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- 1227–1235 **Prairiegrass–Brassica Hybrid Swards for Autumn Dry Matter Production** *D.P. Belesky, J.P.S. Neel, and J.M. Ruckle*

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- 1181–1186 **An Automated Template Approach for Generating Web-Based Conservation Planning Worksheets** *Jeffrey J. Steiner, Toshimi Minoura, and Mariko Imaeda*

- 1265–1273 **Forage Nutritive Value in an Emulated Silvopasture** *Alicia L. Buergler, John H. Fike, James A. Burger, Charles R. Feldhake, James A. McKenna, and Chris D. Teutsch*

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- 1187–1194 **Characterizing Root Responses to Low Phosphorus in Pearl Millet [*Pennisetum glaucum* (L.) R. Br.]** *I. Faye, O. Diouf, A. Guissé, M. Sène, and N. Diallo*

- 1274–1279 **Effect of Planting Date, Clipping Height, and Cultivar on Forage and Grain Yield of Winter Wheat in Argentinean Pampas** *M.J. Arzadún, J.I. Arroquy, H.E. Laborde, and R.E. Brevedan*

- 1280–1289 **Effects of Forage Management on the Nutritive Value of Stockpiled Bermudagrass** *D.A. Scarbrough, W.K. Coblenz, K.P. Coffey, D.S. Hubbell III, T.F. Smith, J.B. Humphry, J.A. Jennings, R.K. Ogden, and J.E. Turner*

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- 1213–1220 **Dairy Cattle Grazing Preference among Six Cultivars of Perennial Ryegrass** *Harm J. Smit, Seerp Tamminga, and Anjo Elgersma*

- 1290–1297 **Winter Cereal Cover Crop Mulches and Inter-Row Cultivation Effects on Cotton Development and Grass Weed Suppression** *I. Vasilakoglou, K. Dhima, I. Eleftherohorinos, and A. Lithourgidis*

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- 1221–1226 **Stand Persistence and Animal Performance for Tall Fescue Endophyte Combinations in the South Central USA** *A.A. Hopkins and M.W. Alison*

- 1257–1264 **Soil Compaction in Conservation Tillage: Crop Impacts** *Dilraj Sidhu and Sjoerd W. Duiker*

Cover: Cattle grazing preference tests at Wageningen University, the Netherlands. These Holstein Friesian cows could choose freely among six different perennial ryegrass (*Lolium perenne* L.) cultivars. Herbage mass was measured before and after grazing sessions of 24 hours to measure herbage intake and preference. See "Dairy Cattle Grazing Preference among Six Cultivars of Perennial Ryegrass," p. 1213–1220.

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- 1298-1311 **Crop Performance and Soil Properties in Two Artificially Eroded Soils in North-Central Alberta** *R.C. Izaurralde, S.S. Malhi, M. Nyborg, E.D. Solberg, and M.C. Quiroga Jakas*

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- 1326-1332 **Changes in the Physiology and Feed Quality of Prairie Grass during Regrowth** *L.R. Turner, D.J. Donaghy, P.A. Lane, and R.P. Rawnsley*

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- 1333-1339 **Irrigated Annual Ryegrass Responses to Nitrogen and Phosphorus on Calcareous Soil** *Hagen Lippke, Vincent A. Haby, and Tony L. Provin*

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- 1345-1351 **Assessment of the Amino Sugar-Nitrogen Test on Iowa Soils: I. Evaluation of Soil Sampling and Corn Management Practices** *D.W. Barker, J.E. Sawyer, and M.M. Al-Kaisi*
- 1352-1358 **Assessment of the Amino Sugar-Nitrogen Test on Iowa Soils: II. Field Correlation and Calibration** *D.W. Barker, J.E. Sawyer, M.M. Al-Kaisi, and J.P. Lundvall*

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- 1359-1366 **Yield-Water Supply Relationships of Grain Sorghum and Winter Wheat** *Loyd R. Stone and Alan J. Schlegel*

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- 1367-1374 **Irrigated Corn and Soybean Response to Nitrogen under No-Till in Northern Colorado** *Ardell D. Halvorson and Curtis A. Reule*

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# Coal Age

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*This month Coal Age takes a look at improving drilling performance through better bit design. Cover photo: Rotary blasthole drills prepare the bench for a production blast.*

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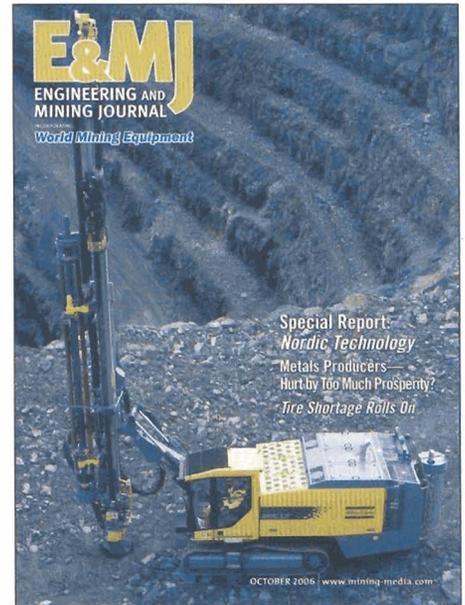
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*Atlas Copco's ROC L7R is the most recent of the company's surface rigs to be equipped with the highly successful CopRod drill tool system. For a comprehensive rundown on new developments in Scandinavian mining and equipment technology, see our special report beginning on pg. 30.*

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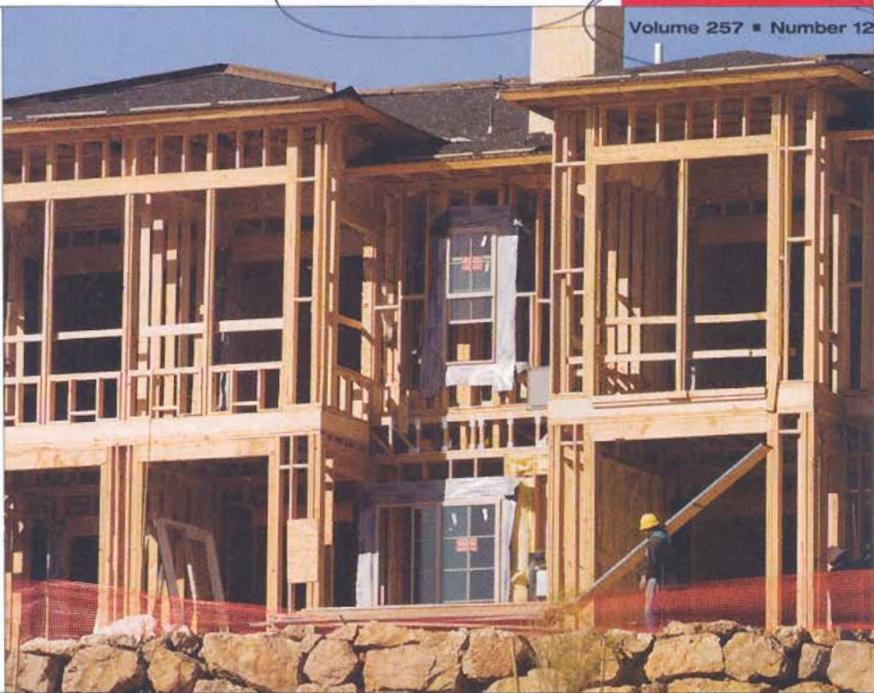
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## SPECIAL REPORT

### ► Cost Break

**25** Contractors got a break from two years of relentless inflation during the third quarter as a downturn in housing saps some cost pressures and price speculation in the commodity markets eased. However, high energy costs and pricey imports promise to keep construction inflation going.

Cover photo and photo right by Michael Goodman for ENR



## NEWS

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**10 Trucks:** Costs still cloud diesel truck cleanup



Diesel truck sales could slip. Page 10

**13 Work Force:** Report cites bias against women in engineering academia

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- 13 School Construction:** New Jersey seeks \$3.2 billion, with changes planned
- 14 Progressive Collapse:** Best practice guidelines for resistance due next year

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- 17 Dams:** Rock anchors stabilize New York structure on foundation

### ► Transportation

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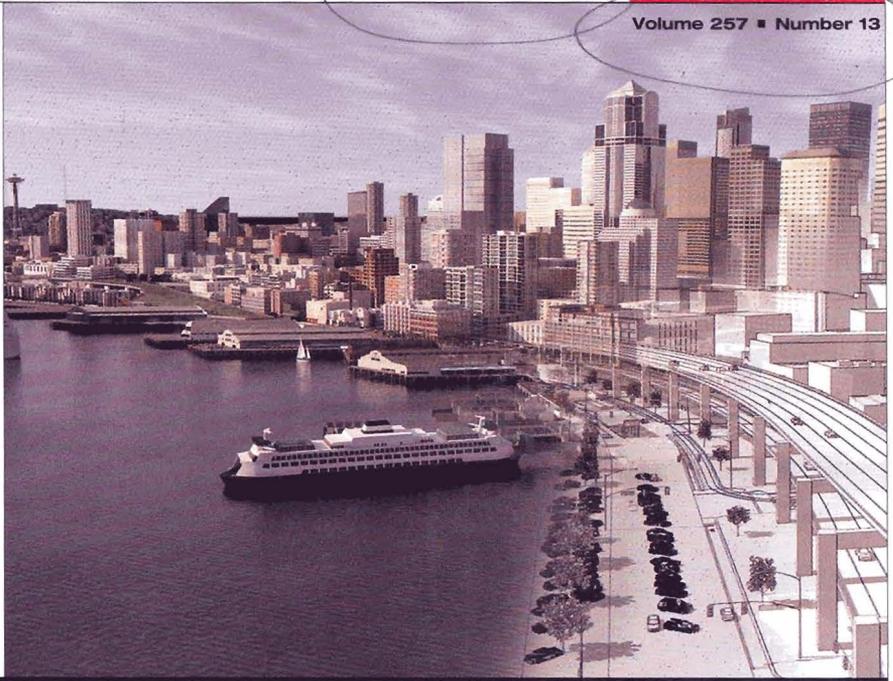
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COVER STORY

► **Mixing Data**

**30** Digital modeling advances beyond Building Information Models, as construction managers interface with nondesign influences to make the model much more than a store of building component information.

Cover illustration and illustration right, of Seattle, courtesy of Washington State DOT.



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► **China Bridge Boom**

**34** Overseas firms are lending a hand as China pursues record-breaking bridges and longer-lasting roads.



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- 13** **Demolition:** Last visible scar of World Trade Center attacks to disappear

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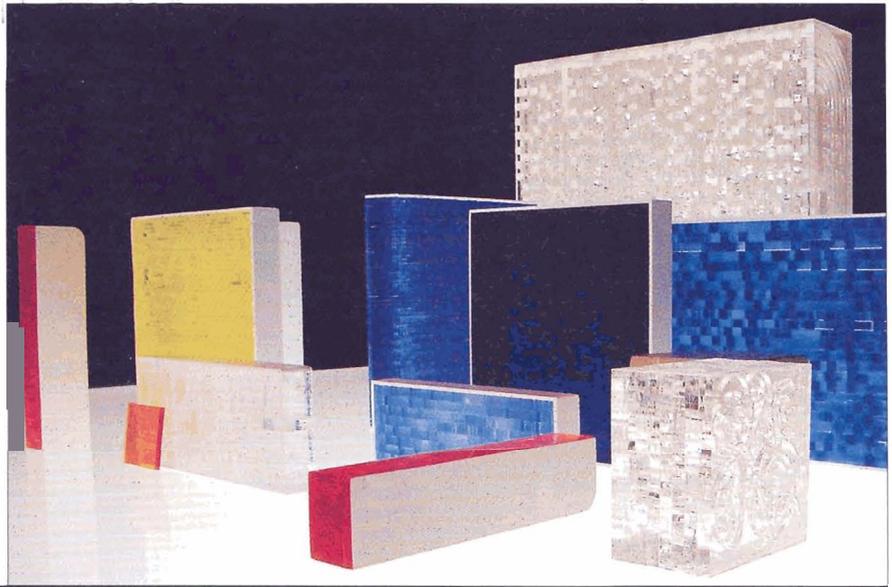
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COVER STORY

► Material Changes

**22** Innovation is infusing concrete and other traditional building materials while new materials are introduced to meet the demand to build smart, clean and fast. The quest for innovation has put some wild, new products on the designer's palette.

Cover photo by AP/Wideworld; photo right courtesy of Princeton Architectural Press



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**15** Work Force: Industry execs convene in D.C. to tackle 'people gap' crisis

**15** Associations: AGC unveils new building information modeling guide

► Buildings

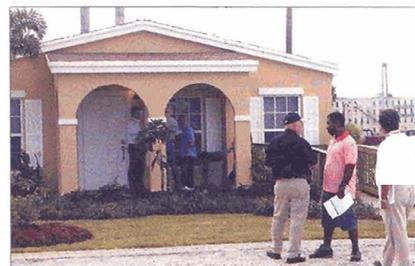
**12** Accidents: Climbing crane not properly secured, says manufacturer

**12** Indoor Air Quality: Study shows cooler temperatures, fresh air boost learning

**13** Reconstruction: Prospects for home-building boom improve with ruling

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**14** Building Codes: Fire sprinklers in houses are not likely



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**SPECIAL REPORT**

**The Top 600 Specialty Contractors:**

**40** For most large specialty and subcontractors, work is plentiful. But pressures from personnel shortage in the office and in the field, immigrant worker concerns, materials price spikes, and new technologies on the job are causing many to ponder how work will get done now and in the future.

**NEWS**

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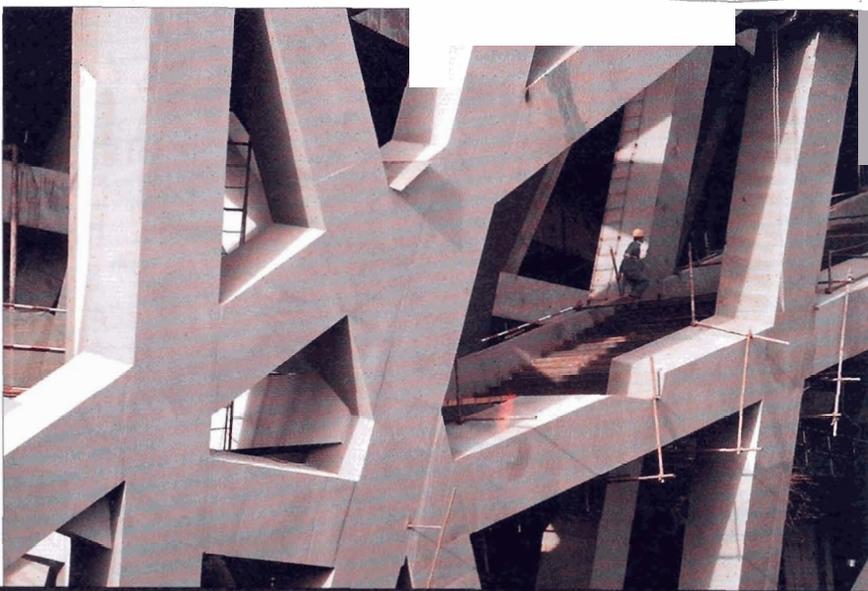
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**26** The 2008 Summer Olympics will open in Beijing's new National Stadium, a venue where facade and structure are identical. Welded steel plates were used to build up the box sections that create its unusual form.

Cover photo and photo right by Michael Goodman for ENR



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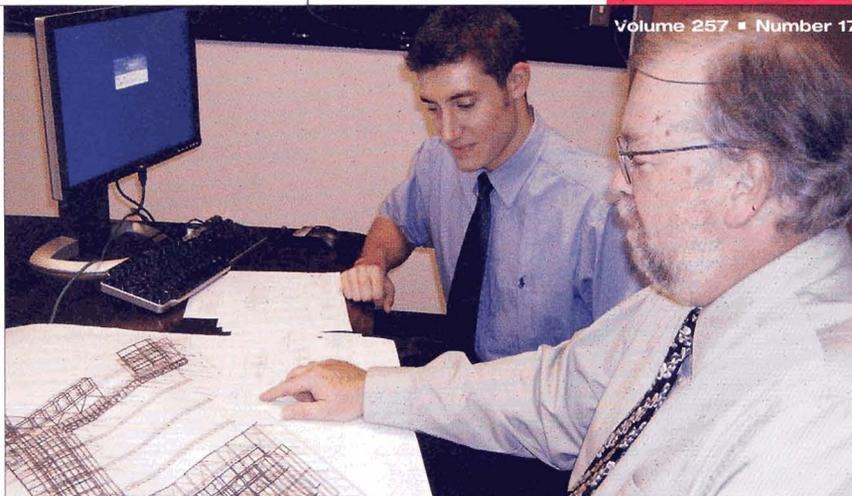
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NOVEMBER/DECEMBER 2006

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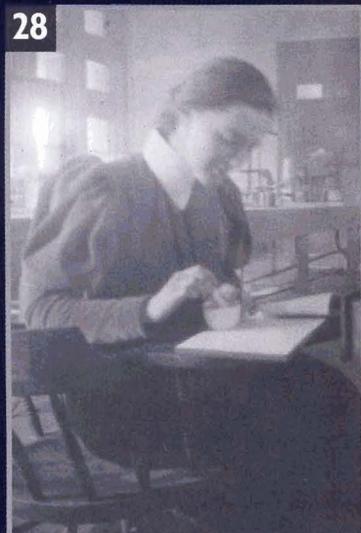
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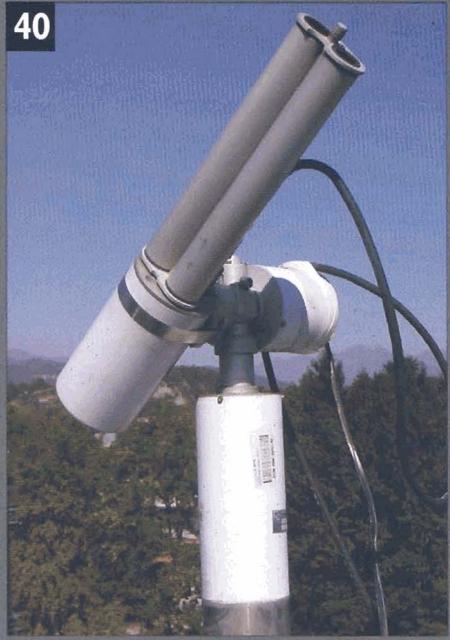
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An artist's rendition imagines the refilling of the Mediterranean Sea about 5 million years ago, after several hundred thousand years of being largely dried out. Scientists are learning more about the complex geologic and climatic processes that led to the drying out and subsequent refilling. Read more on page 20. Digital Matte Painting by Sithiriscient Khay and Claude Précour, Meteor Studios Inc., [www.meteorstudios.com](http://www.meteorstudios.com).

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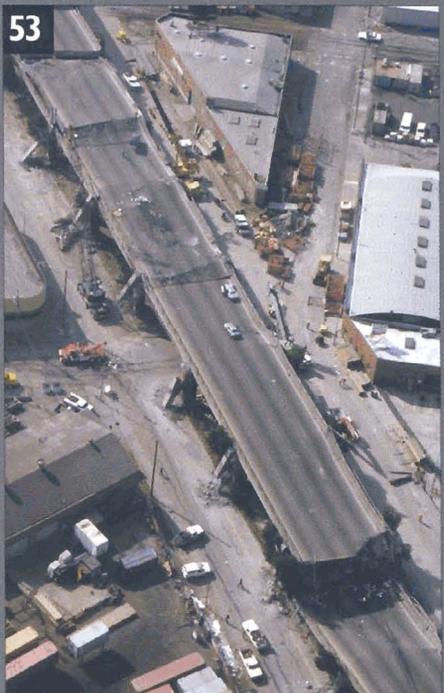
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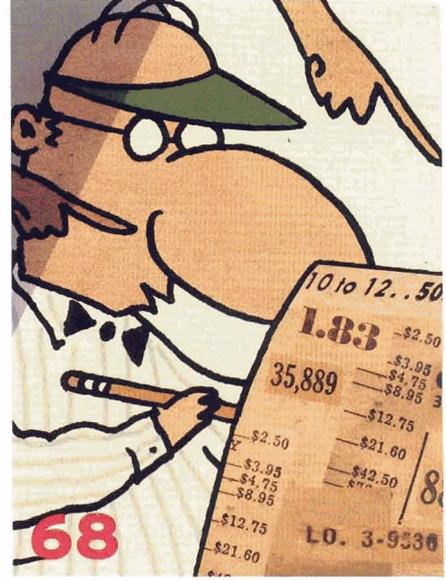
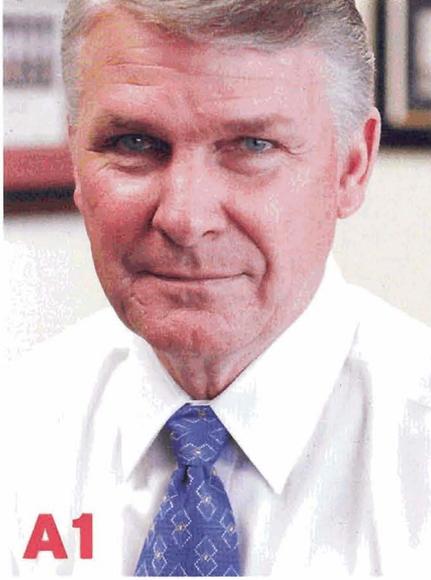
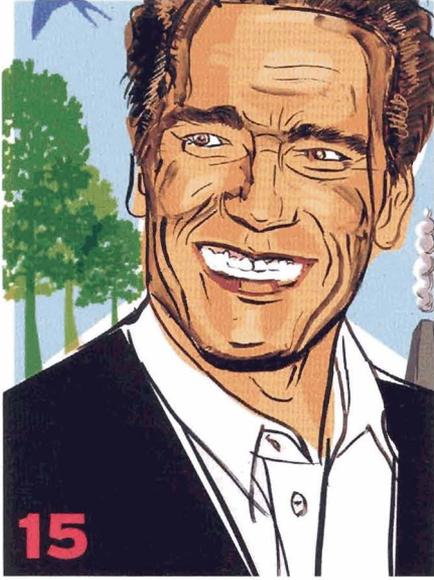
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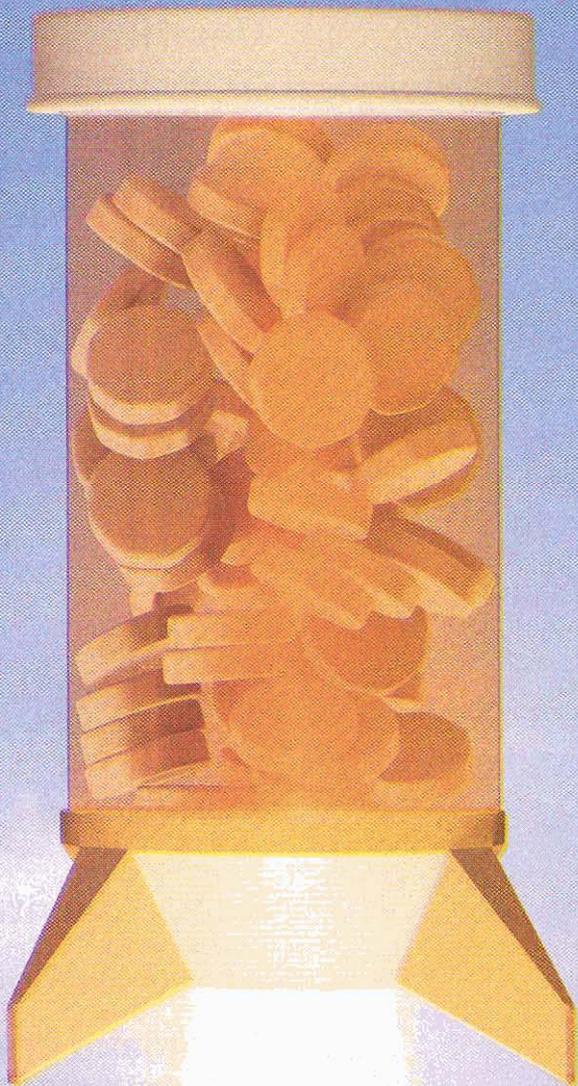
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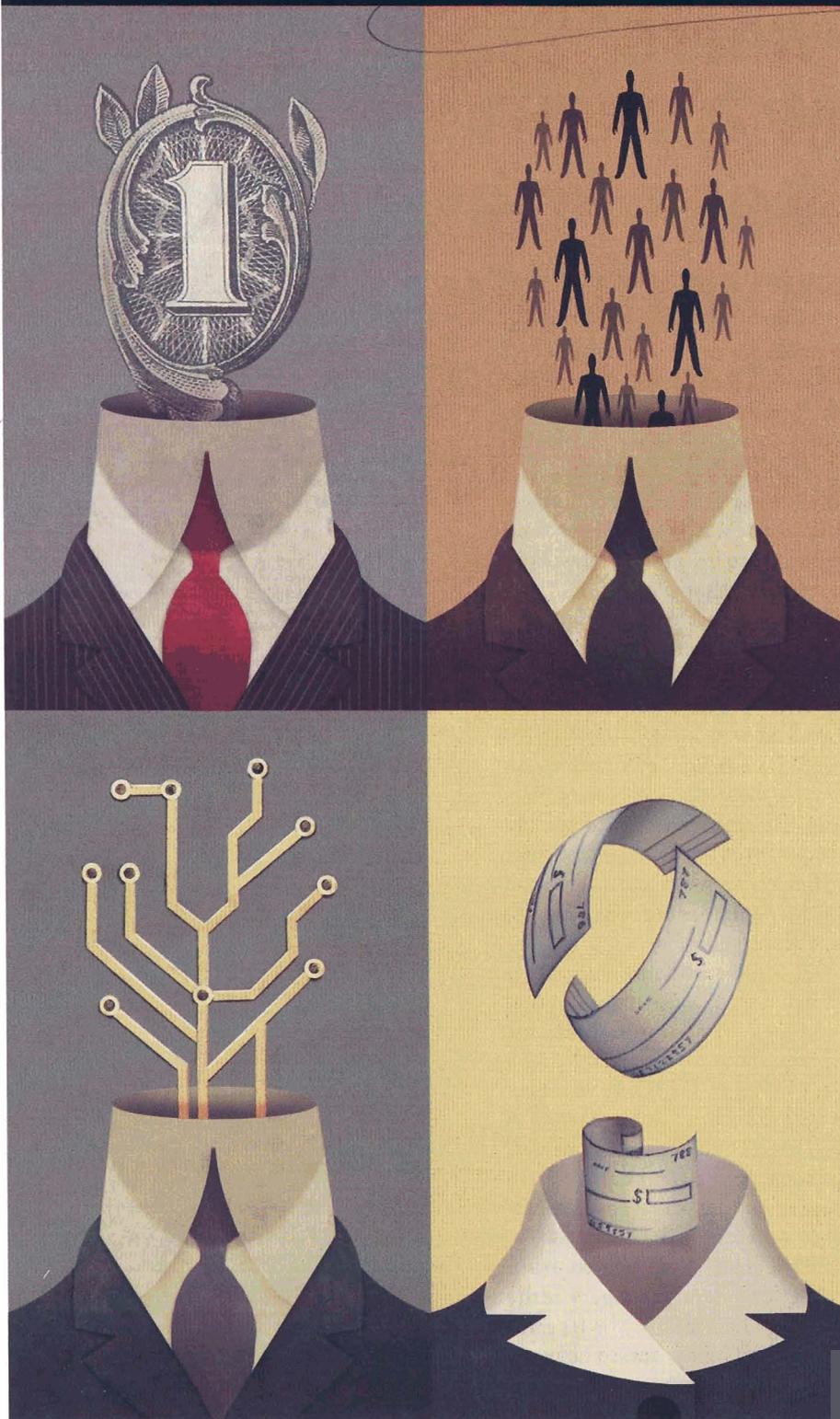
Bloggers can get a bill passed. But will they follow through to see that it's implemented properly?

*By Tom Shoop*



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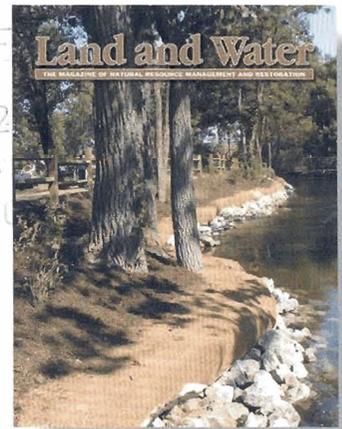
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# Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

Volume 50, Number 5

September/October 2006



## Cover Story

Christiana Creek flows more cleanly through the City of Elkhart Indiana's High Dive Park as a result of a 290-foot stream bank restoration project designed and installed by JFNew. The highly-eroded bank was stabilized by installing a rock toe and one soil encapsulated lift. The shoreline was planted with a variety of native plants and shrubs. The project was funded in part through a grant from the Great Lakes Commission. See related story page 6.

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# NATURAL RESOURCES & ENVIRONMENT

ABA SECTION OF ENVIRONMENT, ENERGY, AND RESOURCES

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# PAY DIRT

## MAGAZINE

*A Voice For Western Mining Since 1938*

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Augusta submits plan to Forest Service; finds more copper • State approved reopening Montanore's portal • Phelps Dodge gets Safford permit, starts work • Canyon gets estimate of resources at Briggs • Placer gold mining may return to Arizona • TV news programs look at mining needs • Sterling advances work at Sunshine mine • Study says cave-ins won't be a problem at Rock Creek • Teryl options claims in Warren Mining District • Former workers recall nation's only wax mine in Utah.

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Arizona copper's impact is starting to look at little bit more like it did in the "good old days," such as when this photo was taken on the relatively new open-pit mine at Jerome, but it has a ways to go before reaching the peak of 1981.

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MAGAZINE

A Voice For Western Mining Since 1938

September 2006

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**The Business of Mining** 21

Phelps Dodge may get \$500 million from ending Inco deal • NovaGold sues Barrick in dispute over Donlin Creek • Also claims Barrick misused confidential info • Barrick's net zooms with higher prices, Placer, new mines • Newmont's net almost doubles in quarter, up 116% in half • Goldcorp, Glamis plan \$21.3 billion merger • EuroZinc and Lundin merging their copper and zinc assets

From My Viewpoint, 2; Ad Index, 6; Mexico, 8; Canada, 9; Peru, 10; Chile, 11; Latin America, 12; World, 13; Western Briefs, 14; Companies and Markets, 24; Earnings, 26, 27; Miners in the News, 28; Directory, 30; Safety, Health & Labor, 31; Low Grade, 32

## On the Cover

These historic photos show an oil shale demonstration project undertaken by the U.S. Bureau of Mines at Rifle, Colo. in the 1950s. A 1944 presidential decree, the Synthetic Liquid Fuels Act, directed the Bureau to construct and operate demonstration plants to produce liquid fuels from coal, oil shale, and other substances.

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**Front and Back Cover:** Upper Lodgepole Creek in the foothills west of Cheyenne, Wyoming. Photo by John Mitchell.

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