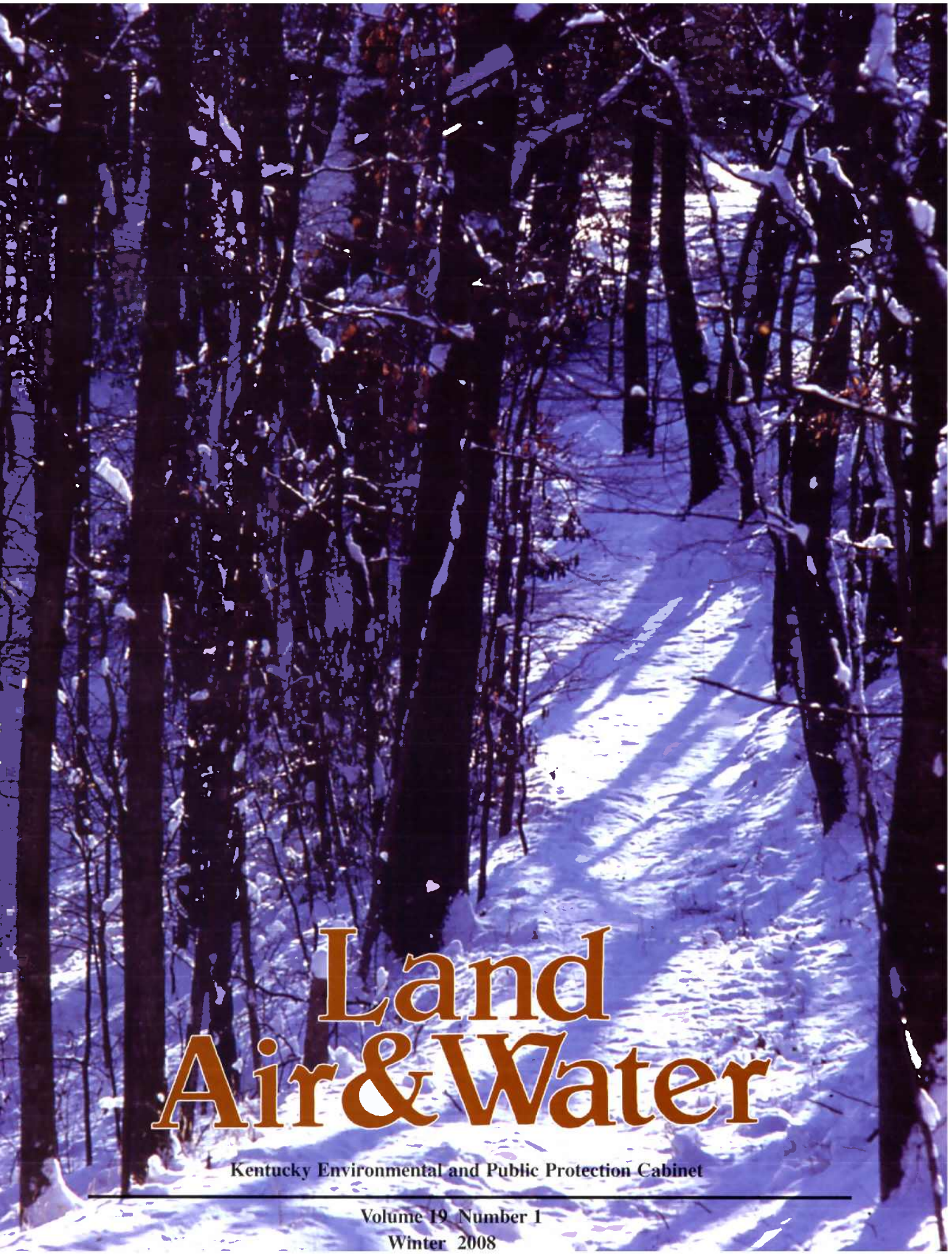

Land Air & Water

Kentucky Environmental and Public Protection Cabinet

Volume 19 Number 1
Winter 2008

Land
Air&Water

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Maysville banker tapped as cabinet secretary

By Mark York
Office of Communications and Public Outreach

Gov. Steve Beshear has appointed Robert Vance, Maysville, as secretary of the Environmental and Public Protection Cabinet (EPPC). Vance took the oath of office during a ceremony in the state Supreme Court chambers on Dec. 12.

Gov. Steve Beshear signs the executive order appointing Robert Vance as secretary of the Environmental and Public Protection Cabinet. Creative Services photo

Vance brings nearly 40 years of managerial experience and a record of civic involvement to his post as EPPC secretary.

The new secretary has served as chairman or a senior officer of banks in Maysville, Warsaw, Dawson Springs and Evansville, Indiana. He also has worked as an agricultural lender for Farm Credit Services, a trust examiner for the Controller of the Currency and a stockbroker for Bache & Co.

A native of Grant County, Vance earned business and law degrees at the University of Kentucky.

Vance has served as president of the Maysville-Mason County Chamber of Commerce, board chairman of the Kentucky Bankers Association School of Banking, vice chairman of the Maysville-Mason County Industrial Authority and president of Limestone Family YMCA. He is a past board member of the Kentucky Gateway Museum Center, the Hayswood Foundation, UK Law School Alumni and Integra Bank Corp., of Evansville.

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Pine Mountain. Photographed by Ben Begley, Pine Mountain Settlement School.

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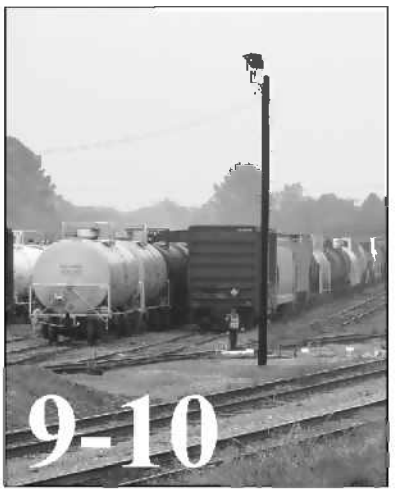

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The cutting edge

Hardinsburg's water treatment plant uses state-of-the-art reverse osmosis to supply reliable water to Breckinridge County residents.

By Allison Fleck
Division of Water

Surrounded by open fields near the banks of the Ohio River in Breckinridge County is a long, low barn-like structure flanked by a "silo." The cross buck door design enhances the building's rural charm. Small bushes strategically planted around the "barn" will eventually create green barriers to further complement the building's innocuous appearance.

Welcome to the city of Hardinsburg's new $14 million water treatment facility and distribution system, which celebrated its official opening Sept. 6 but has been in operation since June 1. Designed to blend into the countryside for aesthetic and security reasons, the agrarian structure houses the first municipally owned reverse osmosis (RO) facility in Kentucky.

Nearly eight years ago, the city of Hardinsburg took its first step toward making a commitment to its customers to build a state-of-the-art water treatment facility to provide a reliable water supply for the 19,000 residents of Breckinridge County and prepare the county for future growth.

Problems with the existing conventional rapid sand filter plant, which drew water from Tules Creek, a tributary of Rough River Reservoir, had plagued the system for years. Siltation, combined with low water levels during winter months, caused chronic clogging of the raw water intake.

The city decided in 2001 to relocate the water treatment plant to the alluvium fields along the Ohio River in the northeast part of the county to tap into the abundant local groundwater as its raw water source. Unfortunately, the groundwater contained high levels of hardness and nitrates. Despite this problem, the city persisted in its decision. They were weary of the problems associated with siltation, capacity and disinfection by-products compliance.

After studying various treatment technologies, city officials chose low-pressure reverse osmosis, which would remove in one treatment process the high levels of hardness and nitrates found in the groundwater. They worked closely with the Kentucky Division of Water (DOW) to meet permitting requirements, arrange financing and obtain expertise.

Solitha Dharman, an engineer in the DOW Drinking Water Branch who was involved in the eight-year planning, design and construction process, said the city selected the best option for its needs.

Continued on Page 8

About the plant

The $14 million plant is a 2.0 million gallons per day (MGD) treatment facility, expandable to 3.3 MGD. It provides water to 14,790 of the 19,000 residents in Breckinridge County and sells water to the city of Irvington. Plans are under way to extend service to the remaining county residents.

Construction began in January 2006 and was completed in June 2007. The plant was financed using low-interest loans through Kentucky's Drinking Water State Revolving Fund and U.S. Department of Agricultural (USDA) Rural Development programs. The city also received multiple grants from USDA Rural Development, the Governor's Office for Local Development and U.S. EPA Special Appropriations.

ABOVE: ***The Hardinsburg water treatment plant in Breckinridge County was constructed to blend in with its rural surroundings.***

RIGHT: ***Inside the facility, reverse osmosis is used to filter groundwater and remove water hardness and nitrates.***

Photos provided by O'Brien & Gere

The Drought of 2007

Cooperation, planning, advance warnings helped Kentuckians cope

By Allison Fleck
Division of Water

Barren River reached the lowest levels on record since the completion of Barren River Reservoir in 1963. Photo by Richard McGehee, Bowling Green Regional Office

The Great Flood of '37, the Super Tornadoes of '74, the Ice Storm of '03 . . . now the Drought of '07 will take its place in the weather books as a natural disaster of historic proportions in Kentucky.

It started with an unusually dry winter over most of the southeast. Then came spring, but no rain. The first signs of trouble were forest fires in Georgia and dry lake beds at Okefenokee Swamp in Florida. Soon, river and reservoir levels in Kentucky began to drop.

It would be difficult to find someone in the commonwealth who was not affected by the drought. Homeowners faced water restrictions, some businesses shut down, farmers saw their crops wither in the fields and the green grasses of summer became parched and brown. Water shortages forced some communities to seek alternate water sources. Shallow waters and high temperatures threatened fish and other aquatic life.

The state Division of Water (DOW) played an integral role in keeping the state informed, helping farmers and residents find assistance and helping local communities plan as conditions continued to deteriorate.

Bill Caldwell, DOW environmental scientist and Water Quantity Section supervisor, held weekly phone conferences with officials from other state, federal and local agencies to share information and respond to emerging conditions.

"These conversations were invaluable in bringing together experts from many fields," said Caldwell. "The problems associated with drought are interrelated and complex."

Rainfall deficits of several inches at the end of April worsened in May when Kentucky received half its usual rainfall. By early June, DOW was warning that eastern Kentucky had reached severe drought status and that the west, central and Bluegrass regions were in the moderate drought range according to the Palmer Drought Severity Index. The index uses data for rainfall, temperature and soil moisture to classify drought conditions as mild, moderate, severe or extreme.

By mid-June, reports of low water pressure, boil water advisories or no water

Continued to Page 4

Drought survival factors

Despite the length and severity of the drought, community drinking water systems coped and survived because of several positive factors:

Water supply planning—The water supply planning program legislated after the drought of 1988 required counties to assess their current and future water needs and develop alternative water supplies. One goal was to make sure that water supply sources were capable of delivering a reliable supply even during severe to extreme drought.

A second goal was to develop water shortage response plans for all water suppliers. These plans allowed local water suppliers to initiate and implement drought response actions in a timely manner with less technical assistance from DOW.

Monitoring—The DOW continuously monitors hydrologic conditions throughout the state to detect emerging drought conditions, identify the locations and severity of drought and provide timely and appropriate public notification. Municipalities continuously monitored flows and levels of local water resources.

In June, DOW focused monitoring on individual water supplies in the most drought-vulnerable areas in an effort to anticipate developing water shortage conditions. DOW stayed in close communication with these suppliers and provided technical assistance as needed.

Communication—Newspapers, television and radio stations helped inform Kentuckians of current drought conditions. DOW maintained a drought Web site and updated it weekly.

Consumer Conservation Individuals and businesses responded to the warning to conserve water. Some used buckets and barrels to catch "brown" water and air conditioning condensation to water plants. Soaker hoses were purchased to water shrubs at deeper levels. Car wash events were cancelled.

Cooperation—Many agencies shared their information and expertise. These included the National Weather Service, state climatologist, U.S. Army Corps of Engineers, the U.S. Geological Survey, Tennessee Valley Authority, Ohio River Basin Commission, Kentucky Division of Emergency Management, Kentucky State Police, Kentucky Divisions of Forestry and Conservation, Kentucky River Authority, Kentucky National Guard, U.S. Department of Agriculture, Kentucky Water Resources Research Institute and the Governor's Office.

Conference energizes participants

Energy for Kentucky's Unbridled Spirit was theme of 31st Governor's Conference on the Environment

By Natalie Jensen
Department for Environmental Protection

ENERGY KY
for Kentucky's Unbridled Future

The 31st Governor's Conference on the Environment, which was held in October at the Lexington Convention Center, provided a boost of energy for the event's 375 attendees.

The Environmental and Public Protection Cabinet's (EPPC) Department for Environmental Protection (DEP), along with assistance from the Office of the Secretary, organized the conference that focused on energy issues facing Kentucky.

Participants included business owners; educators; representatives from energy companies, associations and local, state and federal government; legislators and private citizens.

The two-day conference began with participants choosing between one of five diverse workshops. Following the workshops, former EPPC Secretary Teresa J. Hill hosted a reception and awards dinner for conference guests.

Jimmy Palmer, the southeast regional administrator for the U.S. Environmental Protection Agency, was the dinner speaker and provided information on current environmental issues. Secretary Hill also recognized Dr. Donald H. Graves, retired chair of the University of Kentucky's Department of Forestry, with the 2007 Secretary's Environmental Leadership Award.

Dr. Graves was honored for his extensive research to improve reforestation techniques on surface-mined land.

With assistance from EPPC's conference partners—the Governor's Office of Energy Policy, the Public Service Commission and the Department of Agriculture—the second day's agenda included interactive discussions on the following topics:

- Kentucky's new energy legislation
- reducing energy consumption
- becoming environmental leaders
- regulatory issues and barriers
- progressive energy initiatives

The 2007 conference was one of the best attended and plans are already underway for next year's event.

TOP: ***Former EPPC Secretary Teresa J. Hill speaks with students representing Eastern Kentucky Pride during the Secretary's Reception.***
ABOVE: ***Secretary Hill presents Dr. Donald H. Graves with the Secretary's Environmental Leadership Award.***
BELOW: ***Students from the Somerset High School NEED (National Energy Education Development) E-team teach the public about energy/environment issues.***
Creative Services photos

Boot camp on clean diesel

The program focused on diesel emission reductions through refueling, retrofitting, repairing, repowering, replacing and reducing idling (the five R's). Attendees learned about the types of diesel retrofits available and the health benefits of the "five R's."

Messer Construction, in partnership with the Association of General Contractors of Kentucky, U.S. EPA Region 4 and the Southeast Diesel Collaborative, has already retrofitted half of its fleet, with additional retrofits scheduled. This equipment is deployed throughout Kentucky for construction projects, and retrofitted equipment has already been used for a total of 2,256 hours.

The Drought of 2007 *Continued from Page 2*

service began filtering in from areas hardest hit. State officials encouraged the practice of water conservation as rainfall deficits ranged from 6 inches to 10 inches.

The Environmental and Public Protection Cabinet issued a water shortage watch for 61 counties in Kentucky. A water shortage watch is issued when drought conditions have the potential to threaten the normal availability of drinking water supply sources. A water shortage warning alerts citizens in the affected area that the availability of water has reached a critically low level and that a shortage of potable water may result.

July brought some scant relief but not enough to eliminate the hydrologic drought. A hydrologic drought can develop after a prolonged period of below-normal precipitation, causing deficiencies in water supply as measured by below-normal streamflow, lake and reservoir levels and groundwater levels.

In early August, the western Kentucky city of Bowling Green and surrounding communities were placed on a water shortage warning when flow in the Barren River reached the lowest levels on record since the completion of Barren River Reservoir in 1963. In October, the warning was extended to Harlan and Letcher counties and the Elkhorn Creek watershed in Pike County.

September and October, ordinarily the driest months of the year in Kentucky, saw stream flows well below normal for fall. As source levels dropped, some water suppliers around the state reported complaints about an unpleasant taste and odor of their produced water. The changes were attributed to supplemental treatment of algae growth induced by reduced stream flow and high temperatures.

Kentucky agriculture took a hard hit from the drought. In response to a request from Gov. Ernie Fletcher, the U.S. Department of Agriculture designated all 120 Kentucky counties in disaster status, making available emergency loans to farmers.

"The difference in production levels across the state this year is mind boggling," said Kenny Burdine, a livestock and forage economist with the University of Kentucky Extension Service. "Some areas that were blessed with timely rains are seeing pretty good yields, but there are also a lot of areas where state average yields would sound great."

As conditions deteriorated, many communities issued water alerts and mandated reduced usage. Berea, for example, banned nonessential uses of water and levied extra charges for excessive use. Laurel County mandated a 20 percent reduction in water use, levied a fee for excessive use and tacked on jail time plus termination of service for failure to comply.

While beneficial rainfall in late October provided welcome relief to the drought conditions, Kentucky is not yet out of the woods. As of mid-November deficits in the headwaters of the Kentucky, Licking, Cumberland and Big Sandy river basins still ranged from 12 to 18 inches for the year.

"We need to look at drought as a continuum rather than as a discreet event," said Caldwell. "Low precipitation and lack of snowfall last year reduced the amount of water in storage. If Kentucky experiences the same conditions again this year, we may be looking at another drought with profound impacts on water supplies, agriculture and Kentucky's overall economy."

Landfill remediation protects groundwater, surface water

Environmental and Public Protection Cabinet (EPPC) staff attended an event to mark completion of $3.7 million in environmental remediation work to reclaim the old Perry County Landfill. Funding was from the Kentucky Pride Fund administered by the cabinet. The Perry County project is among several being conducted under EPPC oversight at old, closed landfills. (Left to right) Arthur Walker III, The Walker Co., Mount Sterling; Denny Noble, county judge/ executive for Perry County; J.C. Jenkins, Foppe Technical Group Inc., Cincinnati; Danny Anderson and Ron Gruzesky, EPPC's Division of Waste Management. Division of Waste Management photo

Greening schools across Kentucky

By Kate Shanks
Office of the Secretary

It seems that these days everything is becoming greener, and it is fitting that our schools—the very buildings where we prepare our future leaders—would become green too. Fortunately, Kentucky's new Green and Healthy Schools program will guide students, teachers and administrators through a standards-based process of becoming greener. The Green and Healthy Schools program was launched in the summer of 2007, and within six weeks more than 20 schools had signed on for the program.

"We expected a lot of interest in the program, but we were still pleasantly surprised by the number of participants early on," said Jane Eller, executive director of the Kentucky Environmental Education Council (KEEC).

For more information

To find out more about Kentucky green and healthy schools, go to **www.greenschools.ky.gov** or call 800-882-5271.

The KEEC coordinated the development of the program, with the help of many professionals throughout Kentucky.

In existing schools, students, teachers and administrators conduct inventories on eight different areas—energy, solid waste, water, green space, transportation, indoor air quality, health and safety, and hazardous chemicals. Teachers also complete an inventory on instructional leadership. Once the inventories are complete, schools conduct improvement projects.

"Our students use the city's Rosie system to recycle 75 percent of our paper, plastic and metal waste, and they have installed a composter to recycle our cafeteria food waste," said Janet Sams, parent volunteer at Christ the King School in Lexington.

In an effort to strengthen students' technology skills and reduce paper, the entire Green and Healthy Schools program is administered online. Students answer inventory questions online, and teachers have access to resources, improvement project ideas and references to Core Content for Assessment standards that are addressed by the program.

"It was important to create a program that is educational. Teachers need to see how the activities address the standards while teaching critical thinking skills. Something extra in a classroom would not fly," stated Eller.

Scott Pile, seventh-grade science and environmental science teacher at Calloway County Middle School, agrees.

"The students are challenged to look at their school critically, analyzing the building, students and faculty for strengths and weaknesses in environmental efficiency. It's refreshing as a teacher to see students so excited to use critical thinking skills while improving our school for future generations."

The program isn't just for existing schools. Building high-performance green schools is a concept that is catching on in Kentucky. Two green schools in Kenton County—Twenhofel Middle and Caywood Elementary—are green inside and out. Both schools use day lighting and geothermal systems to reduce the buildings' energy demands. Caywood is an Energy Star school. At Twenhofel, water is siphoned off the roof and collected in a cistern to water the football field and flush toilets and urinals. The building's energy and water use can be tracked online by students in other schools.

The Green and Healthy Schools program also provides standards and guidelines for architects and builders to use when building new schools.

Greener buildings are not only better for the environment but they are healthier, more effective learning environments as well. Research cited by the LEED (Leadership in Energy and Environmental Design) in Schools Web site has linked aspects of green school environments such as day lighting and better indoor air quality to increased learning in math and reading, increased teacher retention and satisfaction, and reduced student absenteeism. Perhaps the greatest impact the program will have will be on the students.

"The program has taught me how to conserve our resources presently and for the future. I even took my learning out of the school and set up a recycling program in my local church," said Jacob Reynolds, an eighth-grade student at Calloway County Middle School. "The students in my school now realize we can all help the environment and that one or two people can really make a difference."

Baffles in the ceiling direct ample sunlight into the classroom to reduce the need for overhead lighting. Photo by Tim Thornberry, Education Cabinet

KY EXCEL members produce amazing results

By Mary Jo Harrod
Division of Compliance Assistance

Whether it is educating the public about wildlife, growing food to use in the cafeteria of a manufacturing plant or recycling paper, every individual, organization or business can make a positive difference in the environment. KY EXCEL members are proving it over and over again.

KY EXCEL is Kentucky's voluntary environmental leadership program created in 2006, to improve and protect Kentucky's environment in ways above and beyond what is required by law. There are four levels of membership—master, leader, partner and advocate.

Altuglas International, a division of Arkema, originally joined the program in 2006 at the partner level and set its goal to earn the ISO14001 certification. When the company presented its results to KY EXCEL in 2007, it had received its ISO14001 certification, which is achieved by establishing environmental management standards that help minimize how their operations adversely affect air, water or land; complying with applicable laws, regulations and other environmentally oriented requirements; and continually improving on these. Since then, Altuglas has upgraded its KY EXCEL membership to the master level, the highest level in the program, by volunteering to perform more projects.

"In a world where being 'green' seems to be the fashionable fad, KY EXCEL is more than another program following the crowd. It's a program that is the trendsetter," says Cheryl Farr, the environmental manager for Altuglas. "It's a program that sets the standards by being one of the first to provide tangible results and a positive impact on the environment. It is a program that continuously raises the bar for others to follow. Arkema is honored and proud to be a part of the KY EXCEL program."

Southwestern High School Conservation Club and Raptor Center, an advocate member, completed 21 educational presentations, more than the seven they originally committed to perform for KY EXCEL, to enlighten Kentucky students and adults about the importance of birds of prey and their role in the natural environment. This club, from Somerset in Pulaski County, included approximately 40 students, 25 parents and three to five teachers involved in the project.

In northern Kentucky, the Cincinnati-based Delta Air Lines Inc.–CVG Station joined the program as a leader member. As the first of three projects, Delta employees participated in a three-day community service project that turned Redwood's (a rehabilitation center in Fort Mitchell) raggedy flowerbeds into beautifully landscaped mini gardens.

Delta's second project was to efficiently apply de-icing/anti-icing fluid to its planes to maintain compliance with the federal air regulations, while simultaneously

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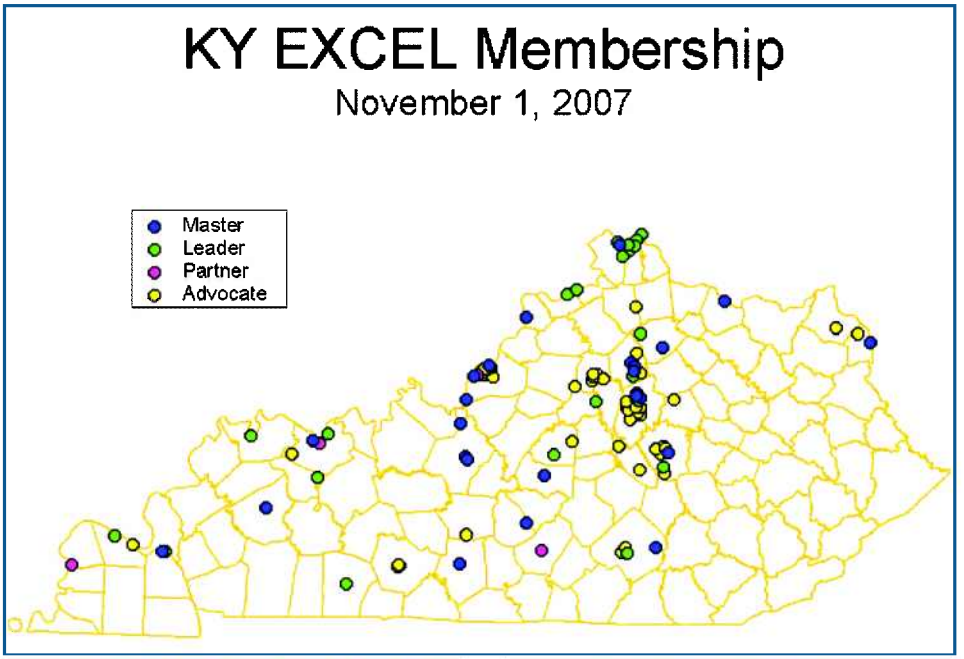


ABOVE: ***This map shows the location of all KY EXCEL members in Kentucky.*** Map created by the Division of Compliance Assistance

RIGHT: ***Delta employees replant the landscape around Redwood, the rehabilitation center in Fort Mitchell.*** Photo provided by Delta Air Lines Inc.

FAR RIGHT: *A member of the Southwestern High School Conservation Club and Raptor Center holds a bald eagle during an educational presentation.* Photo provided by Southwestern High School Conservation Club

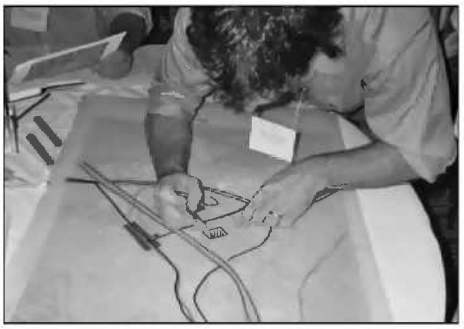
Conference offers sustainable redevelopment and more

By Amanda LeFevre
Division of Compliance Assistance

Sustainability is a hot topic these days. With the population growing and natural resources being stretched to the max, the world must look at ways it can reduce its rampant consumption and protect the environment. The U.S. Environmental Protection Agency, along with federal, state and local partners, came together to offer the Sustainable Redevelopment in the Ohio River Valley Conference in October. The Louisville event focused on ways communities can redevelop land to help improve the environment and ease consumption.

Much of the agenda was structured to help address sites that were visited in preconference tours. Sites were chosen in Louisville and southern Indiana that represented redevelopment in urban, small community and rural areas. This was done to ensure that participants from any size town could gain insight into redevelopment issues. Tour stops included Rhodia, a former chemical company in downtown Louisville; Loop Island, a former tannery and wetland in southern Indiana and an underutilized Peddler's Mall building also in southern Indiana.

In addition, participants visited two Louisville businesses that are going above



and beyond their environmental call of duty. Gallery NuLu is a redevelopment project on Market Street that is seeking Platinum LEED certification. Conference attendees toured the construction site and observed numerous green features being incorporated into the project.

Attendees also visited the Pull-A-Part Auto Recycling Center. Auto salvage yards are notoriously dirty and environmentally destructive. The Pull-A-Part franchise makes a concerted effort to remove harmful fluids and recycle nearly every part of the vehicle that comes through the door.

Actual conference sessions addressed some of the issues seen at the sample sites and properties like those along the Ohio River valley. Educational sessions provided insight on how sustainable redevelopment can have a positive impact on watersheds, air quality, urban heat islands, public health and also educated attendees on how to overcome barriers to redevelopment.

Wrap-up activities included brainstorming sessions where conference participants, along with architectural and design students, created redevelopment solutions for sites visited during preconference tours. Information learned from the sessions was used to create plausible redevelopment scenarios.

Attendees were treated to networking receptions, which provided an opportunity to mingle and share redevelopment experiences. More than 100 conference goers attended the events sponsored by Gallery NuLu, AMEC Environmental and QEPI.

For those with an adventurous spirit, a canoe trip down Beargrass Creek in Louisville provided the setting for discussion of problems with combined sewer overflow systems and other issues commonly plaguing urban waterways.

Planning is underway for a second sustainable redevelopment conference to be held in West Virginia. It will look at sustainability in the context of areas impacted by coal mining.

TOP: ***Susan Hamilton (center), with Louisville Metro Government, guided a tour at Rhodia Chemical Co. in downtown Louisville.***

MIDDLE: ***Participants design plans using information they gained from preconference site tours and conference sessions.***

ABOVE: ***Conference attendees paddle down Beargrass Creek and discuss issues facing urban waterways.***
Photos by Amanda LeFevre

The cutting edge

Continued from Page 1

The plant's state-of-the-art monitoring and control equipment is secured in the restricted-access main treatment building. Computer generation provided by O'Brien & Gere

"While a system treating surface water would have been less expensive in the short run, keeping up with changing regulatory requirements can be become expensive and complicated in the long run," said Dharman. "The beauty of groundwater is that natural filtration may remove most of the turbidity in the surface water, where pathogens are most likely to attach. The DOW Groundwater Branch performed hydrologic tests to ensure that the location of the wells near the Ohio River would provide a reliable quantity of source groundwater."

Reverse osmosis is a separation process that uses pressure to force a solvent through a semipermeable membrane that retains the solute on one side and allows the pure solvent (water) to pass to the other side. Normal osmosis is the natural movement of solvent from an area of low solute concentration, through a membrane, to an area of high solute concentration when no external pressure is applied.

The facility consists of two 115-foot wells with a design capacity of 800 gallons per minute. The raw water is pretreated with sulfuric acid, which lowers the pH level and keeps the calcium carbonate in soluble form so that the RO membranes can remove it from the water. It is calcium carbonate scaling that causes hardness in water. The raw water is also filtered through micron cartridge filters to remove particulates (silt and sand) that could damage the RO feed pumps and membranes.

The pretreated raw water is then fed directly to the RO membrane filters, which remove more than 90 percent of the hardness and approximately 80 percent of the nitrates. The membranes also remove many naturally occurring organics and other contaminants that may be present in the raw water.

In an ironic twist, treated water comes out a little too pure.

"Because the process of reverse osmosis removes virtually all the mineral content from the water, some untreated groundwater is blended into the finished water to restore taste and nutrients," said Dharman. "This makes the water more palatable and more beneficial for consumption."

The blended water then heads to the degasifier/air stripping tower where carbon dioxide is removed, which formed when the sulfuric acid was added to the pretreated water. If not removed, the aggressive, bubbly permeate could cause corrosion in the distribution system and milkiness in the water. The treated water is then transferred to the ground storage tank.

In the post-treatment phase, chemicals are added to the treated water to disinfect and destroy any disease-causing organisms, such as bacteria and viruses, and to help reduce the corrosivity of the water. Fluoride is also added to inhibit dental problems in the community.

Wastewater from the plant is diffused into the Ohio River under a Kentucky Pollutant Discharge Elimination System permit.

Project manager David Wakefield said public response to the new plant has been "nothing but positive."

"We definitely did a lot of research about RO and visited sites in other states," said Wakefield. "I think the general consensus was we wanted off Rough River and not on the Ohio River. Except for the hardness and nitrates, the groundwater was a very good source."

Bryan Lovan, project manager with O'Brien & Gere, which designed the facility, said public response to the renewed water quality has been particularly gratifying.

"After the plant was put on line, customers were calling in enthused about the taste," said Lovan. "One lady said her children now choose tap water over bottled water. Another said even the coffee and tea tastes better. Hardinsburg and Breckinridge County should be set for abundant, high-quality water for many years to come."

Dharman said the Hardinsburg project is one he will never forget.

"This is the most significant project I've ever done and may ever do as an engineer with the Division of Water," he said. "It's rare that you get to start at the earliest planning stages, work for years with the local officials and consulting engineers and eventually get to see the finished product. It has been personally very satisfying."

Plant monitoring and control

A plant-side supervisory control and data acquisition system provides real-time process control data to the operators to facilitate prompt decision making, automated operations and efficient record keeping. All major processes and equipment are monitored for mode of operation and equipment failure. Customized applications software is used to monitor status, control process equipment, initiate alarms and create operating reports. For security reasons, access to the main treatment building is restricted.

Playing it safe: ERT

By Ricki Gardenhire
Office of Communications and Public Outreach

October 2006—Railroad tanker releases hydrochloric acid into the air in Fulton County, forcing evacuation of some residents and impacting air and soil. Time on the scene: two days.

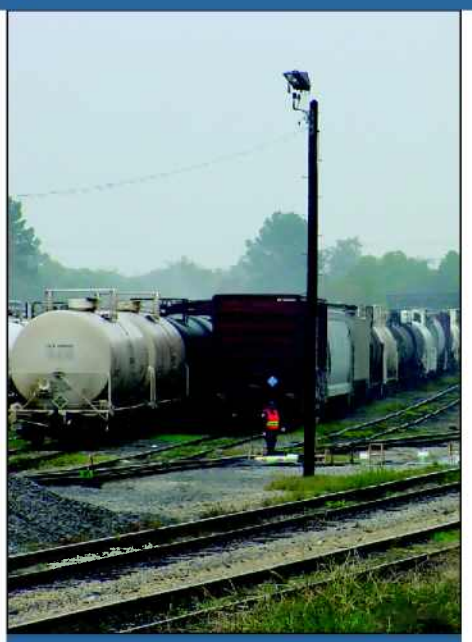
January 2005—Pipeline ruptures near Owen-Carroll county line, releasing 268,000 gallons of crude oil into the Kentucky River. Impacts soil, surface water and intakes for drinking water in Louisville. Time on the scene: 35 days.

October 2000—Impoundment pond collapses at Martin County Coal Corp., sending slurry gushing into tributaries of the Big Sandy River. Ninety miles of stream are impacted and drinking water of 350,000 customers is threatened. Time on the scene: 85 days.

January 2000—A pipeline ruptures in Clark County, resulting in the largest oil spill in Kentucky history – 489,000 gallons. Time on the scene: 12 days.

This is just a sampling of the wide-ranging, real-life accidents and incidents in which the Environmental and Public Protection Cabinet's (EPPC) Environmental Response Team (ERT) has rushed to combat and contain calamities to Kentucky's land, air and water.

"The importance of our environmental response team cannot be underestimated," said former EPPC Secretary Teresa J. Hill. "The members of the team are on call every hour of every day to guarantee that the human costs and environmental impacts associated with toxic and hazardous spills and releases are limited."



A rail car releases hydrochloric acid in Fulton County in October 2006.
Photos provided by the ERT

The ERT, which is based in the Department for Environmental Protection (DEP), is composed of staff from the Commissioner's Office and the Divisions of Air Quality, Waste Management and Water.

Robbie Francis, the team supervisor, says the all-volunteer response team stays sharp with the help of annual training provided by the U.S. Environmental Protection Agency.

"It's very important that the team receives adequate training in emergency response so that we can be most effective while on the job."

The team undergoes training in oil spills and releases of hazardous materials, as well as team building and how to work with other agencies.

"In working major incidents, you often have several agencies on site so it's imperative that we work together and understand each agency's role in order to successfully handle the situation, whether it's cleaning up from an oil spill or monitoring air quality," said Francis.

The reporting of an incident to the ERT sets in motion a rapid but disciplined process. The reported incident is evaluated, and an appropriate level of response is decided. In emergencies, on-site response occurs within two hours of notification. In high-priority situations, DEP will make a follow-up site visit within two working days of notification. In routine situations, DEP staff will make a site visit or contact the caller within five working days of notification.

Increasing Public Awareness

Ferris Sexton, of the Division of Water in Hazard, was a railroad worker

ERT Responders by Region

The Environmental Response Team is composed of three full-time employees, 24 part-time responders and nine alternates. They are drawn from the Division for Air Quality (DAQ), Division of Waste Management (DWM) and Division of Water (DOW). Here is a list of response team members:

Environmental Response Team
24/7 Hotline: 1-800-928-2380

ERT Central Office Staff
Robert Francis, ERT supervisor
David Leo, Environmental Technologist
Keri Greenidge, Administrative Assistant

Area I—Paducah
Kevin Usher, DAQ
Bill Clark, DAQ
Vince Priddle, DOW
Margie Williams, DWM

Area II—Madisonville and Owensboro
Peyton Adams, DOW
Neil Berry, DWM
Larry Tichenor, DWM
Mac Cann, DAQ

responds to the big and small

before joining state government as an oil and gas inspector in 1985. He had responded to oil spills prior to joining the ERT, so he was a natural recruit for them.

"I was doing the response job anyway. I'm not worth 15 cents behind a computer. I'm worth a whole lot more out in the field," said Sexton. "Every time out is a learning experience, and we are responding to a lot more incidents than we used to. The more the public sees us out in the field, the more likely it is that someone will call when the regulated community is doing something questionable or has spilled something and maybe not reported it as required," he said.

Public awareness of the ERT is increasing. The team received 2,478 reports of incidents in 1992, responding to 144 of them. That increased to 8,254 incidents reported in 2006, with the ERT responding to 663.

A pipeline ruptures releasing 268,000 gallons of crude oil into the Kentucky River in January 2005.

Making a Difference

Peyton Adams, of the Division of Water in Madisonville, started his state government career in 1975, straight out of Western Kentucky University. One of ERT's original members, Adams remembers well receiving his $492 monthly paycheck, driving his own car at 14 cents per mile reimbursement and using his mother's dishwashing gloves and washed-out fruit jars to collect water samples.

He also remembers 32 years of stories—one in particular. Adams was called to a Christian County "hog parlor" after neighbors reported a bad odor. Adams found dead hogs and a starving horse—left behind after a bank foreclosed on the property. The bank was unaware of the animals. Adams also found himself staring down the barrel of a loaded gun.

"The end of a gun gets bigger the longer you stare at it," said Adams, whom a neighbor had mistaken for a thief. "By the time it was over, I had to help the elderly man sit down after he realized that he was pointing a gun at a state employee. It scared him to death."

During his career, Adams has worked more than 1,000 incidents in 32 counties from Fulton to the Big Sandy.

"You never know what you are getting into when you go out on a call. No two incidents are alike," said Adams. "I know more about trains when they are belly up than I do when they are right side up.

"You are so focused on getting the answer and getting the job done that you don't think about much else. When you are there in the moment, you focus on getting the job done. When you leave, you think about the human element."

After 32 years in state government, does Adams have the itch to retire?

"I love my job. I haven't found anything else as fulfilling. And we are family—my co-workers are my extended family and best friends. My weakness is listening to the news—like the news of the Minnesota bridge collapse—and thinking of the things I would do in that situation.

"It's good to know you are making a difference and that the environment is a little cleaner because of the work you do. Our job also requires that we comfort people. Informing them of the unknown brings relief.

"We get to work with police, fire, EMT, county emergency response—these people do more for Kentucky on a daily basis than we know. We take care of people really well."

Area III—Bowling Green and Columbia
Kerry McDaniel, DWM
Robbie McGuffey, DWM
Bill Baker, DOW
Mike Sapp, DWM

Area IV—Louisville and Florence
Keith Simms, DWM
Todd Giles, DOW
Rob Staley, DWM
Mark Jones, DOW

Area V—Ashland and Morehead
Rick Selhorst, DAQ
Rodney Maze, DWM
Philip Carter, DWM
Danny Fraley, DOW

Area VI—London
James McCloud, DOW
Keith Blair, DWM
Bill Belcher, DWM
Jeff Litteral, DOW

Area VII—Hazard
Ferris Sexton, DOW
Damon White, DOW
Roger Martin, DOW
Robert Stidham, DWM

Area VIII—Frankfort
Barbara Risk, DOW
Brian Schrader, DWM
Rodney Polly, DWM
Bill Buchanan, DWM (Bluegrass Army Depot)

Recycling in the fast lane

Kentucky promotes 'green' road construction

By George Gilbert
Division of Waste Management

The federal government, states and other national groups are leading the effort to reuse industrial byproducts in highway construction. They recognize that if a waste material passes the same engineering specifications as virgin material, is about the same cost or lower to install and has less or similar environmental consequences, it should be reused.

The Kentucky Transportation Cabinet (KYTC), a recognized leader in transportation issues across the country, is considering expanding the recycling of coal combustion byproducts, or ash, and other industrial materials and road construction waste into its construction projects. The Kentucky Department for Environmental Protection (DEP) and KYTC staff are currently studying this issue.

"Beneficial reuse of waste products conducted in an appropriate manner can make good environmental and economic sense," said R. Bruce Scott, director of DEP's Division of Waste Management. "It lessens the need for the production of virgin highway construction materials, often lowers handling costs for the generator of the waste product, all while providing a beneficial and protective method to handle the waste product."

After reviewing recycling programs produced by other states, federal agencies and national groups, the KYTC and DEP have laid a possible road map for implementing recycling here in Kentucky. Suggested KYTC actions include:

- measuring current waste byproduct reuse (such as 5 percent fly ash in cement).
- considering monthly meetings between the DEP and KYTC.
- pursuing a memorandum of understanding or secretary's order on recycling.
- publicizing past reuse efforts.
- joining the C2P2 (Coal Combustion Products Partnership) and KY EXCEL (Kentucky Excellence in Environmental Leadership) programs.

DEP would assist with environmental data and recycling measurements, continue to research what other groups and states are doing, bring people together and look at environmental consequences of any reuse. Jointly, KYTC and DEP would investigate the possibility of a transportation reuse conference, while KYTC would investigate markets and measurements.

"We are already recycling and have been for some time," said Wesley Glass, director of KYTC's Division of Materials. "Over the years we have come to recognize and accept suitable materials such as fly ash and reclaimed asphalt pavements. Other materials are also recognized and utilized on a much smaller scale due to their availability and when they can be deemed technically equivalent. An effort to quantify by being able to measure and report usage along with performance would serve as a plus."

According to David Waldner, director of KYTC's Division of Environmental Analysis, "The Transportation Cabinet will continue in its efforts to work with the highway construction industry in a manner that embraces the beneficial reuse of these materials where it can be done safely and economically. This makes good sense for both government and private enterprise."

Byproduct reuses

The Federal Highway Administration (FHWA) recommends these byproduct reuses for Kentucky-generated materials:

- Coal combustion ash (primarily from coal-fired power plants)
- Asphalt baghouse fines/dust particles
- Blast furnace slag
- Coal boiler slag
- Lime kiln dust
- Reclaimed asphalt material
- Reclaimed concrete material
- Roofing shingles
- Scrap tires
- Steel slag
- Waste glass

The Recycled Materials Resource Center (a partnership between the University of New Hampshire and FHWA) recommends the reuse of:

- Foundry sands
- Reclaimed concrete
- Shredded tires in embankment
- Full-depth reclamation using foamed asphalt

Kentucky procurement regulations require the economically practicable reuse of:

- Concrete cribbing with 5 percent fly ash.
- Gabions with 10 percent recovered material.
- Glass beads with 50 percent postconsumer waste.
- Guardrail, guardrail post and component parts with 20 percent recovered material.
- Metal bridge planks with 10 percent recovered material.
- Metal pipe with 10 percent recovered material.
- Ready-mix concrete with 5 percent fly ash.
- Reflective powder with 50 percent postconsumer waste.

"Millings," or recycled asphalt, are used in an asphalt mix during resurfacing projects. Millings are also used on road edges to eliminate dropoffs. A milling machine is pictured above.
Photo by the Kentucky Transportation Cabinet

KY EXCEL members produce amazing results *Continued from Page 6*

reducing the impact of the de-icing chemicals to the environment. As a result, total chemical usage of Type I glycol fluid dropped by more than 200,000 gallons in one year. The safety of the passengers, planes and employees was never at risk, but any adverse effects to the environment were minimized.

"Many of our employees are passionate about global environmental issues, and Delta is committed to providing a platform to enable them to take action," said Paul Baird, Delta field director-airport customer service. "The projects we completed for KY EXCEL are just a few of the examples of how we're trying to give back to our communities, while also preserving our environment."

As its final project, Delta mentored its Louisville and Lexington counterparts, which resulted in the Lexington location joining KY EXCEL.

ISP Chemicals Inc., of Calvert City, is a master member of KY EXCEL. Its major project was the construction of a new aboveground wastewater treatment plant. ISP is a chemical manufacturer that produces ingredients for toothpaste, hairspray, denture adhesives and the beverage industry.

"I'm proud to see Kentucky actively push environmental excellence via the EXCEL program," said James G. Leonard, environmental compliance director for ISP. "The program raises environmental stewardship awareness and offers a carrot (good publicity, permitting assistance, etc.) to companies and/or citizens that participate. The EXCEL program is one way to nationally publicize the good things Kentuckians are doing for the environment, while growing industry and providing jobs in our state."

When the debugging and final installations at the plant are completed in 2008, the company will see better effluent wastewater quality discharged into the Tennessee River, reduced volatile emissions to the atmosphere, a higher level of groundwater protection and reduced exposure to volatile emissions for site workers and community residents.

In September, KY EXCEL received annual project reports from the first 12 members to join the program. Those members invested a combined $5.6 million and 44,000 hours to complete their voluntary projects. Some of the projects include reducing energy usage, recycling more than 34 million gallons of water, improving air quality by eliminating the release of chemicals into the air and helping a community complete a sewer project. All of the results are impressive and demonstrate the power that each person, company or community has to protect and enhance the environment.

The remaining 105 members will report the benefits of their projects at a later time. Everyone can make a positive difference, and KY EXCEL members are leading the way.

EE in Kentucky online

A new tool is available for folks interested in the environment. **EEinKentucky.org** features a searchable database that includes an events calendar, a resources page and a listing of current grant opportunities. The Web site offers numerous features that will benefit the general public, teachers and any Kentucky organization that offers environmental education resources or programming.

EEinKentucky.org is a collaborative effort that will continue to grow and improve as the number of partners grows. More than 70 organizations are currently signed on to the Web site. Organizations interested in signing on can visit the Web site, click on the "Organizations" tab and follow the instructions. Once signed on, you may add items to the events calendar.

The Web site is maintained by the Kentucky Environmental Education Council, in partnership with the Kentucky Association for Environmental Education.

New KY EXCEL members

Since May, 24 businesses, individuals, organizations or communities have stepped forward with a variety of projects to improve and protect Kentucky's environment. Become an environmental leader and join KY EXCEL. For more information call 800-926-8111 or visit **http://www.dca.ky.gov/kyexcel/.**

Master members

TRANE, Lexington
Altuglas International, a division of Arkema Inc., Louisville
3M – Cynthiana, Cynthiana
Quality Cabinets, Mount Sterling
E.ON U.S. – Mill Creek Generating Station, Louisville
E.ON U.S. – Trimble County Generating Station, Bedford
E.ON U.S. – Magnolia Station, Magnolia

Leader members

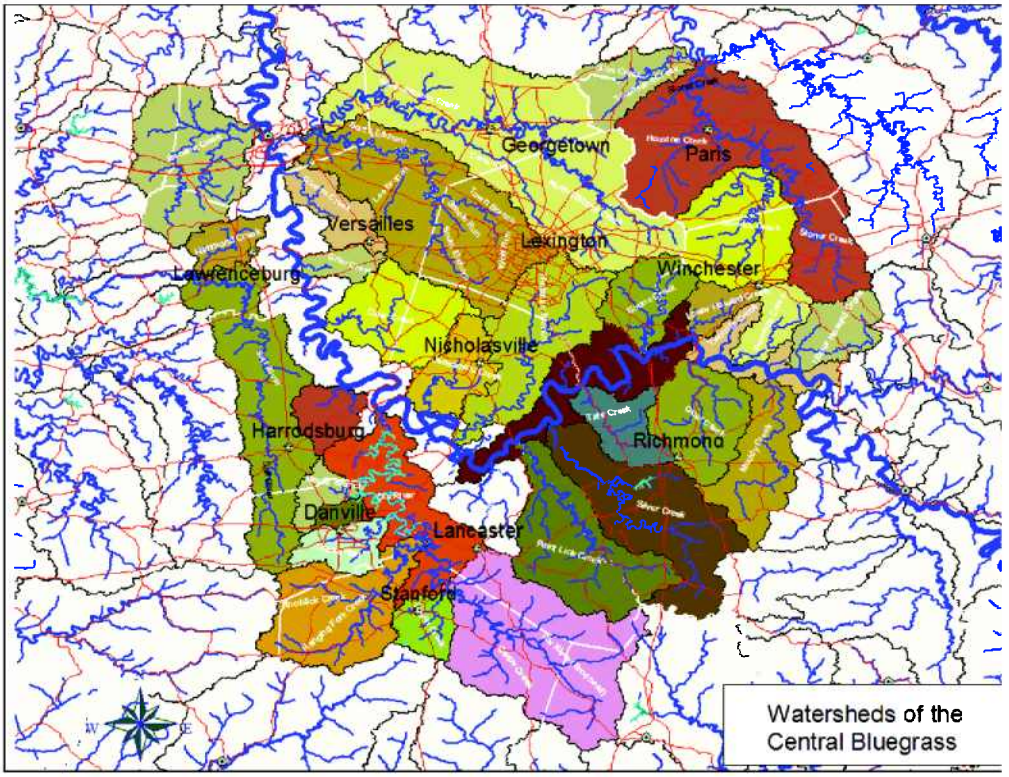
Hanson Aggregates Midwest Inc. – Tyrone Quarry, Lawrenceburg
Hanson Aggregates Midwest Inc. – Laurel Quarry, Stab
Hanson Aggregates Midwest Inc. – Russellville Quarry, Russellville

Partner members

Lubrizol Advanced Materials Inc., Louisville
Owensboro Medical Health Systems, Owensboro
NewPage Corporation, Wickliffe

Advocate members

hype LLC, Richmond
Greater Paducah Sustainability Project, Paducah
Delta Airlines Inc. – LEX Station, Lexington
The Merrick Printing Co. Inc., Louisville
Greenbo Lake State Resort Park, Greenup
UK College of Agriculture, Lexington
Kentucky Transportation Cabinet, Division of Environmental Analysis, Frankfort
Community Action for Barnes-Mill Neighborhood Inc. (CAIBN), Richmond
Kentucky Association of Environmental Education, Louisville
WATERS Laboratory, Bowling Green
Third Rock Consultants, Lexington



Watershed summit provides networking base

By Allison Fleck
Division of Water

The Bluegrass Watershed Summit held in October in Lexington brought together more than 100 citizens and community leaders interested in promoting protection of the 16-county Bluegrass watershed area.

Ken Cooke, education specialist with the Division of Water Watershed Management Branch, organized the meeting and set the tone in his opening remarks.

"We have sufficient expertise, knowledge and energy to solve our own problems in the Bluegrass watershed region," said Cooke. "In this meeting I don't want you to focus on the issues we're facing...Rather, I encourage you to exchange ideas from your different perspectives. What is working in your watershed? How are you promoting education on watershed protection? What can we learn from one another?"

Participants represented a wide range of organizations, including state environmental and enforcement agencies, watershed councils, conservation districts, water watch groups, neighborhood associations, and parks and recreation boards. Participants were organized into groups that mixed members of different watershed areas to foster the sharing of various perspectives. They included Benson Creek, Elkhorn Creek, Salt River, Clarks Run, Dix River, Glenn's Creek, Hickman Creek, Strodes Creek, Stoner Creek, Licking River, Howards Creek, Boone Creek, Muddy Creek, Silver Creek, Tates Creek, the Kentucky River, Town Branch, Cane Run, White Oak Creek and Wolf Run.

"Even though I haven't lived in Woodford County for very long, I feel strongly about helping preserve the natural beauty and health of Glenn's Creek," said Edward Allen Kirkwood, a member of the Bluegrass Wildwater Association.

Miriam Van Meter said she held an organizational meeting to raise interest in Stoner Creek in Bourbon County.

"I went around my neighborhood knocking on doors, called friends and asked them to call friends," said Van Meter. "I expected 10 people to show up, and we had 20."

Julie Smoak believes word of mouth is one of the most important tools for creating interest and support for local areas. Smoak, a colleague of Cooke, has reforested 2.5 acres of her property along Jouett Creek in Clark County.

"You can have all the brochures in the world, but it's best to have one-on-one, neighbor-by-neighbor contact," she said.

Randall Paylor with the Kentucky Geological Survey shared ideas about some of the multi-agency efforts underway in the Cane Run Creek watershed. (See related story on Page 18.)

"A lot of different groups are coming together to do work that never happened before," said Paylor. "There are so many environmental and contamination issues going on in that watershed that need to be addressed on many levels."

David Gabbard, representing the Air and Water Quality division of the Lexington-Fayette Urban County Government (LFUCG), said his involvement in the Reforest the Bluegrass program reminded him of the benefits of volunteerism that go beyond environmental responsibility.

"This program involved 6,000 volunteers planting 160,000 trees over 10 years," said Gabbard. "It has spawned similar programs in Richmond and Danville and other initiatives, such as rain gardens and composting. As volunteer activities spread, so does the commitment to environmental protection. When you do the work yourself, you take ownership of it."

Bluegrass Watershed area

Anderson, Bourbon, Boyle, Clark, Fayette, Franklin, Garrard, Lincoln, Madison, Mercer, Montgomery, Scott, Shelby, Taylor, Washington and Woodford counties.

The Bluegrass Partnership for a Green Community sponsored the summit with funding from Kentucky American Water Co. and support from the UK College of Agriculture, Kentucky Division of Water, Bluegrass PRIDE, Kentucky Waterways Alliance, Tracy Farmer Center for the Environment, LFUCG, Kentucky River Watershed Watch, Bluegrass Wildwater, Kentucky Water Resources Institute, Kentucky Geological Survey, Kentucky Natural Lands Trust and Fayette County Neighborhood Council.

For more information on monitoring, education, restoration and advocacy activities in your watershed, visit **www.kywater.net/bluegrass**

Natural Land Trusts

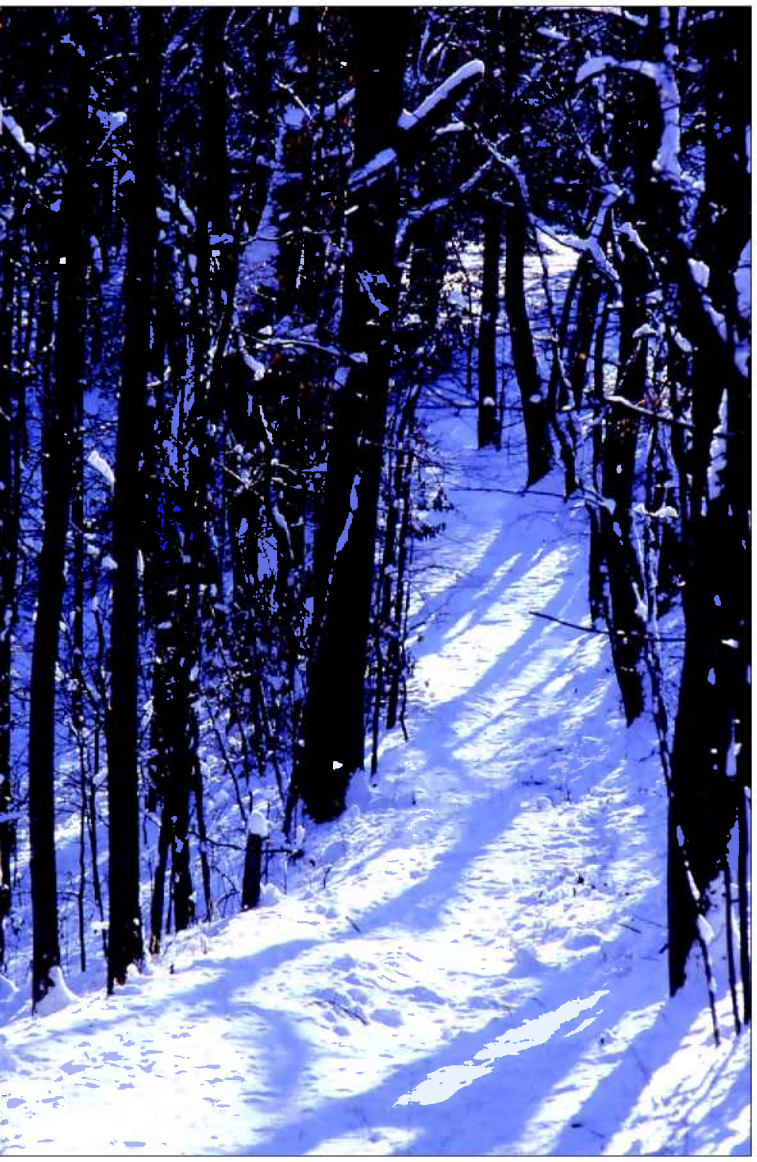
Preserving Kentucky's forestland, one acre at a time

By Don Dott, Kentucky State Nature Preserves Commission, and
Hugh Archer, Kentucky Natural Lands Trust

Local, state and national land trusts have protected 37 million acres across the United States by utilizing federal and state tax law benefits and public financing incentives, in addition to their own private fundraising. Land trusts' tools include conservation easements, acquisition and management agreements. The work of land trusts, with more than 1,600 currently existing across the country, is critical to the work of many of the traditional governmental natural resource agencies.

Land trust partners are becoming more necessary every day as the development of natural lands continues to escalate. Kentucky has less land conserved by public agencies than most states, and often seems to have less dedicated resources for conservation projects than its neighbors. Kentucky has too few land trusts working on local conservation efforts, resulting in an inability to take advantage of the many offers of gifts of land, or utilize tax opportunities for conservation-minded residents and businesses, and the synergy public-private partnerships can offer.

This article is about the success of one statewide land trust and the need for an expanded network of more land trusts and the partnerships they can forge.



Pine Mountain. Photo by Ben Begley, Pine Mountain Settlement School

Kentucky is blessed with a great deal of forestland, covering 47 percent of the state. However, most forests are broken into small tracts by roads, public utility easements, housing and agricultural land use. The average size of a privately owned woodlot is now less than 40 acres, which is not large enough to provide the interior forest habitat necessary for many species to survive. Forests or woodlots of this size are incapable of providing "eco-services" such as water filtration and air quality benefits that have been taken for granted for so long. Larger forest blocks assembled into north-south migratory corridors become more valuable to the sustainability of native plant communities and their resident wildlife, to the provision of eco-services and the security of our health.

The Kentucky Natural Lands Trust (KNLT) is unique in being the only statewide land trust focused on forested landscapes. KNLT uses all the tools of nonprofit conservation—acquisitions, easements, tax deductions, government agency rollovers, long-term forest land management advice, carbon sequestration agreements, demonstration sites, policy assistance and others.

KNLT is also the only statewide land trust dedicated to conserving natural areas by partnering with state agencies. It has specific partnerships with the Transportation Cabinet, the Kentucky State Nature Preserves Commission (KSNPC), the Department of Parks and the U.S. Fish and Wildlife Service. KNLT has also been able to take advantage of resource removal industry gifts, mitigation funds and supplemental environmental projects agreements. Much of KNLT's effectiveness derives from its diverse partnerships with both government agencies and the private sector.

KNLT's first successful partnership was begun to preserve Blanton Forest, the state's largest old-growth forest. KNLT was established in the early 90s because the state had gaps in both acquisition dollars and stewardship resources to act on the discovery of what would become Kentucky's largest state nature preserve. KNLT joined with the KSNPC to raise and secure more than $3 million to purchase the old-growth and buffer land that

Continued on Page 15

Natural Land Trusts *Continued from Page 14*

became Blanton Forest State Nature Preserve (SNP). Centered along the 120-mile Pine Mountain corridor, the preserve protects more than 3,000 acres, with hiking trails open to the public year round. KNLT continues to work with KSNPC to acquire property to add to Blanton Forest, as well as the Bad Branch State Nature Preserve and other high-quality natural areas along the mountain.

In its first nine years, KNLT's focus on Blanton Forest evolved into partnerships with the Pine Mountain Settlement School, Camp Blanton, the Louisville Zoo, Harlan County tourism programs, the Kentucky Woodland Owner's Association, the Division of Forestry and other organizations active on Pine Mountain and in its communities. The success of this project has been, and continues to be, dependent on a growing number of partners.

Building on its success at Blanton Forest, KNLT undertook a strategic planning process to consider three new potential focus areas—the entire landscape of Pine Mountain, the Obion Creek complex in the Jackson Purchase area and the central Kentucky barrens.

The Pine Mountain corridor is an ambitious plan to connect existing protected areas on Pine Mountain (including Blanton Forest) and maintain the ecological and migratory corridor that, so far, has remained relatively undisturbed.

Because major, but disconnected, public lands owned by six state and federal agencies already protect significant tracts of this north-south migratory corridor, Pine Mountain presented one of the best opportunities for an achievable landscape level protection project in Kentucky.

Christened the "Pine Mountain Legacy Project," it encompasses an estimated 151,000 acres and one of the most significant large forest blocks remaining in Kentucky.

Pine Mountain is a Cumberland Mountain ridge, uplifted along a fault that passes through Whitley, Bell, Harlan, Letcher and Pike counties, running for more than 120 miles, southwest to northeast. Pine Mountain harbors 94 documented rare plants and animals and remains a major migratory route for elk, black bear, raptors and other wildlife, and harbors the most diverse forest community in the country.

Pine Mountain. By Ben Begley, Pine Mountain Settlement School

The mountain presents one of the best remaining areas in the southeastern United States to connect established public lands into a nationally significant forested landscape for migratory needs and headwater protection for three major rivers—the Upper Cumberland, the Big Sandy and the Kentucky River.

KNLT is working to protect the most ecologically important areas on Pine Mountain by partnering with conservation landowners on the mountain—the KSNPC, the Department of Fish and Wildlife Resources, the Division of Forestry, the Department of Parks, the Pine Mountain Trail Conference, the U.S. Forest Service, the U.S. Fish and Wildlife Service and others. KNLT helped establish and supports the Pine Mountain Trail Conference and the work of the Kentucky Department of Parks to establish a hiking trail, a "linear state park" running along the crest of Pine Mountain, and veering south to Cumberland Gap National Park. KNLT joins the Pine Mountain Settlement School in staffing the "Footsteps of Lucy Braun" program, which introduces new people to the mountain and partners in other environmental education programs in the region.

KNLT also works closely with private landowners to gain their participation and to promote the importance of land conservation, stewardship and sustainable forestry practices. It is partnering with MACED (the Mountain Association for Community Economic Development) to enroll landowners across Pine Mountain so that their participation will help restore the quality of their forestland, while providing an annual source of income through the sale of carbon credits.

KNLT's most recent successes include the purchase of the 740-acre Arrington tract to be used as a demonstration site for the latest in conservation forestry practices and carbon sequestration. It also acquired 786 acres known as the Parsons tract, which is now a major addition to Pine Mountain Trail State Park, with more than 600 of its acres protected as a state nature preserve. KNLT is negotiating options for additions to Blanton Forest, Bad Branch and a new area at Laurel Creek. These tracts include intact mountain bogs, bat caves and endangered species habitat.

Another feature of KNLT's mission is to assist the formation of new land trusts. The largest forested tracts remaining in the Bluegrass region lie north of Frankfort along the lower Kentucky River and its tributaries. KNLT has been working with a group of individuals in central Kentucky to establish the Woods and Waters Land Trust that will work to preserve the forested riparian lands found in the lower Kentucky River watershed in Franklin, Henry and Owen counties. This new land trust has already secured commitments from several individuals who wish to donate conservation easements. It has also been successful in gaining formal support from local government leaders in its project area.

KNLT will continue to support and help with these efforts that will begin showing tangible results following its designation as a charitable, nonprofit land trust. For more information on the Pine Mountain Legacy Project, KNLT or its work to protect Kentucky's forested landscapes visit **www.knlt.org** or contact KNLT at 877-367-5658, e-mail info@knlt.org.

Solar-powered monitoring station reduces infrastructure costs

By Elizabeth Robb
Division for Air Quality

Recently, the Division for Air Quality (DAQ) deployed an air toxics sampler that is powered by a 40-watt solar panel. The use of solar power demonstrates that the division continues to embrace cutting-edge technology designed to benefit air quality.

"After using the solar panel for a period of time, the division will determine whether use of solar panels on other monitoring equipment will be feasible," stated John Lyons, director of the DAQ.

The monitor's semi-remote location would have required installing expensive utility infrastructure in order to access the electrical grid. In an effort to reduce utility and infrastructure costs, the DAQ decided to employ a grid-free technology—solar power.

The solar-powered monitor uses two battery cells to store electricity for use at night and during overcast skies. The solar panel recharges the batteries during periods of sunlight. Another benefit of the solar panel application is that should there be a power outage in the area, the monitoring will not be interrupted.

Solar-powered air toxics monitor. DAQ photo

A bumper crop of brownfield grants

By Amanda W. LeFevre
Division of Compliance Assistance

Writing an EPA brownfield grant is not tops on anyone's to-do list. However, getting brownfield money can bring big changes to a city's environmental and economic future. That's why the Kentucky Brownfield Program staff has been busy trying to get more communities to apply for the grants and better prepare them for the endeavor.

Last year, program staff held one grant-writing training and a grant review session. The state had a total of seven applications submitted from five communities. As a result, the state was awarded $1.4 million in brownfield funding.

This year the program stepped up its efforts by offering three grant writing workshops in various locations across the state. The intent was to offer it in more locations to get more communities involved. The program also offered its annual grant review party and grant review services. The efforts seem to have paid off. According to statistics released from the EPA, 10 Kentucky communities authored 16 grants for assessment and cleanup of brownfield sites. This was more than double the number submitted last year.

Kentucky fared well among its regional cohorts as well. Only two other states sent in more applications—North Carolina and Georgia each had 18. In terms of population, Kentucky turned in more applications than any other state, at a rate of 3.8 per 1 million residents.

The Kentucky Brownfield Program would like to offer its thanks and congratulations to all of the communities that took on this task.

If you have questions about grants or brownfields, call 800-926-8111 or e-mail Amanda.Lefevre@ky.gov

Use it up, wear it out, make it do (or go without)

Waste reduction is art contest theme

The 10th annual Commonwealth Cleanup Week will be March 23-29. The event includes a student art contest and cleanup activities around the state coordinated by the Division of Waste Management.

Waste reduction—cutting down on the amount of trash that goes in the garbage and on to the landfill—is the focus of the 2008 art contest.

The contest theme, "Use It Up, Wear It Out, Make It Do (or Go Without)," is a saying about thriftiness that, in a slightly different variation, was featured on a World War II resource conservation poster (see poster at right). Students are being asked to create a 21st century version of the 1940s poster. The contest deadline is Feb. 15.

Contest rules, background information and an entry form are available by going online to **www.waste.ky.gov** or contacting the division at 502-564-6716.

Commonwealth Cleanup Week was created in 1998 when the Kentucky General Assembly designated the fourth week in March as an opportunity for Kentuckians to participate in "activities that highlight the natural beauty of their communities."

The Paducah Gaseous Diffusion Plant is located within a 3,420-acre reservation approximately 10 miles west of Paducah and three miles south of the Ohio River. Constructed from 1951 to 1954, the PGDP started processing uranium in 1952 for national defense purposes. After 1964, the U.S. Department of Energy (DOE) enriched uranium at the plant for civilian nuclear power. In 1993, Congress transferred production of enriched uranium from DOE to the United States Enrichment Corp. DOE's primary mission became the environmental cleanup of the site, including any off-site releases, with oversight provided by the Environmental and Public Protection Cabinet's Division of Waste Management and U.S. Environmental Protection Agency (EPA).

Drum Mountain is no more

Paducah scrap metal removal project completed

By PGDP Section Hazardous Waste Branch
Division of Waste Management

At one point, the Paducah Gaseous Diffusion Plant (PGDP) had the largest inventory of scrap metal found at any DOE site in the country. That included a 35-foot-high, acre-sized pile of crushed and rusting drums referred to as "Drum Mountain."

Completion last year of the $145 million scrap metal project and removal of other containerized wastes stored in outside areas of the plant marks a significant milestone for the overall cleanup of the site. With the removal of the contaminated scrap, the skyline change at the site has been dramatic.

Scrap metal background

Between 1974 and 1983, the uranium enrichment facility was the subject of multiple upgrades. Contaminated equipment and materials from process buildings were dismantled, removed and stored on-site in a fenced and secured 50-acre tract in the northwestern portion of the plant area.

The contaminated scrap metal and materials storage area had long been identified as a source of contamination to off-site surface waters. Additionally, the scrap-metal-covered burial grounds suspected to contribute to groundwater contamination. To address impacts to surface waters and investigate the burial grounds impact to groundwater, the scrap had to be removed.

Drum Mountain

One of the most prominent features at the site was Drum Mountain. The drums once contained uranium tetrafluoride (UF4) commonly referred to as "green salt." Although the bulk green salts had been removed from the drums, the drums continued to be a source of contamination at the site.

Drum Mountain removal activities began in June 2000 and were completed in March 2001. The drums were shredded and containerized for transport. A total of 2,631 tons of radiologically contaminated wastes were sent to Envirocare of Utah for disposal. The total cost of the project was $11.5 million. Disposing of the drums removed an eyesore from the site, but it had the unintended impact of mobilizing contaminants that entered the surface water.

Preparation for removal of remaining scrap

Surface water sampling during the Drum Mountain removal indicated that contaminants entering nearby creeks increased during the removal activities. DOE, the Environmental and Public Protection Cabinet and EPA agreed that stronger sediment control measures were necessary prior to the removal of additional scrap at the site. To address the concern for surface

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TOP: ***Drum Mountain.*** Division of Waste Management photo
ABOVE: ***Aerial view of the Northwest Scrap Yards prior to removal action.*** Department of Energy photo

Royal Spring is the primary water source for public water in Georgetown and most of Scott County. The spring is fed by Cane Run.
Photo by James Currens

UK, EPPC working to revitalize Cane Run Creek, Royal Spring watershed

By Allison Fleck
Division of Water

Hundreds and even thousands of years before the arrival of settlers in central Kentucky, native inhabitants hunted, camped and fished along the lush banks of Cane Run Creek. They found an endless supply of fresh drinking water in the bountiful flow from Royal Spring, which is fed by Cane Run Creek as it drains the areas now known as Scott and Fayette counties.

However, the proliferation of modern agricultural methods, industrialization, urbanization and suburbanization have taken their toll on the once-pristine waters of the Cane Run and Royal Spring watershed. Contaminants related to these activities flow over the land and into streams, threatening the quality of Royal Spring, which after all these centuries, is still the main source of drinking water for the city of Georgetown.

Cane Run is particularly susceptible to these pollutants because of the karst nature of the watershed terrane. Karst terranes are underlain by weathered soluble rocks and are typically characterized by sinkholes, sinking streams, subterranean drainage, caves and large springs.

Any land surface underlain by weathered limestone or dolomite has the potential for rapid groundwater movement and, thus, greater sensitivity to pollution.

Now, a collaborative effort by state, federal and local agencies, as well as private entities, will bring long-lasting improvements to the neglected creek through development of a watershed-based plan of protection and restoration. The University of Kentucky (UK) College of Agriculture will receive a $666,564 nonpoint source implementation grant from the U.S. Environmental Protection Agency and will match that award with $444,376 in state funds. The Enviromental and Public Protection Cabinet's (EPPC) Division of Water will administer the grant.

Protection of its water supply has long been a concern of Georgetown city officials. The city's water service formed the Royal Spring Water Supply Protection Committee to develop a wellhead protection plan over a five-year period. It also worked to educate planning and zoning officials in Scott and Fayette counties about the vulnerability of the aquifer and the importance of protecting it.

The Cane Run watershed is one of five priority watersheds selected by the Kentucky Watershed Steering Committee for focused restoration and protection efforts. Segments of the watershed contain high levels of sedimentation/siltation, pathogens and nutrient/organic enrichment.

These pollutants come from pet waste, illegal or failing on-site wastewater treatment systems or livestock manure, residential and agricultural fertilizers or pesticides. Fluids leaking from vehicles also enter the waterways, as interstates 65 and 75, the CSX railroad and U.S. and state roadways crisscross the watershed.

A watershed plan is a strategy that provides assessment and management information for a geographically defined watershed, including the analyses, action, participants and resources related to developing and implementing the plan.

The university will develop and implement a watershed-based plan to identify nonpoint source pollutants in the watershed and recommend best management practices for agricultural and nonagricultural activities to prevent stream degradation. UK and its partners will also collaborate on an extensive information and education component to build public participation in preventing pollution.

While the Cane Run watershed encompasses approximately 29,000 acres, project participants will focus their efforts during the first phases of the project on the 15,000 acres in the upper portion, which recharges the Royal Spring.

Planned activities for the watershed include planting thousands of native trees and grasses along the creek to help slow runoff and improve water quality. Owners of property through which the creek flows also plan to make improvements on their segments. These include Lexmark, Fasig-Tipton and the Kentucky Horse Park. The portion of the stream on Maine Chance Farm, location of the university's new Equine Center, will become a kind of outdoor classroom for school children and 4-H clubs to learn about stream chemistry and the importance of waterway protection.

There will also be a program through community centers and neighborhood associations to educate the public about restoring and protecting the Cane Run watershed.

Cane Run project participants

- UK - College of Agriculture
- University of Kentucky, KWRRI
- Kentucky River Properties, LLC
- Kentucky Horse Park
- Lexmark International
- Royal Spring Water Supply Protection Committee
- Bluegrass Pride
- Lexington Fayette Urban County Government
- Kentucky Department of Fish and Wildlife Resources
- Fayette County Conservation District
- Kentucky Division of Water

State environmental laboratory receives NELAP accreditation

By Danna Hinkle
Division of Environmental Services

(Left to Right) ***Former EPPC Deputy Secretary Lloyd Cress, former Department for Environmental Protection Commissioner Cheryl Taylor, recently retired DES Director Gleason Wheatley and Michael Peyton, director of the U.S. EPA Region IV SESD, joined DES staff to celebrate the NELAP accreditation of the chemistry laboratories.*** Photo by DES

The Kentucky Division of Environmental Services (DES) was recently recognized as receiving accreditation under the National Environmental Laboratory Accreditation Program (NELAP) from the New Hampshire Environmental Laboratory Accreditation Program. DES is only the second state laboratory in the southeastern United States to achieve this goal.

DES is the Department for Environmental Protection's consolidated chemistry laboratory in Frankfort. The Department for Environmental Protection operates within the Environmental and Public Protection Cabinet (EPPC).

The NELAP is a voluntary accreditation program that examines a laboratory's quality and operating systems against established standards that are aligned with international quality standards. NELAP accreditation is additional testament to a laboratory's ability to produce accurate and defensible data.

The accrediting authority rigorously audited the laboratory's written and administrative standard operating procedures, performance evaluation study results, preparation and instrument log books, quality control samples, equipment calibration records and laboratory methods for each analyte certified. In addition, it examined the division's quality management plan, training records and other documentary evidence of the division's commitment to quality.

"Reliable data is absolutely necessary for making sound environmental decisions," said former EPPC Deputy Secretary Lloyd Cress during his remarks prior to a celebratory luncheon in September. "During my career, I have both prosecuted and defended many environmental cases. This laboratory has always had an outstanding reputation for its data quality, and I commend each of you for achieving this accreditation."

Michael Peyton, director of the Science and Ecosystem Support Division (SESD) with the U.S. EPA Region IV, noted that Region IV's laboratory is also NELAP accredited and that he was well aware of the detailed quality systems and documentation needed to comply with the standards for accreditation.

"Attaining this accreditation has required a tremendous effort, and you should feel a real sense of accomplishment," Peyton said. "The data that our laboratories produce is at the very foundation of understanding the environmental condition, and we must be vigilant in doing all that we can to ensure the quality and credibility of the information we generate."

The Division of Environmental Services also recently celebrated its 25th anniversary. It was established Oct. 16, 1982, to provide centralized laboratory services to support the environmental monitoring activities of the Department for Environmental Protection. An executive order consolidated the laboratory programs of the Divisions of Water, Air Quality and Waste Management into a single laboratory organization. The Division of Environmental Services has provided chemistry laboratory services to the Department for Environmental Protection since that time.

Renew your operator certification license online

By Lisa Butler and Mary Jo Harrod
Division of Compliance Assistance

The Division of Compliance Assistance wants to remind water operators that operator licenses can be renewed online. Last year, the division launched the online certification renewal system, which reduces the amount of time it takes operators to get their licenses renewed and eliminates the need to complete forms and submit paperwork. Since the introduction of this enhancement, at least 25 percent of all certification renewals have been submitted online.

The online renewal service uses the department's e-Search Web portal, where operators can check the number of continuing education hours they have earned, review the status of their operator license, and if the operators have sufficient continuing education hours, renew their license with a credit or debit card. This site will also allow administrators of wastewater or drinking water facilities to renew multiple operators' licenses at one time with only one payment.

Once the renewal request is submitted online, operators will receive an e-mail confirmation and a receipt for the transaction. When the renewal request has been approved, a new wallet card will be mailed to each operator.

To participate in the online renewal option, go to **www.dca.ky.gov/certification** and click on the link to online license information. Easy-to-follow directions are available. For more information regarding online renewal, contact Lisa Butler at 800-926-8111 or 502-564-0323, ext. 317.

Waterline projects bring safe drinking water to eastern Kentucky

By Linda Potter
Department for Natural Resources

Potable water, sustainer of life and the ultimate refresher on a hot day, is perhaps the most precious of all resources. Necessary for survival and taken for granted by many, residents of the eastern Kentucky coalfields appreciate its value. The Division of Abandoned Mine Lands (AML) has always given water supplies a high priority in their reclamation efforts, and with the reauthorization last year, additional funds should become available to do more.

Groundwater contamination studies funded by AML found pre-1982 mining had impacted much of the groundwater in areas of eastern Kentucky, making them eligible for AML assistance for replacement of potable water supplies. Over the years, the AML program has installed almost 1,000 miles of waterlines serving more than 11,700 residences. AML recently awarded grants totaling $6.1 million to Knott, Perry, Owlsey, Jackson, Carter, Elliott, Lawrence and Letcher counties in an effort to provide safe drinking water to these areas. The federal funds will be used to construct 47 miles of water main and install meters at 586 homes.

- Knott County received $1.15 million for the design and construction of a waterline extension project to serve Clear Creek watershed residents from Ash Bee Tree Gap to Fisty along U.S. Highway 721, which will involve the installation of approximately 4.5 miles of water main and the installation of meters at approximately 98 residences.
- Knott County was also awarded $1.2 million for the extension of public waterlines to serve the residents of the Big Branch of Troublesome Creek, Irishman Creek and Trace Fork of Irishman Creek watersheds. The first two phases of the project have been completed with the third phase timed to coincide with the completion of the water treatment plant on Carr Fork Lake. Phase III will involve the installation of approximately 5.3 miles of water main, installation of one booster pump station and the installation of meters at approximately 77 residences.
- The Acup Branch area of Perry County will benefit from $1 million to construct a water supply distribution system with a water storage tank, one booster pump station, approximately 3.4 miles of water main and the installation of meters at approximately 96 residences.
- Owsley County Fiscal Court was awarded $1.05 million for the design and construction of a waterline project to serve the residents of Grassy Branch, Laurel Fork of Buffalo Creek, Little Sturgeon and the Split Poplar/Poletown areas of Owsley County and the Allen Road area of Owsley and Jackson counties. The project will involve the installation of approximately 11.3 miles of water main and the installation of meters at approximately 35 residences.
- The Rattlesnake Ridge Water District received $1.05 million for the design and construction of a waterline extension project to serve the residents of the Cherokee Gap area of Lawrence County and the Brushy Creek and Little Brushy Creek areas of Carter and Elliott counties. The project will involve the installation of approximately 14.4 miles of water main and the installation of meters at approximately 52 residences.
- Letcher County Fiscal Court will receive $630,000 for the construction of public waterlines to serve Crafts-Colly watershed residents. Letcher County has secured coal severance funds to help with the extension of waterlines to areas in the vicinity not eligible for AML funding. Eight miles of water main and meters at approximately 228 residences will be installed.

Since January 2004 AML funding has resulted in the construction of 236 miles of waterlines, serving 3,407 residences costing approximately $21 million. The projected increase of future AML funds will help significantly grow the number of waterline projects, resulting in more Kentuckians having a reliable supply of drinking water.

Drum Mountain is no more

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water contamination, a 4.5 million gallon sediment collection basin was constructed in 2002. The sediment collection basin receives surface water runoff from the 61-acre scrap yard where it settles out many of the contaminants mobilized during removal activities and rainfall events.

Scrap metal removal and disposal

The scrap yards contained a wider variety of wastes than did Drum Mountain. The bulk of the scrap materials were characterized as a low-level radioactive waste, although asbestos and PCB (polychlorinated biphenyl) contaminated materials were also present.

Segregation and containerization of the remaining scrap began in June 2002. To reduce disposal costs, much of the scrap was cut into pieces before being packed and shipped. The majority of the scrap metal was loaded onto rail cars and sent to Energy Solutions Inc. (formerly Envirocare), a facility licensed for disposal of hazardous and radiologically contaminated wastes. Other materials went to the on-site solid waste landfill.

Materials that were classified for national security reasons were sent to a DOE disposal facility in Nevada. The last railcars of scrap were shipped in 2007.

Ongoing and future cleanup at the site

Currently, a $40 million thermal-treatment system is being installed to address the largest source of groundwater contamination at the site. Investigation of the burial grounds, another major source of groundwater contamination, is nearing completion. Future cleanup decisions and efforts at the site must address these burial grounds as well as contaminated soils and sediments along with other sources of contamination at the site.

Although these future decisions and efforts will not produce the visual change that occurred with the removal of the scrap metal from the site, future projects such as addressing the groundwater and burial grounds are every bit as important.

Nature license plates change in 2008

By Mary Jean Eddins
Kentucky Heritage Land Conservation

Beginning in January, three new nature license plate designs will become available featuring a dragonfly, hummingbird and Cumberland Falls. These plates will replace the current three designs of the viceroy butterfly, bobcat and cardinal.

The month prior to the month of your registration, you should receive a postcard in the mail notifying you that your nature license plate will be replaced. If you handle your registration by mail, the butterfly plate will automatically be replaced with the dragonfly; the cardinal plate will be replaced by the hummingbird; and the bobcat plate will be replaced with Cumberland Falls.

If you do not want the plate assigned as a replacement, simply write your plate of choice in the margin or another blank area on the registration card when you send your payment to the county clerk.

For those that handle their registration in person, simply tell the county clerk which plate you prefer.

Nature license plates cost an extra $10. That money is used to purchase and manage selected natural areas and wildlife habitat across Kentucky. Since 1995, when nature plates first went on sale, more than $8 million has been generated. Since Kentucky loses 130 acres to development every day, the nature license plate program is an important land conservation tool that ensures a portion of Kentucky's natural heritage is left intact for future generations. For more information about the Kentucky Heritage Land Conservation Fund Board or the nature license plate program, e-mail Mary Jean Eddins at mary.eddins@ky.gov or call 502-573-3080.

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