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*This month, the Annual Forecast makes predictions for 2009 and gives readers insight as to what U.S. coal operators are thinking. (Cover photo: Lee Buchsbaum, www.lmbphotography.com)*

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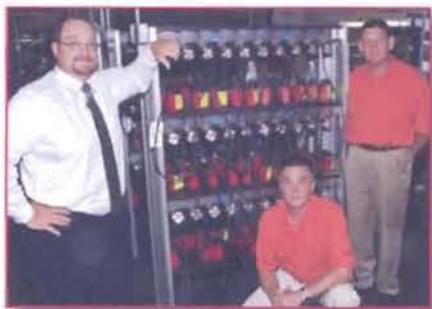
*This month, Coal Age documents the longwall sector with the annual U.S. Longwall Census. (Cover photo: Shearing machine on a longwall, photo courtesy of Joy Mining Machinery)*

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100 Years of Lighting**

by Art Sanda

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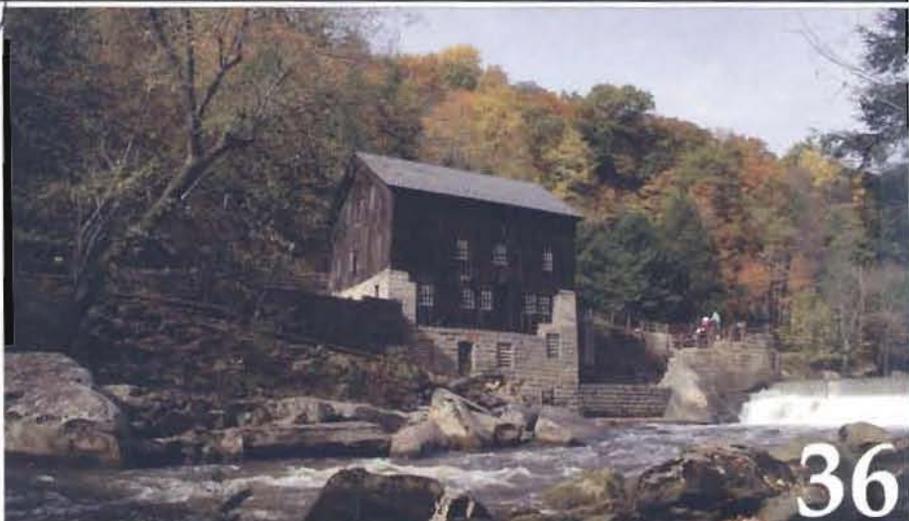
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## FEATURE

### REWIRING RIVERS

Two geologists examining streams near Lancaster, Pa., made an unexpected discovery: Many streams and floodplains in the mid-Atlantic were vastly changed by milldams in early America. That counters traditional models of the relationship between streams and landscape, sparking a broad controversy that may revolutionize the science of fluvial geomorphology — and efforts at river restoration.

David B. Williams



## FEATURE

### SAVING ENERGY AND WATER THROUGH SUPERIOR SANITATION

Recycling plastic shopping bags and newspapers may be commonplace today, but many people are still skittish about reusing toilet water or recycling feces and urine. Yet a growing number of recycling-minded people are embracing the idea, and are starting to use such technologies in their homes and businesses as a way to conserve water and energy — and save money.

Erin Wayman

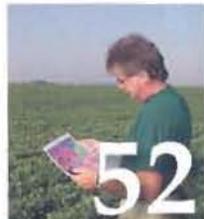


## FEATURE

### FOOD FOR A HUNGRY WORLD: TRACKING AGRICULTURE FROM OUTER- AND CYBERSPACE

The dynamics of the global environment — from water and sunlight to soils and nutrients — can be tracked by a variety of sensors on global satellites. The information derived from these satellites is proving especially valuable for farmers and ranchers in the Northern Great Plains, who are using the new data to produce food more efficiently and to safeguard the environment.

George A. Seielstad



## TRENDS AND INNOVATIONS

### NEXT-GENERATION UNDERWATER ROBOTS TAKE A LEAP

Autonomous underwater vehicles, or AUVs, are designed to be tough; they travel to places that humans can't, doing jobs that are dull, dirty or dangerous. AUVs are intended to be self-sufficient: They are not tethered to shipboard operators, and as such, can navigate on their own, following and make adjustments to a predetermined mission that might last days. These robots are among the newest and most elite in a generation of artificially intelligent underwater explorers.

Carolyn Gramling



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Roaring Fork River in North Carolina's Great Smoky Mountains. Photo by Michael Collier.

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MINING REFORM: NO LAW IN DEADWOOD?  
Hardrock mining laws haven't changed much in the 130-or-so years since mining took off in Deadwood, S.D., a place where a mining camp with no laws at all developed into a more civilized town. Like Deadwood, these laws are in need of reform.  
**Stephen M. Testa**
- 87 **A COMMENT**  
UNDERSTANDING GEOLOGY: TO BE HEARD, GEOLOGISTS NEED TO MAKE SOME NOISE  
The "drill, baby, drill" call of the 2008 presidential election is just one of many examples of geologic ignorance. So, what can geologists do about this lack of understanding of Earth? First of all, geologists need to make noise.  
**John J.W. Rogers**
- 88 **GEOLOGIC COLUMN**  
TO MRS. REYES, AND THOSE WHO MAKE A DIFFERENCE  
Sometimes, people who are not geoscientists can have a profound effect on those who are. Geology students from 70 colleges and universities learned their mapping skills through the generosity of Mrs. Gertrude Reyes, who offered her land and her wisdom.  
**Lisa A. Rossbacher**

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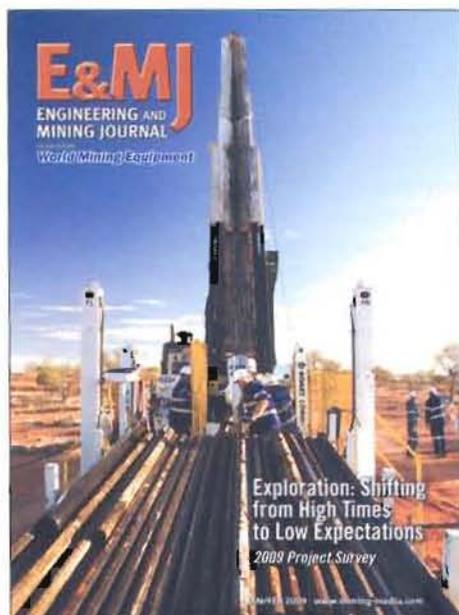
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A Boart Longyear KWL1600 multipurpose rig drills in Western Australia. Photo courtesy of Boart Longyear

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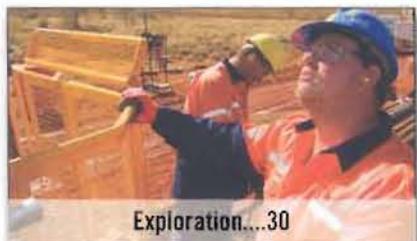
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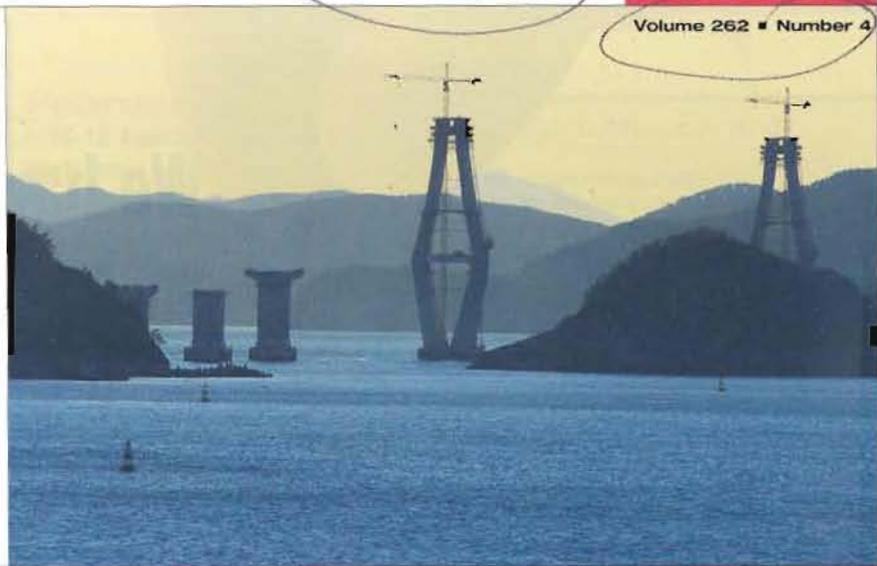
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Cover photo and photo right courtesy of Halcrow



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COVER STORY

New Money

28 As infrastructure begins drawing attention on Capitol Hill, venture capitalists are looking for firms with innovative products and materials to bring to market.

Cover by Guy Lawrence for ENR, photo courtesy of Hycrete Inc.; photo right courtesy of NX Infrastructure Ltd.



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**Cover:** The active sand dunes in the center of the Taklimakan Desert, China. The mean annual precipitation in the central desert is less than 25 mm, making it one of the driest regions in the world. Local people call this desert the "dead sand sea," and say that it "never comes in, never goes out." See "New evidence on the age of the Taklimakan Desert," by Sun et al., p. 159–162.

Photo by: Jimin Sun

Cover Design by: Eric Christensen

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**Associate Editor Changes**

2009 brings a few changes to the JAWRA editorial team. Karl Williard is stepping down as associate editor for Ecohydrology. Since 2005, Karl has helped us in upgrading this area of our journal. AWRA won't be losing Karl though, as we look forward to his continued service with his election to the AWRA board of directors. Thank you and congratulations, Karl!

Replacing Karl will be Ge Sun, of the USDA Forest Service Southern Research Station in Raleigh, North Carolina. Ge served as a guest associate editor for the recent featured collection on Forest Hydrology in China. I was very impressed with his energy and the quality of his work on this well-received collection. His title will be associate editor for Forest Hydrology. We look forward to Ge bringing an international flavor to this exciting topic.



Kenneth J. Lanfear, P.E., JAWRA Editor  
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Cover photo: The Mississippi River rounds a bend at New Orleans by Ken Lanfear.

# Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

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January/February 2009

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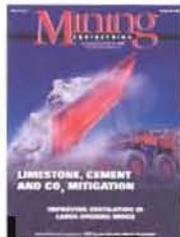
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# Mining

ENGINEERING  
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VOL. 61, NO. 2 FEBRUARY 2009

COVER STORY



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Newmont has a lot in the project pipeline, including the FALC JV diamond project, the Boddington moly project, the Euronimba iron ore project and the Phoenix copper leach project, in addition to a host of gold properties. Among the gold projects at Stage 3 are Callie Deeps and Turf.

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## Poisonous Plants and Rangelands

Guest Editors: James A. Pfister and Kip E. Panter, USDA–Agricultural Research Service Poisonous Plant Research Laboratory, 1150 E 1400 N, Logan, UT 84341, USA.

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# SOIL SCIENCE

An Interdisciplinary Approach to Soils Research

FEBRUARY 2009

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