge and experience as well as a total willingness to share that knowledge with others," Fritzke said.

Roney has 29 years of environmental experience, 22 of which have related to drinking water. As a staff member of DOW for more than 10 years, Roney advises public water utilities on water quality and technical issues. A frequent speaker at water industry training events, Roney believes that continuing education is key to effective water utility management.

"Water utility operators – especially at small public facilities – look to us at the Division of Water for information on current rules and technologies," said Roney. "Training conferences give me the opportunity to assist operators with their day-to-day operations and help them solve problems unique to their plants, their water sources and their communities."

Julie Roney is presented the George Warren Fuller Award by AWWA Vice President Dean Fritzke. Roney is only the third woman to be selected for the award by the Kentucky-Tennessee Section since 1938. Photo submitted

Roney's previous awards include the AWWA Kentucky-Tennessee Section Distinguished Service Award and the Kentucky Water and Wastewater Operator's Association Eugene Nichols Award.

George Warren Fuller (1868-1934) was a pioneer in American water purification practices. He spent several years in Louisville and Cincinnati studying the viability of coagulation and rapid sand filtration to handle turbid waters, such as that of the Ohio River. Fuller was also instrumental in the standardization of biological testing practices, publishing the "Manual of Public Works Practice" in 1925 under the auspices of the newly formed AWWA.

Other Kentucky-Tennessee AWWA awardees

Outstanding Operator—Terry Hendrick, chief operator of the Bowling Green Municipal Utilities (BGMU) water treatment plant, in recognition of special performance for compliance with public health standards, plan maintenance, development of new ideas, training, outstanding achievement beyond normal operating responsibilities and consistent operation of distribution lines, pump stations and reservoirs.

Award of Excellence for Water Plant Operation—recognizes the following plant operation staffs that have demonstrated exceptional performance in exceeding all federal drinking water standards and initiative to excel at the business of producing safe water for its customers:

- **Bowling Green Municipal Utilities (BGMU) Water Treatment Plant**—for a system producing more than 10 million gallons a day (MGD). BGMU's water treatment plant was built in 1928 and treats an average of 16 MGD. Fifteen employees operate and maintain the plant.
- **Somerset Regional Water Treatment Facility**—for a system producing 5 to 10 MGD. The plant, with 10 employees working around the clock, provides water services to more than 100,000 individuals per day.
- **West Liberty Water Treatment Plant—**for a system producing less than 5 MGD. The plant employs four full-time and two part-time employees to produce 1 to 2 MGD serving 3,300 customers.

Energy and Environment Cabinet
Office of Communications and Public Outreach
5th Floor, Capital Plaza Tower
Frankfort, KY 40601

Address Service Requested

Presorted Standard
U.S. Postage
PAID
Permit #1
Lexington, KY

Grant will improve natural areas in Harlan County

(left to right) Stacia Peyton, deputy commissioner of the Department for Local Government; Marcheta Sparrow, secretary of the Tourism, Arts and Heritage Cabinet; First Lady Jane Beshear; Kyle Napier and Gov. Steve Beshear. KSNPC photo

Kyle Napier, Kentucky State Nature Preserves Commission southeast regional nature preserves manager, recently received a $20,000 grant from the Recreational Trails Program. Gov. Steve Beshear announced the award at the Salato Wildlife Education Center in Frankfort.

The grant will be used to improve a hiking trail that passes through Stone Mountain State Natural Area and Cranks Creek Wildlife Management Area in Harlan County. Improvements will include the restoration of an amphitheater for classroom use, installation of an information kiosk at the trail head and interpretive signage for the trail, and a parking facility. The trail will be used by local school children and other visitors who would like to learn more about the plants and animals that are protected within these state managed lands.