TECHNICAL LIBRARY

May 5, 2006

Current Journal Contents
of the
OSM-WR Technical Library
1999 Broadway, Suite 3410
P.O. Box 46667
Denver, CO 80201-6667

This is the current compilation of the table-of-contents pages for journals received during the month of April in the Library. Individuals may have copies of specific articles by notifying the librarian either by phone, e-mail, or regular mail service. **(If you have more than one or two articles you want, please send a written or e-mail request.)**

Deborah K. McGinnis, Librarian Tele: (303) 844-1436
FAX (303) 844-1545 E-mail: dmcginni@osmre.gov
OSM Library Catalog: http://www.wrcc.osmre.gov/glas/

NOTICE OF WARNING CONCERNING COPYRIGHT RESTRICTIONS

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted material.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specific conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of copyright law.

Coal Age

FEATURE ARTICLES

20 The Gentrification of Gillette
Poised for growth, this energy mecca is missing one thing: skilled labor

26 Black Thunder Reaches New Highs
After successfully merging North Rochelle, Arch Coal sets its sights on reopening Coal Creek

30 Restoring Erosional Features in the Desert
New landform design software and automated machine guidance combine in award-winning reclamation project

COAL IN THE NEWS

4 Mine safety commission announces members, plan of action

4 ICG resumes operations at Sago; announces initial findings of independent accident investigation

5 Emergency mine rule to go into effect

6 Alabama miners safe after ignition

8 W. Va. workers' comp provides for Sago families

10 NCC purchases rail line

14 Murray sets the record straight at Galatia

15 New Ohio mine to fuel county job market

17 MSHA files suit to force payment of penalties

18 Massey air quality permit denied

19 Kentucky halts coal truck exemption

WORLD NEWS

5 65 miners die in Mexican mine explosion

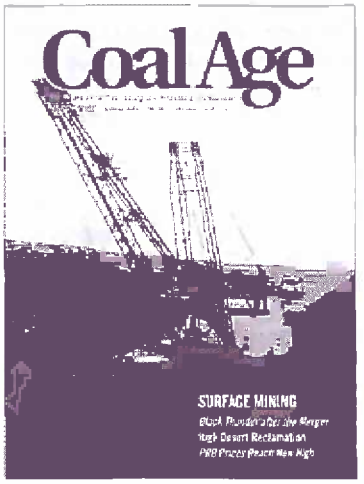
Taiwanese firm to build 300-mw coal-fired power plant

Exploration permits granted for major coal reserve in Queensland

6 Hillsborough defines Canadian resources

Coal India reports profits

Coalcorp expands rights in Colombia



GILLETTE / 20

ENGINEERING TECHNOLOGY / 30

THIS ISSUE

This month Coal Age takes an in-depth look at western surface mining. Arch Coal discusses merging the North Rochelle operation into Black Thunder. BHP Billiton's La Plata mines uses technology to effectively reclaim mined lands. And, Gillette is no longer a one-horse town. (Cover: A dragline moves overburden at the Black Thunder mine, the largest coal mine.)

DEPARTMENTS

2 Editorial

4 Coal in the News

5 World News

8 People

16 Calendar

34 Marketwatch

36 Product News

45 Classified

48 Legally Speaking

COAL People Magazine
March 2006 Vol. 26 No. 10
Dedicated to Coal People Worldwide
www.coalpeople.com

On the cover...
Top: Foothills, Campbell County Memorial Hospital, Gillette, Wyoming.
photo by Lori King

Bottom: Peabody's North Antelope Rochelle Mine is located 65 miles south of Gillette, Wyoming.
photo courtesy of Peabody Energy

Gillette, Wyoming 8
A friendly coal city with a great quality of life
by Al Skinner
Keeping it Simple Separation 14
New coal recovery machine operates just on air and water
by Art Sanda
Frank "Wyso" Wysochansky 18
Coal region artist's exhibition featured at Lehigh University
by James Stevens, photo credit Steve Lichak
Bruce Hagerton 34
West Virginia coal operator considering pulling the plug
by Bill Archer

Departments

Editorial 6
Coal News Worldwide 28
Capsule News 22
Coal People in the News 30
SME Exhibitor Profiles 60
Product Literature 62
Product News 62
Advertising Index 68
Classified 66-69

Business Profiles

Brush Wellman 37
Priority Wire and Cable 38
Richwood Industries 39
Strata Products 40
Brookville Mining Equipment 41
Sandvik Mining & Construction 42
Rulmeca Corp. 43
Liebherr Mining Equipment Co 44
Mine Site Technologies 45
Logan Corporation 46
Wooster Hydrostatics 47
CONSPEC Controls 48
R J Mine Service 49
Jennmar Corp 50
Fairmont Rubber Products 51
Saminco 52
Argonics 53
Coalscan/Scantech 54
Damascus Corp. 55
Ceramic Technology 56
Engart, Inc 57
Ludowici MPE 58
Rezplast Manufacturing 59

Buyer-Friendly Products and Services Reference

ABRASION RESISTANT MATERIALS
CBP Engineering 66
AUTOMATED SAMPLING SYSTEMS
James A. Redding 69
BEARINGS
Brush Wellman 29
BELT FASTENERS
Persinger Supply Co. 25
BOLTER MINER
Sandvik Mining & Construction 2
CENTRIFUGES
Ludowici MPE 36
COAL PROCESSING EQUIPMENT
Ceramic Technology 26
Scantech 22
COAL WASHERS
Eagle Iron Works 67
COMMUNICATION/UNDERGROUND
Mine Site Technologies 27
CONSULTING SERVICES
GIW Industries 69
Marshall Miller & Associates 69
CONSULTING SERVICES/ENGINEERS
Cowin & Company 69
Norwest Corporation 69
CONTRACTING & CONSTRUCTION
Coalfield Services 66
CONVEYOR BACKSTOPS
Marland Clutch 66
CONVEYOR DE-ICING
Thermo-Tech 67
CRANE BODIES
General Truck Bodies 67
DISTRIBUTORS-MOR SUPPLIES
Fairmont Supply Co. 23
DUST EXTRACTORS
Engart Inc 24
ELECTRIC TRACTION DRIVES
Saminco 35
ELECTRICAL CONTRACTORS
D & S Electrical Contractors 69
EMERGENCY REFUGE STATIONS
Strata Products 16
EMPLOYMENT OPPORTUNITIES
ACES Power Marketing 67
DSI Ground Support 67
ENGINEERING SERVICES
Farnham & Pfile 66
Skelly and Loy 69
EQUIPMENT DISTRIBUTORS
Logan Corp. 25
RM Wilson Co 30
United Central Industrial Supply 71
FANS
Paul's Repair Shop 66
FEEDER SYSTEMS
Hughes Supply 67
FIBERGLASS PRODUCTS
Rezplast Inc 31
FILTERS/DISC
Peterson Filters 69
GAS MONITORING EQUIPMENT
CONSPEC Controls 28
HOISTING EQUIPMENT
FKC-Lake Shore 69
INSURANCE
American Mining Insurance 20
LINERS
Richwood Industries 22
MINING EQUIPMENT/NEW and/or USED
Brookville Equipment Corp 10
Whayne Supply 20
MINING EQUIPMENT/SERVICE & REPAIR
R J Mine Service 33
MINING EXCAVATORS
Liebherr Mining Equipment Co ..... BC
MINING TOOLS-UNDERGROUND/SURFACE
Kennametal Inc. 5
MOTORIZED CONVEYOR PULLEYS
Rulmeca Corp. ..... 17 & 69
PAINTING SERVICES
Gardner Paint Services 66
PERSONNEL CARRIERS
Damascus Corp. 12
PIPING/FABRICATION
Jabo Supply Corporation 66
POWER CABLES
Priority Wire & Cable ..... 24 & 67
PREPARATION PLANT-DESIGNERS & BUILDERS
Boyce, Graybeal & Sayre, Inc. 69
Lincoln Contracting & Equipment 66
PUMP REBUILDERS
Wooster Hydrostatics 7
REFUGE CHAMBERS/FRESH AIR BAY
Strata Products 32
ROOF SUPPORT SYSTEMS
American Commercial 11
Jennmar Corporation 13
TIRES & ACCESSORIES
SETCO 3
TRADE SHOWS
Coal Prep / AGG Show 63
SME Show 21
National Coal Show 70
URETHANE SHEETS
Argonics 36
VENTILATION CONTROL
Richwood Industries 61

Coal People Magazine

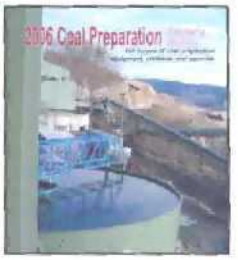
April 2006 Vol. 28 No. 11

Dedicated to Coal People Worldwide

NEXT ISSUE
Midwest Coal

On the covers...

Front cover...
Background: Compliments of Boyce, Graybeal, & Sayre, Inc. Coal Stacking System
Foreground: Dr. Frank Burke photo compliments of CONSOL Energy



Buyer's Guide cover
Compliments of Boyce, Graybeal, & Sayre, Inc. 300 TPH Preparation Plant

Coal Prep / AGG 2006 Keynote Speaker: Dr. Frank Burke 14
Energy Policy Earmarks Billions for Clean Coal Technology
by Art Sanda

No Climate Change Legislation Expected for Current Year 28
by Marc A. Ross, National Mining Association

Building Relationships 30
Women's Mining Coalition
by Terah Burdette, president WMC

Mine'ing Our Business 59

Educator Ward Lichtel: Born to Teach in the Coalfields 60
by James Stevens

CBP Engineering:
Knowledge, Quality, and Longevity Equals Success 64

Departments

Editorial 8
Coal People Comments 13
Coal News Worldwide 23
Capsule News 18
Coal People in the News 31
Product Literature 59
Product News 63
Advertising Index 70
Classified 67-70

Buyer-Friendly Products and Services Reference

ABRASION RESISTANT MATERIALS
CBP Engineering ..... 30 & 70
Hard Steel 26
Hausner Hard-Chrome 32
AUTOMATED SAMPLING SYSTEMS
James A. Redding 68
BELT FASTENERS
Persinger Supply Co. 19
BELTING
Bullitt County Belting 70
BOLTER MINER
Sandvik Mining & Construction 7
COAL PROCESSING EQUIPMENT
Ceramic Technology 70
COAL WASHERS
Eagle Iron Works 68
COMMUNICATION/UNDERGROUND
Mine Site Technologies 61
CONSTRUCTION-RAIL/TRACK
Atlas Railroad Construction 59
CONSULTING SERVICES
GIW Industries 69
Marshall Miller & Associates 69
CONSULTING SERVICES/ENGINEERS
Cowin & Company 69
Norwest Corporation 69
CONTRACTING & CONSTRUCTION
Coalfield Services 69
CONVEYOR BACKSTOPS
Marland Clutch 68
CONVEYOR DE-ICING
Thermo-Tech 68
CONVEYOR SOLUTIONS
FLEXCO 26
CRANE BODIES
General Truck Bodies 68
CRUSHING EQUIPMENT
McLanahan Corp. 11
DE-SHALING
Imperial Technologies, Inc. 31
DISTRIBUTORS-MOR SUPPLIES
Fairmont Supply Co. 27
DUST EXTRACTORS
Engart Inc 16
ELECTRICAL CONTRACTORS
D & S Electrical Contractors 68
EMERGENCY REFUGE STATIONS
Strata Products ..... 2 & 3
EMPLOYMENT OPPORTUNITIES
DSI Ground Support 67
ENGINEERING SERVICES
Farnham & Pfile 69
Skelly and Loy 69
EQUIPMENT DISTRIBUTORS
Logan Corp. 17
RM Wilson Co 28
FANS
Paul's Repair Shop 68
FEEDER SYSTEMS
Hughes Supply 68
FIBERGLASS PRODUCTS
Rezplast Inc 63
FITTINGS
Lee Supply Co., Inc. 22
GAS MONITORING EQUIPMENT
CONSPEC Controls 21
HOISTING EQUIPMENT
FKC-Lake Shore 70
IMPACT ASSEMBLIES
Innovative Conveyor Technology, LLC 13
MATERIAL HANDLING
Industrial Resources 67
MINING EQUIPMENT/NEW & USED
Whayne Supply 17
MOTORIZED CONVEYOR PULLEYS
Rulmeca Corp. ..... 12 & 68
ON-SITE SERVICE
DBT America Inc ..... 72 (BC)
PAINTING SERVICES
Gardner Paint Services 69
PIPING/FABRICATION
Jabo Supply Corporation 68
POWER CABLES
Priority Wire & Cable 68
PREPARATION PLANT-DESIGNERS & BUILDERS
Boyce, Graybeal & Sayre, Inc. ..... 24 & 68
Lincoln Contracting & Equipment 69
PUMP REBUILDERS
Wooster Hydrostatics 4
REFUGE CHAMBERS/FRESH AIR BAY
Strata Products ..... 2 & 3
RESCUE EQUIPMENT
Paratech, Inc. 19
ROOF SUPPORT SYSTEMS
Jennmar Corporation 25
SCREENING TECHNOLOGY
Derrick Corporation 9
SPRINGS
Draco Spring Manufacturing 20
TIRES & ACCESSORIES
SETCO 5
TRADE SHOWS
National Coal Show 71
URETHANE SHEETS
Bailey-Parks Urethane 18
V-PLOW
Richwood Industries 16
WEAR STEEL
JADCO, Inc 29

APRIL 2006 • VOL 207 • NUMBER 3

E&MJ ENGINEERING AND MINING JOURNAL®

FEATURES

Mining Companies Go Public on the AIM
The London Stock Exchange's small-cap market provides opportunities for junior companies to gain the benefits of a public listing 36

KPIs: Keying in on Crusher Performance
Choose the correct set of key performance indicators for the application 38

Ridgeway Seeks Productivity Boost with Automated Drill Systems
Computerized drill sequencing at this large underground mine now includes automatic bit changing 42

Investing in Lubrication
A look at the importance of effective lubrication practices 46

When Less is More: A Guide to Using Lower Viscosity Lubricants
Higher viscosity lubricants don't always provide better protection 48

LEADING DEVELOPMENTS

Tussling for Tethyan 4

Glamis to Buy Western Silver; Yamana Buys RNC Gold and Agrees to Buy Desert Sun 4

Survey Ranks World's Mining Jurisdictions by Their Policies and Potential 5

Codelco and Minmetals Sign Off on Long-Term Copper Supply Deal 6

Protests in Indonesia Target Freeport, Newmont, and Exxon 6

AROUND THE WORLD

U.S. & Canada:
CanTung Ramped Up 8

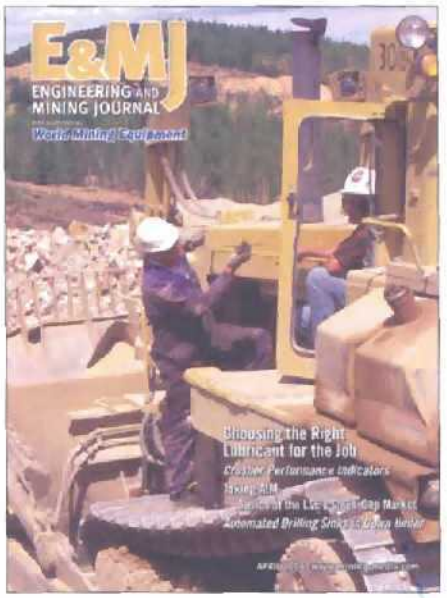
Latin America:
Las Bambas Drill Results Encouraging 12

Australia/Oceania:
Newmont OKs Boddington Development 26

Asia:
Abu Dhabi Plans World's Largest Aluminum Smelter 28

Africa:
Zimbabwe Mulls Mines Grab 30

Europe:
Agnico-Eagle Advances Suurikuusikko 32



In their efforts to meet rising demand for mineral commodities, equipment owners are putting more hours than ever on their production units. It's tempting to cut operating costs by extending lube intervals and using lower-priced products, but the wrong choices can lead to major equipment problems. Read more, starting on page 46. Photo: Baldwin Filters

DEPARTMENTS

Calendar 16

Classified Advertisements 70

Equipment Gallery 64

From the Editor 2

Letters 22

Markets 72

Operating Strategies 60

People 20

Processing Solutions 58

Suppliers Report 50

This Month in Coal 34

"ENR"

March 20, 2006

Contents

Volume 256 ▪ Number 11

COST REPORT

▸ New Heights

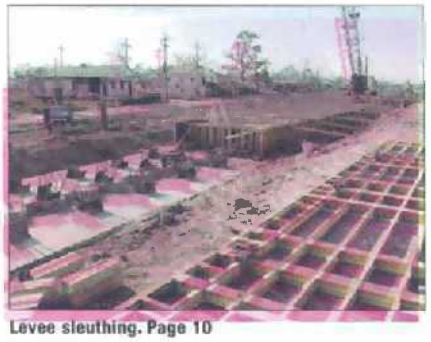
25 Materials prices are posting double-digit annual percentage hikes, which with strong global demand, a weak dollar and higher energy costs, may be taking on an air of permanence.

Cover photo and photo right by Michael Goodman for ENR

NEWS

▸ Business & Economics

10 **Flood Protection:** In dissecting disaster, experts dig for clues



Levee sleuthing. Page 10

13 **Legislation:** House mulls $19 billion more for Gulf Coast rebuilding

14 **Associations:** ASA's ethics task force recommends the Golden Rule

14 **Elections:** Decision for Seattle viaduct plan slated for January

15 **Companies:** Parsons Brinckerhoff slims down, and reorganizes management

▸ Buildings

12 **Building Codes:** Terrorism-related proposals stir up strong criticism

▸ Transportation

15 **Roads:** Legislators slash Idaho construction program budget

▸ Environment

16 **Cleanups:** Investment firm offers to shoulder Bhopal's cost

▸ Power and Industrial

16 **Powerplants:** Clean-coal plant project to start this spring in Montana

17 **Process Plants:** Biochemical plant to make polymers using corn, not oil

Bhopal cleanup. Page 16

DEPARTMENTS

5 Letters

7 Construction Week

9 Washington Observer

20 People

21 Construction Economics

64 Manufacturers' Information

65 Pulse

71 Official Proposals (cont. on p. W19)

72 Editorials

▸ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▸ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

PHOTO LEFT BY LANE LEFORT WITH THE U.S. ARMY CORPS OF ENGINEERS, NEW ORLEANS. RIGHT COURTESY OF CHEROKEE INVESTMENT PARTNERS

Engineering News-Record

The McGraw-Hill Companies

ENR (Engineering News-Record), (ISSN 0891-9526). Published weekly except for one issue in January and one issue in August by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y., 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 518, Hightstown, N.J. 08520. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No.40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Finocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.20 per copy for each article. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $82 per year (single copies $5 in U.S.); Canada and Mexico, $89 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4654. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 518, Hightstown, N.J. 08520. If possible, attach address label from a recent issue. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815

"ENR"

March 27, 2006

Contents

Volume 256 ▪ Number 12

COVER STORY

▸ **Ship Shape**

28 An interactive ship module that is designed to test recruits under high-tech fire and simulated at-sea conditions, marks the beginning of a new genre of naval military training facilities.

Cover photo Nathaniel West at BRC Imagination Arts; photo right Courtesy of the Smith Group

NEWS

▸ **Buildings**

10 **Tall Buildings:** Chicago builders ride the next supertall wave

15 **Hospitals:** Load transfer to hang five floors is a success

▸ **Environment**

13 **Clean Air:** Federal court strikes down EPA 'new source' regulation

16 **Levees:** California flood threat detailed as funding initiatives fail

▸ **Transportation**

13 **Bids:** O'Hare International Airport runway work delayed until 2008

▸ **Power and Industrial**

17 **Pipelines:** Explosion won't halt plans for Peru LNG plant

Dreaming big. Page 10

▸ **Business and Economics**

11 **Schools:** New Jersey officials may disband building agency

12 **Reconstruction:** Contractors muddle on as Iraq slips close to civil war

14 **Labor:** Union and nonunion officials plot separate strategies while both in Vegas

Iraq reconstruction. Page 12

DEPARTMENTS

5 Online

7 Construction Week

9 Washington Observer

18 Information Technology

23 Construction Economics

33 Products

35 Pulse

44 Official Proposals (cont. on p. 45)

47 Viewpoint

48 Editorials

▸ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▸ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

Engineering News-Record
The McGraw-Hill Companies
SERVING THE INDUSTRY SINCE 1874

ENR (Engineering News-Record), (ISSN 0891-9526), Published weekly except for one issue in January and one issue in August by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 518, Hightstown, N.J. 08520. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No.40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer, Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Finocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.20 per copy for each article. Send payment to CCC. ISSN 0891-9526/82. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $92 per year (single copies $5 in U.S.); Canada and Mexico, $89 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 518, Hightstown, N.J. 08520. If possible, attach address label from a recent issue. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2615.

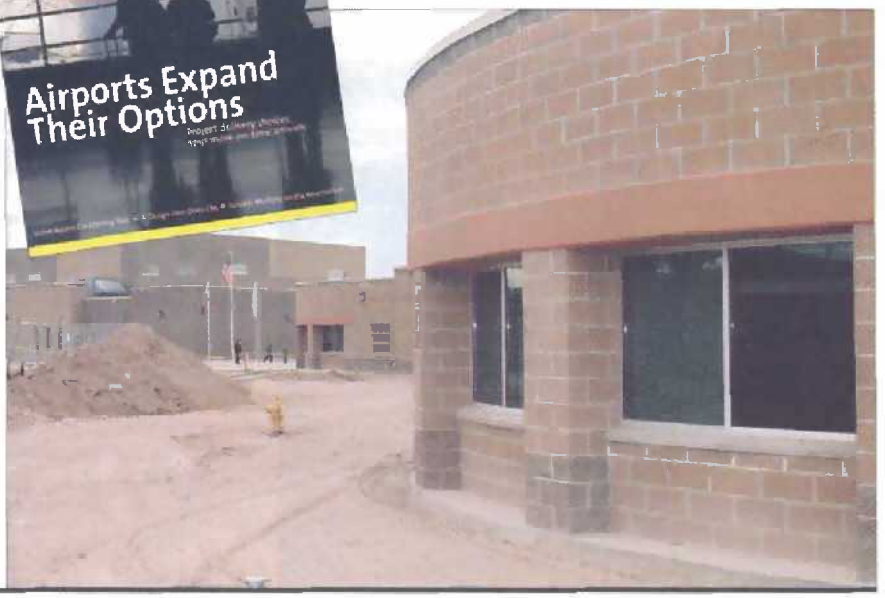
PHOTO LEFT BY TUDOR HAMPTON FOR ENR; RIGHT COURTESY OF BERNTEL NATIONAL, INC.

"ENR"

April 3, 2006

Contents

Volume 256 • Number 13



SPECIAL REPORT

▸ Focus on Projects

37 Whether it's building Native American schools (right) or airports, construction in the U.S. and abroad is turning to new project delivery approaches. ENR's Progressive Project Delivery publication looks at the innovations and the innovators.

Cover photo by Getty Images; photo right courtesy of the Bureau of Indian Affairs

NEWS

▸ Environment

15 **Investigations:** Safety questions now dog New Orleans' levee design

Corps' levee concerns. Page 15

▸ Buildings

12 **Model Codes:** Terrorism-provoked building code changes proposed

14 **Model Codes:** Skyscraper group says 'no' to terrorism-resistant code

▸ Business & Economics

14 **Unions:** New market recovery group faces some bumps

20 **Military Contracting:** Service construction chiefs seek contract coordination

▸ Transportation

16 **Bridges:** Controversial Bay-area span may move forward at last

19 **Tunnels:** Tel Aviv-to-Jerusalem rail route mimics conditions in Alps

21 **Airports:** Berlin finally wins approval to build out Schönefeld

22 **Mass Transit:** Toronto subway wins some funds

▸ Power & Industrial

18 **Nuclear Power:** South Africa will be first to build pebble-bed reactor

San Francisco span plan. Page 16

DEPARTMENTS

7 Calendar
9 Construction Week
11 Washington Observer
57 Construction Economics
81 Products
83 Pulse
90 Official Proposals (cont. on p. 91)
92 Editorials

▸ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▸ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

Engineering News-Record
The McGraw-Hill Companies
SERVING THE INDUSTRY SINCE 1874
(1860-1948) **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298 Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention Fulfillment Manager, P.O. Box 518, Hightstown, N.J. 08520. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No 40012501. Registered for GST as The McGraw-Hill Companies. GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Finocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.20 per copy for each article. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $82 per year (single copies $5 in U.S.); Canada and Mexico, $99 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 518, Hightstown, N.J. 08520. If possible, attach address label from a recent issue. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2315.

"ENR"

April 10, 2006

Contents

Volume 256 • Number 14

COVER STORY

▶ Award Winner

34 Dwayne McAninch, chairman and CEO of McAninch Corp., is a Midwestern contractor with global ideas. His Iowa-based company invested millions of dollars in electronic earthmoving controls and became the "missionary" for the revolutionary technology.

Cover photo and photo right by Michael Goodman for ENR; cover photo manipulation by Guy Lawrence for ENR

NEWS

▶ Environment

10 **Flood Protection:** Raising New Orleans levees is even more costly

New Orleans levees. Page 10

17 **Hazardous Waste:** No more delays in railyard, Montana governor orders

▶ Business & Economics

11 **Unions:** Building trades have some success as talks go on with unhappy leaders

12 **Privatization:** Private-sector toll roads are more appealing, and riskier

13 **Companies:** With a burgeoning backlog, PCL puts up 'now hiring' sign

22 **Equipment:** Exports to Latin America rise as economies gain strength

▶ Buildings

13 **Design Competitions:** Chinese architect prevails in Canada

16 **Tall Buildings:** Contender for Europe's tallest would express its structure

18 **Manufacturing Plants:** Safety and schedule both benefit from monster crane

▶ Transportation

14 **Bridges:** Redesigned Phoenix transit crossing features intricate steel work

Phoenix transit span. Page 14

DEPARTMENTS

5 Update
7 Construction Week
9 Washington Observer
24 People
29 Construction Economics
42 Newsmakers 2005
44 Products
46 Pulse
57 Official Proposals (cont. on pp. 58-59)
60 Editorials

▶ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▶ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

Engineering News-Record
The McGraw-Hill Companies
SERVING THE INDUSTRY SINCE 1874

ENR (Engineering News-Record) (ISSN 0891-9526) Published weekly except for one issue in January and one issue in August by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 518, Hightstown, N.J. 08520. Periodicals postage paid at New York, N.Y. and at additional mailing offices. Canada Post Publication Mail Agreement No 40012501. Registered for GST as The McGraw-Hill Companies, GST #R123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: SPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com. **Copyright, printing and reprinting:** Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved. **Officers of The McGraw-Hill Companies, Inc.:** Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Pinocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.25 per copy for each article. Send payment to CCC. (ISSN 0891-9526/92). Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $82 per year (single copies $5 in U.S.); Canada and Mexico, $89 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Please contact customer service to change your name or address.** If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 518, Hightstown, N.J. 08520, if possible, attach address label from a recent issue. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.

PHOTO LEFT COURTESY OF FEMA; RIGHT COURTESY OF SPANGLER WELDING INC.

"ENR"

April 17, 2006

Contents

Volume 256 ▪ Number 15

SPECIAL REPORT

▸ Seismic Design

22 Big strides in earthquake engineering founded on technology

26 Computers, broadband revolutionize seismic research methods

30 Optimism replaces anxiety over skyscraper performance design

34 Science drives upgraded codes for bridges and tunnels

38 New protections bolster once-vulnerable and fragile utility lifelines

Cover illustration by Guy Lawrence for ENR, 1906 image from The Bancroft Library, computer models on cover and at right courtesy of Nabih Youssef Associates

NEWS

▸ Environment

10 **Levees:** California flood defenses fight rising tide of record rainfalls

Rising concern. Page 10

12 **Hurricanes:** Florida tries to reason with storm season

15 **Drinking Water:** Two California desalination plants could cost $540 million

▸ Business & Economics

12 **Housing:** FEMA contracts go to small, disadvantaged businesses

13 **Lawsuits:** Los Angeles school district sues insurer over waste terms

▸ Power & Industrial

13 **Alternative Power:** Romney could knock the wind out of Nantucket Sound project

14 **Powerplants:** London betting on distributed energy for low-emission power

▸ Transportation

14 **Mass Transit:** In unique deal, airport owner will fund and operate road

16 **Bridges:** Hoover Dam bypass builders stick to old-style cableways

▸ Buildings

17 **Schools:** New Haven learning a lot in $1.5-billion building spree

California desalination plants. Page 15

DEPARTMENTS

5 Update

7 Construction Week

9 Washington Observer

20 Construction Economics

49 Products

50 Pulse

55 Official Proposals (cont. on p. 56)

60 Editorials

▸ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▸ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

Engineering News-Record
The McGraw-Hill Companies
SERVING THE INDUSTRY SINCE 1874

ENR (Engineering News-Record), (ISSN 0891-9526). Published weekly except for one issue in January and one issue in August by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2089. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 518, Hightstown, N.J. 08520. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No. 40012501. Registered for GST as The McGraw-Hill Companies. GST #123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 2-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@cdsfulfillment.com.

Copyright, printing and reprinting: Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved.

Officers of The McGraw-Hill Companies, Inc.: Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Finocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, www.copyright.com, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.25 per copy for each article. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $82 per year (single copies $5 in U.S.); Canada and Mexico, $89 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4634. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 518, Hightstown, N.J. 08520. If possible, attach address label from a recent issue. **Please contact customer service to change your name or address.** If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2815.

PHOTO LEFT BY APWW/ENGWORLD, PHOTO RIGHT BY AES CORP.

"ENR"

April 24, 2006

Contents

Volume 256 ■ Number 16

COVER STORY

▶ **Perils of Prosperity**

44 Driven by a strong construction market, designers are posting dramatic gains at the leading edge of the boom. But prosperity proposes new challenges as design firms race to meet new staffing and technology demands.

Cover illustration and illustration at right by Nancy Soulliard for ENR

NEWS

▶ **Transportation**

13 **Bridges:** Construction nears on Lousiana's cable-stayed span

20 **Railroads:** Feds like Powder River plan but locals object to route

24 **Tunnels:** Unique segment system marks Los Angeles rail line

Mississippi River span. Page 13

▶ **Business & Economics**

12 **Ethics:** World Bank sunshines anti-corruption efforts

14 **Acquisitions:** 3D/I is the latest addition to Parsons Corp.'s empire

▶ **Power and Industrial**

17 **Nuclear Power:** U.K. unveils cleanup program and mulls new construction

▶ **Environmental**

14 **Planning:** New Orleans flood base elevation to count on levees again

16 **Radioactive Waste:** Hanford vitrification project generates heat over costs

23 **Wastewater:** Sureties wouldn't support bidding for D.C.'s Blue Plains plant

28 **Wastewater:** California city claims largest natural treatment system

33 **Technology:** Water issues to be studied from space

On the rise. page 14

DEPARTMENTS

7 Online

9 Construction Week

11 Washington Observer

39 Construction Economics

34 People

81 Products

82 Pulse

93 Official Proposals (cont. on pp. 94-99)

100 Editorials

▶ **For subscriber services call:** (877) 876-8208 or (515) 237-3681

▶ GO TO MY.ENR.COM FOR PASSWORD-PROTECTED ONLINE ACCESS.

enr.com

FOR CONSTRUCTION NEWS ON LINE, VISIT OUR WEBSITE, ENR.COM.

PHOTO LEFT COURTESY OF LOUISIANA TIMED MANAGERS; RIGHT BY TOM SAWYER FOR ENR

Engineering News-Record
The McGraw-Hill Companies
SERVING THE INDUSTRY SINCE 1874

ENR (Engineering News-Record), (ISSN 0891-9526). Published weekly except for one issue in January and one issue in August by The McGraw-Hill Companies, 1221 Ave. of the Americas, New York, N.Y. 10020. Founder: James H. McGraw (1860-1948). **Executive, editorial, circulation, advertising offices:** Two Penn Plaza, New York, N.Y. 10121-2298. Phone (212) 512-2000. **Postmaster:** Please send address changes to ENR/Engineering News-Record, Attention: Fulfillment Manager, P.O. Box 5736, Harlan, IA 51593. Periodicals postage paid at New York, N.Y., and at additional mailing offices. Canada Post Publication Mail Agreement No.40012507. Registered for GST as The McGraw-Hill Companies. GST #123075673. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO: DPGM Ltd., 3-7496 Bath Road, Mississauga, ON L4T 1L2. Email: enrcustserv@kbsfulfillment.com.

Copyright, printing and reprinting: Titles Engineering News-Record (ENR) and CONSTRUCTION WEEK reg. ® in U.S. Patent Office. Copyright © 2006 by The McGraw-Hill Companies. All rights reserved.
Officers of The McGraw-Hill Companies, Inc.: Harold W. McGraw III, Chairman, President, and Chief Executive Officer; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Frank D. Penglase, Senior Vice President, Treasury Operations. **McGraw-Hill Construction:** Norbert W. Young, Jr., FAIA, President; Louis J. Finocchiaro, Vice President and CFO. Where necessary, permission is granted by copyright owner for those registered with Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, *www.copyright.com*, to photocopy any article herein for personal or internal reference use only for the flat fee of $1.20 per copy for each article. ENR Construction Economics, Top Rankings and Sourcebooks available for a fee in downloadable PDF format at www.ENR.com. Send payment to CCC. ISSN 0891-9526/92. Copying for other than personal or internal reference use without express permission of The McGraw-Hill Companies is prohibited. Write the editor to request such permission. **Printed in the USA. Subscription rates for individuals in the field of the publication:** U.S. and possessions, $82 per year (single copies $5 in U.S.); Canada and Mexico, $89 per year; outside North America, $195 per year. Please allow four to six weeks for shipment. **Subscriber service:** (877) 876-8208 or (515) 237-3681. For single copies, (212) 904-4834. Send all correspondence, notices and subscription orders to Fulfillment Manager, ENR, P.O. Box 5736, Harlan, IA 51593. If possible, attach address label from a recent issue. **Please contact customer service to change your name or address.** If the postal authorities alert us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within two years. Please allow a month for change of address to take effect. Classified advertising: Send ads to ENR, Classified Advertising, Two Penn Plaza, 9th Floor, New York, NY 10121. Phone (212) 904-2615.

Volume 26, Issue 4, May 2006 ISSN 0195-9255

Environmental Impact Assessment Review

Notes on authors in this issue 317

EIA PROCEDURE

Treatment of biodiversity issues in impact assessment of electricity power transmission lines: A Finnish case review 319
Tarja Söderman

Biosafety assessment protocols for new organisms in New Zealand: Can they apply internationally to emerging technologies? 339
B.I.P. Barratt, A. Moeed and L.A. Malone

Scoping in environmental impact assessment: Balancing precaution and efficiency? 359
Tim Snell and Richard Cowell

ASSESSMENT METHODS

Analyzing impact factors of CO_2 emissions using the STIRPAT model 377
Ying Fan, Lan-Cui Liu, Gang Wu and Yi-Ming Wei

STRATEGIC ENVIRONMENTAL ASSESSMENT

SEA effectiveness criteria—equally valid in all countries? The case of Italy 396
Thomas B. Fischer and Paola Gazzola

HEALTH IMPACT ASSESSMENT

Practitioner survey of the state of health integration in environmental assessment: The case of northern Canada 410
Bram Noble and Jackie Bronson

Geobiology

Volume 3, Issue 4, October 2005

Special Issue
Geochemical Controls on Microbial Processes

Guest Editors
Jan P. Amend and Greg K. Druschel

Original Articles

235 Fe(III) mineral formation and cell encrustation by the nitrate-dependent Fe(II)-oxidizer strain BoFeN1
A. Kappler, B. Schink and D. K. Newman

247 The coupling of biological iron cycling and mineral weathering during saprolite formation, Luquillo Mountains, Puerto Rico
H. L. Buss, M. A. Bruns, M. J. Schultz, J. Moore, C. F. Mathur and S. L. Brantley

261 Temperature dependence of Fe(III) and sulfate reduction rates and its effect on growth and composition of bacterial enrichments from an acidic pit lake neutralization experiment
J. Meier, R. Costa, K. Smalla, B. Boehrer and K. Wendt-Potthoff

275 Addition of U(VI) to a uranium mining waste sample and resulting changes in the indigenous bacterial community
A. Geissler and S. Selenska-Pobell

287 Microbial stratification in deeply buried marine sediment reflects changes in sulfate/methane profiles
J. F. Biddle, C. H. House and J. E. Brenchley

297 On the energetics of chemolithotrophy in nonequilibrium systems: case studies of geothermal springs in Yellowstone National Park
W. P. Inskeep, G. G. Ackerman, W. P. Taylor, M. Kozubal, S. Korf and R. E. Macur

319 Archaeal diversity and geochemical energy yields in a geothermal well on Vulcano Island, Italy
K. L. Rogers and J. P. Amend

333 Author index

Volume contents

Information on this journal can be accessed at www.geobiol.com
For Earth Sciences News from the Geological World, visit www.earthpages.com

Blackwell Publishing

Blackwell Synergy

This journal is available online at Blackwell Synergy. Visit www.blackwell-synergy.com to search the articles and register for table of contents e-mail alerts.

1472-4677(200510)3:4;1-P

Geobiology

Volume 4, Issue 1, March 2006

Original Articles

1 Controls on marine animal biomass through geological time
J. L. Payne and S. Finnegan

11 The genetic response to Snowball Earth: role of HSP90 in the Cambrian explosion
M. E. Baker

15 Chilean high-altitude hot-spring sinters: a model system for UV screening mechanisms by early Precambrian cyanobacteria
V. R. Phoenix, P. C. Bennett, A. S. Engel, S. W. Tyler and F. G. Ferris

29 *In situ* ecological development of a bacteriogenic iron oxide-producing microbial community from a subsurface granitic rock environment
C. R. Anderson, R. E. James, E. C. Fru, C. B. Kennedy and K. Pedersen

43 Microbial nitrate respiration of lactate at *in situ* conditions in ground water from a granitic aquifer situated 450 m underground
M. E. Nielsen, M. R. Fisk, J. D. Istok and K. Pedersen

53 Planktonic microbial community composition across steep physical/chemical gradients in permanently ice-covered Lake Bonney, Antarctica
R. E. Glatz, P. W. Lepp, B. B. Ward and C. A. Francis

69 Erratum

Information on this journal can be accessed at www.geobiol.com
For Earth Sciences News from the Geological World, visit www.earthpages.com

Blackwell Publishing

Blackwell Synergy

This journal is available online at Blackwell Synergy. Visit www.blackwellsynergy.com to search the articles and register for table of contents e-mail alerts.

1472-4677(20060314:1;1-Q

GEOTIMES

PUBLISHED BY THE AMERICAN GEOLOGICAL INSTITUTE

APRIL 2006

vol. 51 ■ no. 4

MINING

18

24

30

14

FEATURES

18 A NEW LOOK AT MINING AND THE ENVIRONMENT: FINDING COMMON GROUND

U.S. mining industry and environmental groups are in a standoff that is historically rooted, but not necessarily unbridgeable, as is evident from other countries.

Frank T. Manheim

Plus! Minerals consumption soars

24 THE RUSH TO UNCOVER GOLD'S ORIGINS

Geologists are hotly debating the genesis of 25 percent of the world's annual gold output.

John Muntean

30 DIAMONDS BEDAZZLE CANADIAN NORTH

Canada is the sixth largest diamond producer in the world, and is getting a boost with new tools to navigate the region's unique climate and geology.

Kathryn Hansen

8

NEWS & VIEWS

8 NEWS NOTES

Feeling the heat wave

Tiny fossils go 3-D

Faith-based carbon credits systems

Tiny *T. rex* cousin

Minerals cut again

Deep sediments, strong quakes

Fossil bites into mammal stereotypes

Undersea methane not to blame

Tibetan plateau timing

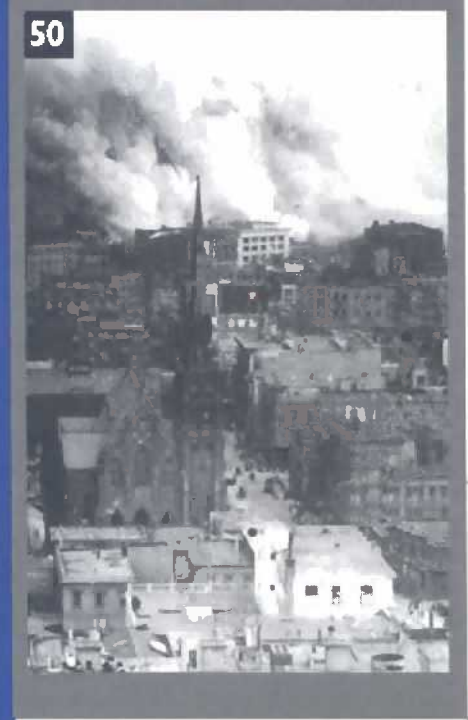
ON THE COVER

At the height of its production in the early 20th century, the Kelly Mine near Socorro, N.M., shown here in 1995, was well-known for producing a green-blue zinc carbonate mineral called smithsonite. But now, it stands largely abandoned and as a symbol of the mining days of old. Today, new technologies and policies, as well as scientific progress, are shaping a different view of mining. Photo is courtesy of Christopher M. Keane.

GEOTIMES APRIL 2006

36

40


50

NEWS & VIEWS CONTINUED

7 COMMENT Digging Into Coal Mining Safety
The United States is looking at the safety of underground coal mines in light of several high-profile mining accidents earlier this year, but any evaluation of the current state of the industry needs to delve below the headlines.
Robert Ferriter

17 POLITICAL SCENE Energy Efforts on Tap
Months after passage of the energy bill, lawmakers are still ironing out short- and long-term goals to reduce U.S. dependence on foreign oil and gas.
Margaret Anne Baker

36 GEOPHENOMENA
Italy's hidden hazard
Philippines village buried

38 TRENDS & INNOVATIONS Trying out Prehistoric Tools
Experimental archaeology seeks to understand how ancient people forged and used tools, weapons and other objects.
Megan Sever

40 EDUCATION & OUTREACH Need a Job? Coal Workers Wanted
With academic mining programs disappearing and a wave of retirements, the demand for coal workers is rising.
Naomi Lubick

44 ENERGY & RESOURCES
Royalties flushed
Mineral Resource of the Month: Mercury

46 GEOMEDIA
Wikipedia v. *Britannica*: Reader beware
Books: Amazing ice: A review of *Ice: The Nature, the History and the Uses of an Astonishing Substance*
On the Web: Podcast powwow

50 BENCHMARKS: April 18, 1906: The Great Earthquake Destroys San Francisco
A magnitude-7.8 earthquake strikes San Francisco, Calif., sparking fires that engulf the city.

53 PROFILES
Ann Carpenter: Searching for gold

60 GEOLOGIC COLUMN Oink If You Love Coal
Pigs eat coal — it's true, just ask around.
Edward R. Landa

DEPARTMENTS

4 **FROM THE EDITOR**
6 **LETTERS:** Perspectives from readers
34 **WHERE ON EARTH?**
54 **GEOMARKETPLACE**
55 **CLASSIFIEDS:** Career opportunities

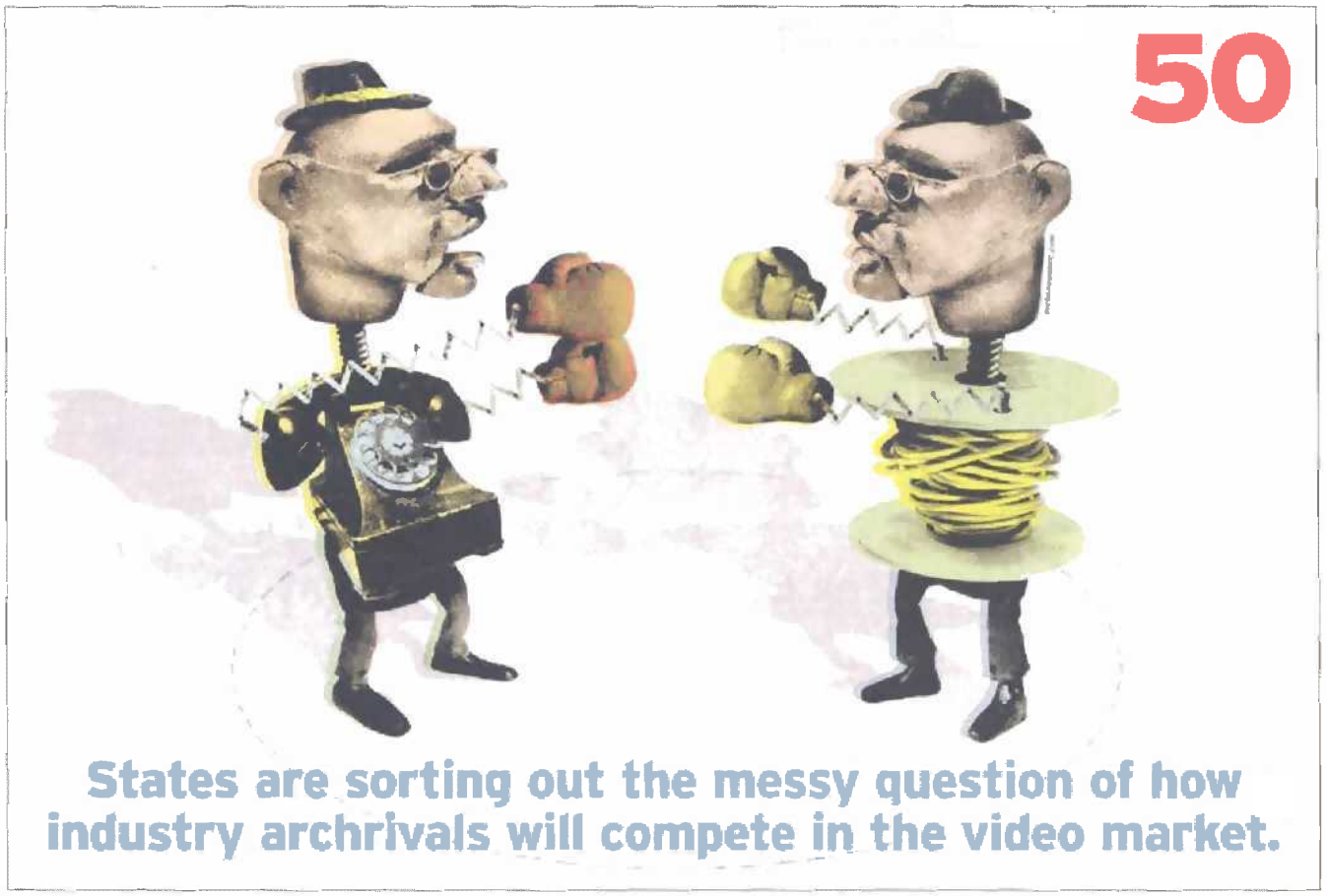
34 WHERE ON EARTH?

Want to attend a geoscience meeting? Visit the online Calendar at **calendar.agiweb.org**

APRIL 2006, VOL. 19, NO. 7

GOVERNING

www.governing.com



States are sorting out the messy question of how industry archrivals will compete in the video market.

RICHARD BORGE

Features

26 **Toil and Trouble**
Illegal immigrants working as day laborers present one of the toughest, most divisive issues facing local governments.
By Jonathan Walters

36 **Plight of the Benefits**
Retiree costs are moving from the easy promise of a nest egg to a political hot potato.
By Alan Greenblatt

44 **Coal Converts**
When it comes to lining up new energy sources, some states are pushing the conversion of coal to gas or liquid fuel. *By Christopher Swope*

50 **Heavyweights on TV**
Cable and telecom companies are slugging it out over franchises. Some localities may get hurt.
By Christopher Swope

58 **Crypto Crackdown**
New federal rules are forcing utilities to significantly upgrade their treatment of drinking water supplies.
By Tom Arrandale

GLIMPSE

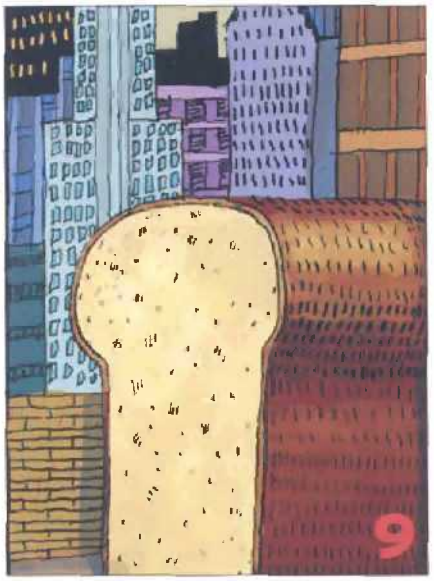
84 **Wiki Skirmishes**
Politicians' profiles are sometimes the targets of spin doctors and mischief makers who alter Wikipedia entries. *By Christopher Swope*

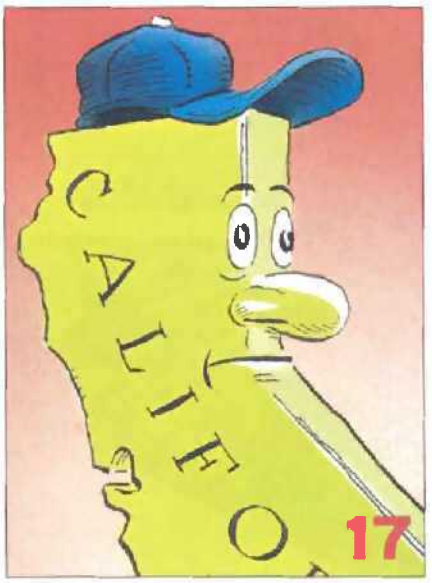
(cont.)

COVER PHOTOGRAPH BY CHARLES STECK

GOVERNING The Magazine of States and Localities

Vol 19, no 7 (04/2006)





Up Front

6 **Publisher's Desk**

9 **Assessments**
Alan Ehrenhalt on the urban grocery gap.

12 **Dialogue**
Letters from readers.

17 **Observer**
Reducing disability costs, New Mexico's generous pensions, and the gambling-gasoline connection.

19 **Urban Notebook**
Decked highways, running schools the Canadian way, and the strangest town in America.

22 **Player**
S. David Freeman: Ageless young turk

24 **Potomac Chronicle**
More worrisome than the failed response to Hurricane Katrina is the disaster's searing judgment on American federalism.

The Business of Government

LEAD STORY

63 The demand for scrap steel boosts governments' recycling revenues.

FINANCE

64 **Briefing:** A plan to aid businesses hurt by transit-line construction.

HEALTH

66 **Briefing:** Florida puts stats about health procedures and prices on the Web.

ENVIRONMENT

68 Tom Arrandale on a backward step in pollution control.

TECHNOLOGY

70 **Tech Talk:** Ellen Perlman on Internet access via the electric grid.

TRANSPORTATION

72 Alex Marshall on the death of Seattle's grassroots monorail project.

MANAGEMENT

74 **Briefing:** FedEx gives a DMV lessons in logistics.

76 Citizens who track problems in their neighborhood also learn whose job it is to fix them.
By Jonathan Walters

ECONOMIC DEVELOPMENT

80 William Fulton on the latest wave of research parks.

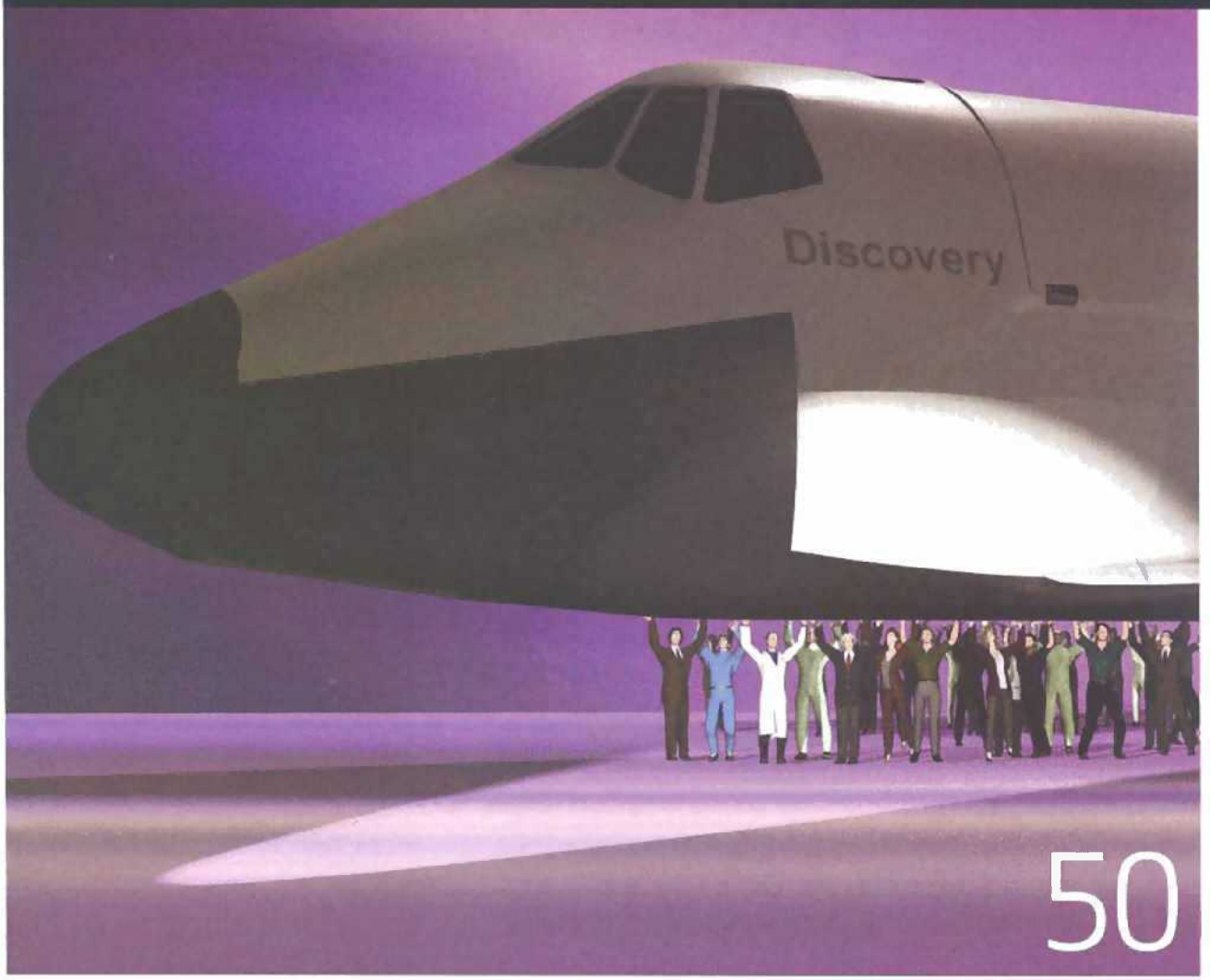
On Governing.com

Real experts draw on real-world experiences to improve government performance and efficiency in Management Insights, Governing.com's new weekly column updated every Wednesday. It's published in collaboration with the Government Innovators Network at Harvard's Kennedy School of Government: Governing.com/manage/mi/insight.htm

Government Executive

Contents

APRIL 1, 2006 VOL. 38 NO. 5



MARK SNYDER

FEATURES

Threat Connector 40
Two years ago, John O. Brennan got the nod to build a new kind of intelligence organization. But to do it, he had to persuade the most powerful, turf-conscious agencies in government to donate staff and money. *By Justin Rood*

Getting to Liftoff 50
NASA's mission management team puts a new philosophy on the flight line for *Discovery*. *By Beth Dickey*

Haunted by Abu Ghraib 60
Having helped reveal abuse at the notorious prison, former interrogator Torin Nelson opens up about why it happened and how it has wrecked his career.
By Jason Vest

(Cont.)

Cover illustration by Ryan Etter

Contents

Government Executive
Vol. 38, no. 5 (04/01/06)

36

NEWS+ANALYSIS

Waiting for Alliant 15
After much delay, GSA vows to roll out its governmentwide contract for technology purchases next year. *By David Perera*

Muzzled or Misunderstood? 19
A public relations scandal rocks the space agency. *By Beth Dickey*

Uncle Sam Blogs You 22
The Army Reserve provides content to attract and keep soldiers. *By Jason Vest*

Past Trumps Present 25
Politics keeps Cold War weapons alive, sucking resources from the battles at hand. *By Jason Vest*

Avian Enemy 27
Bird flu raises special concerns for deployed troops. *By Katherine McIntire Peters*

Hawk or Dove 30
Attorney General Alberto Gonzales balances tough action with an amiable management style. *By Brian Friel*

Tax Collectors for Hire 34
Some say only IRS employees should be able to pursue overdue debtors. *By Kimberly Palmer*

Off the Air 36
The Voice of America will cease broadcasting its flagship English radio program by year's end. *By Katherine McIntire Peters*

ADVICE+DISSENT

Polling Chads And Fads 69
Tech Insider Electronic voting machines might not be the best solution. *By David Perera*

Parting Wisdom 74
Management Matters Pentagon change agent's legacy sets Defense leaders on a new course. *By Brian Friel*

The Next Congress 76
Political World Retirements, election losses and a host of new committee chiefs will dramatically alter Capitol Hill. *By Charles Mohtesion*

Crisis of Contracting 78
Viewpoint Procurement missteps after Katrina signal government's failure to work as a system of systems. *By William G.T. Tuttle, Susan Livingstone and Robert Welch*

In Harm's Way 80
Viewpoint Government must act now to thwart the toll of the next disaster. *By Ronald J. Daniels, Donald F. Kettl and Howard Kunreuther*

74

76

IN EVERY ISSUE

Editor's Notebook 6

Letters 8

The Buzz 11
Pinko Pentagon, coming to America and be all that you can be.

Outlook 82
President Bush's curious case for more hierarchical disaster response. *By Tom Shoop*

PHOTO BOTTOM: STEPHEN WEBSTER; TOM KRAUSE; SHAWN THEW/LANDOV

Government Executive

Contents

APRIL 15, 2006 VOL. 38 NO. 6

DOUG SANFORD

FEATURES

Tangled Lines of Business 24
The administration's plan to consolidate technology is tied up in its own contradictions.
By David Perera

Dodging Disaster 38
Worried about your agency's ability to handle massive disruption during a crisis? Take a lesson from the Minerals Management Service.
By Katherine McIntire Peters

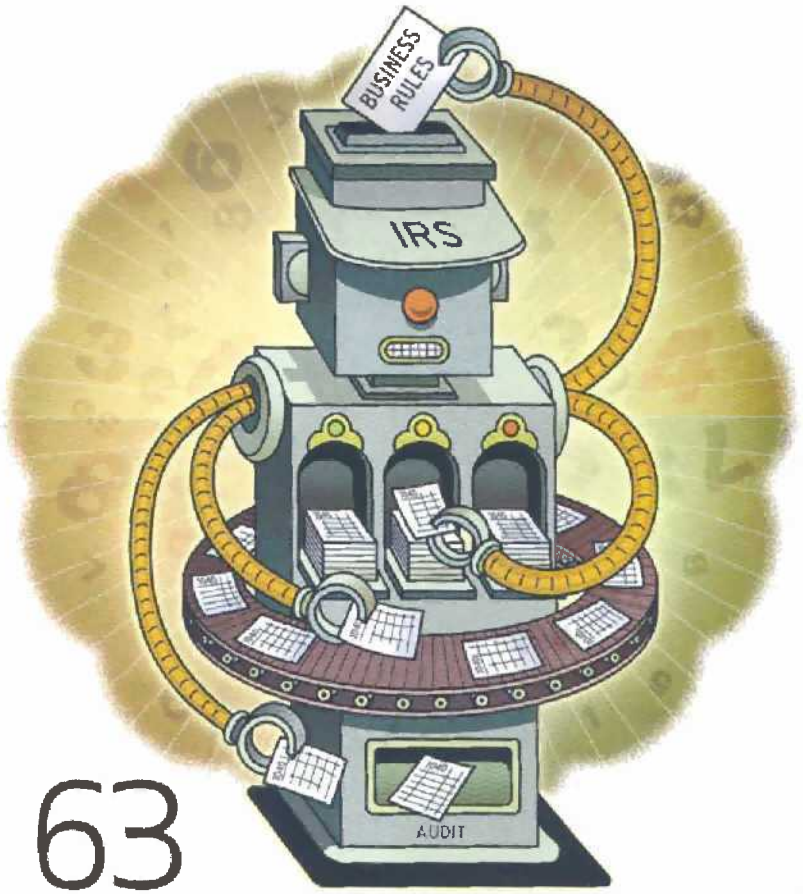
Fake Busters 48
Federal agencies, local police and industry are teaming up to stop the sale of counterfeit goods.
By Kimberly Palmer

Fear Factor 56
The Energy Department has to figure out how to reassure Americans before it rolls 77,000 tons of nuclear waste across the country.
By Beth Dickey

Cover illustration by Tim O'Brien

Contents

Government Executive
Vol. 38, no. 6 (4/15/2006)



63

NEWS+ANALYSIS

Contracting 101 15
A class dispenses advice about life for people hoping to sell to the government.
By Kimberly Palmer

Maverick Moves On 19
Pentagon whistleblower Ernie Fitzgerald hangs up his spurs after a career of fighting government waste. *By Jason Vest*

Exporting E-Junk 20
Discarded government computers land in countries looking for high-tech hand-me-downs.
By Beth Dickey

Pat the Builder 21
Leadership Profile Patrick F. Kennedy aims to manage the cantankerous intelligence community. *By Shane Harris*

ADVICE+DISSENT

Rules of the Road 63
Managing Technology The IRS wants to modernize how it works along with the tools it uses. *By David Perera*

As the Wall Crumbles 65
Management Matters Intelligence and law enforcement agencies topple the information barrier. *By Brian Friel*

IN EVERY ISSUE

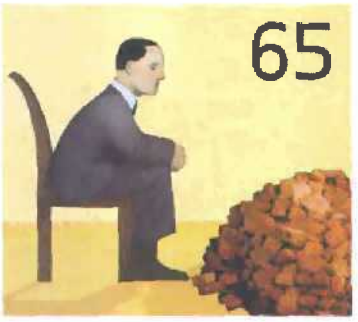
Editor's Notebook 6
We seek to nurture the community of senior federal officials in print, in person and online.

Letters 8

The Buzz 11
Safeguarding grizzly bears, buying American, Dirk Kempthorne on the hot seat and revisiting the McCarthy hearings.

Outlook 66
Forget a larger federal workforce—agencies can barely hire the employees they need to oversee contractors. *By Tom Shoop*

21



65

TOP TO BOTTOM: PETER HOEY; PATRICK GILBERT; JON KRAUSE

International Journal of
COAL
GEOLOGY

ELSEVIER

Volume 66 – Issue 4 **CONTENTS** **3 April 2006**

(Abstracted/Indexed in: Chemical Abstracts; Current Contents Physical, Chemical and Earth Sciences; Geo Abstracts; PASCAL/CNRS; PROMIS; and the Science Citation Index)

Research Papers

Modelling of strata movement with a special reference to caving mechanism in thick seam coal mining
B. Unver and N.E. Yasitli 227
Mineralogy and geochemistry of the No. 6 Coal (Pennsylvanian) in the Junger Coalfield, Ordos Basin, China
S. Dai, D. Ren, C.-L. Chou, S. Li and Y. Jiang 253
Properties of thermally metamorphosed coal from Tanjung Enim Area, South Sumatra Basin, Indonesia with special reference to the coalification path of macerals
H. Amijaya and R. Littke 271
Influence of localised igneous activity on cleat dawsonite formation in Late Permian coal measures, Upper Hunter Valley, Australia
A.N. Golab, P.F. Carr and D.R. Palamara 296
Geochemistry of beryllium in Bulgarian coals
G.M. Eskenazy 305

http://www.elsevier.com/locate/ijcoalgeo

The Journal of Explosives Engineering
Published by International Society of Explosives Engineers
30325 Bainbridge Road
Cleveland, Ohio 44139
www.isee.org

Publisher
International Society of Explosives Engineers

Editor
Dede Manross
explo@comcast.net

Contributing Writers
Ann Barron
R.B. Hopler
S. S. "Bud" Jenkins
Larry C. Schneider

Board of Directors
President
Lawrence E. Gilmore

Vice President Administration
Jerry R. Wallace

Vice President, Technical
Ron J. Elliott

Treasurer
John E. Capers

Secretary
James H. Redyke

Past President
Dale L. Ramsey

Directors
James P. Daley
Charles H. Dowding
Jack W. Eloranta
Kenneth K. Eltschlager
Phyllis E. Hasser
Michael J. Koehler
Randall S. May
George Plaschke
Roger N. Prescott
David K. Saunders
Roger G. Sprague
Alastair C. Torrance

Executive Director & General Counsel
Jeffrey L. Dean, CAE

Assistant to the Executive Director
Arlene Chafe

Publications Manager
Janis Davis

Assistant Manager, Publications
Kathy Siracusa

Meetings & Conference Manager
Lynn Mangol

Assistant Manager, Meetings
Gloria Eppich

Communications Manager
Dede Manross

Webmaster
Debbie Kapes

Membership Manager
Michelle Lantos

Office Coordinator
Mary Spena-Bosch

Receptionist
Lauren Creneti

RECEIVED
2006 APR -3
DENVER, CO

The Journal of www.isee.org

EXPLOSIVES ENGINEERING

Volume 23 Number 2 *March/April 2006*

Table of Contents

FEATURES

6 **32nd Annual Conference Highlights**
Photos, events, and awards from the 32nd Annual Conference in Dallas, TX.

13 **Call for Papers**
Call for papers for the 33rd Annual Conference to be held January 28-31, 2007 in Nashville, Tennessee at the Opryland Hotel.

18 **Anhydrous Ammonia and Ammonium Nitrate Production**
A discussion of the factors that effect on the cost of ammonium nitrate produced for the explosives industry.

26 **You Be The Judge**
An ethics case study for blasters. What would you do?

32 **Book Review**
Review of *Rock Blasting Effects and Operations*.

34 **Safety of Ammonium Nitrate**
Discusses accidents, safety and security and new legislation surrounding ammonium nitrate.

42 **13th Annual Photo Contest**
Winners from the 13th Annual Photo Contest.

DEPARTMENTS

6 **From the Executive Director**
Ammonium Nitrate: How Will Rising Costs, Production Shortfalls, and New Security Requirements Affect the Explosives Industry.

14 **Chapter News**
Annual Chapter Awards, Kentucky Blasting Conference Highlights, and Chapter Contacts.

22 **Industry News**
News about people, company announcements, new products, and events.

24 **Calendar of Events**
List of upcoming events in the explosives industry.

28 **Explosives, 100 Years Ago, More or Less**
Articles from 100 years ago on the value of detonating caps in blasting.

40 **Blast Vibration and Seismograph Section**
Accuracy of blasting seismographs.

On the Cover: An Ammonium Nitrate Loading Bin. Photo by Thomas Lobb.

Copyright © 2006 International Society of Explosives Engineers.

The Journal of Explosives Engineering, published six times per year, is the official publication of the International Society of Explosives Engineers. The Society is not responsible for opinions expressed and statements made by authors in articles or advertisements published in the Journal.

Since the information is unique and because each job site is different, information presented in this Journal may not apply to your specific field situation. Readers are cautioned to carefully consider ideas presented and decide for themselves if the procedures described are safe and appropriate for the intended use. The International Society of Explosives Engineers cannot be responsible for the specific application of the information presented. Also remember to always consult the manufacturer of the product(s) you are using for recommended practices.

Yearly subscription rates: $50 U.S.A.; $70 all others (International Air Mail). All members of the Society receive a complimentary subscription.

All correspondence should be directed to: International Society of Explosives Engineers, 30325 Bainbridge Road, Cleveland, Ohio 44139. Telephone: (440) 349-4400. Fax: (440) 349-4788. E-mail: isee@isee.org. Website: www.isee.org

JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION

AMERICAN WATER RESOURCES ASSOCIATION

VOLUME 42 APRIL 2006 NUMBER 2

TABLE OF CONTENTS

TECHNICAL PAPERS

Arsenic in the Shallow Ground Waters of Conterminous United States: Assessment, Health Risks, and Costs for MCL Compliance
– *Navin Kumar C. Twarakavi and Jagath J. Kaluarachchi* 275

ArcGIS-SWAT: A Geodata Model and GIS Interface for SWAT
– *Francisco Olivera, Milver Valenzuela, R. Srinivasan, Janghwoan Choi, Hiudae Cho, Srikanth Koka, and Ashish Agrawal* 295

Assessing Flood Mitigation Alternatives in Shijr Area in Metropolitan Taipei
– *Chao-Hsien Liaw, Yao-Lung Tsai, and Mow-Soung Cheng* 311

Resolution of Impacts of Runoff Events on a Water Supply Reservoir With a Robotic Monitoring Network
– *David M. O'Donnell and Steven W. Effler* 323

Modeling Fecal Coliform Contamination in the Rio Grande
– *Paul LaWare and Hanadi S. Rifai* 337

Fluvial Geomorphological Methodology for Natural Stable Channel Design
– *Richard D. Hey* 357

Optimum Use of Paddy Fields for Flood Mitigation
– *Po-Shan Yu, Yu-Chi Wang, Tao-Chang Yang, and Chun-Chao Kuo* 375

A Genetic Algorithm to Reduce Stream Channel Cross Section Data
– *Charles Berenbrock* 387

Reassembling Hetch Hetchy: Water Supply Without O'Shaughnessy Dam
– *Sarah E. Null and Jay R. Lund* 395

Evaluating the Effectiveness of a Fixed Wellhead Delineation: Regional Case Study
– *Jay Y.S. Hodgson, John R. Stoll, and Richard C. Stoll* 409

Effects of Adjacent Agricultural Activities and Watershed Characteristics on Stream Macroinvertebrate Communities
– *Sofia A. Kyriakeas and Mary C. Watzin* 425

Hydrologic Impacts of Alternative Approaches to Storm Water Management and Land Development
– *Evan Shane Williams and William R. Wise* 443

Cooperative Modeling: Building Bridges Between Science and the Public
– *Kristan Cockerill, Howard Passell, and Vince Tidwell* 457

Application of Grey Model and Artificial Neural Networks to Flood Forecasting
– *Moon Seong Kang, Min Goo Kang, Seung Woo Park, Jeong Jae Lee, and Kyung Hak Yoo* 473

(cont.)

Journal of the Amer. Water Resources Assoc.
Vol. 42, no. 2 (04/2006)

Prediction of Local Scour Around Bridge Piers Using Artificial Neural Networks
– *Sung-Uk Choi and Sanghwa Cheong* 487

The Flexible Tolerance Method for Estimating Hydrologic Parameters in the Root Zone
– *Xunhong Chen and Yanfeng Yin* 495

Role of Watershed Subdivision on Modeling the Effectiveness of Best Management Practices with SWAT
– *Mazdak Arabi, Rao S. Govindaraju, Mohamed M. Hantush, and Bernard A. Engel* 513

Book Reviews 529-534
AWRA Institutional Members 535-538
AWRA Corporate Members 539-540
2006 AWRA Membership Plan 541
2006 AWRA Membership Application 542
Professional Services – AWRA Corporate Members 543-544

From the Editor of *JAWRA* ... I am enormously honored to assume the editorship of JAWRA, and I'm humbled by the responsibility of caring for the single biggest element of AWRA member satisfaction.

First of all, I want to recognize the work of my predecessor, John Warwick, in building the reputation of our journal. John's high standards and unceasing insistence on good science have brought about increased manuscript submissions from which to select the best papers. I also want to recognize Managing Editor Laura Helsel who worked closely with John and the Associate Editors to push forward the review and editing of manuscripts. AWRA thanks John and Laura for their dedication over the past four years, and wishes them the best in their future endeavors.

We also welcome a new face to the AWRA family – Susan M. Scalia, our Editorial Assistant. Based in AWRA's Middleburg, Virginia, headquarters, Susan will be tracking the manuscripts and keeping the reviews on schedule. All of the Associate Editors have graciously agreed to continue or extend their terms for at least this year. I hope our team can continue to bring you a high level of service and produce a great journal.

The technical aspects of scientific journal production are changing rapidly. JAWRA continues to explore new ways to deliver content to its readers and to make it easier for authors to effectively present their ideas. Despite the changes, there is one constant: our commitment to producing peer-reviewed articles of the highest scientific quality. We invite your participation in this process by reading *JAWRA*, volunteering as a reviewer, and submitting your manuscripts for publication.

Kenneth J. Lanfear, P.E., Editor

Please Submit All Manuscripts For *JAWRA* To . . . jawra@awra.org
All inquiries should be made to ... Phone (540) 687-8390 or Fax (540) 687-8395 or Email editor@awra.org

LISTING OF 2005 *JAWRA* REVIEWERS CAN BE FOUND ON AWRA's WEBSITE

Printed on partially recycled paper

Cover Photo: Mckenzie River, Oregon, Spring 2005
(Photo by Ken Lanfear).

The Journal of Wildlife Management

Contents

Vol. 69, no. 4 (10/2005)

Editorial: Viewpoints, Genetics, and Free Lunch 1313

Invited Paper: How Do Prey Persist?
William J. Matter and R. William Mannan 1315

Research and Management Viewpoint: Using the North American Breeding Bird Survey as a Tool for Conservation: A Critique of Bart et al. (2004)
John R. Sauer, William A. Link, James D. Nichols, and J. Andrew Royle 1321

Research and Management Viewpoint: Enhancing the Value of the Breeding Bird Survey: Reply to Sauer et al. (2005)
Charles M. Francis, Jonathan Bart, Erica H. Dunn, Kenneth P. Burnham, and C. John Ralph 1327

Research and Management Viewpoint: A Framework for Monitoring Multiple-species Conservation Plans
Cameron W. Barrows, Monica B. Swartz, Wendy L. Hodges, Michael F. Allen, John T. Rotenberry, Bai-Lian Li, Thomas A. Scott, and Xiongwen Chen 1333

Research and Management Viewpoint: Quantifying Home-range Overlap: The Importance of the Utilization Distribution
John Fieberg and Christopher O. Kochanny 1346

Special Section

Molecular Genetics in Wildlife Science, Conservation, and Management
Randy W. DeYoung and Leonard A. Brennan 1360

The Molecular Toolbox: Genetic Techniques in Wildlife Ecology and Management
Randy W. DeYoung and Rodney L. Honeycutt 1362

Genetic Approaches for Estimating the Effective Size of Populations
Paul Leberg 1385

Molecular Approaches to the Study of Parentage, Relatedness, and Fitness: Practical Applications for Wild Animals
J. Andrew DeWoody 1400

Noninvasive Genetic Sampling Tools for Wildlife Biologists: A Review of Applications and Recommendations for Accurate Data Collection
Lisette P. Waits and David Paetkau 1419

Geographical Genetics: Conceptual Foundations and Empirical Applications of Spatial Genetic Data in Wildlife Management
Kim T. Scribner, Julie A. Blanchong, Douglas J. Bruggeman, Bryan K. Epperson, Cheng-Yu Lee, Yu-Wen Pan, Rainy I. Shorey, Harold H. Prince, Scott R. Winterstein, and David R. Luukkonen 1434

DNA Testing in Animal Forensics
Brandt G. Cassidy and Robert A. Gonzales 1454

Genetic Consequences of Reintroductions: An Example from Oregon Pronghorn Antelope (*Antilocapra americana*)
Catherine L. Stephen, Don G. Whittaker, Don Gillis, Lindsey L. Cox, and Olin E. Rhodes, Jr. 1463

Stimulation of Satiation Receptors: A Novel Approach to Wildlife Management
Jane V. Cotterill, Richard W. Watkins, and David P. Cowan 1475

Variation in Terrestrial Habitat Use by Four Pool-breeding Amphibian Species
Jonathan V. Regosin, Bryan S. Windmiller, Rebecca N. Homan, and J. Michael Reed 1481

Impact of Special Early Harvest Seasons on Subarctic-nesting and Temperate-nesting Canada Geese
Susan E. Sheaffer, William L. Kendall, and E. Frank Bowers 1494

Survival Rates of Australasian Shoveler Ducks in New Zealand
Richard J. Barker, Tom Caithness, and Murray Williams 1508

Foraging and Nesting Habitat of Breeding Male Northern Goshawks in the Laurentian Mixed Forest Province, Minnesota
Clint W. Boal, David E. Andersen, and Patricia L. Kennedy 1516

Evaluation of the Landscape Surrounding Northern Bobwhite Nest Sites: A Multiscale Analysis
Craig G. White, Sara H. Schweitzer, Clinton T. Moore, Ira B. Parnell III, and Lynn A. Lewis-Weis 1528

(continued on inside back cover)

The Journal of Wildlife Management

Contents (continued) Vol. 69, no. 4 (10/2006)

Population Size and Winter Distribution of Eastern American Oystercatchers
Stephen C. Brown, Shiloh Schulte, Brian Harrington, Brad Winn, Jonathan Bart, and Marshall Howe 1538

Mountain Plover Population Responses to Black-tailed Prairie Dogs in Montana
Stephen J. Dinsmore, Gary C. White, and Fritz L. Knopf 1546

Site Occupancy, Apparent Survival, and Reproduction of California Spotted Owls in Relation to Forest Stand Characteristics
Jennifer A. Blakesley, Barry R. Noon, and David R. Anderson 1554

Effects of Hunting on Survival of American Woodcock in the Northeast
Daniel G. McAuley, Jerry R. Longcore, David A. Clugston, R. Bradford Allen, Andrew Weik, Scot Williamson, John Dunn, Bill Palmer, Kevin Evans, Will Staats, Greg F. Sepik, and William Halteman 1565

Snags, Cavity-Nesting Birds, and Silvicultural Treatments in Western Oregon
Scott T. Walter and Chris C. Maguire 1578

Conservation Risks of Male-selective Harvest for Mammals with Low Reproductive Potential
Philip D. McLoughlin, Mitchell K. Taylor, and François Messier 1592

Identifying Bats from Time-expanded Recordings of Search Calls: Comparing Classification Methods
Damiano G. Preatoni, Mosè Nodari, Roberta Chirichella, Guido Tosi, Luc A. Wauters, and Adriano Martinoli 1601

Resource and Spatial-use Patterns of an Endangered Vertebrate Pollinator, the Lesser Long-nosed Bat
Holly K. Ober, Robert J. Steidl, and Virginia M. Dalton 1615

Giant Panda Habitat Selection in Foping Nature Reserve, China
Xuehua Liu?, Albertus G. Toxopeus, Andrew K. Skidmore, Xiaoming Shao, Gaodi Dang, Tiejun Wang, and Herbert H. T. Prins 1623

Bait Stations, Hard Mast, and Black Bear Population Growth in Great Smoky Mountains National Park
Joseph D. Clark, Frank T. Van Manen, and Michael R. Pelton 1633

Yearling and Subadult Black Bear Survival in a Hunted Virginia Population
Daniel J. Lee and Michael R. Vaughan 1641

Seasonal Activity Areas of Coyotes in the Bear River Mountains of Utah and Idaho
Glen F. Gantz and Frederick F. Knowlton 1652

Monitoring and Habitat Analysis for Wolves in Upper Michigan
Marcel J. Potvin, Thomas D. Drummer, John A. Vucetich, Dean E. Beyer, Jr., Rolf O. Peterson, and Jim H. Hammill 1660

Influence of Thinning of Douglas-fir Forests on Population Parameters and Diet of Northern Flying Squirrels
Douglas M. Gomez, Robert G. Anthony, and John P. Hayes 1670

Effects of Human Disturbance on Use of Space and Flight Distance of Mountain Gazelles
Regev Manor and David Saltz 1683

Habitat Selection by Elk Before and After Wolf Reintroduction in Yellowstone National Park
Julie S. Mao, Mark S. Boyce, Douglas W. Smith, Francis J. Singer, David J. Vales, John M. Vore, and Evelyn H. Merrill 1691

Microhabitat Use by Black-faced Impala in the Etosha National Park, Namibia
Tammie K. Matson, Anne W. Goldizen, and Peter J. Jarman 1708

Yellowstone Bison Fetal Development and Phenology of Parturition
Peter J. P. Gogan, Kevin M. Podruzny, Edward M. Olexa, Helga Ihsle Pac, and Kevin L. Frey 1716

Research Notes: Prenesting Use of Intertidal Habitats by Piping Plovers on South Monomoy Island, Massachusetts
James D. Fraser, Shannon E. Keane, and P.A. Buckley 1731

Research Notes: Night Roost Habitat of Radio-Tagged Northern Goshawks on Lassen National Forest, California
Tom H. Rickman, Bobette E. Jones, Danny R. Cluck, David J. Richter, and Kenneth W. Tate 1737

Research Notes: Utilizing Behavioral Biophysics to Mitigate Mortality of Snared Endangered Newfoundland Marten
Jason T. Fisher, Colin Twitchell, Wayne Barney, Earl Jenson, and Jonathan Sharpe 1743

Research Notes: Antler Breakage in Tule Elk, Owens Valley, California
Heather E. Johnson, Vernon C. Bleich, and Paul R. Krausman 1747

Book Reviews 1753

Index 1757

Manuscript Guidelines for *The Journal of Wildlife Management* 1804

The Journal of Wildlife Management

Contents

Volume 70, Number 1, 2006

1 Improving the Use of Science in Conservation: Lessons from the Florida Panther
Michael J. Conroy, Paul Beier, Howard Quigley, and Michael R. Vaughan

8 Optimizing Presence–Absence Surveys for Detecting Population Trends
Jonathan R. Rhodes, Andrew J. Tyre, Niclas Jonzén, Clive A. McAlpine, and Hugh P. Possingham

19 Population Momentum: Implications for Wildlife Management
David N. Koons, Robert F. Rockwell, and James B. Grand

27 Effects of Vegetation Loss on a Sand Dune Lizard
Omar A. Attum and Perri K. Eason

31 Survival of Grand and Otago Skinks Following Predator Control
Mandy D. Tocher

43 Identification of Primary Substrate in the Initiation of Avian Botulism Outbreaks
Catherine Sojo and Gary Wobeser

54 Wetland Environmental Conditions Associated with the Risk of Avian Cholera Outbreaks and the Abundance of *Pasteurella multocida*
Julie A. Blanchong, Michael D. Samuel, Diana R. Goldberg, Daniel J. Shaddock, and Lynn H. Creekmore

61 Waste Rice for Waterfowl in the Mississippi Alluvial Valley
Joshua D. Stafford, Richard M. Kaminski, Kenneth J. Reinecke, and Scott W. Manley

70 Spring Census of Mid-Continent Sandhill Cranes Using Aerial Infrared Videography
Paul J. Kinzel, Jonathan M. Nelson, Randolph S. Parker, and Lawrence R. Davis

78 Local Survival of Marbled Murrelets in Central California: Roles of Oceanographic Processes, Sex, and Radiotagging
M. Zachariah Peery, Steven R. Beissinger, Esther Burkett, and Scott H. Newman

89 Neckbands, Harvest, and Survival of Ross's Geese From Canada's Central Arctic
Ray T. Alisauskas, Kiel L. Drake, Stuart M. Slattery, and Dana K. Kellett

101 The Importance of Winter Floods to Mallards in the Mississippi Alluvial Valley
Mickey E. Heitmeyer

111 Demographics of Breeding Female Mallards in Southern Ontario, Canada
Steven T. Heckman, T. Shane Gabor, Ron Maber, Henry R. Murkin, and Mark S. Lindberg

121 Population Dynamics of Mallards Breeding in Agricultural Environments in Eastern Canada
Steven T. Heckman, T. Shane Gabor, Mark J. Petrie, Ron Maber, Henry R. Murkin, and Mark S. Lindberg

129 Determinants of Mallard and Gadwall Nesting on Constructed Islands in North Dakota
Terry L. Shaffer, Ann I. Dahl, Ronald E. Reynolds, Kathy L. Baer, Michael A. Johnson, and Glen A. Sargeant

138 Ruffed Grouse Nest Success and Habitat Selection in the Central and Southern Appalachians
John M. Terpak, William M. Giuliano, C. Allan Miller, Thomas J. Allen, Steve Bittner, John W. Edwards, Scott Friedhof, William K. Igo, Dean E. Stauffer, and Gary W. Norman

145 Critical Demographic Parameters for Declining Songbirds Breeding in Restored Grasslands
Robert J. Fletcher, Jr., Rolf R. Koford, and Dana A. Seaman

158 Patch Size and Landscape Effects on Density and Nesting Success of Grassland Birds
Marken Winter, Douglas H. Johnson, Jill A. Shaffer, Therese M. Donovan, and W. Daniel Sparlarsky

173 Factors Affecting Avian Species Richness and Density in Riparian Areas
Rebecca G. Peak and Frank R. Thompson, III

180 Songbird Use of Regenerating Forest, Glade, and Edge Habitat Types
Alix D. Fink, Frank R. Thompson, III, and April A. Tudor

189 Bird–Vegetation Relationships in Southeastern British Columbia
Frances L. Schwab, Neal P. P. Simon, and Anthony R. E. Sinclair

198 Henslow's Sparrow Winter-Survival Estimates and Response to Prescribed Burning
Benjamin S. Thatcher, David G. Krementz, and Mark S. Woodrey

207 Day-Roosting Habitat of Female Long-Legged Myotis in Ponderosa Pine Forests
Michael D. Baker and Michael J. Lacki

216 Coyote Habitat Use in a Tropical Deciduous Forest of Western Mexico
Mireia G. Hidalgo-Mihart, Lisette Cantú-Salazar, Carlos A. López-González, Patricia G. Martínez-Gutiérrez, Erin C. Fernández, and Alberto González-Romero

222 Do Black Bears Respond to Military Weapons Training?
David J. Telesco and Frank T. van Manen

231 Winter Microhabitat Separation between Giant and Red Pandas in *Bashania faberi* Bamboo Forest in Fengtongzhai Nature Reserve
Zejun Zhang, Fuwen Wei, Ming Li, and Jinchu Hu

236 Evaluating Scientific Inferences about the Florida Panther
Paul Beier, Michael R. Vaughan, Michael J. Conroy, and Howard Quigley

246 Cougar Population Dynamics and Viability in the Pacific Northwest
Catherine M. S. Lambert, Robert B. Wielgus, Hugh S. Robinson, Donald D. Katnik, Hilary S. Cruickshank, Ross Clarke, and Jon Almack

(contents continued on inside back cover)

Journal of Wildlife Management
Vol. 70, no. 1 (2006)

Contents

(continued)

255 Estimating Animal Abundance in Heterogeneous Environments: An Application to Aerial Surveys for Dugongs
Kenneth H. Pollock, Helene D. Marsh, Ivan R. Lawler, and Mathew W. Alldredge

263 Comparison of Camera and Road Survey Estimates for White-Tailed Deer
Clay W. Roberts, Brian L. Pierce, Anthony W. Braden, Roel R. Lopez, Nova J. Silvy, Philip A. Frank, and Dean Ransom, Jr.

268 Managing an Overabundant Deer Population by Sterilization: Effects of Immigration, Stochasticity and the Capture Process
John A. Merrill, Evan G. Cooch, and Paul D. Curtis

278 Late Prehistoric and Early Historic Abundance of Columbian White-Tailed Deer, Portland Basin, Washington and Oregon, USA
R. Lee Lyman

283 Estimates of Elk Summer Range Nutritional Carrying Capacity Constrained by Probabilities of Habitat Selection
Jeffrey L. Beck, James M. Peek, and Eva K. Strand

295 Carcasses of Shot Richardson's Ground Squirrels May Pose Lead Hazards to Scavenging Hawks
Loren D. Knopper, Pierre Mineau, Anton M. Scheuhammer, Della E. Bond, and Donald T. McKinnon

300 Book Reviews

302 Editorial

304 Unified Author Guidelines

CONTENTS

Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

Volume 50, Number 2 March/April 2006

Cover Story

Spartina, an invasive cordgrass that's not native to the west coast, invades the intertidal mudflats of Willapa Bay, a crucial estuary that supports Washington's shellfish industry and provides essential habitat for many species. See story page 31

Features

WETLANDS

6 From Degraded Pastureland To Forested Wetland
by David Dickson

44 Wetland Enhancement Through Scraping Reed Canary Grass

SHORELINE STABILIZATION

10 Geocell Shoreline Cover Supports Aquatic Plantings Over Impervious Liner
by Lee Bell, Greg Kramer and Patricia Stutler

EROSION CONTROL

14 Turf Reinforcement Mattings
by Roy J. Nielsen, CPESC, Kent Chabot, P.E., and Mark Maxwell, CPESC

RETAINING WALLS

21 Utilizing Creative Retaining Wall Solutions

WATER MANAGEMENT SYSTEMS

24 Innovative Drainage Water Management: Missouri's MUDS Project

VEGETATION SELECTION

28 Plant Selection for Vegetated Swales

VEGETATION MANAGEMENT

31 Invasive Spartina Infiltrates the West

SOIL STABILIZATION

38 Reinforced Vegetation Helps South Carolina Channels Hold Their Ground

ROADSIDE PRAIRIES

48 Roadside Planting or Remnant?
by Kirk Henderson

PRAIRIE RESTORATION

50 Save That Prairie
by Ray Dodge

SILT FENCE

52 Proper Silt Fence Installation
by Tom Carpenter

HURRICANE CLEANUP

57 Hurricane Trials: Cleanup a Success in Pensacola Bay
by Sam Ease

LAND IMPROVEMENT CONTRACTORS OF AMERICA

60 Forever A Drainage Contractor
by Bob Oertel

62 Endless Opportunities
by Bob Oertel

Departments

5 Tell It Like It Is

65 Index to Past Articles

68 Equip Board

70 Advertiser's Index

STAFF

Kenneth M. Rasch
President/Owner

Jane Rasch
Vice President/Owner

Amy Dencklau
Publishing Editor
landandwater@frontiernet.net

Shanna Egli
Assistant Editor
lweditor@frontiernet.net

Martha Steinkamp
Circulation Manager
lwsub@frontiernet.net

Bob Oertel
Contributing Writer

Issy Weaver
Photographer

Jennifer Beahler
Accounting
lwacct@frontiernet.net

Land and Water (ISSN 0192-9453) is published monthly by Land and Water, Inc., 220 A Street, P.O. Box 1197, Fort Dodge, IA 50501-9125. Telephone (515)576-3191. Fax (515)576-2606. **Land and Water** is edited for contractors, engineers, architects, government officials and those working in the field of natural resource management and restoration from idea stage through project completion and maintenance. Subscription rates: One year - $20.00; Two years - $35.00; Three years - $50.00 (Foreign - add $12.00 per year). All non-paid subscriptions are mailed on a rotating basis to receive occasional copies at Fort Dodge, Iowa and at additional mailing offices. No part of this publication may be reproduced without the written consent of the publisher. **Land and Water** assumes no responsibility for statements expressed by contributors.

TABLE OF CONTENTS

vol. 7 | no. 1 | spring 2006

Native Plants Journal

PAPERS PRESENTED AT THE 3RD PACIFIC NORTHWEST NATIVE PLANT CONFERENCE

Restoration of native plants on Catalina Island, California 4
W Douglas Serrill

Seed quality testing of native species 15
Sabry Elias, Adriel Garay, Lee Schweitzer, and Sherry Hanning

Control of knotweed and other invasive species and experiences restoring native species in the Pacific Northwest US 20
Roberta Davenport

Moss propagation in Glacier National Park's Native Plant Nursery 27
Stacy McDonough

Understanding cultural reasons for the increase in both restoration efforts and gardening with native plants 31
Linda R McMahan

REFEREED RESEARCH
Native grass seeding and forb planting establishment in a degraded oak savanna plant community in the Coast Range foothills of western Oregon 35
Nan Vance, Andrew Neill, and Frank Morton

Seed production protocols for *Anaphalis margaritacea, Eriophyllum lanatum,* and *Eriogonum umbellatum* 47
Colleen Archibald

Propagating native Salicaceae for riparian restoration on the Hopi Reservation in Arizona 52
Thomas D Landis, David R Dreesen, Jeremy R Pinto, and R Kasten Dumroese

---

REFEREED RESEARCH
Seeding rate affects establishment of native perennial legumes in the upper midwestern US 61
Jason A Fischbach, Nancy J Ehlke, Paul R Peterson, Donald L Wyse, Douglas R Swanson, and Craig C Sheaffer

Successful 1-y storage of swamp white oak acorns 69
Gregory Hoss

REFEREED RESEARCH
Genetic fingerprinting of goldenseal (*Hydrastis canadensis* L. [Ranunculaceae]) using AFLP markers 73
Suping Zhou and Roger J Sauvé

Planting longleaf pine at wide spacings 79
David B South

Propagation protocol for the endangered crenulate lead plant, *Amorpha herbacea* var. *crenulata* 89
Julissa Roncal, Jack Fisher, Meghan QN Fellows, Kristie Wendelberger, Joyce Maschinski, and Matthew W Fidelibus

REFEREED RESEARCH
Comparison of methods for seeding Nebraska sedge (*Carex nebrascensis*) and Baltic rush (*Juncus balticus*) 95
Derek J Tilley and J Chris Hoag

The pot planter: a new attachment for the Waterjet Stinger 100
J Chris Hoag

BOOK REVIEW
Poisonous plants: a handbook for doctors, pharmacists, toxicologists, biologists, and veterinarians 102

MEETINGS AND OPPORTUNITIES 104

PAY DIRT

MAGAZINE

A Voice For Western Mining Since 1938

February 2006

Cover Story: Codelco's Villarzú is Copper Man of the Year 3

Mining in the West 6

Estimate at Pebble shows 'world-class' resource, owner says • New estimate increases Donlin Creek by one-third • Phelps Dodge to move on $550 million Safford mine • Augusta defining more resources at Rosemont • BHP Billiton drilling on Dragoon property • Plant commissioning under way at Utah mine • Palladon hits high-grade in Milford-area drilling • Mercator is installing EW rectifier for growth • Portal site preparation under way at Sunshine • Bullion River acquires Cortez Trend properties • Canyon says Reward would make good mine • Canadian firm mining moly near Helena

Energy 15

Peabody to develop new New Mexico mine to help power Arizona • URI gets favorable decision on ISL at Crownpoint • PRB coal production breaks records — again • West Elk's problems brought under control, Arch says • Academy starts talks on needed coal R&D • Firm wants to go back into Firefly uranium mine • Coal's share of energy market continues to grow

Governments and Mining 18

USGS reports double-digit growth in import dependency • Canada, U.S. talk about mineral cooperation • TRI changes offer little to mining, NMA says • NMA opposes regs for coarse particulates • Newmont completes permitting for coal-fired power plant

Environment 20

Mining relieved about coarse-particulate rules • International panel says U.S. improves environment • Feds look at protecting a plant in shale, gas territory • Kennecott spending heavily on cleanup in Utah

The Business of Mining 21

Special charges reduce Phelps Dodge income for fourth quarter and year • FCX catches up on production, sees large profit numbers • Peabody has 2005 record for income, safety, other factors • Barrick is completing Placer Dome takeover • Canada-Alaska ties strong in mining, more

Commentary, 2; Mexico, 8; Canada, 9; Peru. 10; Chile, 11; Latin America, 12; World, 13; Western Briefs, 14; Ad Index, 19; Companies and Markets, 24; Metals, 25; Miners in the News, 29; Directory, 30; Safety, Health & Labor, 31; Low Grade, 32

On the Cover

Juan Villarzú Rohde, executive president of Codelco, the state-owned copper company in Chile, was chosen by The Copper Club as its Copper Man of the Year.

PAY DIRT
Magazine

William C. Epler
Publisher and Editor
1968-1995

William B. Sullivan
Publisher
1995-1999

Gary Dillard
Editor

Dan Eyde • Ted Eyde
George Learning
Clarence Ellis
Chug-A-Lug
Correspondents

Frank Barco
Production Manager

Lupe A. Silva
Adelina Espinoza
Rosina M. Hernandez
Production Staff

Caryl L. Larkins
Advertising Sales/Circulation

Mary Farrington
Office Staff

Doug Harris
Maintenance Manager

PAY DIRT (USPS 424-000)
P.O. Drawer 48, Copper Queen Plaza
Bisbee, AZ 85603
(520) 432-2244; FAX (520) 432-2247
E-mail: *paydirt@theriver.com*

PAY DIRT is published monthly by Copper Queen Publishing Co. Inc.

Subscription Rates

Single copy	$ 3.00
One year	$30.00
Two years	$55.00
Three years	$75.00

Canadian subscriptions add $10.00 per year; foreign subscriptions add $50.00 per year

Advertising Rates
For information call (520) 432-2244

Periodical postage paid at Bisbee, AZ 85603
Postmaster: Please send Form 3579 to:
PAY DIRT, P.O. Drawer 48, Bisbee, AZ 85603

Plains Anthropologist

CONTENTS

Articles

Hoax or History: A Bison Skull with Embedded Calf Creek Projectile Point.....**Leland C. Bement, Ernest L. Lundelius, Jr., and Richard A. Ketcham** 221

Rockshelter Archaeology and Geoarchaeology in the Bighorn Mountains, Wyoming.....**Judson B. Finley, Marcel Kornfeld, Brian N. Andrews, George C. Frison, Chris C. Finley, and Michael T. Bies** 227

Late Paleoindian (Allen/Frederick Complex) Subsistence Activities at the Clary Ranch Site, Ash Hollow, Garden County, Nebraska.....**Matthew G. Hill** 249

A Keith Phase Burial on the High Plains of Kansas.....**Robert J. Hoard, Michael Finnegan, Timothy Weston, Randall M. Thies, Steven R. Bozarth, and Don Rowlison** 265

Portable X-Ray Fluorescence Analysis of Rock Art Pigments.....**Bonita Newman and Lawrence Loendorf** 277

Darkened Skies and Sparkling Grasses: The Potential Impact of the Mazama Ash Fall on the Northwestern Plains.....**Gerald A. Oetelaar and Alwynne B. Beaudoin** 285

Location, Location, Location: The Lewis Canyon Petroglyphs.....**Solveig A. Turpin** 307

Book Reviews

BRINK and DORMAAR: Archaeology in Alberta: A View from the New Millenium.....**Fred Schneider** 329

KEYSER: The Five Crows Ledger: Biographic Warrior Art of the Flathead Indians and Art of the Warriors: Rock Art of the American Plains.....**Linea Sundstrom** 330

LYMAN and O'BRIEN: W.C. McKern and the Midwestern Taxonomic Method.....**Richard A. Krause** 332

WYCKOFF, THELER, and CARTER: The Burnham Site in Northwestern Oklahoma: Glimpses Beyond Clovis?.....**Matthew E. Hill** 334

ROPER and PAULS: Plains Earthlodges: Ethnographic and Archaeological Perspectives.....**Dennis L. Toom** 336

Editor's Note.....219
Announcement.....220
Advertisement.....264
Mission Statement.....284

On the cover: CT scan image of bison skull illustrating the condition of the embedded point (from "Hoax or History: A Bison Skull with Embedded Calf Creek Projectile Point," by Leland C. Bement, Ernest L. Lundelius, Jr., and Richard A. Ketcham, Figure 2b).

Rangeland Ecology & Management

A Journal of the Society for Range Management

VOLUME 59 NUMBER 2 MARCH 2006

Table of Contents

Research Articles

111 **Fluxes of CO_2 From Grazed and Ungrazed Tallgrass Prairie**
Clenton E. Owensby, Jay M. Ham, and Lisa M. Auen

128 **Elevated Atmospheric CO_2 Magnifies Intra-specific Variation in Seedling Growth of Honey Mesquite: An Assessment of Relative Growth Rates**
H. Wayne Polley, Charles R. Tischler, and Hyrum B. Johnson

135 **Herbaceous Vegetation Responses (1992-2004) to Restoration Treatments in a Ponderosa Pine Forest**
Margaret M. Moore, Cheryl A. Casey, Jonathan D. Bakker, Judith D. Springer, Peter Z. Fulé, W. Wallace Covington, and Daniel C. Laughlin

145 **Stocking Rate and Weather Impacts on Sand Sagebrush and Grasses: A 20-Year Record**
Robert L. Gillen and Phillip L. Sims

153 **Woody Plant Community in the Cross Timbers Over Two Decades of Brush Treatments**
David M. Engle, Timothy N. Bodine, and J. F. Stritzke

163 **Postfire Vegetation Dynamics in Three Rangelands of Northeastern Patagonia, Argentina**
César M. Rostagno, Guillermo E. Defossé, and Héctor F. del Valle

171 **Herbaceous Restoration of Juniper Dominated Grasslands With Chaining and Fire**
R. J. Ansley, H. T. Wiedemann, M. J. Castellano, and J. E. Slosser

179 **The Accuracy of Ground-Cover Measurements**
D. T. Booth, S. E. Cox, T. W. Meikle, and C. Fitzgerald

189 **Do Pasture-Scale Nutritional Patterns Affect Cattle Distribution on Rangelands?**
Dave Ganskopp and Dave Bohnert

197 **Effect of Standing Litter on Rough Fescue Utilization by Cattle**
Darlene M. Moisey, Walter D. Willms, and Edward W. Bork

Research Notes

204 **Cattle Consumption of Velvet Lupine (*Lupinus leucophyllus*) in the Channel Scablands of Eastern Washington**
Michael H. Ralphs, Kip E. Panter, Clive Gay, Ernie Motteram, and Stephen T. Lee

208 **Effects of Livestock Grazing on Duck Nesting Habitat in Utah**
Ben C. West and Terry A. Messmer

212 **Seasonal Variation in Resistance of Aspen Stems to Shearing Force**
Craig W. M. Dockrill, Arthur W. Bailey, Peter V. Blenis, and Jane R. King

Forum: Viewpoint

216 **Successful Adaptive Management—The Integration of Research and Management**
Kimberly J. Reever Morghan, Roger L. Sheley, and Tony J. Svejcar

220 **Emerging Issues in Rangeland Ecohydrology: Vegetation Change and the Water Cycle**
Bradford P. Wilcox and Thomas L. Thurow

Front Cover Photograph: A winter scene of the northern Kansas Flint Hills. Photo by Clenton Owensby.

Rangelands

Volume 28 No. 2
April 2006

Published bimonthly:
February, April, June, August, October, December
Copyright 2006 by the Society for Range Management

EDITOR-IN-CHIEF
Gary Frasier
7820 Stag Hollow
Loveland, Colorado 80538
(970) 962-3094
E-Mail: gfrasier@aol.com

MANAGING EDITOR
Peter Burns
Alliance Communications Group
810 East 10th Street
Lawrence, Kansas 66044
(785) 843-1235 ext. 187
E-Mail: pburns@acgpub.listing.com

BOOK REVIEW EDITOR
David L. Scarnecchia
Dept. Natural Res. Sci.
Washington State University
Pullman, Washington 99164-6410
E-Mail: scarneda@mail.wsu.edu

RANGELANDS STEERING COMMITTEE
Ed Fredrickson – *Chair*
Robbie Baird LeValley
Dave Bradford
Kim McReynolds
Jennifer Pluhar
Gustavo Quintana-Martinez
Lisa Schmidt
Sandy Wyman

RANGELANDS EDITORIAL BOARD
Kim McReynolds, *Wilcox, Arizona – Chair*
Jerry Barker, *Boulder, Colorado*
Jon Bates, *Burns, Oregon*
James Brunner, *Medford, Oregon*
Jay Davison, *Fallon, Nevada*
Jerry Dodd, *Lawton, Oklahoma*
Deb Frasier, *Benkelman, Nebraska*
Mike Frisina, *Butte, Montana*
Lynn Huntsinger, *El Cerrito, California*
Dustin Johnson, *Burns, Oregon*
John Mitchell, *Fort Collins, Colorado*
Tom Monaco, *Logan, Utah*
Marilyn Samuel, *Lehigh Acres, Florida*
Ed Smith, *Minden, Nevada*
Lori Ziegenhagen, *Burns, Oregon*

RANGELANDS (ISSN 0190-0528) is the official publication of the Society for Range Management (SRM) and is published bimonthly in February, April, June, August, October, and December. Publishing services are provided by Alliance Communications Group, 810 East 10th Street, Lawrence, Kansas 66044. SRM members receive *Rangelands* as a benefit of membership. Calendar-year subscription prices are $120.00–160.00 for institutions. Additional surface charges may apply to subscribers located outside of the USA. The online version of *Rangelands* can be found online at www.srmjournals.org. Subscriptions, changes of address, and requests for missing issues should be sent to Allen Marketing & Management, P.O. Box 7065, Lawrence, Kansas 66044.

Editorial correspondence should be addressed to Gary Frasier, 7820 Stag Hollow, Loveland, Colorado 80538. Page proofs should be returned to the Managing Editor, Peter Burns 810 East 10th Street, Lawrence, Kansas 66044.

PERIODICALS POSTAGE paid at Denver, Colorado, and additional offices.

POSTMASTER: Address service requested to *Rangelands*, PO Box 7065, Lawrence, Kansas 66044.

PRINTED IN USA

Columns

2 Frasier's Philosophy
Gary Frasier

Feature Articles

3 Fire!
Heather Smith Thomas

12 Rangeland Wildfires Can be Good or Bad
Heather Smith Thomas

17 Wildfire's Place in Land Management: A Case Study
Lee E. Hughes

22 Controlling Annual Bromes
Derek Miller

26 Do Micro-Nutrient Seed Treatments Assist in Range Restoration Efforts?
Charlie D. Clements and James A. Young

30 The United States Sheep Experiment Station: Shedding Light on Rangeland Ecosystems
Steven S. Seefeldt and William Laycock

36 The Language of Rangeland Science
E. E. Grings

Departments

38 Listening to the Land

40 Twelfth in a Series: Insight From SRM's Charter Members

44 Browsing the Literature

47 Highlights, *Rangeland Ecology & Management*, March 2006

50 Book Reviews

Front Cover: The Withington Creek fire burned for nearly two weeks near Salmon, Idaho, in August 2003. Read more in the article "Fire!" in this issue. Photo by Leslie May Shumate.

SOIL SCIENCE

An Interdisciplinary Approach to Soils Research

MARCH 2006 **CONTENTS** **Vol. 171 No. 3**

PRESCRIBED FIRE EFFECTS ON FOREST FLOOR AND SOIL NUTRIENTS IN A SIERRA NEVADA FOREST
J. D. Murphy, D. W. Johnson, Watkins W. Miller, Roger F. Walker, and Robert R. Blank 181

PREDICTING THE DISSOLUTION OF FOUR ROCK PHOSPHATES IN FLOODED ACID SULFATE SOILS OF THAILAND
S. Yampracha, T. Attanandana, A. Sidibé-Diarra, A. Srivihok, and R. S. Yost 200

USING A SOIL QUALITY INDEX TO ASSESS THE EFFECTS OF APPLYING SWINE MANURE COMPOST ON SOIL QUALITY UNDER A CROP ROTATION SYSTEM IN TAIWAN
Chia-Hsing Lee, Mao-Yi Wu, Victor B. Asio, and Zueng-Sang Chen 210

SPATIAL DEPENDENCE AND RELATIONSHIPS OF ELECTRICAL CONDUCTIVITY TO SOIL ORGANIC MATTER, PHOSPHOROUS, AND POTASSIUM
Rex A. Omonode and Tony J. Vyn 223

DEGRADATION KINETICS ASSESSMENT FOR THE FUNGICIDE BAS 505 IN INTACT SOIL CORES VERSUS BATCH SOILS
Jason A. McDonald, Lewis A. Gaston, Scott H. Jackson, Martin A. Locke, and Robert M. Zablotowicz 239

COMPOST AND MULCH EFFECTS ON GASEOUS FLUX FROM AN ALFISOL IN OHIO
Marek K. Jarecki and Rattan Lal 249

POST-RECLAMATION LAND USE EFFECTS ON PROPERTIES AND CARBON SEQUESTRATION IN MINESOILS OF SOUTHERN OHIO
David A. N. Ussiri, Rattan Lal, and Pierre-Andre Jacinthe 261

DESTABILIZATION OF AGGREGATES IN SOME TYPIC FRAGIUDALFS
Gloria Falsone and Eleonora Bonifacio 272

Southwestern Naturalist Vol. 51, no. 1 (March 2006)

CONTENTS

Feature Articles

Diversity and distributional patterns of legumes in southern Nuevo León, México. *Eduardo Estrada C., José A. Villarreal Q., Alfonso Delgado S., Marisela Pando M., Laura Scott M., Enrique Jurado, and Carmen Yen M.* 1

Seed dispersal of *Bursera fagaroides* (Burseraceae): the effect of linking environmental factors. *Raúl Ortiz-Pulido and Victor Rico-Gray* 11

Summer food habits and trophic overlap of roundtail chub and creek chub in Muddy Creek, Wyoming. *Michael C. Quist, Michael R. Bower, and Wayne A. Hubert* 22

Is the Coachella Valley fringe-toed lizard (*Uma inornata*) on the edge of extinction at Thousand Palms Preserve in California? *Xiongwen Chen, Cameron W. Barrows, and Bai-Lian Li.* 28

Microhabitat use, home range, and movements of the alligator snapping turtle, *Macrochelys temminckii*, in Oklahoma. *J. Daren Riedle, Paul A. Shipman, Stanley F. Fox, and David M. Leslie, Jr.* 35

Responses of greater roadrunners during attacks on sympatric venomous and nonvenomous snakes. *Wade C. Sherbrooke and Michael F. Westphal* 41

Chihuahuan raven (*Corvus cryptoleucus*) reproductive success and nest spacing in the southern High Plains of Texas. *J. Paul Burton and James M. Mueller.* 48

Patterns of habitat use by bats along a riparian corridor in northern Utah. *Duke S. Rogers, Mark C. Belk, Malinda W. González, and Brent L. Coleman* 52

Direct effects of fire on endangered Mount Graham red squirrels. *John L. Koprowski, Katherine M. Leonard, Claire A. Zugmeyer, and Julia L. Jolley.* 59

Characteristics of Abert's squirrel (*Sciurus aberti*) cavity nests. *Andrew J. Edelman and John L. Koprowski* 64

Effects of spool-and-line tracking on small desert mammals. *Mary C. Steinwald, Bradley J. Swanson, and Peter M. Waser* 71

Morphological analysis of *Perognathus flavus* and *P. merriami* (Rodentia: Heteromyidae). *Joel G. Brant and Thomas E. Lee, Jr.* 79

Rapid recovery of rodent populations following severe drought. *Robert D. Bradley, J. Delton Hanson, et al.* 87

Notes

Range extension and status update for the Oklahoma cave crayfish, *Cambarus tartarus* (Decapoda: Cambaridae). *G. O. Graening, Danté B. Fenolio, Horton H. Hobbs, III, Shane Jones, Michael E. Slay, Shelley R. McGinnis, and Jim F. Stout* 94

Distribution of the black-capped vireo at Fort Hood, Texas. *David A. Cimprich and Richard M. Kostecke* 99

Habitat preferences of surface-diving waterbirds and American white pelicans wintering in Redfish Bay, Texas. *Richard E. Gibbons and Kim Withers* 103

New records of *Sorex preblei* and *S. tenellus* in California. *Hanna E. Shohfi, Chris J. Conroy, Alan R. Wilhelm, and James L. Patton* 108

Geographic distribution, taxonomy, and conservation status of Nelson's woodrat (*Neotoma nelsoni*) in Mexico. *Noé González-Ruíz, José Ramírez-Pulido, and Hugh H. Genoways* 112

New records of the endangered Tehuantepec jackrabbit (*Lepus flavigularis*) from Oaxaca, Mexico. *Consuelo Lorenzo, Fernando A. Cervantes, Felipe Barragán, and Julieta Vargas.* 116

Bobcat attack on a cottontail rabbit. *Dean E. Biggins and Denise M. Biggins* 119

Molecular identification of coyote feces in an urban environment. *Paul R. Krausman, Martha I. Grinder, Philip S. Gipson, Gerald L. Zuercher, and George C. Stewart* 122

Minutes 127

Announcements 137

Cover: Design by Brian Gardner for the 52nd Annual Meeting held in April 2005.

UNIVERSITY OF

COLORADO LAW REVIEW

Volume 77, Issue 2 *2006*

CONTENTS

ARTICLES

Adverse Possession and Conservation: Expanding Traditional Notions of Use and Possession

Alexandra B. Klass 283

Is Cost-Benefit Analysis Neutral?

David M. Driesen 335

Toward A New Horizontal Federalism: Interstate Water Management in the Great Lakes Region

Noah D. Hall 405

COMMENTS

The Roadless Rule That Never Was: Why Roadless Areas Should Be Protected Through National Forest Planning Instead of Agency Rulemaking

Heather S. Fredriksen 457

Safeguarding Colorado's Water Supply: The New Confluence of Title Insurance and Water Rights Conveyances

Julia S. Walters 491

The Shrinking Scope of Judicial Review in **Norton v. Southern Utah Wilderness Alliance**

Justin C. Konrad 515

An Official Publication of
The Wildlife Society
Volume 33, Number 4
Winter 2005

Editorial Staff
Warren B. Ballard
Editor-in-Chief
Janet L. Wallace
Editorial Assistant
Rebecca Britton
Technical Assistant
Tracy Estabrook
Scientific Assistant
William R. (Bill) Rooney
Managing Editor
Gene Pozniak
Production Editor

Associate Editors
Roger Applegate
Kansas Department of Wildlife & Parks
Robert J. Baker
Texas Tech University
Jake Bowman
University of Delaware
Jeff Bowman
Ontario Ministry of Natural Resources
Michael Chamberlain
Louisiana State University
Michel Crête
Min. des Ressources naturelles, de la Faune et des Parcs du Québec
John M. Eadie
University of California, Davis
David Euler
Birch Point Enterprises
William M. Giuliano
University of Florida
Steve Grado
Mississippi State University
Dave Haukos
U.S. Fish and Wildlife Service
Cynthia A. Jacobson
Alaska Department of Fish and Game
Pat Kehoe
Ducks Unlimited, Canada
Winifred Kessler
U.S. Forest Service
Paul Krausman
University of Arizona
William P. Kuvlesky, Jr.
Caesar Kleberg Wildlife Research Institute
Joshua J. Millspaugh
University of Missouri
Christopher E. Moorman
North Carolina State University
Dennis Murray
Trent University, Peterborough, Ontario
Charles H. Nilon
University of Missouri–Columbia
Gad Perry
Texas Tech University
Lyle Renecker
Renecker and Associates, Inc.
Sara Scheweitzer
University of Georgia
Alberto Lafon Terrazas
Universidad Autonoma de Chihuahua, Chihuahua, Mexico
Gary White
Colorado State University
Heather Whitlaw
Texas Parks and Wildlife
Don Whittaker
Oregon Department of Fish and Wildlife

Wildlife Society Bulletin

Female black bear at White River National Wildlife Refuge See page 1363

TABLE OF CONTENTS

Habitat Research and Management

Impacts of land management practices on a population of nine-banded armadillos in northern Florida
Colleen M. McDonough and W. J. Loughry 1198

Effects of pocket gophers on the herbaceous vegetation growing in aspen meadows
Stacey T. Coggins and Michael R. Conover 1210

Wolf Research and Management

Snow-tracking versus radiotelemetry for predicting wolf–environment relationships in the Rocky Mountains of Canada
Shelley M. Alexander, Paul C. Paquet, Travis B. Logan, and D. Joanne Saher 1216

Evaluation of wolf density estimation from radiotelemetry data
John W. Burch, Layne G. Adams, Erich H. Follmann, and Eric A. Rexstad 1225

Wolf habitat analysis in Michigan: an example of the need for proactive land management for carnivore species
Thomas M. Gehring and Bradly A. Potter 1237

Generalizing wolf effects across the Greater Yellowstone Area: a cautionary note
Robert A. Garrott, Justin A. Gude, Eric J. Bergman, Claire Gower, P. J. White, and Kenneth L. Hamlin 1245

Assessing factors related to wolf depredation of cattle in fenced pastures in Montana and Idaho
Elizabeth H. Bradley and Daniel H. Pletscher 1256

Ungulate Research and Management

Mule deer and pronghorn migration in western Wyoming
Hall Sawyer, Fred Lindzey, and Doug McWhirter 1266

Impacts of white-tailed deer grazing in hay fields of southern Québec
Marie-Claude Richer, Jean-Pierre Ouellet, Line Lapointe, Michel Crête, and Jean Huot 1274

(cont.)

VOLUME 33, NUMBER 4, WINTER 2005

Wildlife Society Bulletin

Efficacy of an animal-activated frightening device on urban elk and mule deer
Kurt C. VerCauteren, John A. Shivik, and Michael J. Laveille 1282

Winter habitat relationships of deer and elk in the temperate interior mountains of British Columbio
Kim G. Poole and Garth Mowat 1288

Hunter effort-harvest size relationships among hunt types of white-tailed deer
Floyd W. Weckerly, Michael L. Kennedy, and Steven Stephenson 1303

Human Dimensions

Regional perspectives and opportunities for feral hog management in Texas
Clark E. Adams, Billy J. Higginbotham, Dale Rollins, Richard B. Taylor, Raymond Skiles, Mark Mapston, and Saidor Turman 1312

Waterfowl and Wetlands Research and Management

Experimental evaluation of duck nesting structures in Prairie-Parkland Canada
Matthew D. Chouinard, Richard M. Kaminski, Patrick D. Gerard, and Stephen J. Dinsmore 1321

Evaluation of supplemental feeding to reduce predation of duck nests in North Dakota
Michael R. Conover, Richard L. King, Jr., Jaime E. Jimenez, and Terry A. Messmer 1330

A simple method to predict seed yield in moist-soil habitats
Luke W. Naylor, John M. Eadie, W. David Smith, Mike Eichholz, and Matthew J. Gray 1335

Bear Management and Research

Dynamics of a recolonizing population of black bears in the Ouachita Mountains of Oklahoma
Sara L. Bales, Eric C. Hellgren, David M. Leslie, Jr., and Joe Hemphill, Jr. 1342

Do brown bear litter sizes reported by the public reflect litter sizes obtained by scientific methods?
Andreas Zedrosser and Jon E. Swenson 1352

Effects of trapping with bait on bait-station indices to black bear abundance
Lara L. Brongo, Michael S. Mitchell, and James B. Grand 1357

Factors affecting settling, survival, and viability of black bears reintroduced to Felsenthal National Wildlife Refuge, Arkansas
Brandon J. Wear, Rick Eastridge, and Joseph D. Clark 1363

Predator and Prey Research

Initial comparison: jaws, cables, and cage-traps to capture coyotes
John A. Shivik, Daniel J. Martin, Michael J. Pipas, John Turman, and Thomas J. DeLiberto 1375

Use of scented hair snares to detect ocelots
John L. Weaver, Peggy Wood, David Paetkau, and Linda L. Laack 1384

Urine urea-creatinine ratio of mammalian carnivores: a good nutritional index for the wrong reason?
Alexandria E. Darnell, Karen E. Hodges, and Christopher G. Guglielmo 1392

Effect of field borders and nest-predator reduction on abundance of northern bobwhites
William E. Palmer, Shane D. Wellendorf, James R. Gillis, and Peter T. Bromley 1398

(cont.)

Editorial Panel

Vince Crichton
Manitoba Conservation

Matthew A. Cronin
University of Alaska

Glenn D. DelGiudice
Minnesota Department of Natural Resources

James de Vos, Jr.
Arizona Department of Fish and Game

Daniel Edge
Oregon State University

Brian T. Gray
Ducks Unlimited, Canada

John P. Hayes
Oregon State University

Jonathan A. Jenks
South Dakota State University

Julio A. Carrera Lopez
Comisión Nacional de Áreas Naturales Protegidas, Mexico

James E. Miller
Mississippi State University

James M. Peek
University of Idaho

John Rappole
National Zoological Park

Gary San Julian
Penn State University

Nova J. Silvy
Texas A&M University

Winston P. Smith
USDA Forest Service

Mark Wallace
Texas Tech University

Book Review Editor

Gary W. Witmer
USDA Wildlife Services
Fort Collins, Colorado

Editor contact: Dr. Warren B. Ballard, Editor, *Wildlife Society Bulletin*, Dept. of Range, Wildlife, and Fisheries Management, Texas Tech University, Box 42125, Lubbock, TX 79409-2125. Phone (806) 742-4885. E-mail: Editor-WSB@ttu.edu

Publication guidelines for this journal can be downloaded from the TWS website: www.wildlife.org.

Subscriptions: The *Wildlife Society Bulletin* is published quarterly by The Wildlife Society, 5410 Grosvenor Lane, Suite 200, Bethesda, MD 20814-2144, at an annual nonmember subscription rate for 2003 of $110 in North America ($125 overseas) or $26.25/issue ($28.75 overseas). Members may receive the *Bulletin* for $81. A current list of available back issues can be obtained from the Society's headquarters in Bethesda, Maryland.

Address all subscription, membership, and business correspondence to the Executive Director, The Wildlife Society, 5410 Grosvenor Lane, Suite 200, Bethesda, MD 20814-2144.

Periodicals postage paid at Bethesda, Maryland, and at additional mailing office.

Contacts for
The Wildlife Society Bulletin

Michael Hutchins
Executive Director
Laura M. Bies
Associate Director of Governmental Affairs
William R. (Bill) Rooney
Managing Editor

5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814-2144
(301) 897-9770
Fax: (301) 530-2471
E-mail: tws@wildlife.org
Website: http://www.wildlife.org

Sandra Staples-Bortner
Program Director
18214 NE 125th Way
Brush Prairie, WA 98606
(360) 253-4611

Robert D. Brown
President
Department of Wildlife and Fisheries Sciences, 210 Nagle Hall
Texas A&M University
College Station, TX 77843-2258

John F. Organ
President-Elect
USFWS
300 Westgate Center Drive
Hadley, MA 01035

W. Daniel Svedarsky
Vice-President
University of Minnesota
Natural Resources Department
Crookston, MN 56716

The Journal of Wildlife Management
Michael L. Morrison, Editor
Great Basin Institute
948 Incline Way
Incline Village, NV 89451
(775) 233-8630
Fax: (775) 298-0017
E-mail: jwm@unr.edu

Wildlife Society Bulletin
Warren B. Ballard, Jr., Editor-in-Chief
Texas Tech University
Dept. of Range, Wildlife, and Fisheries Management
Box 42125
Lubbock, TX 79409-2125
(806) 742-4885
Fax: (806) 742-2280
E-mail: Editor-WSB@ttu.edu

Wildlife Monographs
Paul R. Krausman, Editor
School of Renewable Natural Resources
235 Biological Sciences E. Bldg.
University of Arizona
Tucson, AZ 85721
(520) 621-3845
E-mail: Krausman@ag.arizona.edu

VOLUME 33, NUMBER 4, WINTER 2005

Measuring prevalence of raccoon roundworm (*Baylisascaris procyonis*): a comparison of common techniques
L. Kristen Page, Stanley D. Gehrt, Kristin K. Titcombe, and Nathaniel P. Robinson 1406

Nongame Research and Management

Evaluating biotic and abiotic influences on torrent salamanders in managed forests of western Oregon
Kevin R. Russell, Todd J. Mabee, Michael B. Cole, and Michael J. Rochelle 1413

Temperature sensor evaluation of opossum winter activity
L. Leann Kanda, Todd K. Fuller, and Kevin D. Friedland 1425

Home range and survival of breeding painted buntings on Sapelo Island, Georgia
Elizabeth G. Springborn and J. Michael Meyers 1432

Departments

Editorial, *by Warren Ballard, Editor-in-Chief* 1197
Policy News, *by Laura M. Bies* 1440
From the Field:

Overestimation bias in estimate of black-tailed prairie dog abundance in Colorado
Sterling D. Miller, Richard P. Reading, Bill Hasking, and David Stern 1444

Response to: Overestimation bias in estimate of black-tailed prairie dog abundance in Colorado
Gary C. White, James R. Dennis, and Frances M. Pusateri 1452

Flawed model has serious conservation implications: Response to Turner et al.
Stacey D. Ostermann, Esther S. Rubin, Jeremiah D. Groom, James R. DeForge, Guy Wagner, Pete Sorensen, Steven G. Torres, Mark C. Jorgensen, Aimee J. Bayard, and Oliver Ryder 1456

Ostermann's assumption of a flawed habitat model is premised on facts not in evidence: Turner et al. (2005) response to Ostermann et al. (2005).
Jack C. Turner, Charles L. Douglas, Cecil R. Hallum, Paul R. Krausman, and Rob Roy Ramey 1465

Officers, Editors, and Representatives to Council 1474
Reviewers 1476
Index to Volume 33 1485
Table of Contents for Volume 33 1506

Front Cover: Painted bunting photo by Amanda Heffron Morgan. Habitat photos by J. Michael Meyers. See page 1432.

All technical information published in the *Wildlife Society Bulletin* has been selected through peer evaluation. Articles identified as peer refereed are selected from manuscripts that have been subjected to rigorous review by 2–4 independent referees, an Associate Editor, and the Editor. Articles identified as peer edited have been evaluated and selected by an Editorial Panel of academicians and resource professionals performing more rapid review of content to expedite dissemination of timely resource information. Material in other features and departments not labeled with an evaluation tag is selected and edited by the *Bulletin* staff. To be published in the *Bulletin*, manuscripts must meet the criteria of broad applicability and technical merit established by The Wildlife Society and the *Bulletin* editorial process. The opinions expressed by the authors do not necessarily reflect those of The Wildlife Society. Mention of products within articles does not constitute endorsement by The Wildlife Society.

Postmaster: Send address changes to *Wildlife Society Bulletin*, The Wildlife Society, 5410 Grosvenor Lane, Suite 200, Bethesda, MD 20814-2144

© The Wildlife Society 2005