

Natural Resources Review

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KENTUCKY DEPARTMENT FOR NATURAL RESOURCES

OUR MISSION: To improve the quality of life for all Kentuckians by protecting our land, air, and water resources; utilizing our natural resources in an environmentally conscientious manner; and creating efficient environmentally responsible ways of managing, conserving and sustaining our resources for future generations.

Kentucky Division of Forestry Wildfire Response 2008 - 2012



Commissioner's Corner



By Steve Hohmann, Commissioner
Department for Natural Resources

Dear Employees, Colleagues, and Friends,

Welcome to this issue of the Department for Natural Resources newsletter – the final issue for 2012. You will find this issue full of articles recounting the varied achievements this department has accomplished in the recent past.

I can tell you with certainty that these accomplishments have occurred in the midst of serious budget reductions and were made possible only through the dedication and innovation of the department employees. Unfortunately, budget concerns will continue to strain the resources of DNR into the foreseeable future and remain one of the most significant challenges we face. While the DNR budget problem is real and significant, we will address the problem with decisive measures that account for our rapidly changing natural resource industries while protecting the public and our natural resources.

Even with this adversity, the DNR continues to steadily improve the delivery of services to the citizens and industries in Kentucky. Serious mine accidents and fatalities remain very low while the Office of Mine Safety and Licensing focuses on roof and rib control measures that should improve the safety record.

The Division of Forestry continues to protect the public from the dangers of wild fires while coping with the most severe budget problems in the department.

Our Division of Mine Reclamation and Enforcement improved its inspection frequency to over 99 percent in the third quarter of this year—an impressive accomplishment considering the division conducted over 5,600 inspections.

The Division of Conservation worked with its partners in Ohio, Indiana, and others to successfully forge an agreement allowing for interstate trading of water quality credits. The program will provide funding for Kentucky farmers to implement best management practices that will reduce pollution to the Ohio River.

There is no backlog in the issuance of mine permits. The Division of Mine Permits has implemented measures that successfully eliminated the backlog while maintaining the environmental protections intended by the permitting process.

For the first time since 2003, the Division of Abandoned Mine Lands received the federal Office of Surface Mining's Appalachian Regional Award for reclamation. The Rock Creek Project was recognized for its outstanding efforts to remediate the effects of acid mine drainage from abandoned mines in Lower Rock Creek of McCreary County.

And the Division of Oil and Gas continues to plug abandoned wells and address oil and gas well emergencies while maintaining a robust inspection presence.

Additionally, the department is working diligently to address the adequacy of reclamation bonds for coal mining operations. After successfully revising regulations to increase the amount of individual bonds this summer, we are preparing statutory changes to establish a statewide reclamation bond pool. The changes will be submitted to the 2013 General Assembly in January.

The stories and articles you see in this newsletter are only a small glimpse at the work that occurs within DNR. We always strive to improve our programs and deliver the best, most efficient services to the public while safeguarding the natural resources of the Commonwealth. I hope you find this edition of our newsletter both enjoyable and informative.

AML Project to Win Regional Award at National Conference

By Bob Scott

An abandoned mine reclamation project in McCreary County has received an award by the U.S. Office of Surface Mining Reclamation and Enforcement (OSM).

The Rock Creek Task Force — made up of a dozen government agencies and conservation organizations — has won the OSM 2012 Appalachian Regional Award, which was presented by OSM Director Joe Pizarchik during the 34th Annual Conference of the National Association of Abandoned Mine Land Programs in Des Moines, Iowa.



The task force worked for more than a decade to clean up damage from acid mine drainage that had left Lower Rock Creek without aquatic life for several miles, according to an OSM news release. When the project was done, acid in the creek had been cut by 99 percent and fish and other wildlife had returned, the agency said.

“The Lower Rock Creek Watershed Restoration Project has been a success that exemplifies the need, purpose and capability of the abandoned mine land program. The project overcame great obstacles from technical problems, minimizing construction induced sediment problems, to permits and funding,” Bob Scott, director of the Kentucky Division of Abandoned Mine Lands, stated.

“The Rock Creek Task Force brought together regulatory public agencies that provided input from multiple scientific disciplines and created a ‘buy-in’ effect for all parties involved.” Rock Creek is a boulder-strewn stream that flows from Tennessee (Pickett State Park) northeast into Kentucky through the Daniel Boone National Forest and the Big South Fork National Recreation Area before it empties into the Big South Fork of the Cumberland River.

AML Project to Win Regional Award at National Conference (continued)

Underground coal mining began in the Rock Creek watershed in the early 1900s and continued through the 1960s. The project was completed in three phases: the installation of about six miles of open limestone channels; construction of a vertical flow pond system; and construction of a self-flushing limestone pond.

The entire Rock Creek watershed is a major recreational attraction visited by thousands each year for fishing, hunting, hiking, backpacking and camping. Upper Rock Creek is a Kentucky Wild River, serving as a major recreational attraction and a blue ribbon trout stream. However, Lower Rock Creek's aquatic habitat and fresh water supplies had been decimated from acid mine drainage (AMD) from more than 40 underground coal mine portals and eight pyrite-rich refuse dumps. The dumps also posed a fire hazard and supplied sediments to the water.

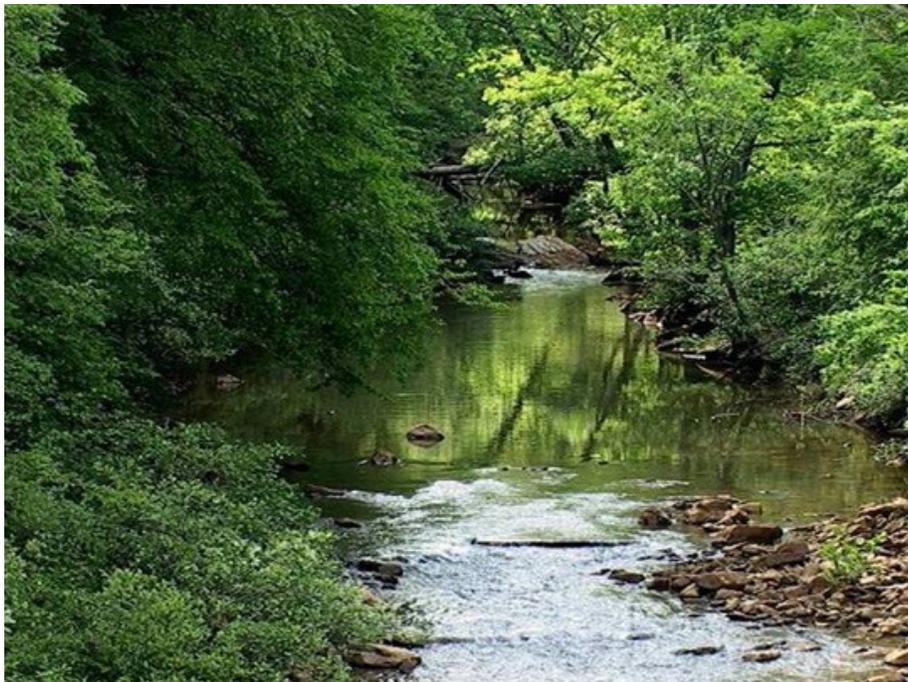
The cleanup project in the watershed covered four areas in Kentucky and Tennessee. Completed in 2010, the project has virtually eliminated the AMD impacts from the Rock Creek watershed into the Big South Fork while reducing erosion and suppressing the fire hazard.

"Most importantly, the restoration of the Rock Creek watershed has had a major impact on the lives of the residents of the area," Kentucky Energy and Environment Secretary Len Peters stated. The environment of the region is much cleaner, allowing families to enjoy swimming and fishing again."

Partners in the reclamation project include the Kentucky Division of Abandoned Mine Lands, Kentucky Division of Water, Kentucky Department of Fish and Wildlife Resources, Kentucky Division of Mine Reclamation and Enforcement, Office of Surface Mining, U.S. Geological Survey, U.S. Forest Service, U.S. National Resources Conservation Service, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Park Service and Trout Unlimited.

Since 1992, the federal Office of Surface Mining has presented awards to reclamation programs affecting lands abandoned before 1977 when federal oversight of coal mining began. In addition to public recognition, OSM hopes to encourage the exchange of successful reclamation technology.

Other regional winners were from Illinois (Mid-Continent) and Montana (Western), while projects in Utah (Small Project) and Pennsylvania (National) were also honored.



On the Road Training for ePermitting and Engineering

By Danita LaSage, PhD

The Division of Mine Permits is taking training on the road this fall. During September and October, engineering consultant Gary Gilliam, resource management analyst Mike Nielsen, and network analyst James Neal visited four DMRE Regional Offices to provide specialized instruction to engineers involved in permitting, production and regulatory oversight of surface coal mines.

e-Permitting

Electronic permitting (e-Permitting) for mining applications has been around DNR since 1999, when the first electronic application was submitted to the Division of Mine Permits. The process is easier now with a newly revised e-permitting program.

E-permitting in its original form, while still useful, did have some drawbacks. Applicants considered the original program error prone and difficult to use. It was especially difficult to incorporate revisions, since any changes required rebuilding the entire document. The program was not set up to interface with SMIS, the Surface Mining Information System program that tracks various aspects of each application. Additionally, the program used Microsoft Word, which limited file names and made navigation of attachments difficult.

The new process is built on Access, rather than Microsoft Word, so that changing attachments for resubmittal is much easier. Other improvements include the use of dropdown menus, flagging required information, automatic latitude/longitude checks, and quick, intuitive navigation. Section headings are color-coded for ease of use.

Validation checks for missing or unacceptable information allow applicants to submit a document that is more accurate, more complete, and requires less time to process and review.

It is not necessary to have Access installed, but Windows XP or greater is required.

Engineering

Engineering topics of interest include sediment channels design and construction, slope stability issues and the regulatory provisions related to thick overburden.

There are a variety of different approaches being used to design the sediment channels, which carry sediment-laden runoff water from disturbed areas to settling ponds. Sediment carried into the ponds settles to the bottom, resulting in a layer of clear water at the surface that can discharge into receiving streams. Gary Gilliam is providing additional training in design, compliance demonstration, construction and removal of sediment channels.

Stability concerns are a result of a trend towards placing fills on upland areas, away from streams, resulting in steeper ground slopes in soils that are more sandy. Special considerations are required to ensure that an adequate safety factor is incorporated into the design. Gilliam's presentation deals with the latest technology for such analyses and information on relevant soil characteristics.

Increasingly, backfill areas are becoming used for final storage of overburden. Thus, DNR published RAM 156 (July 2012) to provide guidelines for compliance with the regulatory requirements for backfilling. The RAM, a product of DNR personnel, industry, the U.S. Office of Surface Mining and the environmental community, was developed to answer questions that in many instances have not yet been asked due to industry's unawareness of thick overburden provisions in coal regulations. The guidelines are offered as a step towards simplifying what can be a complex issue; however, they constitute the minimum level of design or analysis to comply with the regulations. More stringent design or analysis may be appropriate on a case-by case basis.

The training promises to enhance communication between state regulators and the engineering community to improve design and construction of environmental controls.

The screenshot displays the Microsoft Access database interface for the 'TECHNICAL INFORMATION FOR A MINING PERMIT' form. The window title is 'Microsoft Access - [DMAP21_v3.13.mdb]'. The main area shows a form with various fields for applicant and engineer information, including name, address, phone, and email. The form is divided into sections like '3.1 Applicant Name', '3.2 Engineer', and '3.3 Applicant Address'. The interface includes a menu bar with 'Validate Data', 'Extract Data', and 'Import Data', and a toolbar with buttons for 'Save a Copy', 'Print Data', 'Import Data', 'Export to Word', 'Print Application', and 'Print Report'. The bottom right corner has buttons for 'Extract All Attachments', 'Delete All Attachments', and 'Import All Attachments'.

Division of Conservation's "Districts in Good Standing Program"

By Kimberly Richardson

In a recent statewide audit on special districts conducted by Adam Edelen, Kentucky state auditor, two shining stars stood out - the Kentucky library districts and Kentucky conservation districts. Conservation districts were mentioned due to their "Districts in Good Standing" program.

The Soil and Water Conservation Commission, in conjunction with the Division of Conservation, instituted the "Districts in Good Standing" program at the end of the 2010-2011 fiscal year. The commission had been struggling with deciding how to continue to financially assist Kentucky's 121 conservation districts with limited funds. With the "Districts in Good Standing" program, the commission was able to reward the districts that were meeting and exceeding statutory and policy requirements while giving the districts that were not an incentive to do so. The Division of Conservation polled the field representatives who work with the districts on a daily basis to put together a list of qualifying factors for the program. Twelve actions that are required by state statute or commission policy were considered important enough to add to this list. The requirements and current report card that the districts complete can be found on the Division of Conservation's website (<http://conservation.ky.gov/Pages/DirectAid.aspx>).

The "Districts in Good Standing" program has helped many districts set aside the time and resources to complete these directives. Employees of the Division of Conservation have been available to assist the districts with their reporting and other requirements. For the 2011-2012 fiscal year, 88 districts were in the highest category and received 100 percent of the direct aid funding that had been approved for them. Seven districts were in the second category and received 90 percent of the funding that had been approved for them, and 26 districts were in the last category and received 75 percent of the funding that had been approved for them.

The commission believes the "Districts in Good Standing" program has been a success, but they do not want to rest on their laurels. The program is meant to be an ever-changing program. Both the commission and the Division of Conservation want districts to strive to be model agencies that always work to protect the public and allocated funds. As regulations and policies change, the program will change accordingly so that districts who strive to do the right thing will continue to be rewarded for doing so.



AML Implements OSM Emergency Program

By Mark Meade

In July 2011 Abandoned Mine Lands (AML) began the implementation of a state-managed emergency program in cooperation with the Federal Office of Surface Mining (OSM). Since that time, AML has had approximately 30 projects incorporating underground mine blowouts, land slides, subsidence, high-wall failure and refuse fires. Most of the high priority projects have been in the eastern counties: Pike, Floyd, Perry, Letcher, Magoffin, Harlan, Johnson, Bell and Boyd. Because of this, a new field office was opened in Hazard located at: Hal Rogers Center, 101 Bulldog Lane, Hazard, KY 41701.

The division currently budgets \$5 million per year for these projects. The cost to reclaim the problem sites completed thus far range from \$65,000 to \$2.1 million depending upon their size and scope. Prior to the opening of the Hazard office, an average high priority project took approximately two weeks from the time the complaint was received to the site was investigated by the Program Development Branch in the Frankfort office. Plans were then developed by the Design Branch, after which the project was advertised and bids received by the Emergency Branch/Program Services. Average construction time on these projects was around 45 days during which a Construction Branch field office inspector would inspect the project until completion.

Now that the Hazard office is fully functional, the only action conducted in the Frankfort office is receiving the initial complaint and making a determination if the site is mining related and therefore eligible to be reclaimed under the AML program. Once that is processed, the information is sent to the inspectors of the Emergency Branch who inspect the site and assess the severity of the complaint. They will then classify it as a high priority or regular project. This speeds up the response time and also makes AML's regular program more efficient. A high priority project will usually impact a home or an access road to a residence creating a potentially life threatening situation.



Photos AML staff

Forestry Employees Utilize Information Systems Training in mock disaster

By Lynn True

Several Energy and Environment Cabinet employees, including two Kentucky Division of Forestry (KDF) employees recently participated in a Joint Information Systems training held at the Boone National Guard Center in Frankfort. The training was designed to familiarize communicators and emergency responders with the Commonwealth Joint Information Center (CJIC). Through the collaboration of public information professionals, the CJIC speeds information release time, enhances information analysis, reduces misinformation, maximizes resources and helps build public confidence in response efforts.

“CJIC is a central location designed to facilitate the sharing of information,” said Lynn True, KDF public information officer. “The CJIC not only allows information officers to work together in a centralized facility, it maximizes communication between different agencies. At its most basic function, the CJIC serves as a one-stop-shop for the media.”

The concept of using a JIC to facilitate the dissemination of emergency public information is not new. The idea initially emerged in the late 70s after unsuccessful attempts to communicate crisis information to the media and public during the Three Mile Island Nuclear Power Plant incident. Since that time, the concept and structure of JICs has grown and evolved – often taking a shape necessary to accomplish the task and necessitated by various emergency plans and available resources.

Kentucky’s CJIC has been in existence for about 10 years according to Buddy Rogers, information officer for Kentucky Emergency Management (KYEM). “Kentucky’s CJIC has responded to numerous disasters over the years including hurricanes, ice storms, floods and tornadoes,” said Rogers.

One of KYEM’s main programs, the Chemical Stockpile Emergency Preparedness Program (CSEPP), conducts an annual exercise that involves the CJIC as well as various emergency responders. This year, participants in the joint information systems training were invited to practice their skills and assist with the exercise.

“The exercise is actually a mock disaster involving a chemical explosion at the Bluegrass Army Depot (BGAD) located in Madison County,” noted Rogers. “We were better prepared to function as a ‘real’ CJIC this year. This is due in part to the willingness of other agency personnel who participated in the joint information systems training.”



Left to right: Lynn True, Buddy Rogers

Pigeonroost Fork CHIA Project

By Jeff Laird, CMS, GISP

The Cumulative Hydrologic Impact Assessment (CHIA) effort ongoing at the Division of Mine Permits is heavily dependent on water quality sampling and results data. Baseline and quarterly results are submitted by industry, though only field parameters, iron, and manganese are submitted. Over the past two years, these data have been supplemented by results recorded from trend station sampling locations established at the mouths of several watersheds in the eastern and western coal fields. These samples are taken quarterly with rigid adherence to Division of Water/Environmental Protection Agency (DOW/EPA) protocols. The results are processed by the Environmental Services Branch at the state laboratory. These samples include the full metals screen encompassing 29 parameters ranging from arsenic to zinc.



Pigeonroost is the name of a HUC-12 in Martin County, Ky. This HUC (hydrologic unit code) completely contains Pigeonroost Fork, including its headwaters. It has a significant amount of active and inactive surface and underground mining, as well as a DOW designated outstanding state resource water (Hobbs Fork). The Pigeonroost project is essentially a trend station location but with a sampling regimen at a much finer grain as not only does it have a sampling point at the mouth of the watershed, but 10 additional sampling points upstream, including tributaries. The array of sampling points within the watershed provides the basis for understanding the health of the stream from its headwaters to its discharge point into Wolf Creek. The increased density of the sampling network and the establishment of sample locations on tributaries enable scientists to determine at which points the stream may be impacted by discharges from streams originating in mining areas, construction, population, and other potential impacts.



The Pigeonroost project team consists of two environmental scientists, Dr. Richard Wahrer and Paul Rothman, and two GIS (geographic information systems) specialists, Kevin Devine and Jeffrey Laird. The GIS team compiled a series of maps showing hydrology, population, mining locations, stream health and characteristics, and noted water withdrawal points or sewage treatment plants. The scientists reviewed these maps and selected a series of potential sampling sites. The whole project team travelled to Pigeonroost and ground-truthed every site, approving or dismissing the potential sites or adding stations that better reflected on-ground conditions. Numerous pH and conductivity readings

were recorded at several points as the team made its way upstream to the headwaters to reveal any impacted stream reaches that would qualify for the full sample screen.

Pigeonroost Project (continued)



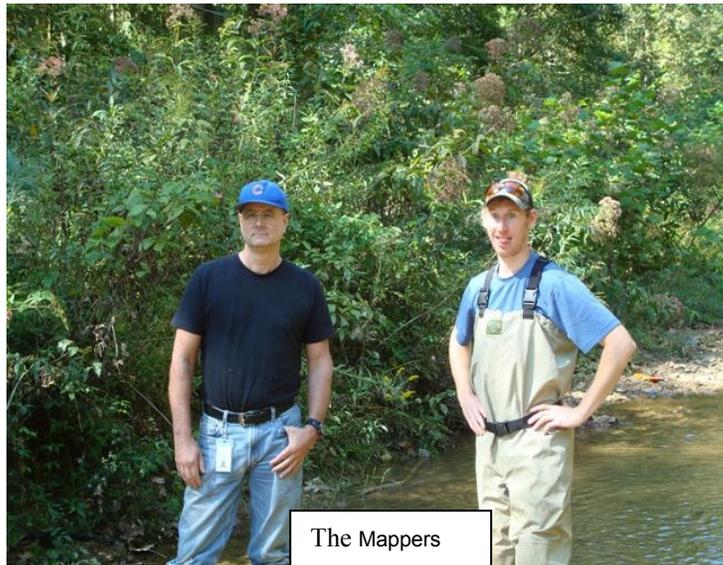
The Scientists

Once the scientists established the locations, the GIS team mapped the sample points and recorded the pH/conductivity values in a database. Sample results received from the lab were validated by the GIS team and placed in an Access database. They created a front-end result viewer application so that the scientists could manipulate, compare, graph, and analyze the data more easily. They also integrated another Access application that tracked the location and characteristics of the stations themselves, including video, photos, and stream cross section graphs.

The GIS team then loaded all of the location information, sampling points, photos and videos, aerial photography, Bing map images, and planimetric features such as hydrography and roads into an ArcMap project on their Trimble Yuma GPS/Tablet computer. Many of the points in the upper reaches of Pigeonroost are only accessible by haul roads, power line cut roads, or gas/oil well maintenance roads and can be quite remote. Navigating to the 11 site locations every month to conduct sampling is difficult as they become overgrown and hidden from the road. Using ArcMap to display the project area and relevant feature data on the Yuma, the GIS team uses the Yuma GPS to navigate the scientists to the sites with mobile GIS. Because the Yuma supports a full installation of ArcGIS, the team is able to query the database as well as edit the features on site in the field. As the Yuma is a field-hardened unit, rough handling or rain/ice conditions are no problem.

Eventually, the scientists will prepare a peer-reviewed paper evaluating the impacts of mining on this watershed. They will rely heavily on the GIS team for mapping and database support. The Pigeonroost project is an excellent example of how resources and results can be maximized by including GIS staff in the planning and execution elements of a field project.

Inclusion at the planning phase is critical as GIS is able to reduce time spent in the field assessing the situation and searching for sample sites. Inclusion during the operational phase has proven to be essential as methodologies can change in response to the scientific evaluation of the data. For example, more field readings may need to be taken, or a new sample point establish as a result of the unexpected presence of a compound. As the scientists adjust, the GIS team is able to correspondingly modify the project to maintain the highest levels of integration and support.



The Mappers

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Photo by
J. Hamon