

A black and white photograph of a winter landscape. In the foreground, there is a snow-covered bank with several bare trees. A river flows through the middle ground, and the far bank is also covered in snow and trees. The sky is overcast.

Land Air & Water

Kentucky Energy and Environment Cabinet

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A Message from Secretary Len Peters

Kentucky must act now. This is the message I want to convey regarding our energy plan for the future.

Kentucky's first-ever comprehensive plan, *Intelligent Energy Choices for Kentucky's Future*, released by Gov. Steve Beshear on Nov. 20, 2008, is a seven-point strategy for achieving energy independence, a diverse energy portfolio and reduced carbon dioxide emissions while meeting our projected 40 percent increased energy demand by 2025.

The plan has strong ties to economic development in the state. It calls for increasing research and development of energy technologies, including technologies for managing carbon dioxide emissions and developing Kentucky's biomass resources. It also calls for tripling renewable energy output and increasing the production of nonfood-based biofuel. The plan conservatively estimates that 40,000 new jobs can be created by diversifying the state's energy sector. Additionally, the plan's strategies will help to protect Kentuckians from fluctuating energy prices through a more diversified energy portfolio and through enhanced energy efficiency.

On Pages 9-10 is an article that explains how the strategies will enable us to meet our rising energy demands while curbing carbon dioxide emissions and creating new jobs. The plan sets several long-term goals, but in the short term all Kentuckians can take action. One of the most important things you can do in 2009 is to use energy more efficiently. We may have already forgotten the sting of \$4-a-gallon gasoline we felt last summer, but now is still the time to combine trips, carpool, and switch to more fuel efficient cars, and take other steps to reduce energy usage. Now is also the time to use energy more efficiently at home. Kentucky ranks third in the nation for the amount of kilowatt hours of electricity used per customer. Seal windows and doors, install a programmable thermostat and when you shop for appliances, windows and lightbulbs look for the ENERGY STAR logo.

There is much ground to gain in making Kentucky a smarter user of energy. Please visit www.energyplan.ky.gov to view the plan in its entirety and to learn about using energy more efficiently. We must act now.



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

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Features

Locally grown 1

The Division of Forestry produces native tree seedlings for public and private use at its two nurseries.

Karst studies 5

Division of Water geologist Joe Ray travels to China to help students and scientists learn about their karst environment.

Recycling e-scrap 17

State agencies team up to recycle electronics, save landfill space and earn money for the state.

NASF elects president 20

Leah W. MacSwords is first woman to serve as organization president.

Contents

A Message from Secretary Len Peters	Inside cover
Conventional plant remains cost-effective.....	2
Operation Swift Solution	3
Glaciers teach U of L professor about climatic conditions	4
Hidden infrastructure	6
New KY EXCEL members	7
The need for change.....	9-10
Water well drillers regulations amended.....	11
Go for the Green	13-14
Learn more about home energy efficiency at ENERGY STAR conference	15
Got garlic mustard?.....	18
Awards	19-20
State forest opens to the public	Back cover



1

20



5



17

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Our Cover

A winter wonderland along the banks of the Elkhorn Creek in Franklin County. Photograph by Cindy Schafer, editor of *Land, Air & Water*.

Reforestation Kentucky

The Kentucky Division of Forestry (KDF) operates two seedling nurseries and has grown and distributed native tree seedlings since 1956.

The two nurseries—John P. Rhody Nursery in western Kentucky and the Morgan County Nursery in eastern Kentucky—produce both hardwood and conifer seedlings for a variety of reforestation projects, which include establishing timber stands, improving wildlife habitat, restoring streamside buffers, reclaiming surface mines and promoting urban forestry.

Over the years, the nurseries have been a primary source for seedlings for landowners, resource agencies and communities. In fact, more than 90,000 acres of forestland in Kentucky exists today in 1-acre blocks or larger as a direct result of KDF seedlings. Additionally, more than 41,500 acres of Kentucky's land has been permitted for mine reclamation with a post-mine use of hardwood forest. With this type of demand, there is little wonder why private and public landowners have come to rely on the nurseries.

Aside from providing high-quality seedlings, one of the missions of the nurseries is to sustain Kentucky's forest

Continued to Page 16

Kentucky's state nurseries: advantages of locally-grown seedlings

By Lynn Brammer
Division of Forestry



ABOVE: Oak seedling at John P. Rhody Nursery. Photo by Diana Olszowy

RIGHT: Tree planting project at Idlewild Park in Boone County. Photo by Bluegrass District Staff

Conventional plant remains cost-effective

By Alison Simpson
Division of Water

New Adair regional water treatment plant extends service, invites growth

Overlooking Green River Lake in Taylor County, the new \$14 million Columbia-Adair County Water Commission Water Treatment Plant is supplying water to 6,700 local customers.

Situated off Highway 55, the plant's location invites new growth, according to Lenny Stone, who serves as manager of the plant, the water commission and the Adair County Water District.

"It's got industry looking at us now, because our tank is

"The highlight is being able to say we did something conventional that was cost-effective."

David Bowles
Taylor County native and plant designer

full," said Stone. "We just had a super Walmart move in and they use a lot of water. Without the new plant, there's no way we could serve them."

The county wasn't always flush with water. Not too long ago, they were buying it wherever they could find it—Columbia, Campbellsville, Russell Springs, Jamestown—but Adair's demand was exceeding supply capabilities.

This led to the creation of the Columbia-Adair County Water Commission and their



An aerial view of the Columbia-Adair County water commission water treatment plant overlooking Green River Lake in Taylor County. Photo provided by Monarch Engineering

need to find money to build a new plant.

Funding sources for the project included a \$5.42 million loan from the Drinking Water State Revolving Fund,

\$1.5 million from a state grant (through House Bill 267), \$5.48 million from the U.S. Department of Agriculture, a \$2 million Community Development Block Grant and \$500,000 from an EPA special appropriations grant.

Eighteen months later, the 5-million-gallon-per-day plant was producing water. Monarch Engineering and Taylor County native David Bowles designed the plant and administered the construction and financing. The conven-

tional design of the plant is one of its highlights, according to Bowles.

"The thing we like is the fact that it is not innovative, it is conventional," he said. "It is a multi-media filter plant just like in the past. The highlight is being able to say we did something conventional that was cost-effective."

The new plant includes a floating raw water intake structure, raw water transmission main, four flocculators, four sedimentation basins, four filters, a cleanwell, four sludge settling basins, a plant works building, instrumentation and controls, and a chemical feed building.

Public response to the plant has been extremely positive, said Bowles.

"Community cooperation has been good. Sometimes communities don't cooperate, but they did in this case. Between the city and the county,

everyone pulled together in a unified effort," he said.

This cooperative spirit is reflected in water sales. The water commission has agreed to sell water to the Adair County Water District and the city of Columbia at the same price (presently \$2.10 per thousand gallons).

The water commission is already making plans to expand its customer base, and with 13 more acres remaining of the original 20-acre tract, the plant has room to expand.

"We want to pick up as many customers as we can," said Stone. "We'll keep making it bigger as we need to."

The plant, which began its regular operation in January, cost \$14 million to construct.

"This is one of the biggest things in Adair since they built the new road to Campbellsville," said Bowles. "It was a significant step to build a plant of this magnitude."

Operation Swift Solution

Chemical agents at depot processed for destruction

By Shannon L. Powers
Division of Waste Management

Citizens of Madison County witnessed the first steps to a safer future as Operation Swift Solution started in November at the Blue Grass Chemical Activity (BGCA) located on the Blue Grass Army Depot (BGAD) in Richmond.

The operation involved destruction of the first of BGAD's chemical agents—contained in three deteriorating steel 1-ton containers that hold a corrosive mixture of the chemical agent GB (sarin), miscellaneous decontamination liquids and breakdown products.

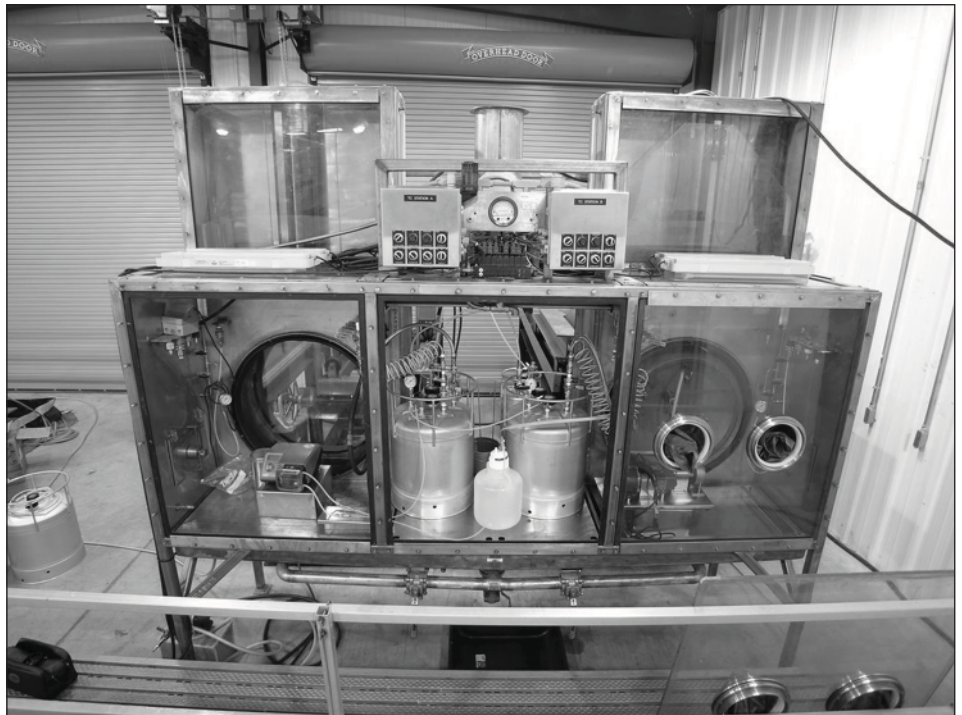
During the procedure, BGCA employees moved the 1-ton containers in an airtight, metal coffin-like structure, known as a SPORTS, from their igloo to a structure housing the sealed glove-box grouping, known as a chemical agent transfer system, or CHATS.

At that point, a trained team from the U.S. Army Edgewood Chemical and Biological Center took over the operation and placed the containers into the CHATS where a peristaltic pump pulled liquids from the containers into a metering vessel and then pumped the agents into a reactor. There the chemical agents were mixed with caustic materials with a residence time of about one hour or until the resulting mixture, also known as hydrolysate, reached 99.9999 percent destruction efficiency (about 60 parts per billion).

The hydrolysate was placed into an isotainer located in a hazardous waste storage area complete with secondary containment and other engineering controls provided by the storage container.

Operation Swift Solution, including the shipment of hydrolysate to Veolia Environmental in Texas for destruction, is expected to be complete in early 2009. Once the containers are cleaned, they will be cut in half and recycled.

The 1-ton containers had been causing



The chemical agent transfer system (CHATS) unit, a sealed glove box grouping, was used during Operation Swift Solution to drain the mixture of GB, miscellaneous decontamination liquids and breakdown products contained in the 1-ton containers stored on the Blue Grass Army Depot. Photo by Edgewood Chemical and Biological Center at Aberdeen Proving Grounds, Maryland

problems since November 2004 when a routine plug change-out of the original container went awry due to the corrosive contents eating away at its plugs and inner threads. As a precaution, depot officials transferred some of the contents into two new stainless steel containers.

On Aug. 27, 2008, workers detected a leak in the igloo that houses all the containers. It was first reported as a minor leak, but later it was determined that about a gallon of the GB mixture had dripped from its original container into a spill pan below. The leak was the largest ever detected at the depot. The newer containers are showing corrosion around their plugs, too.

While BGAD officials said the leak posed no threat to the public, they have stated that the 1-ton containers are the biggest threat on the depot.

"It's going to get worse with age," said Kevin Flamm, program manager for Assembled Chemical Weapons Alternatives, the group in charge of destroying

the chemical weapons stored at BGAD. "Acid in the 1-ton containers is going to continue to cause deterioration with the steel threads."

After months of meetings with governmental and local stakeholders, an agreement was reached to temporarily authorize the operation as part of the existing hazardous waste chemical storage permit for the whole demilitarization project. The Army submitted temporary authorization requests to the Department for Environmental Protection with the approval letter issued Nov. 3, 2008.

"With Operation Swift Solution, a positive action has been taken to address future potential threatened releases of agent from the 1-ton containers," said Tony Hatton, director of the Kentucky Division of Waste Management. "In addition, this project should help stakeholders understand that these agents can be destroyed in a safe manner if the right controls and processes are in place."



LEFT: *The glacier on Mount Kilimanjaro looking toward the Northern Icefield shows significant retreat and degradation. The steep vertical walls indicate that melting is taking place downward in the ice as well as laterally.*
BELOW: *Ice core recovery in central Greenland.* Photos by Keith Mountain

Glaciers teach U of L professor about climatic conditions

By Allison Fleck
 Division of Water

Tune into almost any science or weather channel on your local cable network and you'll hear about the melting of the polar ice caps, the effects of global warming and the increase of the Earth's temperatures. Kentucky's chief geographer is convinced that climate change is "the major environmental issue of our time."

"There is no doubt that man's activities are affecting the atmosphere and producing climate change," said Dr. Keith Mountain, associate professor and chair of geography and geosciences at the University of Louisville. "There is the potential for disastrous impacts on ecosystems, communities, species and diversity, which could involve major changes in human health and lifestyle and amplify natural disasters."

An expert in the study of glaciology and climatology, Mountain said glaciers in different parts of the world have much to teach us about local and worldwide climatic conditions.

Ice core recovered from a drill site in Alaska. The core is extracted, catalogued and stored in containers for transport. Great care is taken to avoid contamination of the ice through direct contact. Photo by Keith Mountain

Glaciers are useful geographical features to study for a variety of reasons, Mountain explained. First, they are global in extent and provide a consistent pattern of analysis. Second, glaciers respond directly to changes in climate, particularly temperature and precipitation. Third, glaciers have an annual accumulation at the summit that provides a hydrologic "tree



ring." Lastly, detailed diagnostic evidence can be retrieved by drilling ice cores from deep inside the glaciers.

Mountain has taken part in more than 25 international glaciological expeditions to recover ice cores from existing glaciers and ice sheets. This research has taken him to Antarctica, Greenland, China, Tibet,

Continued to Page 7



Kentucky and China connected by karst

By Allison Fleck
Division of Water

DOW geologist lectures at Southwest China University

Division of Water geologist Joseph Ray (retired) has conducted numerous dye tracing projects to study the behavior of karst springs and groundwater in Kentucky.

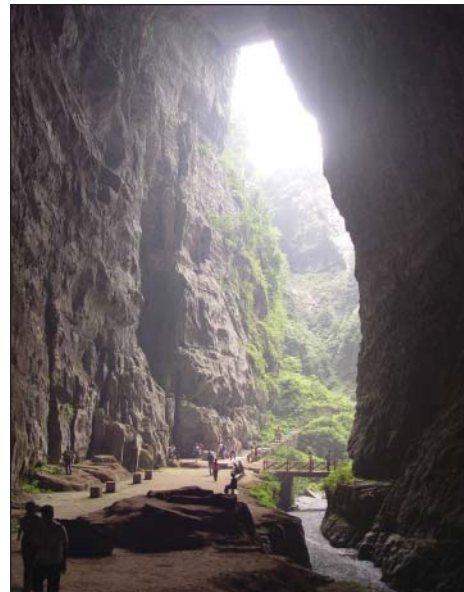
Recently, he had the opportunity to help Chinese scientists and students learn more about their own karst environments as they attempt to put the brakes on widespread water pollution problems.

Ray was one of four geologists who traveled to China in September under the auspices of the U.S. Agency for International Development and Western Kentucky University to present a karst hydrogeology workshop to students and professors at Southwest China University. The focus of the workshop was current technology in groundwater tracing and monitoring.

As China rushes to modernize, industrialize and globalize, environmental protection has lagged far behind. Deforestation, erosion and desertification have impacted local spring water supplies and polluted karst waters. Municipal water treatment is inadequate and rural sewage treatment is negligible.

Media coverage of the 2008 Beijing Summer Olympics exposed some of these pollution issues. For example, China's skies are often blanketed by a thick gray haze of smog caused by numerous coal power plants, heavy industry and a rapidly growing population of fume-spewing motor vehicles. Environmental problems are further exacerbated by a lack of governmental accountability and transparency. Rudimentary environmental laws are often ignored because of the priority for rapid development.

Ray said he was encouraged by the willingness of the government to allow



educational exchange, but that certain conditions hampered the effectiveness of the workshop. Government restrictions prohibited the Americans' access to detailed maps of karst areas. And despite the presence of translators, there were inevitable communication problems.

Following the week-long workshop, the American contingent boarded a train

TOP: View of isolated karst peaks (fenglin) along the Yulong Jiang (river) near Yangshuo, China. Photo by Joe Ray

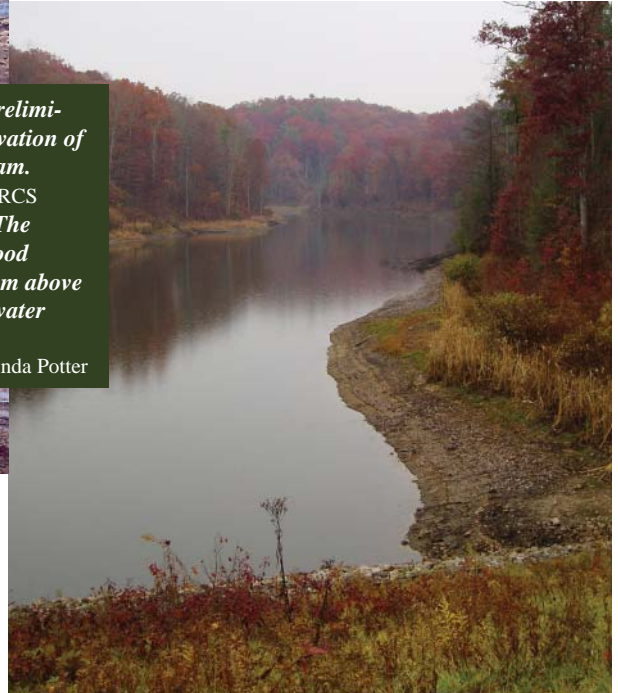
ABOVE LEFT: Groundwater tracer injection during karst workshop for Chinese students at Southwest China University, near Chongqing. Photo by Priscilla Baker

ABOVE: Entrance to Xianren Dong (cave) in Sanqiao National Park, Chongqing Province. This seven-kilometer-long cave was first mapped by British and American cavers in 2002. Photo by Joe Ray

Continued on Page 8



LEFT: Preliminary excavation of the new dam.
 Photo by NRCS
RIGHT: The current flood control dam above McKee's water supply.
 Photo by Linda Potter



Hidden infrastructure

Kentucky's watershed dams protect lives, shore up water supplies

By Ricki Gardenhire
 Office of Communications and Public Outreach

When you hear the term, 'infrastructure,' you may think of water and sewer lines, roads and bridges, and you may even think of information technology. However, infrastructure includes Kentucky's more than 200 watershed protection dams constructed under the U.S. Department of Agriculture's Small Watershed Protection and Flood Prevention Program.

For the last half century, these dams have provided flood protection, water for communities, water for livestock and recreational opportunities. Since time takes its toll on all things, these dams are in need of repair—about \$20 million worth.

Putting the rehabilitation of these dams on the hot burner is downstream real estate development that has occurred since their construction, elevating the hazard risks of the structures. Rehabilitation also is needed for the dams to meet the standards of state dam safety laws. In addition, the Division of Water is requiring emergency action plans for high-hazard dams, which is not a small expense.

The Kentucky Division of Conservation, through a partnership with the commonwealth's 121 conservation districts and 40 local watershed conservancy districts, is working to fund the repair of these dams. Watershed conservancy districts are taxing districts charged with operating and maintaining flood prevention and multi-purpose structures, or dams. The conservancy districts are managed by volunteers who are elected to four-year terms by residents of the watershed areas.

The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), instrumental in the original design and construction of these structures,

continues to provide the state and watershed conservancy districts with valuable technical expertise to ensure the continued safe operation and maintenance of these watershed impoundments. NRCS helps with the annual inspections of the structures, makes suggestions on needed maintenance or rehabilitation actions that are needed, and provides guidance on emergency action plan development and day-to-day operation of these valuable structures in Kentucky.

Conservation's strategy is two-fold: pursuing additional funding for breach analyses with federal and state legislators and meeting federal match regulations for the rehabilitation of these structures. The federal government requires a 65 percent to 35 percent local match in order to capture federal dollars.

"A huge investment has already been made in the construction of these dams," said Steve Coleman, director of the Department for Natural Resources' Division of Conservation. "Now we need to maintain these structures to ensure their intended use. As water concerns move up the priority list, these types of dams become more important. Numerous options are available for rehabilitating dams such as broadening the spillway, increasing dam height and increasing storm event storage capacity. It requires a financial commitment, and each site is unique."

Coleman says Kentucky's watershed program, the third largest in the nation, has benefitted over 2 million acres, including savings in soil erosion, sedimentation, water conservation, water quality, property damage,

Continued on Page 8

Dams facts

The following Kentucky cities depend on watershed dams for their communities' water supply and storage:

- Berea
- Caneyville
- Elizabethtown
- Hodgenville
- Hopkinsville
- Lewisburg
- McKee
- Russellville
- Tompkinsville

Glaciers teach U of L professor about climatic conditions

Continued from Page 4



Africa and South America in a quest to understand past climate variability and the rates of change.

The ice cores drilled from glaciers at depths of nearly 1,500 feet provide a wealth of climatological history, said Mountain. They can determine historic atmospheric temperatures, precipitation rates, atmospheric dust and chemistry. The evidence allows them to study conditions from tens of thousands of years ago and compare them to current conditions.

Mountain said advances in technology have made analysis of the frozen cores faster, more comprehensive and, unfortunately, more disturbing. For example, scientists have now determined that in the last 20 years, glaciers in Greenland and Alaska are retreating twice as fast as previously predicted. The retreat rate is slightly less in Antarctica, but is particularly rapid along the Antarctic Peninsula.

On the peaks of Mount Kilimanjaro in Tanzania, the 11,000-year history revealed by ice cores drilled in the year 2000 reveals the famous glaciers are “self-destructing.” Mountain and his colleagues from Ohio State University predict they will be completely gone by 2018. In Tibet, the Himalayan glaciers are in rapid retreat and lakes are drying and becoming more saline.

Mountain said rising temperatures

worldwide as well as local decreases in precipitation are contributing to the decline of the glaciers, which will have global geopolitical ramifications. For example, conflict over water will become more intensive and more widespread. Mountain said he has already seen this conflict in his native Australia, where the worst drought sequence in 10 years has triggered enormous brush fires and ignited intense conflict over water-use choices.

“When water is so limited, do you send it to the cities or to the farmers for irrigation?” he asked rhetorically.

Mountain ponders the geopolitics related to the rich oil reserves of the Arctic Ocean made possible by a 12-percent reduction in the area since 1985. Russia has already embedded a flag on the floor of the Arctic Ocean, thus staking a claim in the rich oil reserves.

He added that while Kentuckians are not suffering the water shortages of Tibet and Peru, the problem is no less real and the time for action is now.

“By the year 2050, it will be too late to develop and implement effective changes,” said Mountain. “The trick now is to develop adaptive strategies. What kind of policies are we going to develop and implement to deal with this?”

As the state geographer, Mountain will continue to emphasize the geographic

connection between transportation, climate, the environment, economics and demographics.

As a glaciologist, he will continue his race against time, working to capture historic and scientific records from the world’s glaciers before they melt away.

In Tibet, Mountain and his research team used local herdsmen and their animals to move equipment into the glacier and transport the recovered ice core. Photo by Keith Mountain

New KY EXCEL members

In every issue of *Land, Air & Water*, we list businesses, individuals, organizations and communities that have elected to become environmental leaders by joining KY EXCEL, Kentucky’s voluntary environmental leadership program.

These members have committed to a variety of projects to improve and protect Kentucky’s environment that go beyond the environmental regulations. Be an environmental leader and join KY EXCEL. Call 1-800-926-8111 for more information or visit <http://www.dca.ky.gov/kyexcel/>.

Members joining since October:

Advocate

Bluegrass Partnership for a Green Community—Lexington
Saint William Catholic Church—Louisville
Go Green Campbell County Organization—Fort Thomas
Trinity Consultants Inc.—Covington

Partner

Aisin Automotive Casting LLC—London
UPS Green Team: Flight Training/
Simulator Facility—Louisville
Grupo Antolin Kentucky—Hopkinsville
Rumpke of Kentucky Inc.—Louisville
Emerson Power Transmission, Morehead—
Morehead
Jim Beam Brands Old Grand Dad Plant—
Frankfort

Kentucky and China connected by karst

Continued from Page 5



Tianlong Natural Bridge, in Sanqiao National Park, is the largest known natural bridge in the world with a total height of 235 meters (771 feet). Photo by Joe Ray

for a 20-hour trek and six-hour boat ride near the Guilin area, which boasts some of the most spectacular karst landforms in the world. The karst topography is characterized by many sinking streams, caverns and sinkholes that form as groundwater or rainwater dissolve limestone and other carbonate rocks—just as it does in Kentucky.

Ray explained that four factors coincide in this region of southwest China to create such dramatic formations. They include the presence of hard, compact carbonate rock, strong tectonic uplift, a subtropical monsoon climate and the absence of glaciation.

Despite his lengthy experience with karst, Ray said he was unprepared for the mystical landscape presented by the towering peak “cluster” (fengcon) he viewed during the boat ride on the Li River near Guilin and the peak “forest” (fenglin) near Yangshuo.

“Surreal is the word that comes to mind when you see these huge limestone rock cones rising from the earth, one after another,” he said.

Ray was similarly astounded by the scale of the world’s largest natural bridge, Tianlong, which measures 235 meters high, 139 meters thick, 147 meters wide with a span measuring 96 meters high and 34 meters long (compare this to Natural Bridge in the Red River Gorge, which measures 20 meters high with a 24-meter-long span).

Ray’s visit to these amazing geological formations convinced him even more of the potential for international geo-tourism and the immediate need for environmental protection regulation in China. He is also aware of the sobering reality of how far the country has to go.

“China is where we were about 30 to 40 years ago when the Clean Air Act and Safe Drinking Water Act were first introduced,” he said. “Unfortunately, China is experiencing exponential growth and development and the accompanying pollution with little regulation. A trip like this reminds you of how lucky we are in the United States to enjoy the benefits of state and federal laws aimed at protecting our air and water.”

Hidden infrastructure

Continued from Page 6

rural water supplies and wetland/habitat protection, and enhancement. In addition, countless lives have been saved. Total annual watershed benefits to Kentucky exceed \$11.5 million.

Pigeon Roost Structure #3

The importance of these dams can be found in McKee, Kentucky, where a flood prevention structure is under construction. The dam will be operational in June and is expected to keep the small town in Jackson County from flooding, a problem that has reoccurred for decades. One needs only to stand at the proposed site, look into the valley behind and imagine the water rushing down to realize its necessity.

McKee Mayor Dwight Bishop says the flood prevention dam is vital to economic development.

“We are hoping the new dam eliminates flooding in our community and encourages more businesses to move into town. We don’t want business owners to use the threat of floods as an excuse not to locate here,” said Bishop. “There’s been a tremendous amount of water damage in McKee in the past. We’re looking forward to not having to deal with that any longer.”

State Rep. Marie Rader echoed the mayor’s comments and said she saw the need for flood protection during her years on the McKee city council.

“We wanted a new library, a new courthouse and economic opportunity in McKee, but we couldn’t have those things without the ability to protect our investment through flood prevention,” McKee said. “The last flood damaged homes and people moved out of the area. Flood prevention is costly but necessary.”

Soaring construction costs and dwindling budgets combine to increase the likelihood that the Pigeon Roost dam will be Kentucky’s last. Somehow, somewhere we must find funding to ensure that other communities can benefit from the safety and protection that these structures provide.

THE NEED FOR CHANGE

Kentucky's forward-thinking energy plan diversifies the energy portfolio, creates jobs

By Kate Shanks
Office of the Secretary

On Nov. 20, 2008, Gov. Steve Beshear and Energy and Environment Cabinet Secretary Len Peters unveiled Kentucky's first-ever comprehensive energy plan.

Intelligent Energy Choices for Kentucky's Future is a seven-point strategy for energy independence. The plan outlines steps that will be necessary to ensure Kentucky meets an expected 40 percent increased energy need by 2025, while increasing energy security, diversifying the energy portfolio, reducing carbon dioxide emissions and creating jobs.

"Kentucky can be a national leader in energy technology and production," said Gov. Beshear. "We can help the country move toward greater energy self-reliance. I intend to put us on such a path."

SETTING THE STANDARDS

The plan introduces two new concepts. First, it calls for the adoption of a Renewable and Efficiency Portfolio Standard. Second, it proposes that Kentucky embrace an Alternative Transportation Fuel Standard.

Renewable Portfolio Standards have been adopted by several states, but in Kentucky there is much ground to gain in energy efficiency. Therefore, the plan calls for Kentucky to adopt a Renewable and Efficiency Portfolio Standard. Kentucky has some of the lowest energy costs in the nation. While this is beneficial to consumers and an important incentive for industries to locate in the state, it has put Kentucky behind in maximizing energy efficiency. The plan calls for energy efficiency to offset future energy needs by 18 percent by 2025.

Kentucky's plan also calls for tripling renewable energy output by 2025. Currently, Kentucky generates less than 3 percent of its energy from renewable resources such as wind, solar and hydropower. While Kentucky cannot meet its base load demands using current renewable energy technologies, it is possible to increase its renewable energy output through distributed solar and wind production. Combined, increased energy efficiency and renewable energy generation will offset 25 percent of Kentucky's energy needs in 2025.

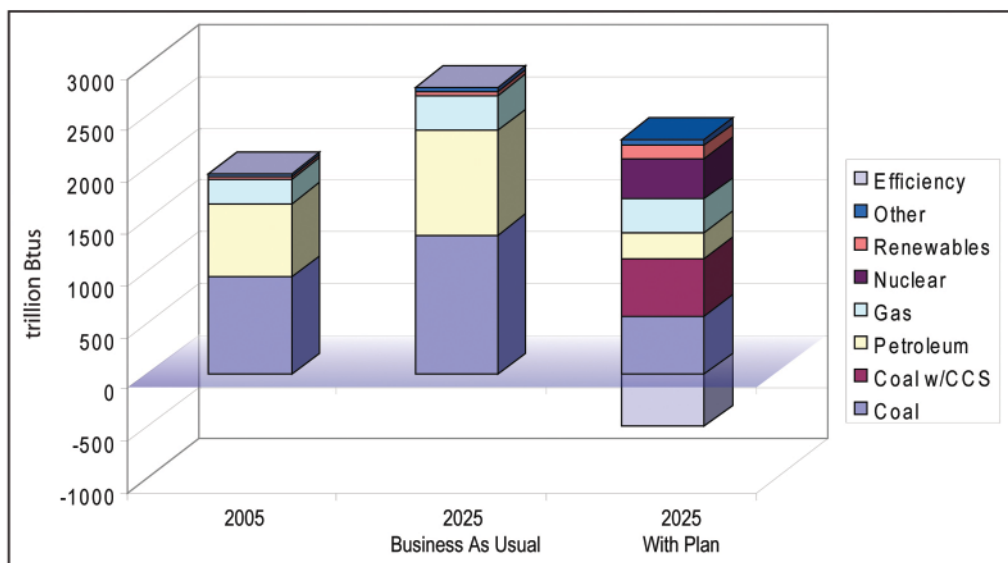
"Kentucky must remain receptive to new technologies or new uses of existing technologies in a timely manner," stated Secretary Peters.

Kentuckians use 3.5 billion gallons of fuel a year, most of which is derived from foreign oil. However, only about 80 million gallons of biofuel (ethanol and biodiesel) are produced in Kentucky, and much of this fuel is shipped overseas. Under the strategy, by 2025 Kentucky will have decreased its reliance on foreign oil by 60 percent. This will be achieved in part by an Alternative Transportation Fuel Standard. This standard incorporates the use of plug-in hybrid vehicles, biofuels, coal-to-liquids derived fuel and compressed natural gas.

In order to meet the standard, the plan calls for an increase

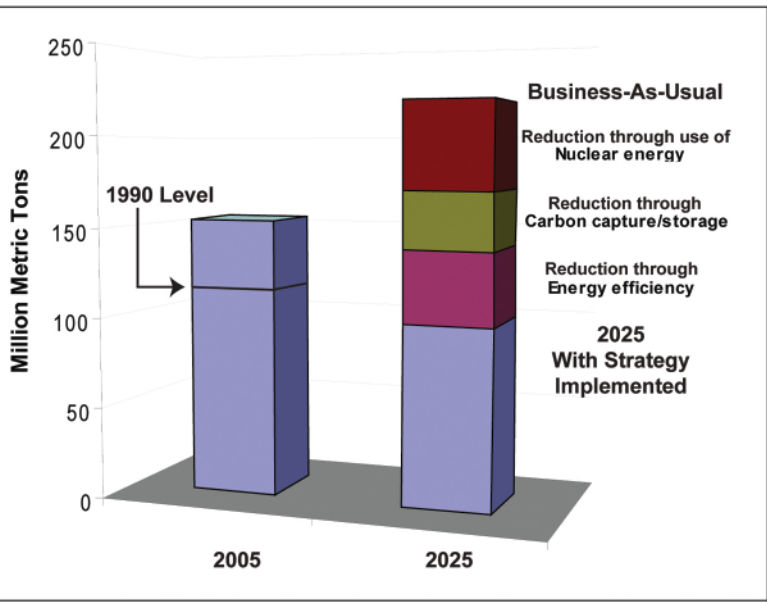
in production of biofuels so that 12 percent of motor fuel demand will be met with biofuels by 2025. The plan further places emphasis on non-food biofuel feedstock (raw material required for an industrial process). Corn is the primary feedstock for ethanol. The growing demand for corn for ethanol has substantially increased the price of corn. While this is good for corn growers, the higher price leads to increases in

This chart summarizes Kentucky's current energy demand and what can be accomplished with the energy plan based on a business-as-usual scenario and how the plan will provide a more flexible and effective energy portfolio.



"KENTUCKY CAN BE A NATIONAL LEADER IN ENERGY TECHNOLOGY AND PRODUCTION. WE CAN HELP THE COUNTRY MOVE TOWARD GREATER ENERGY SELF-RELIANCE. I INTEND TO PUT US ON SUCH A PATH."

Gov. Steven Beshear



LEFT: Just as we experience a growth in our demand for energy, greenhouse gas emissions will continue to escalate under a business-as-usual scenario. With such a high reliance on fossil fuels, projected greenhouse gas emissions will be more than 40 percent higher than they are today if we do not take action.

BELOW: This graph illustrates the current sources of carbon dioxide emission-free electricity within the U.S. (Nuclear Energy Institute, 2008)

PRODUCING SYNTHETIC NATURAL GAS

In addition to the Alternative Transportation Fuel Standard, Kentucky will meet the goal of reducing its reliance on foreign oil by augmenting in-state natural gas production with synthetic natural gas produced from coal.

In 2007, the production of natural gas contributed to nearly \$112 million in wages and salaries and \$32.6 million in severance tax revenues. But Kentucky produces less than half of what it consumes. Kentucky, like most of the country, has endured supply uncertainties and volatility in price. Further complicating the natural gas market are the coming carbon constraints in the United States.

It is expected that climate change legislation will greatly increase the demand and price for natural gas. In the short term

Continued on Page 12

cost for corn-based food. Much debate has resulted over growing crops for food versus fuel. Replacing food-based biofuels with nonfood-based biofuels will resolve this growing concern and silence the debate.

Gov. Beshear recognizes that the coal industry is an important part of Kentucky’s economy. The industry provides more than 17,000 jobs in Kentucky, which paid over \$1 billion in direct wages in 2006. This impact creates a ripple effect throughout the state’s economy. Work is already underway to build a coal-to-liquids program. The plan strengthens the existing research and development efforts by calling for the production of 4 billion gallons of coal-derived liquid fuel by 2025. This will be achieved by bringing online two 500-million gallons-per-year facilities in both 2013 and 2014, two additional 480 million gallons-per-year facilities by 2018 and two more by 2025.

Kentucky joins The Climate Registry

Kentucky has joined The Climate Registry, a nonprofit organization that seeks to develop a common method for measuring greenhouse gas emissions.

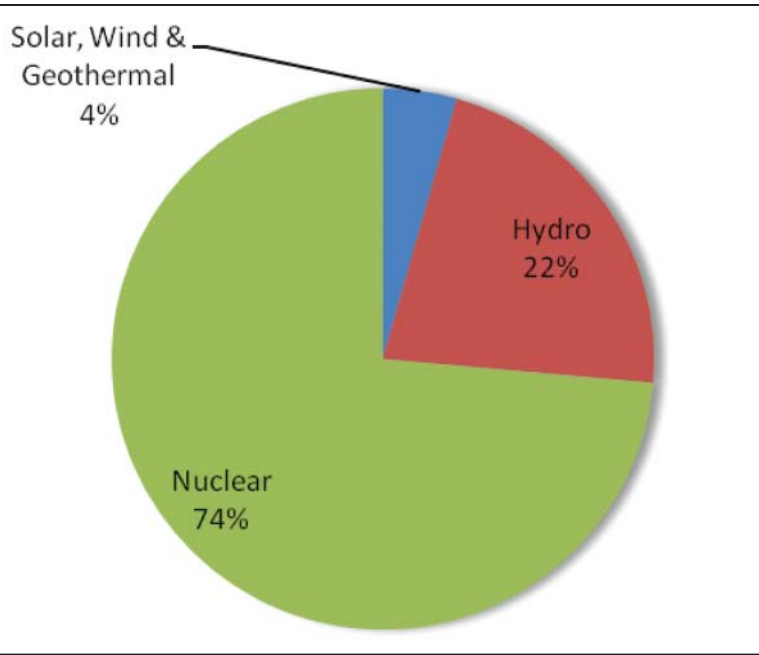
In a recent news release, Gov. Steve Beshear said, “Joining the registry will enable Kentucky to work with other states to develop an agreed-upon reporting system for greenhouse gas emissions, such as carbon dioxide. By doing so, we will ensure that we are better positioned to respond to any future carbon management rules that the federal government might issue.”

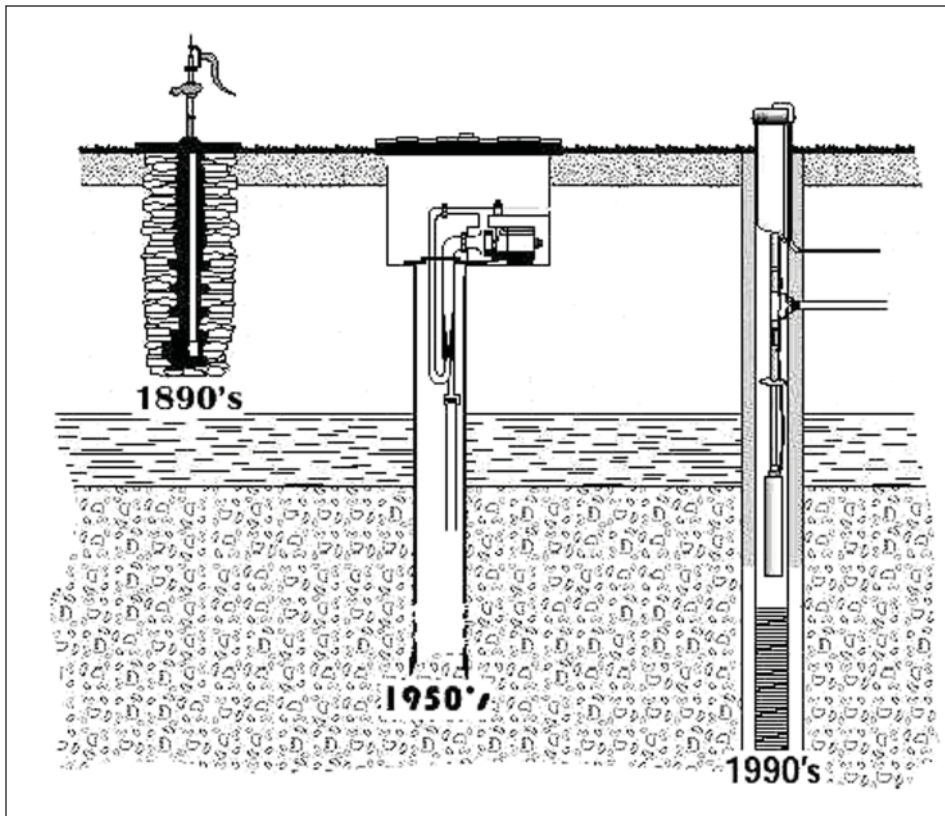
Gov. Beshear also appointed Dr. Len Peters, secretary of the Energy and Environment Cabinet, to serve as the commonwealth’s representative on the registry’s board of directors.

Kentucky’s membership in the registry complements the recently released comprehensive energy plan that aims to reduce Kentucky’s energy usage, capitalize on renewable energy sources and significantly reduce dependence on foreign fuels.

“It’s important to note that Kentucky’s power plants already are reporting their carbon dioxide emissions,” Peters said. “Kentucky’s active involvement in The Climate Registry will be useful in establishing a baseline for any future emission reductions.”

The registry is based in Los Angeles. It emphasizes voluntary actions by states to increase energy efficiency and reduce greenhouse gas emissions that are associated with global climate change. Kentucky is among 40 states that have joined the registry since its formation in March 2007.





Water well drillers regulations amended

By Allison Fleck
Division of Water

Private wells, public wells and springs provide drinking water to more than 1 million Kentuckians. Groundwater also provides a source of water to industry and agriculture.

Amendments being made to the legislative rules that regulate water and monitor well drillers will promote the protection of Kentucky's groundwater resources and public health, while providing clearer guidance to the regulated community.

The regulation package was passed by the 2008 General Assembly and became effective in October. The changes apply to water supply well construction practices and standards (401 KAR 6:310), certification of water well drillers (401 KAR 6:320) and monitoring well construction practices and standards (401 KAR 6:350).

The Division of Water (DOW) Groundwater Section worked closely with the Kentucky Water Well Certification



TOP: *The evolution of water wells depicting the simplicity of the 1890s through the 1950s and with today's use of more sophisticated technology.*

ABOVE: *An air rotary drill installing a water well in Casey County.* Division of Water photos

Board to update the regulations that had been "on the books" since 1985 and were last amended in 1991.

"The industry has seen major changes in water-drilling technology in the last 25 years," said Joe Moffitt, program coordinator for the DOW Water Well Drillers Certification Program. "Drilling is faster and deeper, and the machinery is much more sophisticated. But we in

the science community have become smarter, too, as our knowledge of geology and the behavior of water has increased. For example, we understand how contaminants dropped into a sinkhole on one property can migrate to someone else's water source."

The new regulations governing well drillers (401 KAR 6:350) establish a performance standard for new monitoring wells that requires the prevention of the migration of contaminants into the well or aquifer through the borehole or annulus.

This regulation has received overwhelming support from the drilling community because it provides clear and consistent direction regarding the construction and abandonment standards for monitoring wells—a topic that was previously limited to only one section in 401 KAR 6:310, which governs water supply wells.

401 KAR 6:310 was further amended to provide performance standards for new water supply wells. It also clarifies the minimum standards for location, construction, modification and abandonment of water supply wells. As in the case of monitoring wells, the regulation requires the prevention of the migration of contaminants into the well. Also, variances to water well construction will be granted verbally only in emergency situations.

The regulation changes also address problems associated with the accumulation of natural gas in well houses.

"Some older wells in the eastern part of the state are located inside structures, such as well houses," said Moffitt. "These wells commonly produce significant levels of natural gas, which have on occasion caused explosions in well houses. The amendments require that vents be installed for new wells in which naturally occurring methane is likely or known to occur."

Amendments to 401 KAR 6:320 cut out the "rig operator provision" that allowed driller's assistants to continue to drill in the temporary absence of the certified driller. The elimination of this provision will help ensure that water supply wells and monitoring wells are drilled in the most safe manner possible and in accordance with the law.

THE NEED FOR CHANGE

Continued from Page 10

after legislation is passed, natural gas will be the only alternative to coal-fired electricity generation. Kentucky can meet the demand by increasing its natural gas production and augmenting that with coal-to-gas production, thereby producing 100 percent of its natural gas needs by 2025. This goal assumes that five new plants are brought online by 2030. It is believed that these plants would create up to 5,500 construction jobs and 950 new jobs in plant operation and would consume about 9 million tons of coal per year.

A CARBON CONSTRAINED KENTUCKY

Kentucky's per capita consumption of energy is among the highest in the country. This is no doubt due to Kentucky's low energy costs enabled by its vast coal reserves. Historically, coal has provided more than 90 percent of the state's electricity. Coal is, and will continue to be, a strong component of Kentucky's energy portfolio. However, getting energy from coal either by converting it to liquids or gas or by burning it in power plants, emits carbon dioxide (CO₂), a greenhouse gas that studies show contributes to global warming. In 2004 Kentucky emitted over 150 million metric tons of CO₂. This put the state 13th in the nation for CO₂ emissions.

This greenhouse gas must be managed, and currently carbon capture and sequestration is a possible strategy. Carbon capture and sequestration involves separating and capturing the carbon dioxide from industrial and energy-related sources and transporting it to a storage location for either beneficial reuse or sequestration underground. The Kentucky Geological Survey believes that the capacity for as much as 28 billion tons of CO₂ could be found underground in the Devonian shales that underlay two-thirds of the state. If this is correct, there would be enough CO₂ storage for more than 100 years.

Another strategy for managing carbon dioxide is the use of algae to take up CO₂ emissions. The algae are then used to make biodiesel, thereby closing the energy



The Arizona Public Services' Redhawk power station where algae is harvested and used to produce biodiesel. Image by Raymond Hobbs, Arizona Public Service

loop. The Center for Applied Energy Research at the University of Kentucky is examining algal uptake research from MIT and the Arizona Public Services' Redhawk power station for application in Kentucky. The center is also conducting its own research to test algal growth under Kentucky's climatic conditions and with a source of CO₂ similar to what is emitted by power plants.

The federal government is expected to impose carbon dioxide restrictions soon, and by 2025 the plan calls for CO₂ management strategies to be used in 50 percent of the state's coal-based energy applications. Kentucky and its coal industry will be forced to move forward in a carbon constrained world. If Kentucky does not act swiftly to prepare for carbon constraints, low energy costs and jobs provided by the coal industry and other energy intensive industries will be in jeopardy.

DISCUSSING NUCLEAR POWER

Nuclear power, used throughout the world, currently accounts for about 20 percent of the U.S.'s base load electricity generation, but no new plants have come

online since 1996. The industry has been able to keep up with its share of the rising energy demand through efficiencies.

Energy generated by nuclear power avoids almost 700 million metric tons of CO₂ per year in the U.S. because nuclear power does not generate CO₂. Nuclear power would reduce Kentucky's CO₂ emissions, but this would come at a cost. The spent fuel rods would need to be stored onsite until a federal storage facility is established, and the possibility of an accident at any of the existing plants in the U.S. would dissuade the public's receptivity to nuclear power.

Nuclear power is on the rise in the U.S. Nine construction and operating licenses for 15 new reactors have been submitted through June 2008 to the Nuclear Regulatory Commission and six more are expected by the end of the year. Many of these licenses are for reactors in the southeast. However, none are for Kentucky. Kentucky state law prohibits the certification of nuclear reactors by the Public Service Commission unless there is a disposal site for high-level waste (HLW) or one would be in operation by the time it is needed. So long as this law exists and there is not a repository for HLW, nuclear reactors will not be certified and built in Kentucky. The energy plan calls for a discussion of whether or not nuclear power should become a significant part of meeting the state's energy needs by 2025.

Kentucky is at a crossroads. Changes at the federal level to control carbon, growing energy demand and rising energy prices create challenges, but where there are challenges there are opportunities. By implementing the plan's seven strategies, Kentucky will reduce its carbon emissions, use energy more efficiently, integrate its agricultural and energy sectors, use coal more cleanly and efficiently, achieve energy independence and diversify its electricity generation. Meeting the challenge will still allow Kentucky to maintain current coal production and provide 40,000 new jobs from a diversified energy sector.

Citizens are encouraged to review the plan in its entirety at www.energyplan.ky.gov.

Go for the Green

Annual Governor's Conference on the Environment encourages Kentuckians to live and work the 'green' way to protect the environment.

Every day, we see it in the news, in magazines, in commercials and on bill boards. 'It' is the reminder to live 'green.'

In October, the annual Governor's Conference on the Environment brought together 450 attendees to learn how to "go for the green." The concept behind the conference theme was to gather people from the public and private arenas to share and exchange ways to make Kentucky a greener place to work and live.

The two-day conference, held at the Lexington Convention Center on Oct. 6-7, provided a host of workshops ranging in topics from utilizing the outdoor classroom to storm water management issues, to promoting green living through community education and civic involvement.

Barry Tanning, director of applied research at Tetra Tech in Lexington, along with his colleagues, provided several workshop sessions on low-impact development and water resource management.

"Controlling post-construction storm water runoff through low-impact development and better site design will help us avoid the mistakes of the past and prevent the degradation of Kentucky's lakes, rivers, streams and wetlands," said Tanning. "We can have new development while conserving our natural stream channels, which helps keep the water clean and prevents flooding. All it takes is a little up-front planning, and a willingness to embrace new development designs that are simple, straightforward, and in many cases, cheaper to build than what we've done in the past."

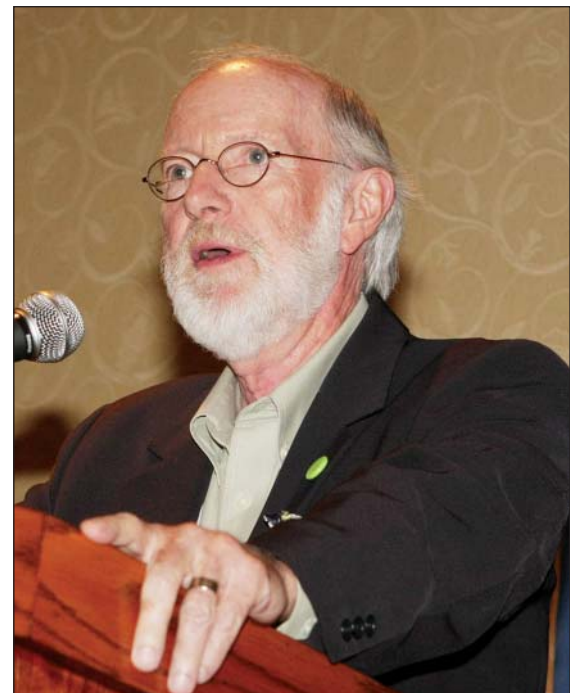
Noted environmentalist and preservationist Bob Berkebile was the



keynote speaker during the evening's Leadership Award events. Berkebile is the principle founder of BNIM Architects and founding chair of the American Institute of Architects Committee on the Environment.

Following Berkebile's presentation, Energy and Environment Cabinet (EEC) Secretary Len Peters recognized several businesses, schools and individuals who have shown environmental leadership in protecting the citizens of the commonwealth. (See *Small businesses receive awards* on Page 20.)

On day two, presenters from the Energy and Environment Cabinet, as well as other Kentucky organizations and businesses, offered discussions on Kentucky's environmental future, implementing green business practices and building green communities. Additional topics on clean air, recycling and





problems that will face our nation in the near future,” said Graham. “Our role in this work is to help interested parties identify the legal issues that must be resolved to facilitate the future of carbon storage and other kinds of alternative energy projects.”

Conference attendees also heard from first lady Jane Beshear, who is leading a “green” initiative in Kentucky. She stressed the importance of every Kentuckian taking an active role in protecting their environment.

The success of this conference was a collective effort of Kentucky’s businesses, communities and individuals. The future of every Kentuckian depends on their willingness to “go for the green.”

Mayor’s Summit

In conjunction with the Governor’s Conference on the Environment, the Environmental Quality Commission (EQC) hosted a summit for the commonwealth’s mayors.

This summit gave Kentucky’s mayors an opportunity to share with each other the concerns and priorities of their constituents, with the need to look forward to future environmental costs.

While the mayors’ priorities varied greatly—including air quality, wastewater and stormwater issues and landfills—the largest obstacle mentioned was funding. The mayors felt that the commonwealth could support their decisions by offering more grant funding, holding polluters accountable and providing better environmental guidance.

The EQC is continuing to work with the mayors to be certain that all concerns were captured. These challenges and priorities will be compiled and presented to key members of Gov. Beshear’s administration and to the commonwealth’s legislators. This compiled summary will be available upon completion on the EQC’s Web site (www.eqc.ky.gov).



reforestation efforts in Kentucky preceded talks on carbon sequestration, the legal issues of carbon storage and the direction Kentucky should take in addressing carbon storage.

Louise Graham, dean of the University of Kentucky College of Law, participated in discussions on how Kentucky can lead the way in responsible carbon management.

“Kentucky’s choice to be a leader in carbon storage should position our commonwealth to confront many of the

TOP: *The conference included an exhibition hall where businesses could showcase their environmental-related products and services.*

FAR LEFT: *Keynote speaker Bob Berkebile.*

LEFT: *EEC Secretary Len Peters*
Photos provided by Creative Services

Learn more about home energy efficiency at ENERGY STAR conference

By Lee Colten
Department for Energy Development and Independence

When you hear the words ENERGY STAR, do you think of refrigerators, televisions and other appliances? If so, you are not alone. While the ENERGY STAR brand is one of the most recognized brands in the country (surveys show it ranks along side brands such as the Good Housekeeping seal, American Heart Association and the Food and Drug Administration) some people are a little bit confused about what the brand actually represents.

ENERGY STAR is a joint program between the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us save money and protect the environment through energy-efficient products and practices.

One of the main goals of the ENERGY STAR program is to develop performance-based specifications that determine the most energy efficient products in a particular category. Products that meet these specifications earn the ENERGY STAR label. Products can range from stereos to thermostats to washing machines.

ENERGY STAR practices also include sound building techniques and procedures that enable architects, engineers, builders and owners to build and operate energy-efficient homes and buildings. Homes and buildings that achieve performance-based standards can earn the ENERGY STAR label, too.

Midwest Regional ENERGY STAR Conference

A conference, being held in March 2009, aims to clear up any confusion about ENERGY STAR by informing home builders, suppliers and owners about ENERGY STAR products and practices. Learn how ENERGY STAR can reduce costs, save energy and improve home marketability while helping the environment. The conference will provide participants the opportunity to learn from the entire spectrum of individuals involved in the housing market.

Who Should Attend?

The conference targets trade associations and industry professionals that have any role in the production or sale of homes. This includes home builders, remodelers, architects, government officials, code officials, financial and mortgage institutions, real estate agents, appraisers, equipment vendors and



2009 MIDWEST REGIONAL
ENERGY STAR CONFERENCE



March 12 - 13, 2009
The Lexington Center and The Hyatt Regency Hotel
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installers of heating, ventilation and cooling systems (HVAC), home energy raters, insulation and other energy-efficient products vendors. Even homeowners will find valuable information.

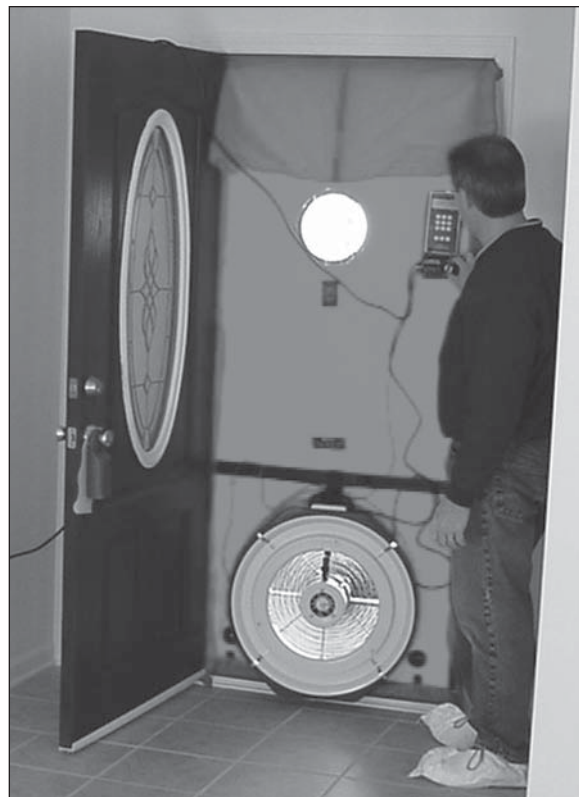
What Can You Expect?

The conference will include a trade show and educational breakout sessions. In-service credits will be made available for participating organizations. During these sessions attendees will have the opportunity to learn about energy and business issues important to the housing industry.

The sessions will address:

- **Building science and technology:** Hear about the latest building practices designed to control humidity, to enhance indoor air quality, to have the right-sized HVAC equipment and more. For example, do you know why keeping a tight seal around the house is critical to energy efficiency? Many small air leaks can add up to significant air turnover in a home, resulting in expensive utility bills, poor indoor air quality, and moisture control problems. Come learn more about how to identify and control these issues.

Continued on next page



This blower door test is used to determine a home's air infiltration rate. All ENERGY STAR homes must pass third-party testing to ensure the home is air tight and well insulated. Photo courtesy of Matt Fiscus, Ideal Homebuilders of Lexington

Reforestation Kentucky *Continued from Page 1*

resources by producing locally-grown seedlings. Seedlings that are grown locally are genetically adapted to our soil and climate. Another goal of the nurseries is to eventually derive all seeds from genetically improved sources with superior characteristics, such as fast growth rates, straight trunks and natural pruning limbs resulting in high-quality trees.

Both nurseries have full-scale production and are capable of growing 3 to 4 million seedlings annually from seeds that are gathered from appropriate sources or seed orchards. Nursery employees work year-round to keep up with each step of the process, from soil management to irrigation, fertilization, fumigation and harvesting.

Harvesting takes place after one or two years of growth and involves lifting the bare-root seedlings during the trees' dormant season. The seedlings are then packaged and distributed in quantities of 10 and 100. Over 50 different species of hardwoods, conifers, fruit producers, legumes, nut producers and seed producers are available each year; however, availability is on a first-come, first-served basis.

Nursery workers harvest pine seedlings at John P. Rhody Nursery. Division of Forestry photo



Orders should be made in the early fall as some species may not be available through the entire season. If ordering after Feb. 1, it is advisable to contact a local KDF district office to determine species availability. Shipping is offered from late fall to early spring.

Although nature will reforest most areas on its own through regeneration, the process can take many years and may result in less than desirable species coming back. Therefore, planting tree seedlings is often a more efficient and productive way to establish a forest. Planting trees can save time by allowing you to select the best species for a particular site and

by allowing the control of tree spacing for best tree growth and development. KDF's seedlings have been a reliable source for tree planting for over 50 years and will hopefully provide a source for reforestation projects for many years to come.

For more information about the state nurseries or to obtain an order form, visit the KDF Web site at <http://www.forestry.ky.gov/> or contact KDF at 1-800-866-0555.

Learn more about home energy efficiency at ENERGY STAR conference

Continued from previous page

- **Financing:** Learn about the federal and state financial incentives available for energy-efficient and "green" homes and buildings. For the first time, starting Jan. 1, 2009, a builder or homeowner can take advantage of both state and federal tax credits for certain energy-efficient home improvements or new construction. Incentives also exist for wind and solar energy applications.
- **Business opportunities and marketing:** Understand why ENERGY STAR homes sell in slow markets and learn how to capitalize on this opportunity. ENERGY STAR can also help builders better differentiate their homes in the market and capitalize on a selling point that pays for itself. ENERGY STAR homes can save a homeowner 30 to 40 percent on their utility bills, and ENERGY STAR homes are outselling other homes even in this depressed market. Learn about new approaches to the business of building and remodeling. Increased utility costs are creating business opportunities in energy audits and energy efficiency remodeling.

- **Green building opportunities:** In addition to ENERGY STAR homes, learn about the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) home and the National Home Builder's Association Green Build program for residences.

The Kentucky Home Builders Association of Lexington is hosting the conference. The lead presenting sponsor is Kentucky's Touchstone Energy Cooperatives, along with support from the Kentucky Department for Energy Development and Independence. Exhibitors and sponsorships are being solicited. See www.midwestenergyconference.com for an agenda, registration and sponsorship information.

For more information about ENERGY STAR programs for new homes and energy-efficient home improvements see www.energystar.gov. You can count on other educational and networking functions at the Midwest Regions ENERGY STAR Conference designed to encourage better information exchange and awareness within the energy-efficient home industry.



State contract gives e-scrap recycling a boost

Schools, government agencies can participate

By Eva Smith-Carroll
Division of Waste Management

In September, Gov. Steve Beshear announced that Kentucky schools, universities, state and local government agencies and other public/not-for-profit entities would be able to dispose of old computers and other electronic scrap (e-scrap) through a recycling contract secured by the state Finance and Administration Cabinet with Creative Recycling in Tampa, Fla.

The contract will result in the recycling of more than 5 million pounds of electronic scrap each year. It will also

ABOVE: E-scrap includes end-of-life telephones.

RIGHT: Thomas Heil, with the Kentucky Division of Waste Management, stands beside pallets of computer monitors that will be picked up by Creative Recycling Services and shipped to Durham, N.C. for refurbishment, sanitizing and/or shredding. Photos by Brian Bentley



Len Peters (left) and Jonathan Miller held a press conference to announce the e-scrap recycling contract and its benefits to the state. Photo by Eva Smith-Carroll

ensure the scrap is recycled in an environmentally sound manner with 5 percent or less of the remaining scrap going to landfills. It also provides for proper sanitization of any data/information remaining on hard drives and in memory.

In addition, revenue will be generated through reimbursements for most e-scrap. Currently, many communities and schools do not receive any reimbursement or pay a fee for e-scrap recycling services.

During a joint press conference, Len Peters, secretary of the Energy and Environment Cabinet, and Jonathan Miller, Finance and Administration secretary, talked about the advantages of recycling.

“Through e-cycling—recycling electronics—we can recover valuable resources. For example, cell phones contain a number of valuable metals—including gold, silver, platinum and copper—that

can be extracted and recovered. Recycling also reduces air and water pollution, as well as greenhouse gas emissions caused by manufacturing new products from raw materials,” said Peters.

In addition, proper handling is important to prevent harmful metals—like lead, mercury and cadmium—from polluting the environment.

“This is a major step forward,” said Miller. “This is green in the truest sense of the word. Not only are we reducing the amount of stuff that goes into landfills by recycling our old equipment, but we are also making money for the state by selling it to this company.”

Creative Recycling is developing a Web site for additional information on their recycling service. Their link will be posted on the Division of Waste Management site at www.waste.ky.gov

The Kentucky State Nature Preserves Commission offers new approach to control garlic mustard

By Deborah White and Byron Brooks
Kentucky State Nature Preserves
Commission

Garlic mustard (*Alliaria petiolata*), an exotic pest plant, has had a meteoric rise in Kentucky forests, especially in the Bluegrass area. A statewide group that focuses on identification and control, the Kentucky Exotic Pest Plant Council, ranks garlic mustard as one of the top 10 most severe for the state. It is overwhelming natural areas and leaving landowners with a sense of helplessness.

Hannah Helm, a Franklin County landowner, has experience with garlic mustard.

“I own 50 acres and have watched it spread quickly in the last three years as wildflowers start to disappear. A few areas are heavily infested and controlling it seems like a daunting task. So, if I can find new, more effective ways to manage it, I’m interested,” she said.

Garlic mustard gets its name from its characteristic odor of garlic when the plant is crushed and from its mustard-like appearance.

Although there are many ways of managing the population of this nasty pest, one approach is to spray herbicide on the leaves in the winter when other native plants are dormant. The appeal of this technique is that it requires a low dose of herbicide.

Guidelines for herbicide application:

- Using a sprayer (such as a garden pump type), mix a 2 percent solution of a glyphosate herbicide concentrate (such as Roundup Pro® or equivalent with 41 percent active ingredient—check the product label) in water. This is roughly 8 fluid ounces of herbicide concentrate in three gallons of water.
- When applying, be careful to avoid herbicide contact with native plants through run-off or drift. Glyphosate herbicides are not selective and will damage



Garlic mustard (Alliaria petiolata). Photo by Steven Katovich, USDA Forest Service

nontargeted plants.

- Always follow the herbicide label instructions for application.
- Consider targeting areas that have special significance (perhaps a stand of wildflowers or a place you love to walk that has special value to you).
- You may feel less overwhelmed by the need to control and eradicate this plant if you first focus on lightly infested areas rather than beginning with areas of heavy infestation.

- You will need to repeat this procedure for several years, but with persistence you should be rewarded with continued wildflower displays.

Garlic mustard is not going away. Removing it from your landscape should be incorporated into your annual home maintenance routine like cleaning gutters and trimming trees. Together, we will all battle garlic mustard, and we hope these tools better arm you for the fight.

Awards

Coal companies recognized for reclamation efforts

By Linda Potter
Department for Natural Resources

Reclamation of mined lands and the protection of our environment are of utmost importance to the residents of the coal fields and to all Kentuckians, for us as well as future generations.

At the annual meeting of the Kentucky Coal Association in Lexington on Oct. 17, 2008, awards were presented to five coal companies based on nominations from the Department for Natural Resources/Division of Mine Reclamation and Enforcement (DMRE) regional offices.

Before any coal is mined, land owners and coal producers work cooperatively to arrive at a postmining land use. They may choose forestland, commercial/industrial, pastureland, cropland, water resource, residential, recreation, or fish and wildlife habitat. Once the coal is mined, the companies must transform the land into the agreed upon use. The following recipients have been chosen for their reclamation efforts and their diligence in ensuring a productive postmining land use for 2008.

- London region—Jamieson Construction Co. near Atlanta in Laurel County reclaimed the previously mined area into rolling grasslands with numerous water features for wildlife.

- Middlesboro region—Jamieson Construction Co. also received this region's award for using a variety of reclamation techniques. American chestnut and white oak seedlings are peeking through the grassland, and wildlife are making use of the forested areas. This site is located in Bell County near Tutle and the Sam Low Branch.

- Pikeville region—LLC Kentucky



TOP: *Jamieson Construction Co. received the award for numerous water features for wildlife in the London region.*

ABOVE: *LLC Kentucky LLC was recognized for post-mining land use for wildlife habitat and hay/pastureland in the Pikeville region.*

Photos by DMRE

LLC near Piso and Billy Lowe Branch in Pike County was the recipient for postmining land use that includes fish and wildlife habitat, as well as hay or pastureland.

- Prestonsburg region—Miller Brothers Coal LLC's operation near Stillhouse and Shingle Branches in Knott County,

created pastureland for the landowner.

- Madisonville region—Patriot Coal Co. LLC's reclamation is characterized by hay bales and rolling hills near the Green River in Henderson County.

Carl Campbell, commissioner of the Department for Natural Resources, established the Excellence in Reclamation Awards in the mid-90s and soon discovered their value.

"I feel that these awards are a great incentive on many levels. Each of our five regional DMRE offices has nominated individual mine sites that they feel should be recognized for their outstanding reclamation work," said Campbell. "The honor and recognition associated with these awards in turn inspires other coal companies to improve on their reclamation skills, so a bit of friendly competition results in a win-win for all involved."

Consideration for next year's award recipients is slated to begin early in 2009 and continues into the fall.

Each group of winners raises the bar, and next year promises new ideas and techniques for creatively transforming mine sites. One such example teams the Coal Country Beeworks with the Appalachian Regional Reforestation Initiative in an experimental planting of sourwood trees in Perry County. Hives have been established on several mine sites, potentially creating an additional economic resource for the area. Bees love the sourwood, sourwoods only grow in Appalachia and the honey is fine.

Stay tuned for new developments on the reclamation front.

MacSwords named NASF president

By Lynn Brammer
Division of Forestry



The National Association of State Foresters (NASF) recently elected Leah W. MacSwords, state forester and director of the Kentucky Division of Forestry, as its new president at the association's 86th annual meeting in Hyannis, Mass. MacSwords is the first woman to serve as the president of NASF and is also the first Kentucky state forester to lead the organization.

MacSwords, a woman of many firsts, is also the first female director in the 96-year history of the Division of Forestry. She joined the Natural Resources and Environmental Protection Cabinet (now the Energy and

Environment Cabinet) in 1985 where her primary responsibilities were in the area of environmental protection. In 1997, she was appointed deputy commissioner of the Department for Natural Resources and in June 2001, she became the division director and state forester. Since that time, she has been actively involved in NASF serving on several committees and as the organization's treasurer and vice president. She also served as the chair of the Southern Group of State Foresters and is a member of the Society of American Foresters.

"NASF believes America's forests are a strategic national resource," said MacSwords. "In the coming year, we will continue to pursue actions that promote sustainable forestry, including targeted federal funding to support effective state and private forestry programs. Other ongoing goals include a fire suppression funding fix to deal with the impacts of wildland fires on federal agency budgets and forest management programs, and elevating the role of trees and forests in energy and climate change initiatives," she said.

MacSwords is originally from Wickliffe in Ballard County where she attended Ballard Memorial High School and later graduated from Murray State University. She is the daughter of Mr. and Mrs. George Williamson of Barlow, and Shirley Williamson of Frankfort. She currently resides in Frankfort with her husband, William Legg.

Small businesses receive awards

By Mary Jo Harrod
Division of Compliance Assistance

The Small Business Stationary Source Compliance Advisory Panel selected three recipients for the Air Quality Stewardship Award. The winners received their awards during the Leadership Award ceremony at the Governor's Conference on the Environment (see *Go for the Green* on Pages 13-14.)

- Gallery NuLu, of Louisville, was honored for its community leadership for the installation of a green roof and wall.
- Hausner Hard-Chrome of Kentucky, located in Owensboro, won for its emissions control efforts, which included the installation of a new scrubber system for more efficient and effective control of emissions.
- Denyo Manufacturing Corp., of Danville, was chosen for its pollution prevention efforts. The corporation instituted a testing program for a new low-curing temperature powder coat to reduce natural gas consumption, implemented an air compressor operations program to reduce electricity consumption and switched to a four-day workweek.



Dave Hausner (right), of Hausner Hard-Chrome, is recognized by Len Peters, secretary of the Energy and Environment Cabinet.

Photo by Creative Services

State forest opens to the public

Hikers, hunters and wildlife watchers have an additional 1,608 acres to wander in Metcalfe and Cumberland counties. Marrowbone State Forest and Wildlife Management Area (WMA) is now open to the public.

The Kentucky Division of Forestry and the Kentucky Department of Fish and Wildlife Resources jointly manage this new area.

Marrowbone State Forest and WMA is located west of Burkesville, off KY 90. The area has been an active stewardship forest for 30 years, and was named Kentucky Tree Farm of the Year in 2003. Marrowbone, which is Kentucky's seventh state forest, has a primary mission of education and demonstration of sound forest and wildlife management practices.

"The Division of Forestry is pleased to once again partner with the Department of Fish and Wildlife Resources. This property will show the ability to have working forests while promoting wildlife and outdoor recreation," said Leah W. MacSwords, director of the Division of Forestry.

The land was purchased in 2007 for more than \$1.3 million with funds from the Kentucky Heritage Land Conservation Fund and the Forest Legacy Program administered by the U.S. Forest Service in cooperation with its state partners.

Marrowbone State Forest and WMA is strategically located near outstanding state facilities such as the Barren River, Dale



Marrowbone State Forest and WMA provides an additional 1,608 acres for nature lovers to explore. Division of Forestry photo

Hollow and Lake Cumberland state resort parks. Marrowbone State Forest and WMA is open to the public for day use only, unless hunting regulations specify extended hours. Allowable activities include regulated hunting, hiking and wildlife viewing. ATVs and horseback riding are prohibited.

For additional information visit <http://www.forestry.ky.gov/programs/stateforest/Marrowbone+State+Forest+and+Wildlife+Management+Area.htm>.



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