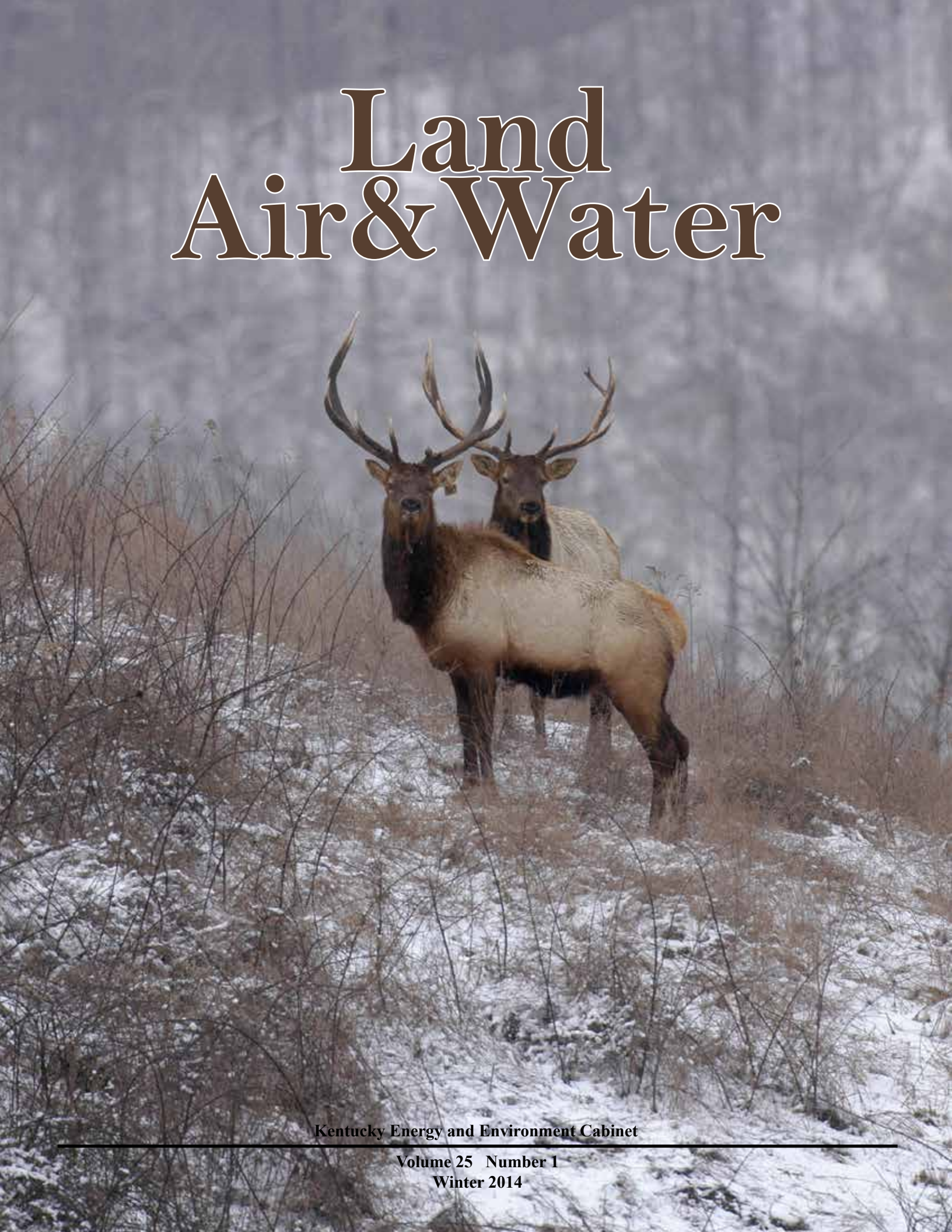
Land Air & Water



Kentucky Energy and Environment Cabinet

Volume 25 Number 1
Winter 2014

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
Steve Hohmann, *Commissioner*

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

Editor and Creative Design
Cynthia Schafer

Agency Contributors
Roberta Burnes
Allison Fleck
Eileen Hardy
Mary Jo Harrod
Virginia Lewis
Linda Potter
Kimberly Richardson
Jennifer L. Turner

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

Email: 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.

Contact the editor for permission to reprint.

From the Secretary's Desk

First, I want to wish all of our readers a very happy New Year and wish all of you the best for 2014. As I looked over some of the stories for this issue, I was reminded of how far-reaching our cabinet programs are across the state. We have wonderfully skilled, creative and dedicated employees who touch so many people's lives in a positive way. So, I also want to thank the people within EEC who make so many good things happen on a daily basis. I used the word creative, because it takes people who think beyond their day-to-day duties to implement the types of successful programs we have in the EEC. The illegal dump story on Page 2 is an example of this creativity. What at first glance would seem to be an intractable problem—cleanup of a site that is practicably inaccessible—had a solution because individuals were determined to find a way to address a decades-long issue.

As we enter the new year, we are in the early weeks of the 2014 session of the Kentucky General Assembly—so in addition to our many regular activities, we will be focusing on legislative initiatives and actions, including the biennial budget. Kate Shanks has recently agreed to lead our Office of Legislative Affairs.

Our cabinet focus will also continue to be on federal climate policies and the potential implications for Kentucky. The U.S. Environmental Protection Agency (EPA) has been tasked with a very aggressive agenda to address carbon dioxide emissions from new and existing coal-fired power plants. The rules for existing plants command a great deal of attention from the cabinet because we will have only a year to develop a plan to EPA after the agency proposes guidelines in June 2014 for finalization in June 2015. This compressed timeline for such a complex compliance strategy is one reason the cabinet now has an assistant secretary for climate policy—John Lyons, who is profiled on Page 1. As he indicates in his interview for *Land, Air & Water*, we have been working very hard to help guide EPA in the development of rules for existing power plants to ensure Kentucky and other manufacturing states that rely on affordable electricity are not harmed economically.

We are also looking at possible state-level policies or actions that could allow us to achieve federal climate objectives in a manner that protects our low-cost energy. Based on our own in-house forecasting models, Kentucky is very likely to go from being predominantly dependent on coal to being dependent on natural gas if we don't find ways to diversify our electricity portfolio. With current federal regulatory and market factors at play, we have to be careful that near-term decisions in response to these factors do not present negative longer-term consequences. While the appetite for mandates is never strong, there are other policy actions that can help us achieve a more balanced portfolio to prevent switching reliance on one fossil fuel for another. A balanced portfolio provides more economic opportunities across the state and is the only way to hedge against the risk of price swings and price increases. We've been talking about the need to diversify our portfolio for many years, and today, that imperative is becoming stronger.

Visit Land, Air & Water online at
http://eec.ky.gov/Pages/LandAirWater.aspx

Printed on recycled paper with state and federal funds.

Land Air&Water

Winter 2014

Volume 25 • Number 1

Features

Our Cover

Elk photographed in Knott County on the former Starfire Mine. One bull is tagged by the Kentucky Department of Fish and Wildlife Resources (KDFWR). Photographed by Dave Baker, KDFWR

Contents

Printed by Post Printing, Lexington, Ky.

Q&A | John Lyons
the Assistant Secretary for Climate Policy

By Roberta Burnes
Division for Air Quality


Photo by Cindy Schafer

Last June, President Obama unveiled his climate action plan to reduce greenhouse gas (GHG) emissions. This was followed a few months later by the Environmental Protection Agency's (EPA) revised proposal to regulate GHGs from new power plants. Regulations for existing power plants are still in the works.

As EPA moves forward to reduce GHG emissions from the electric generating sector, coal-reliant states like Kentucky have a lot at stake. That's why in September, Energy and Environment Cabinet (EEC) Secretary Len Peters announced a new position that would be devoted to climate policy issues. The man for the job? Division for Air Quality (DAQ) Director John Lyons.

I sat down with the new assistant secretary for climate policy to learn more about his work in coordinating Kentucky's climate policy decisions and response to pending GHG regulation.

Can you give us a better understanding of your new role and its importance to the EEC?

Given President Obama's announcement of his climate change plan on June 25 and his direction to EPA to develop new greenhouse gas regulations for new and existing fossil fuel-fired electric generation plants, Gov. Beshear and Secretary Peters felt it was important to have someone coordinating policy decisions on climate-related issues. In my former position as Kentucky's air quality director, I have had the opportunity to help bridge the gap between air quality regulations and energy issues over the last few years.

This has largely been facilitated due to the cabinet's unique organizational structure that includes environmental, energy and utility regulator staffs. Kentucky is one of only four states in the nation with this same organizational structure.

How does your background as director of DAQ fit into this new position?

I started my career in the Division for Air Quality in 1995, with the last 12 serving as director. In that time I watched climate issues evolve from the years immediately following the Kyoto Protocol and casual interest in climate change, to the point we are at today with mainstream acknowledgement of the science that points to changes in the earth's climate. Considering we are talking about carbon dioxide emissions from combustion sources that burn fossil fuels, regulation of air quality is inextricably connected to this issue and will be one of the vehicles for reducing CO_2 emissions.

With the focus on the EPA's pending new rules and for GHG emissions standards at existing power plants, how difficult will it be for Kentucky utility plants to meet these standards?

Until we know what the standards are for existing plants, it is difficult to say. However, we are trying to help guide EPA in the development of this rule by assisting them in recognizing the diversity in states' energy profiles. A rate-based approach, like that proposed on Sept. 20 for new fossil fuel-fired electricity generation, would be devastating to our existing fleet and our economy. In essence, the standards proposed in that rule practically eliminate any new coal-fired generation plants from being built. If a standard remotely similar to that is proposed for the existing fleet, coal units would have no choice but to shut down. That simply is not reasonable or realistic.

"Economically, Kentucky has a tremendous amount at stake here. Kentucky is a manufacturing state. Our low-cost, affordable electricity is largely responsible for the support of more than 200,000 manufacturing jobs."

Continued to Page 4

Illegal open dumping is the **pits**

By Jessica Jones and Gary Logsdon
Division of Waste Management

Typically we think of roadsides, private property and vacant lots when we hear the words "illegal open dump." The truth is illegal open dumps can show up anywhere, including caves and sink holes. Last year, the massive cleanup of the Gulf Pit Dump began in one of Hart County's caves.

The Gulf Pit Dump cleanup took 12 weeks to complete, but this complex, first-of-its-kind project involved more than two years of preparation, including contracting with a caving team certified in multiple aspects of cave safety and rescue. The cleanup was made possible by a $219,000 grant from the Kentucky Division of Waste Management's Illegal Open Dump Grant program. This was the largest illegal open dump cleanup in 2013 and the first cave cleanup where illegal open dump funds were used.

The specialized group of cavers geared up each day and made the 10-minute descent to the mound of material waiting for them below. The cavers handpicked the dump and loaded the materials into large canvas bags weighing up to 1,000 pounds each, which were then carefully hoisted more than 150 feet to the surface by a large crane situated near the mouth of the cave. Care had to be taken to keep the loaded bags from hitting the walls of the cave as they were lifted out, which could result in rocks or debris raining down on the workers below. Safety concerns were paramount during the project, and strict safety protocols were in place, including constant radio contact between the surface crew and the cavers. In addition, the Warren County Rescue Squad remained on standby for the duration of the project.

As the painstaking process of getting the material out of the cave progressed, a crew on the surface began sorting the excavated material. Ultimately, more than 26,000 pounds of metal was recovered for recycling, along with 360 tires, 58,000 pounds of household garbage, 15 tons of construction wood scrap, assorted farm chemicals, a large amount of plastic, and several washers and dryers. Cavers say they estimate the dumpsite had been used for 50 years or more, with the top layer dating to the late 1980s.

Kentucky is home to one of the most famous and vast karst

Continued on Page 16

The Gulf Pit Dump/cave site

Photographs courtesy of Missy Shields, Matt McClintock and Elaine Digges of Hart County

Warm and cozy in northern Kentucky

Kentucky Home Performance helps couple make energy-efficient improvements and save on their utility bill

By Eileen Hardy
Department for Energy Development and Independence

It was the first cold snap—right at the end of October—when David and Tammy Curry of Highland Heights in Campbell County, Ky., couldn't get their furnace up and running again. After 13 years of band-aide repairs, they knew it was time to do something.

"I love our 1940-era Cape Cod home," said Tammy. "We bought it 13 years ago for its charm and solid construction and yes, even the drafty windows and old furnace. We had big plans to move in and fix up the house. But when the economy went south, it presented more of a challenge than we thought.


Photo submitted

"I knew we were losing energy; there was no insulation in the attic space. The house needed a lot of TLC and we lived on a prayer, especially with the heating unit. One thing we hadn't counted on though was the furnace going out," Tammy continued.

Home energy efficiency is a hot topic these days, and for good reason. With a fluctuating economy, unpredictable weather and rising energy costs, managing home energy usage is one way for homeowners to save money without compromising comfort.

The Kentucky Home Performance (KHP) program was developed through a partnership between the Department for Energy Development and Independence and Kentucky Housing Corporation to help Kentuckians create more comfortable, energy-efficient homes. It also provides low-interest loans to help support homeowners needing financing to make improvements to their existing homes, making them more energy efficient, saving money on monthly utility bills and reducing carbon emissions.

KHP connects homeowners with certified contractors to evaluate the total energy performance of the house—from attic to basement and all the windows and doors in between.

"We weren't sure where to turn," explained Tammy. "Then, I remembered a letter sent out by our utility provider, Duke Energy. When I called, they put us in touch with Katie Wydant with Eco Environments, a heating and air conditioning specialist and a service provider for KHP. She explained how evaluating the whole house would give us the big picture on energy saving. Katie crawled through every nook and cranny and then prepared a list of what we could do."

Homeowners are provided an evaluation and list of energy efficiency opportunities, ranked according to the best return on investment. Once the homeowner decides which improvements should be made, KHP ensures all improvements are done according to best practices. The goal is to improve the overall performance of the home rather than simply fixing one item that may be only part of the problem.

Andrew Isaacs, program manager for Kentucky Housing Corporation said, "Customers can often be intimidated by the home-repair process, but making energy-efficient improvements is a solid investment in a home's value. With this program, participants can feel comfortable with the certified contractors, auditors and other vendors coming into their homes."

"After discussing our options, we evaluated the benefits and consequences of each recommendation. We decided on installing attic insulation, sealing the duct work, and of course, a new furnace and air conditioning unit. The work was completed by Thanksgiving—just one more thing we are thankful for this year. Initially, we will save 26 percent on our utility bills, but that number will go higher," said Tammy.

Continued to Page 8

Benefits of Kentucky Home Performance

- Savings average 26 percent on utility bills.
- Fewer drafts and more comfortable rooms.
- Improved air quality.
- Increase home value and lower maintenance.
- Unique financing options—secured and unsecured low-interest loans.
- Whole-house or single-measure computer-based evaluations.
- Trained contractors through nationally recognized programs.
- Proven consumer confidence.

Q&A | John Lyons

Continued from Page 1

Is the EPA listening to what you have to say?

I believe they are. They have been very active in seeking stakeholder input on the development of this rulemaking. I have had numerous opportunities to engage with several EPA personnel at various stakeholder meetings in Washington, D.C. In fact, EPA staff recently came to Kentucky to discuss issues specific to the Commonwealth.

What do you propose be done to minimize the economic impact to the utilities and rate payers, while achieving environmental benefits?

First, we need to acknowledge the significant reductions that have already taken place and those that will take place in the near future. Using 2005 levels of CO_2 emissions from fossil fuel generation as a baseline, Kentucky's emissions have fallen by 7 percent. As a nation, the average reduction has been about 15 percent. Those reductions have been due to other air quality rules that have initiated fuel switching (coal to natural gas) and shut down of older plants where it is not economical to retrofit them. We expect these trends to continue and could see a reduction approaching 25 percent by 2020 without ever promulgating any GHG regulations.

We have also seen significant implementation of industrial, commercial and residential energy efficiency. This will hopefully lead to a decline in demand over the next few years and subsequently a reduction in emissions. That is why we are advocating a mass emissions reduction approach using multiple options.

If the standards are too stringent for Kentucky, what will the overall economic impact likely be?

I'm not an economist but there are ongoing studies that are trying to predict these types of outcomes. Undoubtedly, there would be higher electricity prices in Kentucky, which will lead to a loss of the competitive advantage that the Commonwealth still retains at this point.

How will this play a role in the state's ability to continue as a leading manufacturing state?

Economically, Kentucky has a tremendous amount at stake here. Kentucky is a manufacturing state. Our low-cost, affordable electricity is largely responsible for the support of more than 200,000 manufacturing jobs. The reason for that low-cost energy is due to our abundant coal reserves. In 2012, greater than 92 percent of our electricity generation was from coal-fired boilers. The majority of the remaining 8 percent was from natural gas, so any rules that move us away from our most abundant fuel supply will have an impact.

When will these new rules and standards take effect?

EPA has a year to finalize each rule once it's proposed. For new power plants, the rule will likely be finalized by late 2014. The president directed EPA to propose the rule for existing power plants by June 2014 and to finalize it the following year in June 2015. EPA has a way of letting deadlines slip, but in this case I feel confident that they will hit their marks. Once EPA has finalized the rule, the states have until June 2016 to submit a plan of how they will comply with the standards.

Supreme Court agrees to review GHG regulation

Last October, the U.S. Supreme Court agreed to hear arguments challenging the scope of EPA's authority to regulate greenhouse gases (GHG) under the Clean Air Act. Industry groups and states had petitioned the Supreme Court to review a decision by the U.S. Court of Appeals for the D.C. Circuit, which upheld several of EPA's greenhouse gas rules. Six of these petitions were lumped together to be heard by the Supreme Court in 2014.

In granting the review, the Supreme Court will consider the following question: "Whether EPA permissibly determined that its regulation of GHG emissions from new motor vehicles triggered permitting requirements under Title I of the Clean Air Act for stationary sources that emit greenhouse gases."

The question refers to EPA's 2010 Light Duty Rule (also known as the Tailpipe Rule), which was the first rule ever to regulate GHG emissions in the U.S. The Light Duty Rule restricted GHG emissions from automobiles, but it also triggered GHG limits from stationary sources like power plants as well. At issue is whether EPA had the authority to use the rule to trigger permitting requirements for stationary sources of GHGs.

The last time the Supreme Court heard a case on GHGs was 2007, when it decided that EPA must regulate GHG emissions from new motor vehicles if those emissions were determined to endanger public health and welfare. The agency made that determination two years later in the "Endangerment Finding," concluding that the rising level of GHGs in the atmosphere "threatens both the public health and the public welfare of current and future generations."

Natural areas preserved

Article and photographs by Zeb Weese
Kentucky Heritage Land Conservation Fund

It has been a busy quarter for the Kentucky Heritage Land Conservation Fund (KHLCF), which provided funding to purchase nearly 5,300 acres for habitat conservation since July 2013. These properties are now protected by conservation easements or deed restrictions to ensure that they will always be managed as natural areas to benefit Kentucky's native wildlife and plants.

St. Anne Woods and Wetlands

In September, the KHLCF purchased St. Anne Woods and Wetlands, a 165-acre natural area and environmental education center along the Ohio River, from the Congregation of Divine Providence for the Campbell County Conservation District (CCCD). The property will focus on environmental education, protection of mature forest and improving wetland habitat. This site represents one of the best wetland areas along the Ohio River in northern Kentucky and supports many native species restricted to this region, including diverse amphibian populations. It provides a critical link in maintaining natural habitat in an area under increasing development pressure.

"The Campbell County Conservation District is pleased and humbled to now be the caretaker of this special place," said CCCD Coordinator Mary Katherine Dickerson. "The St. Anne Woods and Wetlands occupy a significant place in the natural history of our area. The significance of the area has been noted by such well-known scientists as E. Lucy Braun and continues to be studied today."

The Sisters of Divine Providence were stewards of this site for decades, which was part of the St. Anne Convent in Melbourne, Ky. In recent years the sisters partnered with Northern Kentucky University and others to develop an environmental education and research program. The sisters will continue their environmental education efforts on the site with land management provided by the CCCD and the added habitat protection of the KHLCF conservation easement.

"The conservation district is honored to be a part of protecting this special place for future generations. This would not be possible without the guidance, expertise and funding offered through the Kentucky Heritage Land Conservation Fund Board. We are grateful for their assistance and also want to thank those who have contributed to this project with their time, talents, letters of support, and purchase of nature license plates, which helps provide funding to preserve our land for the future," continued Dickerson.

Big Rivers Wildlife Management Area and State Forest

Farther down the Ohio River in Crittenden County more than 4,200 acres were added to the Big Rivers Wildlife Management Area and State Forest in adjacent Union County, managed by the Kentucky Department of Fish and Wildlife Resources (KDFWR) and the Kentucky Division of Forestry (KDF). This site now includes nearly 6,800 acres and will be managed for hunting, fishing, paddling, wildlife viewing, and other forms of passive recreation as well as to protect and enhance wildlife habitat. Several endangered species are known from this area, including gray bats, Indiana bats, Interior least terns and fat pocketbook mussels. While the KHLCF provided over half of the funding to make this project happen, multiple partners worked together to acquire this large site, including the Kentucky Natural Lands Trust, U.S. Forest Service Forest Legacy Program, and the U.S. Fish and Wildlife Service.

"The Kentucky Heritage Land Conservation Fund is excited to partner with the KDFWR and KDF in the protection of this large, contiguous piece of forest and field. The site will provide benefits such as public-use opportunities as well as habitat for a multitude of wildlife species," says Dr. Richard Kessler, chairman of the KHLCF Board.

Burnett Watershed and Wildlife Conservation Area

Of course, there are other rivers in the Commonwealth with outstanding habitat; the Kentucky Division of Water's Wild Rivers Program is charged with protecting the watersheds of our rivers that retain most

Continued on Page 15

Plant riparian buffers to reduce nutrient pollution

By Allison Fleck
Division of Water

The over-enrichment of waterbodies by the nutrients nitrogen and phosphorus in stormwater runoff has emerged as one of the leading causes of water quality impairment in Kentucky—and around the globe. One of the most effective ways to counter the problem is by planting and maintaining vegetative riparian zones.

The term "riparian" is not a complicated scientific word. It comes from the Latin *ripa*, meaning streambank. Riparian zones, or buffers, are areas of trees, bushes and grasses that act to intercept sediment and nutrients, as well as pesticides and other materials, in surface runoff.

Where do the nutrients in stormwater runoff come from? Everywhere, says Jim Roe, supervisor of the Nonpoint Source and Basin Team Section at the Kentucky Division of Water (DOW).

"What happens is that phosphorus and nitrogen from detergents, fertilizers, pet and livestock waste, leaking septic systems and wastewater treatment plants attach to sediment," Roe said. "When heavy rains create stormwater runoff, those sediments and nutrients are swept along downstream or downhill to waterbodies as stormwater. This is what is known as nonpoint source pollution."

When too many nutrients enter waterways through stormwater runoff, they upset the natural balance of aquatic ecosystems. They can also cause explosive algal blooms that overrun waterways, block sunlight and use up the oxygen in the water, a process called eutrophication. Some algae blooms, such as cyanobacteria, have the potential to be dangerous to humans and animals (see box below).

The University of Kentucky and the Cane Run Watershed Council used a nonpoint source pollution control grant to establish a riparian zone along Cane Run Creek at the Kentucky Horse Park. Photo by Amanda Gumbert, UK Cooperative Extension Service

This is where riparian buffers come in.

"Riparian buffers are most commonly associated with agricultural settings," said Clark Dorman, manager of the Water Quality Section of the Kentucky DOW. "In fact, they are a recommended best management practice in the Kentucky Agriculture Water Quality Plan, but they can also be effective in natural, forested, suburban and urban areas."

The most important factor controlling effectiveness of riparian buffers is hydrology: how the water moves through or over the buffer. For example, removal of contaminants from surface runoff requires that runoff water be sufficiently slowed to allow sediment to settle out. This is the job of trees, shrubs and grasses in the

Continued to Page 8

Nutrients and harmful algal blooms (HABs)

Earlier this year, the U.S. Army Corps of Engineers and DOW identified the presence of cyanobacteria in several Kentucky lakes. More commonly known as blue-green algae, it is one of the types of harmful algae that can "bloom," that is, grow exponentially under specific environmental conditions, including an overabundance in the water of the nutrients nitrogen and phosphorus. What makes these blooms harmful is that they can emit toxins that are dangerous to humans and animals.

Some, but not all, HABs can produce nerve and liver toxins, which are extremely dangerous to humans and animals. These health effects could occur when surface scums or water containing high levels of blue-green algal toxins are swallowed, when the skin is exposed to the toxins, or when airborne droplets containing toxins are inhaled.

Exposure to blue-green algae in humans may lead to skin rashes or eye irritation as well as nausea, stomach aches, tingling in fingers and toes, upper respiratory symptoms and other flu-like symptoms. These effects may develop fairly quickly following exposure to the algae. Harmful algae exposure in animals may include vomiting, diarrhea, decreased appetite, weakness, seizures and sudden death, especially in livestock.

Kentucky is now joining other states in the region—including Illinois, Indiana, Ohio, Missouri and Arkansas—that have begun addressing HABs in their state waters. DOW is working with multiple state, federal and local agencies to address HABs, reduce nutrient loading in waters of the Commonwealth and formulate a public warning system about lake conditions.

To learn more about the DOW and harmful algal blooms, visit http://water.ky.gov/waterquality/Pages/default.aspx.

Duke Energy operates in a sustainable way

Educates teachers about power generation; recycles numerous products

By Mary Jo Harrod
Division of Compliance Assistance

LEFT to RIGHT: ***The Duke Energy—East Bend Generating Station; the Teacher Immersion Program; teachers touring the plant.*** Photos courtesy of Duke Energy

Since the plant opened in the spring of 1981, Duke Energy—East Bend Generating Station has generated more than 100 million megawatt hours of power. The plant is situated on 1,800 acres on the Ohio River in the city of Union in Boone County and has 100 employees. Every hour, the plant generates a net amount of 600 megawatts of electricity.

As an environmental leader in Kentucky, this KY EXCEL member has undertaken multiple projects, including sowing wildflowers and native grasses on land near the river and recycling as many products around the plant as possible.

"Duke worked with a contractor to identify opportunities for recycling of products currently disposed of in trash containers in the administrative offices," said J.R. Wood, environmental coordinator for Duke Energy. "There are 40 bins around the office to collect paper, metal, food and beverage containers, plastic and glass, and they are emptied into one 6-yard recycling dumpster, which is picked up once a week. As far as out in the plant goes, we have had a recycling dumpster for heavy metals for many years."

Although the monthly cost for the recycling dumpster is $52, Wood expects they will break even by not tipping the multiple 30-yard landfill waste dumpsters as often, with tipping fees in excess of $200 each.

Duke employees are enthusiastic about their office recycling program and the results are even better than expected. A single-stream dumpster for recyclables was brought on-site, and employees are bringing things from home to recycle.

Two additional projects included conducting studies of mercury and particulate matter emissions through stack testing and the installation of continuous emission monitoring systems. These projects were investment-intensive, but they have improved Duke Energy's understanding of how different operating parameters affect emissions. The scrubber at the plant, which was there when operations began, has an efficiency rate of 98 or 99 percent, so nearly all of the sulfur is removed. Precipitators also remove nearly all of the particulate matter.

Duke Energy also hosted a site visit for 30 local science teachers from Boone, Kenton and Campbell counties to improve their knowledge of electric power generation, including a discussion of pollution control processes. The three-day event, called the Teacher Immersion Program, took place in Union at the generating plant and in Erlanger at the Envision Center, an interactive exhibit that demonstrates Duke Energy's integrated smart-grid vision. It features modernized power equipment, home energy management systems, solar panels and a power delivery work center with real-time monitoring capabilities.

The program helped the teachers develop lesson plans that included coal facts and also provided them with an opportunity to ask environmental questions related to power plants, since historically power plants have done little to publicize their efforts to minimize their impact on the environment.

"I'm passionate about the environment," says Wood. "The public needs to be educated about the power industry and operating in a sustainable way. We've done a lot long term to reduce the impact of the power plant on the environment."

New KY EXCEL members

Advocate

- Kentucky Association for Environmental Education—Jefferson County
- Locust Trace AgriScience Farm—Fayette County
- Closed Loop Recycling LLC—Saint Louis

Leader

- Heaven Hill Distilleries Inc.—Bardstown Facility, Nelson County (upgraded from partner level)

Plant riparian buffers to reduce nutrient pollution *Continued from Page 6*

riparian zone: they create obstructions to slow the flow of the water. Once the water is slowed, it has time to seep into the ground, where plant roots can do their job of absorbing the nutrients.

There are actually three specific zones associated with the definition of a riparian buffer, and they all have important roles to play. The following ideal zone expanses can be modified for less open areas:

• Zone 1 is identified as the area beginning at the normal waterline, or at the top of the bank, and extending up-gradient a minimum of 15 feet. Trees, plants and woody debris in this zone are the first line of defense to protect water and are best left undisturbed since they help slow down the flow of water, giving it time to infiltrate the ground. They also help stabilize stream banks from erosion, provide shade for cooling the waterway and create habitat for wildlife.

• Zone 2 is the forested area and should extend about 20 feet beyond the outer edge of Zone 1. About half of Zone 2 should be planted in trees and the remainder in shrubs and grassy plant materials to slow flow velocity and promote water infiltration. Selective tree harvesting may take place here, but woody debris should be left in place.

• Zone 3 is the grassy area furthest from the water body and should extend approximately 20 feet. This area may be mowed, preferably infrequently, to keep down encroachment of invasive species.

Amanda Gumbert, water quality specialist with the University of Kentucky Cooperative Extension Service, says fall and winter are good times to begin establishing riparian buffers.

"Ideal times to plant trees are late autumn through early winter and late winter through early spring when the ground is thawed," said Gumbert. "In Kentucky, this is generally November to December and March to April. For grasses, consider planting native warm-season types that are best planted in late spring or early summer once soil temperatures have warmed."

Gumbert said plant selection should take into account factors such as water tolerance, project goals, natural succession, plant availability and aesthetics. In all cases, however, Gumbert recommends selecting native species that are best adapted to the local climate.

For more information on riparian buffers, visit the Kentucky Division of Water website at http://water.ky.gov/nsp/Pages/default.aspx; the University of Kentucky Cooperative Extension Service website http://www2.ca.uky.edu/agc/pubs/id/id185/id185.pdf; the Natural Resources Conservation Service website http://www.nrcs.usda.gov/wps/portal/nrcs/main/ky/water/watersheds/; and and Kentucky Division of Conservation website http://conservation.ky.gov/Pages/SoilandWaterConservationCommission.aspx.

Warm and cozy in northern Kentucky *Continued from Page 3*

KHP also helps consumers with the important question of how to pay for home efficiency projects. With this year's expanded financing options for low-interest loans, energy improvement projects like those for the Currys became a reality.

"The KHP made the process so easy," continued Tammy, "and Katie took a lot of time answering all of our questions. Money is tight right now and I knew we would need a loan. The utility tax credits and manufacturer rebates combined with a low-interest rate on our home energy improvement loan made a huge difference.

"We decided to not wait any longer. As my mother would say, it sweetened the pot," said Tammy.

Homeowners have more options now with KHP to make their projects affordable, which provides a greater return on their investment.

Isaacs noted, "We offer long-term, fixed rate unsecured financing called KHP PowerPlus, and secured HUD PowerSaver financing in partnership with national energy lending partner AFC First of Allentown, PA."

As one of the country's first statewide Home Performance with ENERGY STAR programs, KHP has been nationally recognized by the Environmental Protection Agency and the U.S. Department of Energy as one of the leading residential energy-reduction programs. Last fall, the National Council of State Housing Agencies recognized KHP as an outstanding state program for its innovation and collaboration.

"The Kentucky Home Performance with ENERGY STAR program has stimulated energy efficiency in the residential home improvement market and leveraged over $12 million in home energy improvement projects," said Secretary Len Peters of the Kentucky Energy and Environment Cabinet. "By starting home energy projects today, Kentucky's families will improve the comfort of their homes, reduce utility bills and greenhouse gases, and overall, will be better prepared for the uncertainties of tomorrow."

KHP has played a crucial role in reducing residential energy consumption, as well as creating jobs and a permanent foundation for a home performance industry in Kentucky. KHP has enlisted 147 contractors, retrofitted 1,071 homes, established partnerships with more than 25 utility providers, national energy software developers, and the nation's leading energy lending agency. In addition, it has successfully developed and utilized cutting-edge energy software while being one of the nation's first programs to utilize new lending platforms.

For more information about KHP and making residential energy improvements, visit www.KYHomePerformance.org or the Kentucky Department for Energy Development and Independence at www.energy.ky.gov.

Brighter days for residents of Black Joe

By Carl B. Hays
Division of Abandoned Mine Lands

A landslide that once threatened the homes and safety of several Black Joe residents in eastern Harlan County, Ky., is now nothing more than a bad memory. The Black Joe residential community, established in 1987, has 27 private homes and 68 apartments located on a peaceful, scenic tract of bottomland that lies just north of the banks of the Cumberland River.

In May 2012, five homes on Eubank Road within the Black Joe community were impacted by a landslide that had developed on a steep hillside behind the homes. The Kentucky Division of Abandoned Mine Lands (AML) was notified of the slide by resident Albert Phillips, who reported that his home seemed to be sinking into the ground and that his foundation and interior walls and floors were cracking. Phillips was deeply concerned that his home would be destroyed by the ground movement.

AML Environmental Inspector Rodney Burch, from the London Regional Office, was immediately dispatched to the site and observed the hillside that had cracked open, heaved up and was slowly heading on a collision course for Phillips' home and four others in its path.

"The slide had caused cracks in the foundation of Phillips' home and displacement and saturation of the ground around the home. Approximately 100 to 200 people lived in this area, and the slide would have affected them in one way or another if it wasn't fixed."

Rodney Burch, Inspector
London Regional Office

"The slide had caused cracks in the foundation of Phillips' home and displacement and saturation of the ground around the home," said Burch. "Approximately 100 to 200 people lived in this area, and the slide would have affected them in one way or another if it wasn't fixed."

As additional AML investigators specializing in engineering, hydrology and geology arrived on the scene, they observed utility poles and power lines that were likely to collapse and interrupt electrical service for the entire neighborhood, trees and vegetation that groaned from the pressure and struggled in a losing battle to maintain a life-sustaining grip in the earth, and a heavy flow of drainage that seeped from the enormous mass of earthen material and flooded the crawl spaces of all five homes.

The lawns of the affected residents bore witness to the pressure being exerted by the landslide as the "toe bulge" advanced down into the city street. A portion of Station Loop Road and adjacent sidewalk was distorted and heaved upwards. An 8-inch sewer main was ruptured and raw sewage was flowing on the surface of the blacktop where local children rode their bikes and played. Clearly, this landslide posed a serious threat to

Continued on next page

OPPOSITE PAGE: ***Excavation began on the steep hillside where 97,365 cubic yards of slide material were removed to prevent further damage to the homes below.*** Photo by Ben Enzweiler, AML. **THIS PAGE (left to right):** ***post-reclamation fill area beside the Harlan County Detention Center; Yocum permit site near the Evarts High School after reclamation; excavation is complete and drainage control measures route surface and groundwater away from the homes.*** Photos by Carl B. Hays

public health and safety and needed to be addressed as soon as possible.

Ultimately, the promise of brighter days for the Black Joe community came in January 2013 when the AML determined that the landslide was eligible for program assistance. Design plans for reclamation were soon drafted and Smith Brothers Excavating of Manchester, Ky., was awarded the bid to reclaim the site of the landslide. Reclamation began the following February as AML engineers estimated approximately 90,000 cubic yards of earthen material would be removed from the slide area. However, that much slide material prompted the immediate need to search for a suitable area or areas for permanent placement of the excavated soil.

The search led the AML team to Harlan County Judge-Executive Joe Greishop, who authorized an agreement to use a swampy, low-lying tract of land beside the Harlan County Detention Center to accommodate most of the fill material from the Black Joe landslide. This presented AML with the opportunity to transform the detrimental slide material into tracts of prime building property suitable for residential or commercial development for the city of Harlan.

In addition to the Harlan County Detention Center property, AML identified an old, forfeited coal tipple in the Evarts community near the Evarts High School and the Evarts United Methodist Church that had recently operated under a Yocum Coal permit. The coal load-out facility was in need of comprehensive reclamation, but forfeited bond funds for the permit were insufficient to reclaim the site to any significant standard of excellence. A decision was made to incorporate the reclamation of the Yocum site with the Black Joe reclamation project. Supplemental financial resources were set aside to demolish and remove an unsightly concrete perimeter wall and excavate and remove a network of hazardous subsurface metal conduit pipe assemblies that were previously used to process and convey coal products into railroad cars for shipment. The Yocum permit site was then covered with 2,500 cubic yards of good soil material from the Black Joe landslide, which provides a rich soil base that will sustain permanent vegetative cover for years to come.

"The Black Joe AML High-Priority Reclamation Project represents the largest emergency project undertaken by Kentucky since taking over the Emergency Program from the federal Office of Surface Mining in 2010. The AML program has demonstrated its expertise by successfully completing this project with such outstanding results."

Bob Scott, Director
Division of Abandoned Mine Lands

In all, nearly 7,500 tandem axle truckloads of slide material were hauled away from the slide, calculating to 97,365 cubic yards or 190,000 tons.

Once the landslide excavation was complete, surface and subsurface drainage control measures were constructed and/or installed. Excavated rock ditches, trapezoidal concrete drainways, gabion channels, subdrains and native stone-lined drainways were designed and constructed. All of these measures proved to be effective tools for safely intercepting and routing surface and groundwater away from the homes that were previously impacted by the slide. For the first time in more than a year, no water has gathered in the crawlspace of any of the five homes located below the slide area and their foundations are dry and secure.

Smith Brothers Excavating worked with the Kentucky Utilities Co. to relocate the main power lines at Black Joe and secure the service poles in a solid rock foundation. At no time was electrical

Continued on Page 11

Lost treasure returned to Kentucky

By Jennifer L. Turner
Division of Forestry

A Kentucky treasure was found in Texas, of all places. Texas State Forester Thomas G. Boggus was cleaning out file cabinets and came across a folded piece of paper. The paper was made from linen, so Boggus knew it was old. When he unfolded it, he found it was the first announcement of Kentucky's new forest fire law dated 1912.

Knowing that the Kentucky Division of Forestry would want this piece of history back in its possession, Boggus sent it to Frankfort to Kentucky State Forester and Division of Forestry Director Leah W. MacSwords.

Kentucky's Forest History

By the early 1900s, Kentucky's forests had been over-harvested, cleared for agriculture, and charred by wildfires. In response to the depleting resource, the Kentucky General Assembly empowered a new Board of Agriculture, Forestry and Irrigation to act as a forestry commission for the state that included Kentucky's first State Forester John Earle Barton.

On March 19, 1912, the Kentucky General Assembly passed a law, which forbids setting fire to forests and provides penalties of fines not less than $10 and not to exceed $100. It states, "The exercise of care with small fires is the best preventive of large ones. Therefore, all persons are requested:

1. Not to drop matches or burning tobacco where there is inflammable material.
2. Not to build larger camp fires than are necessary.
3. Not to build fires in leaves, rotten wood, or other places where they are likely to spread.
4. In windy weather and in dangerous places, to dig holes or clear the ground to confine camp fires.
5. To extinguish all fires completely before leaving them, even for a short absence.
6. Not to build fires against large or hollow logs, where it is difficult to extinguish them.
7. Not to build fires to clear land without taking the greatest precaution against the spread of fire and to refrain from clearing land in this manner in windy or exceedingly dry weather."

The newly framed document hangs in MacSwords' office as a reminder that although the division has changed over the last 100 years, its initial priorities have remained the same.

"We are committed to protecting Kentucky's forests from wildfire, assisting landowners with forest stewardship, and producing tree seedlings for reforestation projects," stated MacSwords.

Leah MacSwords holds the first forest law of 1912.
Photo by Jennifer Turner

Brighter days for residents of Black Joe

Continued from Page 10

service ever compromised or lost.

The Black Joe slide area, the Harlan County Detention Center fill area, and the Yocum permit were all carefully graded according to reclamation plans. After appropriate seed bed preparation was completed, generous quantities of agricultural lime, fertilizer, seed and mulch were applied to the entire surface disturbance. Abundant new vegetative cover is springing up with the promise of new life and a new beginning.

The final steps in the journey of reclamation at Black Joe brought sweet relief when the ruptured sewer main was successfully repaired, eliminating the health hazards associated with the broken line. The side walk was replaced and the subdivision streets were repaired and paved in early November.

AML is happy to see local families and children enjoying a brighter day at Black Joe. Residents are grateful to be living without fear that a landslide will take away their homes, management at the Harlan County Detention Center appreciate their enhanced county property and many in the community appreciate the improvements made to the Yocum permit.

"The Black Joe AML High-Priority Reclamation Project represents the largest emergency project undertaken by Kentucky since taking over the Emergency Program from the federal Office of Surface Mining in 2010," said Bob Scott, director of the Division of Abandoned Mine Lands. "The AML program has demonstrated its expertise by successfully completing this project with such outstanding results. This success story is a result of the dedication of an experienced group of state workers that enjoy the challenges the AML program throws at them."

Smith Brothers Excavating and the AML inspectors marked the completion of the reclamation efforts on the Black Joe reclamation project with a collective sigh of relief and a sense of satisfaction for a job well done.

Sewer rehabilitation project

Infrastructure improvements at Livermore net savings, enhance public health

By William Averell
Division of Water

The city of Livermore in McLean County recently completed a $2 million wastewater infrastructure improvements project funded through a $1 million Clean Water State Revolving Fund low-interest loan and a $1 million Community Development Block Grant. The McLean sewer project will have both short- and long-term effects by relieving current pressure on the wastewater treatment plant while opening the possibility of extension of service into unincorporated areas of McLean County.

John Renfrow, mayor of Livermore, said the project addresses one of the biggest problems facing municipal governments, namely, the deterioration of essential infrastructure components.

A new lift station on Lawrence Street in Livermore.
Photo by the city of Livermore

"The completion of our sewer rehabilitation project has impacted the burden of infiltration and inflows at our wastewater facility by a 35 to 45 percent reduction during the initial period since completion of the project," Renfrow said.

The city had been experiencing infiltration and inflow (I&I) issues that caused overflows at manholes in the system and at the wastewater treatment plant. The project was developed to improve sewer service to Livermore's 511 customers (approximately 1,450 people) by mitigating the inflow of stormwater into the system during wet weather and relieving the extraneous burden of I&I at the Livermore wastewater treatment plant.

The peak flows at the treatment plant occur only in the wet season when the groundwater is high and rainfall abundant. During the summer/fall dry-month period (July to December), the flow averages below 0.15 millions of gallons per day (MGD). During the wetter months (January to June), the average daily flow is approximately 0.31 MGD, indicating an increase in flow of approximately 200 percent.

Normally, the rain must be more than 2 inches per day before the manholes overflow. The flow values at the treatment plant during the wet season have had some months where the average daily flow exceeded the design capacity of 0.315. Since the population of Livermore has had an overall decline between 2001 (1,460) and 2010 (1,448), the increase in flow appeared to be related to an increase in the I&I.

In 2007, Livermore contracted with GRW Engineers to conduct a sewer system evaluation survey of the city's wastewater infrastructure system, which included a comparison of alternative proposals for addressing the local I&I situation. To complete the study, GRW Engineers performed a closed-circuit television inspection of 27,700 linear feet of the existing 57,200 total feet of lines. Three alternatives were considered based on the inspection:

1. Do nothing. If no action was taken to replace or rehab the sewer lines, the city's I&I flow would begin to cause operational problems at the treatment plant. The existing sewer lines would also need rehabilitated or replaced with larger lines.
2. Expand the wastewater treatment plant.
3. Rehab or replace deteriorated sewer lines and manholes.

Alternative No. 3 was determined to be the best choice for the city and county in terms of cost and effectiveness. The decision was also made to rehab sewer lines at a cost of approximately $50 per linear foot versus replacing them at $70 per foot. Rehabilitation would also be less invasive since excavation would be limited to the locations where service lines connected to the main line.

Rehabilitation of manholes was also chosen over manhole replacement, again at significant savings. The internal inspection of the old portions of the sanitary sewer lines included inspection of the associated manholes.

When it came to the sewage pumping lift stations, however, replacement was chosen over rehabilitation due to the extent of deterioration. The Green River station was replaced at a cost of $150,000 and included variable frequency drives to allow for more consistent flows into the wastewater treatment plant. The Lawrence Street pump station was replaced at a cost of $100,000.

Mayor Renfrow said the project will have a significant impact on the area now and in the future.

"The overall impact on a reduction in manpower hours necessary to resolve customer issues has been significant in the overall savings of time in locating and resolving blockages due to the enhanced cleanout facility locations, manhole rehabilitation and geographic information system mapping of both waste water lines and fresh water systems," Renfrow said. "The rehabilitation of more than 50 percent of our existing lines should allow functionality of the existing system over the next 40 years. The reduction of flows into the facility and the replacement of our lift stations should provide a dramatic enhancement to the overall quality of life and public health of our citizens."

On a sunny day in September, Jennifer Miller and I attended the annual Kentucky Prescribed Fire Council conference that included a field trip to Raymond Athey Barrens State Nature Preserve in Logan County. Joyce Bender with the Kentucky State Nature Preserves Commission led a group tour that focused on the uses of prescribed fire for ecosystem management. But for us, employees of the Kentucky Division for Air Quality (DAQ), the real topic of interest was smoke—and how to minimize it during prescribed burns.

Land, Air and Prescribed Fire

Agencies partner to protect air quality during prescribed burns

By Kenya Stump
Division for Air Quality

Enhancing biodiversity

The Raymond Athey Barrens State Nature Preserve consists of 156 acres that support high-quality post oak/black jack oak barrens and limestone glade communities with high species diversity. Walking around the preserve, where access is granted by written permission only, it's easy to see how the land is managed by fire. Those areas that have not been treated with prescribed fire are populated with cedar, sumac and other woody plants. However, those areas where even a minimal amount of prescribed fire has been used are more open and have a richer variety of plants.

The preserve is part of a unique natural community known as the "barrens." Today, the barrens comprise only a small fragment of a fire-dependent ecosystem that used to be far more prevalent in Kentucky.

"The difference prescribed fire made on the landscape was striking," said Miller. "Areas of the preserve that had more frequent treatments of prescribed fire quickly transitioned into beautiful open grasslands. Members of the tour repeatedly pointed out the increases in biodiversity, as well as endangered plant species that might not have been present otherwise. The benefits to the ecosystem were evident."

ABOVE: ***This prescribed fire at Raymond Athey Barrens State Nature Preserve provides a healthier, more diverse ecosystem.*** Photo by Zeb Weese, Kentucky Heritage Land Conservation Fund

LEFT: ***Trained burn professionals are mindful of wind direction in order to keep dense smoke off roads.*** Photo by KSNPC

Where there's fire, there's smoke

Managing the land is one thing, but managing the smoke produced by prescribed burning is another matter, especially in an area surrounded by people. Indeed, Raymond Athey Barrens State Nature Preserve is on the edge of a rural residential area.

"Using fire in this setting requires specific operating parameters, training and effective communication carried out by professionals," said Bender.

The Logan County visit was part of the Kentucky Prescribed Fire Council's (KPFC) training program to educate agencies on the uses of prescribed fire. KPFC consists of state and federal agencies, conservation organizations, universities, contractors and private individuals who promote the safe and beneficial use of controlled burning as a land management tool.

DAQ is currently partnering with KPFC on the development of a statewide smoke management plan. When finalized, the plan will ensure that burn professionals use good smoke management techniques in order to minimize impacts to air quality, while still promoting the use of prescribed fire for ecosystem management.

Continued on Page 16

Where rubber meets the road

Asphalt project utilizes waste tires, demonstrates another end-use for crumb rubber

By George F. Gilbert
Division of Waste Management

Kentuckians generate 4.1 million scrap tires per year, or the equivalent of 5.6 million passenger tires when considering the weight of larger truck tires. We recycle 81 percent into various products such as playground mulch or tire-derived fuel, which is burned in industrial boilers or used in cement kilns. However, according to a report published by the Kentucky Division of Waste Management, 17.5 percent of waste tires are disposed in landfills. The Kentucky Transportation Cabinet (KYTC) and the Energy and Environment Cabinet (EEC) think there is a better alternative—and we drive on it every day.

The first rubber-modified asphalt project in nearly 20 years has been completed along a 2.2 mile stretch of KY 8 running from I-471 to Dayton, Ky. I-471 connects downtown Cincinnati near the Great American Ball Park with northern Kentucky. The stretch of highway runs parallel to the Ohio River, past the Newport Aquarium and its surrounding shopping district. The paving project, completed by the Kentucky Department of Highways District 6 headquartered in Covington, includes the application of crumb rubber from waste tires.

Why pursue rubber-modified asphalt?

From the standpoint of the transportation sector, the use of rubber-modified asphalt may help overcome any future shortages of polymer.

"In 2008, we suffered a shortage of polymer used in premium-grade asphalt binder," said Allen Myers, director of the Division of Materials in the Transportation Cabinet. "Because of this scarcity and other economic factors, Kentucky used unmodified binders on major highways for a time. These materials could potentially result in higher rutting susceptibility and lesser pavement durability. We want to investigate the use of rubber-modified asphalt as a possible replacement for polymers in case the situation reoccurs."

From the side of the environment, the rubberized asphalt consumes about 2,000 waste tires per lane-mile according to the California Department of Resources Recycling and Recovery. Also, the crumb rubber market represents a higher end-use. The sale price for tire-derived fuel is about $20 to 40 per ton, while crumb rubber for asphalt brings $200 to $400 per ton for the scrap tire processor. Development of the fine rubber market in Kentucky would mean more profit for the shredding companies and, consequently, would attract more scrap tires.

Continued on Page 15

ABOVE: ***Eaton Asphalt Paving applies rubber-modified asphalt in Dayton, Ky., near the Ohio River along KY 8.***
Photo by Mark Belshe, Rubber Pavement Association
BELOW: ***Which side is rubber and which is polymer?***
Photo by Brian Donnelly, Kentucky Transportation Cabinet

Where rubber meets the road

Continued from Page 14

Tony Hatton, director of the Kentucky Division of Waste Management that is co-sponsoring the project, says, "Rubber-modified asphalt, extruded rubber automotive parts, and athletic field crumb rubber infills are examples of crumb rubber markets. Kentucky will not have these better uses unless we develop the markets."

Eaton Asphalt Paving Co., the first contractor to propose the crumb rubber asphalt project to the Department of Highways, agreed to pave one lane and its parking spaces with polymer-modified asphalt as a control and the other lane with rubber-modified asphalt. Both types of asphalt binder satisfy the application specification.

"Our parent company has done several rubber-modified asphalt projects around Dayton and Toledo, Ohio. We have the know-how and ability to do similar jobs in Kentucky, which is part of our service area," said Eaton President Tony Ogle.

Brian Donnelly, District 6 materials engineer, likes what he hears.

"If the use of rubber-modified asphalt meets specifications and keeps waste tires out of landfills, I'm all for it," he said.

Eaton Asphalt Paving Co. used an additive to make the rubber-modified asphalt handle similar to regular asphalt. The ingredient decreases the stickiness and rubber smell that normally come from rubberized asphalt. The use of warm-mix also decreases the temperature and assists with the odor.

The original price tag for the KY 8 project was $651,000. The EEC is paying the additional $70,000 for the polymer and rubber-modified asphalt as well as $15,000 for long-term testing for durability of the rubber-modified asphalt as compared to the control section. The testing will be conducted by the Kentucky Transportation Center at the University of Kentucky.

So far, the pilot is considered a success.

"With the test results, contractors in other parts of the state using regional aggregate can modify their asphalt mix design and proceed with confidence in the final product," said Donnelly.

Myers agrees. "I believe that the Transportation Cabinet will be better prepared if another polymer shortage occurs."

And, most importantly, the environment will benefit as fewer tires are disposed of in Kentucky's landfills.

Check it out!

Attention all educators. The Water Watch Program with the Kentucky Division of Water has educational equipment available for loan to an individual, school or organization. Several enviroscape themes are available for checkout, including landscapes for watershed/nonpoint source, landfills, wetland and hazardous waste. Also available is a variety of display boards and the program's mascot, Ollie Otter.

Borrowing equipment is as easy as filling out the request form. Check it out at http://water.ky.gov/ww/Pages/EnvironmentalEquipment.aspx

If you have any questions about the educational equipment or the booking calendars, email JoAnn.Palmer@ky.gov or call 502-564-3410.

Natural areas preserved

Continued from Page 5

of their natural characteristics. Nearly 900 acres in Wayne and McCreary counties were recently added to the Burnett Watershed and Wildlife Conservation Area, which was created in 2011 to protect the Little South Fork of the Cumberland River. The site now protects 2,000 acres of forested bluffs along the river. Rare species here include the Rafinesque big-eared bat, palezone shiner, ashy darter and several endangered mussels. The site will be open to hiking, birding, paddling, fishing and other forms of passive recreation.

Finally, a small tract was added to the Jefferson Memorial Forest in Louisville. At more than 6,000 acres, this is the largest municipal forest in the nation, and the KHLCF has helped to purchase about 10 percent of that acreage to date.

The KHLCF is funded in part by the sale of Nature's Finest license plates. With these acquisitions, the fund has now protected and conserved more than 85,000 acres in 67 counties. For more information, visit the KHLCF website at http://heritageland.ky.gov or contact Zeb Weese at 502-573-3080.

Land, Air and Prescribed Fire *Continued from Page 13*

Smoke management

Paying attention to variables that can affect fire and smoke, as well as the direction smoke travels, is essential in smoke management. The six basic principles of smoke management are: 1) evaluating smoke dispersion conditions; 2) monitoring the effects of smoke on air quality; 3) maintaining a burn/smoke logbook; 4) communicating with the public; 5) utilizing emission reduction techniques; and 6) coordinating burn areas so they do not overlap.

A guide for burn professionals and additional information are available from the Natural Resource Conservation Service at http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046311.pdf.

For Miller and I, understanding fire and how to use it responsibly as a management tool was the first step to understanding wildfire emissions and how to reduce the risk and alleviate the impacts of those emissions.

"What impressed us about our experience at Raymond Athey Barrens State Nature Preserve was how the nature preserve staff were able to effectively use fire around a residential area and communicate to the public that this was a good thing," said Miller. "By following best burn practices, they've been able to minimize the smoke's impact on nearby houses and roadways."

To learn more about prescribed fires, visit the KPFC's website at http://www.kyfire.org/ and watch their video *"Prescribed Fire: It's Time."* To learn more about ambient air quality and Kentucky's air monitoring network, visit DAQ's website at http://air.ky.gov/Pages/default.aspx

Prescribed fire in Kentucky

As one of the most important natural agents of change, fire plays a vital role in maintaining certain ecosystems. In Kentucky and states to our west and south, prescribed fire is a management tool used by professionals to manage species composition and control invasive exotic plant infestations. Areas such as barrens and savannahs have long benefited from fire and prescribed fire is used to maintain these special ecosystems.

So why isn't all fire good? Wildfire by definition is uncontrolled, occurring outside of optimal conditions and very often threatens life and property. Wildfires are extinguished as rapidly as possible to keep damage to a minimum. Prescribed fire is different. Also known as a controlled burn, prescribed fire refers to the controlled application of fire by a team of experts under specified weather conditions for a desired result to help restore or improve the health of an ecosystem. This is accomplished by using fire to safely reduce excessive amounts of competing brush, shrubs and sometimes trees, encourage the new growth of native fire-adapted vegetation, or simply to maintain the many plant and animal species whose habitats depend on periodic fire.

Illegal open dumping is the **pits**

Continued from Page 2

systems in the world. Dumping material into caves and sinkholes directly affects groundwater quality. Water filters through the cave and dumpsite materials into a channel linked directly into water systems. This particular cave is connected to a channel that feeds into Green River.

"As I monitored the progress of this cleanup through multiple site visits, I always came away with an increased level of commitment to the project and profound respect for those actually carrying out the tedious work of removing the literally tons of garbage," said Elaine Digges, chairperson of the Hart County Solid Waste Board. "Now that we better understand the connection between our karst features and groundwater purity, I am pleased to be leaving this Hart County Gulf Pit, and therefore our groundwater, in better health."

The Division of Waste Management administers the Kentucky Pride Fund to clean up county dump sites. Funding for the program comes from a $1.75 environmental remediation fee for each ton of garbage disposed of at Kentucky municipal solid waste disposal facilities. This "tipping fee," authorized by the 2002 General Assembly under House Bill 174, is collected quarterly and placed in the Kentucky Pride Fund.

For more information regarding illegal open dumping and the Division of Waste Management's Open Dump Grant Program, visit http://waste.ky.gov/RLA/Pages/dumps.aspx.

Call for nominations for Eco-Art Contest

The Kentucky Department for Environmental Protection (DEP) is soliciting nominations for its 2013-2014 Eco-Art Contest, which provides an opportunity for Kentucky high school students to gain statewide recognition for their artwork as it relates to Kentucky's environment.

Art may be submitted in the form of drawing/painting/print, mixed media, sculpture and photographs using the contest themes of conservation, pollution prevention and environmental protection.

"For the artist, the creative process can foster understanding and connection to our natural world, and we hope that the pieces they produce can help inspire and educate others about Kentucky's environment," said R. Bruce Scott, DEP commissioner.

Nominations must be received no later than Feb. 28, 2014. Visit http://dca.ky.gov/LGGS/pages/ecoart.aspx for contest rules and a nomination form.

Seedlings come full circle

Division of Forestry employees collect seeds from original plantings

By Jennifer L. Turner
Division of Forestry

For the past seven years, Gallatin Steel has been buying seedlings from the Kentucky Division of Forestry (KDF) and recruiting Gallatin and Carroll county fourth graders to help plant them on the company's property. A guiding principle at Gallatin Steel is to contribute to activities that improve the aesthetic quality of the community and the local environment. The company purchases enough seedlings so that every fourth grader within the two counties can plant a tree on their property along the Ohio River and also take a tree home to plant in their yard.

This year, some of the fruits of those plantings are coming full circle. KDF employees are collecting seed from Gallatin Steel's vast plantings to produce more seedlings to benefit Kentucky. James Wright, KDF north central regional forester, approached Gallatin Steel about collecting seed from the plum trees that were planted that first year in 2007.

"They were delighted that they could contribute," said Wright. "We collected 40 pounds of plum seeds in October."

The seeds were removed from the fruit, cleaned and have already been planted in prepared beds at the KDF's Morgan County nursery near West Liberty. Next spring the seedlings will be offered for sale along with the other species KDF raises.

TOP LEFT to BOTTOM RIGHT: ***KDF employee Delbert Pack gathers plums from a mature tree on the Gallatin Steel property; fourth graders planted approximately 300 trees this year; a fourth grader in 2007 plants one of the original seedlings; ripe plums.*** Photos courtesy of Gallatin Steel

Gallatin Steel buys about 300 trees of mixed species each year to plant and another 300 to give to the students.

"We tell the fourth graders they are planting a forest, not just a tree," said Gallatin Steel's Environmental Coordinator Patrick Underwood. "A single tree might not survive but the forest will."

Approximately 1,900 trees have been planted so far as part of the company's annual Environmental Education Day in April.

Gallatin Steel and its employees are concerned about the world around them. They interact carefully with their environment every day, most notably as a major recycler of millions of tons of scrap metal each year. Just by doing their job, they remove 4,000 tons of scrap metal each day from Kentucky landscapes and junkyards. Providing seed for KDF to raise more seedlings is another example of their commitment to the environment.

Gallatin Steel's manufacturing facility is located on U.S. 42 in Gallatin County, less than one hour from Louisville and Cincinnati. It currently produces more than 1.4 million tons of hot band coils on an annual basis.

To learn more about the variety of seedlings available from KDF, visit their website at http://forestry.ky.gov/statenurseriesandtreeseedlings/Pages/default.aspx

Renowned Leopold Conservation Award comes to Kentucky

Oldham County landowners are inaugural winners

Sylvia and Jon Bednarski at home in Oldham County.
Photo by Sherwood Acres Farms

Kentucky Division of Conservation Director Kimberly Richardson and Jon Bednarski.
Photo by Johnna McHugh

By Johnna McHugh
Division of Conservation

Jon and Sylvia Bednarski of Sherwood Acres Farms in Oldham County were recognized in November as the inaugural winners of the Kentucky Leopold Conservation Award. They received $10,000 and a crystal depicting Aldo Leopold at the Kentucky Agricultural Council's (KAC) Agricultural Summit.

"The Kentucky Agricultural Council is so proud to have Jon and Sylvia Bednarski as the first winners of the Kentucky Leopold Conservation Award. We had 19 outstanding applicants from across the Commonwealth, which shows the deep interest in the award, as well as the long-held commitment by Kentucky farmers and landowners to conservation," said KAC Chairman Tony Brannon. "We are so honored that Sand County Foundation chose to bring the Leopold Conservation Award Program to Kentucky."

When the Bednarskis purchased their land in 2000, it was overgrazed and filled with invasive species. They worked closely with the Natural Resources Conservation Service, Kentucky Division of Forestry, Kentucky Division of Conservation, Kentucky Department of Fish and Wildlife Resources, the University of Kentucky (UK), and other groups to develop and fulfill plans to protect and preserve their resources. They removed invasive species, constructed pastures, instituted rotational and prescribed grazing, and installed fencing, stream crossings and winter feeding pads. These practices have helped their land recover from the inefficient uses of previous owners.

Jon takes every opportunity to educate himself on proper land management techniques and uses that education to promote conservation within his community. He has completed UK's master cattlemen and master grazer programs and is currently participating in the Kentucky Cattlemen's Association Leadership Program. He is serving his second term as chairman of the Oldham County Conservation District and served on the Oldham County Agricultural Development Board for several years. He was instrumental in starting the Oldham County Cattlemen's Association, and he was recognized nationally by being elected president of the U.S. Belted Galloway Breed Society. He has spoken about environmental stewardship and conservation on the local, state and national level.

Bednarski believes strongly in the power of conservation. "I believe more than ever before that what happens on my farm and other farms has a great impact on our neighbors, our community and beyond," said Jon.

The KAC recognized two other landowners as finalists for this year's award. The Halcomb family of Walnut Grove Farms in Adairville use best management conservation techniques as they grow their corn and soybean crops. Todd Clark of Clark Family Farms in Lexington has installed conservation practices for his sheep, poultry and cattle. Both finalists will be included in the selection for the Leopold Conservation Award next year.

The Sand County Foundation, a non-profit conservation group dedicated to working with private landowners to improve habitat on their land, has been presenting its Aldo Leopold Conservation Award since 2003.

The award is named for Aldo Leopold, a renown conservationist who championed sustainable and thoughtful land management in his 1949 book, "A Sand County Almanac."

Awards

Annual conference showcases award winners who care about Kentucky's environment

Each year, agencies within the Energy and Environment Cabinet recognize individuals and organizations that are making positive contributions to Kentucky's environment. During September, various awards were presented at the 2013 Governor's Conference on Energy and the Environment in Lexington.

The Department for Environmental Protection created the Environmental Excellence Awards to recognize individuals, businesses and organizations that are committed to protecting and improving Kentucky's environment. This year's award recipients included:

• **KY EXCEL Champion Award: Kentucky American Water—**The Lexington utility was the first to join KY EXCEL as a master member and has been involved in numerous environmental projects, such as environmental education, Trout in the Classroom, Reforest the Bluegrass, rain gardens, stream bank restorations, Adopt-a-Highway, recycling, stormwater mitigation and more.

Keith Cartier and Cheryl D. Norton of Kentucky American Water accept the Champion Award.

• **Community Environmental Luminary Award: Bluegrass Greensource—**This Lexington organization provides environmental outreach to 18 counties and organized 3,000 environmental presentations with approximately 80,000 students. Outreach educators mentored more than 2,500 school administrators and teachers, taking them to coal mines and solar farms to help them teach about energy. They have demonstrated testing water quality of streams; conducted waste analyses, saving a school system $50,000 in waste hauling costs; and assisted in removing 150,000 bags of trash from roads and streams.

Amy Sohner and Michael Cronk of Bluegrass Greensource accept the Community Environmental Luminary Award.

• **Resource Caretaker Award: University of Louisville—**The university created a strategic plan to focus on creative and responsible stewardship, which led to reclaiming more than 200 acres in grayfield/brownfield areas around the Belknap Campus and receiving the national Phoenix Award for brownfield reclamation. The university reduced energy consumption by $4.6 million annually, constructed or renovated six major capital projects at the LEED gold or silver levels and partnered with local food vendors and producers to utilize local food sources.

• **Environmental Pacesetter Award for an Individual/Organization: Chris Tyler—**As a member of the Kentucky Chapter of the U.S. Green Building Council, Chris Tyler of Lexington has served as the advocacy chair, Green Schools chair and board chair. During Tyler's chairmanship and leadership, the chapter was successful in establishing the first bipartisan Green Schools Caucus in Kentucky, providing the opportunity to educate legislators, school boards, PTA groups and others about the importance of green schools for children.

• **Environmental Pacesetter Award for a Small Business: Pull-A-Part—**This Louisville company transformed what was once perceived as a junkyard into a sustainable recycling business. It has made commitments to resource conservation, waste reduction and pollution prevention, working to set the standard of excellence in handling and recycling of end-of-life vehicles. Pull-A-Part utilizes proper materials' management, minimizing solid waste by removing and recycling all fluids and other potential contaminants, maximizing reuse of all possible parts and materials, and maximizing recycling of the rest of the vehicle to decrease the residue disposed of by the automobile shredder.

Steve Levetan of Pull-A-Part received the Environmental Pacesetter Award for a Small Business.

Awards

• **Environmental Pacesetter Award for a Medium to Large Business: SCA Americas—**The Bowling Green company awarded environmental education grants to schools and implemented a zero landfill program, which diverted more than 7 million pounds of waste materials from local landfills in 2012. SCA team members participated in several community events, such as county parks trash pick-up days, tree plantings and partnering with Western Kentucky University on providing more than 1,000 sustainable tailgating kits at a football game.

Janet Stephens and Michael Littlefield of SCA Americas hold their Environmental Pacesetter Award for a Medium to Large Business.

The Department for Energy Development and Independence recognizes leaders in the Kentucky energy field who have made significant contributions by promoting and utilizing energy efficiency and alternative energy sources as a way to achieve their sustainable goals and to cut costs. The department presented the following Energy Leadership Awards:

• **Governor's Office of Agricultural Policy (GOAP)—**The GOAP provides a direct link between the governor and one of the state's most important industries—Kentucky agriculture. It launched the On-Farm Efficiency program, which funded (through the American Recovery and Reinvestment Act) and supported 164 on-farm energy efficiency projects throughout the state and saved approximately $2 million in energy costs. Energy efficiency projects were implemented in the poultry industry, dairy operations, grain production and greenhouse operations.

• **Republic Conduit**—This Louisville manufacturer of electrical conduit has made waste and energy reduction projects a priority and has demonstrated its environmental leadership with more than 60 percent of the corporate capital budget dedicated to environmental projects. Company projects included improvements to the wastewater treatment system, recycling, installation of mechanical upgrades and controls, and the implementation of shut-down procedures that combined contributed to nearly a 10-percent reduction in annual electric usage. As a testimony to the company's success, Republic Conduit served as a training facility for the U.S. DOE's Advanced Manufacturing Office and the U.S. Council for Energy-Efficient Manufacturing and presented its energy management strategies at the 2013 Kentucky Association of Manufacturers Energy Conference.

Victor Grazionale (left) and Federico Battelli of Republic Conduit hold their award for Energy Leadership.

The Kentucky Heritage Land Conservation Fund Board (KHLCF) presented the Menifee County Fiscal Court an award for their management efforts at Broke Leg Falls. Although Broke Leg Falls is one of the smallest conservation easements held by the KHLCF, it is one of the most scenic. Located on U.S. 460 near the Morgan County line, the site was devastated by the same March 2012 tornado that ripped through West Liberty. While the forest below the falls will take decades to naturally recover, the falls are as beautiful as ever and thanks to Menifee County volunteers led by Lola Thomas and Judge-Executive J.D. Trimble, who secured funding to repair the hiking trails, bridges, and picnic areas, this natural treasure can still be safely visited by hikers and nature lovers.

Lola Thomas (left) and Menifee County Judge-Executive J.D. Trimble (right) flank Horace Brown, KHLCF board member, as they hold a framed photograph of a cardinal as recognition for management efforts at Broke Leg Falls.

Photographs courtesy of Creative Services

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

Seedling nurseries: growing trees for healthy and productive forests

The Shellbark hickory is also known as a kingnut hickory and is the epitome of every squirrel's fantasy—with a hickory nut that can grow to the size of a baseball.

Shellbark hickory is a bottomland hickory with a shaggy bark that tends to twist off the trunk giving it a rough, blistered look. The nuts are sweet and edible and the largest of all hickories.

Seedlings are available from early fall to early spring from the Division of Forestry's nurseries. Orders are shipped at your request for planting projects during the dormant period throughout the winter. To obtain an order form, visit http://forestry.ky.gov/statenurseriesandtreeseedlings/Pages/default.aspx or call the Division of Forestry at 1-800-866-0555.

Just the Facts: Shellbark hickory (Carya lacinosa)

- ***Growth:*** Shellbark hickory typically grows 80 to 100 feet in height with a circumference of 24 to 36 inches. The leaves are massive, up to 2 feet long and usually with seven leaflets.
- ***Range:*** Shellbark hickory prefer wet, fertile bottomland soils of rivers and creeks and soils that can remain underwater for several weeks at a time.
- ***Wildlife Uses:*** The nuts are eaten by a wide range of species, including squirrels, ducks, quail, turkeys, chipmunks, deer, foxes, raccoons and people.
- ***Tree Trivia:*** Kentucky's state/national champion is in Greenup County and measures 139 feet in height and has a circumference of 170 inches. Historically, the sap was tapped and boiled down to make syrup (similar to maple syrup), and the nuts were crushed to make "hickory milk," which was a staple in the diet of Choctaw and Chickasaw Indians.