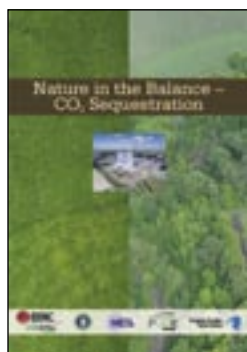




## Documentary focuses on carbon emissions

The University of North Dakota Energy & Environmental Research Center (EERC) released the new documentary “Nature in the Balance: CO<sub>2</sub> Sequestration” in partnership with the award-winning producers at Prairie Public Television. The video made its regionwide premier May 12 on Prairie Public TV, where it will be rebroadcast numerous times.



The half-hour video, which will be offered to all Public Broadcasting Stations in the country, introduces audiences to the capture and long-term storage (sequestration) of carbon dioxide (CO<sub>2</sub>) in North America. It focuses on the U.S. Department of Energy’s (DOE’s) seven Regional Carbon Sequestration Partnerships and describes their role in assessing opportunities for reducing CO<sub>2</sub> emissions worldwide to reduce the risk of global warming.

“There is growing concern that increasing CO<sub>2</sub> in the atmosphere might affect global climate and weather,” said

*Continued on back page*

## Guardisman honors EERC and coworkers

While North Dakota Army National Guardsman Heith Dokken was the only EERC employee serving a 15-month tour of duty in the Iraq war during 2003–2004, the Research Engineer says he felt as though his coworkers were right there alongside him.

“Everyone here was so supportive and helpful,” said Dokken, a medic. “I could not have been there fighting a war without their support.”

While serving with 178 soldiers from the 957th Multi-Role Bridge Company, Dokken said EERC Director Gerald Groenewold called his parents to check up on him and assure them that he had a job to come home to.

“Gerry told them not to worry. I was very fortunate. It was nice knowing I had a job to come back to. Some people weren’t so lucky,” Dokken said.

“I’m also grateful for the employees who e-mailed me and sent me packages and (Human Resources Manager) Sue Bartley, who helped me out when I came back. Also, I’d forgotten a great deal of my GIS abilities, and (Research Scientist) Wes Peck was very patient with me when I had questions—and I had a lot of them! He made the difference in me being productive here,” Dokken said. “I really didn’t know how I could ever repay everyone.”

Dokken showed his appreciation with the presentation of a National Guard medal to the EERC and its employees. He



*EERC Director Gerald Groenewold accepts an award of honor bestowed on the EERC by Research Engineer and North Dakota Army National Guard Sergeant Heith Dokken.*

and other Guard members designed the award to feature a statement President George W. Bush made October 7, 2001, following 9/11: “We will not waver, we will not tire, we will not falter, and we will not fail. Peace and freedom will prevail.”

“We decided it was a fitting quote because fighting this war is a team effort,” Dokken said.

—Janie Solarski



## New Employees



Research Scientist **Steve Smith** says he couldn't be happier than he is right now working at the EERC. "Being able to work in geology is so important to me. I love working here," he said. "I never thought I'd find someplace so close to home where I could put my practical experience in the oil fields to use." Smith, who earned his B.S. in Geology from UND in 2001, spent 2 years working as a well site geologist in the Williston Basin. The long-distance commute from his home in Grand Forks prompted him to return to UND to study geological engineering. At the EERC, he's involved in the Plains CO<sub>2</sub> Reduction (PCOR) Partnership program. His principal areas of expertise include petroleum drilling and production, sequestration of carbon dioxide in geologic reservoirs, and evaluation of geologic provinces in light of CO<sub>2</sub> sequestration. "I'm working on the same geologic formations now as I was then in the oil fields," he said. Smith, a native of Lakewood, California, spent 5 years in the banking business at Farmers and Merchants Bank of Long Beach, California, where he served as assistant operations officer. In 1992, he moved to Grand Forks and worked primarily in sales. He and his wife, Alice, a teacher at Ben Franklin Elementary School, had their first child, Ruby Erin, May 14. In his spare time, Smith enjoys building Shaker-style furniture, carving folk art, and golfing.



**Julie Magnuson** said she's excited about her position as a Contracts Officer at the EERC, where she prepares, reviews, negotiates, and administers numerous types of agreements including sponsored research, subcontract, and confidentiality agreements in accordance with federal and nonfederal contractual requirements, government and university regulations and policies, and EERC policies. "This is something very different for me, but I'm enjoying the learning aspect," Magnuson said. "I enjoy being a part of such a dynamic and progressive organization." Magnuson, who holds a B.S. in Business Administration from the University of Wisconsin-River Falls, earned her J.D. from William Mitchell College of Law, St. Paul, Minnesota, in 2000. She worked for the law firm of Cummins, Gervais & Blocher during law school and for 2 years following before joining The Wirth Companies, in Minneapolis, as Director of Leasing and Property Management. Magnuson and her husband, John, live in Crookston, where he is Vice Chancellor of Campus Operations and Facilities at the University of Minnesota-Crookston. The couple spent the last 14 years in the Twin Cities. They previously lived in a dozen other states, where Magnuson worked primarily in commercial real estate and property management of office buildings and regional malls. In her spare time, Magnuson enjoys gardening and traveling with her husband. The couple has one grown son who serves in the U.S. Army.

## Employees Honored

Several EERC employees were among those honored for their years of service to the University of North Dakota during the UND Recognition Ceremony Tuesday, May 10, at the Memorial Union Ballroom. The following were honored:



### 30 Years

Larry Klein, Building Services Technician



David Hassett, Senior Research Advisor

### 25 Years

Meralee Giese, Administrative Assistant, Purchasing,  
Financial Services

David Westerman, Technology Development Operator

### 20 Years

Dan Daly, Research Engineer

Bruce Dockter, Manager, Fuels and Materials Research  
Laboratory

Curt Foerster, Research Specialist

Dennis Laudal, Senior Research Advisor

Richard Schulz, Manager, Particulate Research Laboratory

### 15 Years

Eugene Balek, Technology Development Operator

Ray Johnson, Technology Development Operator

Patti Kleven, Research Specialist

Erin O'Leary, Senior Research Manager

John Richter, Research Specialist

Joyce Riske, Manager, Editing and Graphics

Lucia Romuld, Senior Research Advisor

Jane Russell, Public Information Specialist, Editing Services

Jeff Thompson, Research Scientist

### 10 Years

Susan Bartley, Manager, Human Resources

Charlene Crocker, Research Scientist

Mary Hoffart, File Clerk, Administrative Resources

Bob Jensen, Research Specialist

John Kay, Research Specialist

Marc Kurz, Research Scientist

Rhonda Olson, Workflow Coordinator, Administrative  
Resources

### 5 Years

Beth Bolles, Senior Research Manager

Loreal Heebink, Research Chemist

Stacie Klegstad, Research Information Associate,  
Administrative Resources

Kari Lindemann, Research Information Associate,  
Administrative Resources

Tami Jo Votava, Project Resource Analyst

## EERC on the Move

**97th North Dakota Academy of Science Conference, Grand Forks, North Dakota, April 28–29:** Saiprasad Jangiti (EERC) presented a paper coauthored by **Nikhil Patel** (EERC) and Nanak Grewal (UND Department of Mechanical Engineering) entitled “Design of Gas–Solid Fixed-Bed Reactors Using Computational Fluid Dynamics.” **Nick Ralston** (EERC) presented a paper coauthored by **J.R. Gallagher** (EERC), **Kevin Galbreath** (EERC), and E.J. Zillioux (Florida Power and Light) entitled “Comparison of DNA Damage Resulting from Exposure to Various Nickel Species.” **Laura Raymond** (EERC) presented a paper coauthored by **Ralston** entitled “Physiological Implications of Mercury’s Effects on Selenium Availability.” **Carla Jordan** (EERC) presented a paper coauthored by **Raymond** and **Ralston** entitled “Environmental Implications of Selenium’s Effects on Mercury Retirement.”

**National Fisheries Institute Annual Meeting, New Orleans, Louisiana, April 19:** **Nick Ralston** (EERC) gave a presentation entitled “Selenium’s Role in the Mercury Issue.”

**Clearwater Coal Conference, Clearwater, Florida, April 17–21:** **John Hurley** (EERC) presented a paper coauthored by **Greg Weber**, **Nathan Kadmas** (EERC), Michelle Swanson (Xcel Energy), Arun Brose (U.S. Department of Energy National Energy Technology Laboratory [DOE NETL]), and Fred Robson (kraftWork Systems, Inc.) entitled “Tests of a Heat Exchanger for Indirectly Fired Combined Cycles While Firing Coal–Biomass Blends.” **Chris Zygarlicke** (EERC) presented a paper coauthored by **Mike Swanson**, **Ann Henderson**, **Mark Musich** (EERC), and Millicent R. Moore (Tennessee Valley Authority) entitled “Gasifying Switchgrass Lignin for Biopower Applications.” **Zygarlicke** presented a paper coauthored by **Darren Schmidt** (EERC) entitled “Biomass Gasification for Small (150-kWe) Power Commercial Application.” **Zygarlicke** and **Bruce Folkedahl** (EERC) presented a tutorial short course entitled “Solving Ash Deposition.” **Zygarlicke** also chaired two conference sessions on gasification.

**University of Georgia Southeastern Watershed Research Laboratory, Tifton, Georgia, April 15:** **Chris Zygarlicke** (EERC) presented a seminar for the U.S. Department of Agriculture Agricultural Research Service entitled “Agri-Based Energy and Fuels.”

**U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition, College Park, Maryland, April 12:** **Nick Ralston** (EERC) gave a presentation entitled “Mercury’s Effects on Selenium.”

**World of Coal Ash Conference, Lexington, Kentucky, April 11–15:** **Erick Zacher** (EERC) presented a paper coauthored by **David Hassett** and **Loreal Heebink** (EERC) entitled “Determination of Expansion Potential of Coal Combustion By-Products.” **Hassett** presented a paper coauthored by **Zacher** and **Heebink** entitled “Organomercury Compound Determination from Microbiologically Mediated CUB Samples.” **Hassett** also presented a paper coauthored by **Heebink**, **Zacher**, **Debra Pflughoeft-Hassett** (EERC), and Lynn Brickett (DOE NETL) entitled “Quantitation and Interpretation of Release of Mercury from Coal Utilization By-Products.” **Pflughoeft-Hassett** (EERC) presented a paper coauthored by Oscar Manz (UND Civil Engineering Department) entitled “Historical Perspective of Coal Ash Marketing and Promotion in the USA.” **Tera Buckley** (EERC) presented a paper coauthored by **Pflughoeft-Hassett**, John Sager (U.S. Environmental Protection Agency), and John Ward (Headwaters Resources) entitled “Review of State Regulations, Standards, and Practices Related to the Use of Coal Combustion Products: Texas Review Case Study.” **Bruce Dockter** (EERC) presented a paper coauthored by Diana Jagiella (Howard & Howard, Law for Business) entitled “Engineering and Environmental Specifications of State Agencies for Utilization and Disposal of Coal Combustion Products.”

**National Academy of Science Institute of Medicine Workshop on Nutrient Relationships in Seafood: Selections to Balance Benefits and Risks, Washington, D.C., April 11:** **Nick Ralston** (EERC) gave a presentation entitled “Selenium Modulation of Toxicants in Seafood.”

**107th American Ceramic Society Meeting & Expo, Baltimore, Maryland, April 10–13:** **John Hurley** (EERC) presented a paper coauthored by **Versha Singh** and **John Hamling** (EERC) entitled “Reaction-Bonded SiC Composites Without Residual Si.”

**International Water Institute Second International Water Conference, Winnipeg, Manitoba, April 6–7:** David Rush (Red River Regional Council) gave a presentation coauthored by **Kerryanne Leroux**, **Wes Peck** (EERC), and Cliff Greenfield (Pembina Valley Conservation District) entitled “Developing a Comprehensive Water Management Plan for the Pembina River Basin.” **Peck** gave a presentation coauthored by **Troy Simonsen** (EERC) entitled “A Geographic Information System Approach for Determining Potential Water Storage for Each Watershed in the Red River Basin.” **Peck** gave a second presentation entitled “Walsh County–Forest River Watershed Lidar Collection” and a third presentation coauthored by Chuck Fritz (International Water Institute) entitled “Lidar for the Red River Basin.” **Lisa Botnen** (EERC) gave a presentation coauthored by **Charlene Crocker** (EERC) entitled “An Evaluation of Sampling Methods for Macroinvertebrates in Low-Gradient Soft-Bottom Streams of the Red River Basin.” **Ed Steadman** (EERC) gave a presentation coauthored by **John Harju** (EERC) entitled “The Plains CO<sub>2</sub> Reduction (PCOR) Partnership: Developing CO<sub>2</sub> Sequestration Opportunities in the North American Great Plains.” **Sheila Hanson** (EERC) gave a presentation entitled “Landowner Opinion of Flood Management Practices in the Red River Basin – The Wild Rice Watershed in Minnesota.” **Bethany Bolles** (EERC) presented a poster coauthored by **Barry Botnen**, **Doug Davidson**, **Melanie Jensen**, **Marc Kurz**, **Stephanie Nielson**, **Sarita Pachhai**, **Peck**, **Simonsen**, **Xixi Wang**, and **Kirk Williams** (EERC) entitled “Progress on the Waffle Project: An Innovative, Basinwide Approach to Flood Mitigation.” **Peck** presented a poster entitled “Walsh County–Forest River Watershed Lidar Collection.”

**Capture and Separation Group Workshop, Urbana, Illinois, March 30–31:** **Melaine Jensen** (EERC) gave a presentation coauthored by **Mark Musich** (EERC) entitled “Plains CO<sub>2</sub> Reduction Partnership.”

**229th American Chemical Society National Meeting, San Diego, California, March 13–17:** **Jill Mackenzie** (EERC) presented a paper and poster both of which were coauthored by **Steve Benson**, **Don McCollor**, and **Mike Holmes** (EERC) and entitled “Evaluation of Mercury Control Technologies for Subbituminous Coal-Fired Combustion Systems.”

## Upcoming Events

### June 6–7, 2005

Turning Coal into Electricity: What Happens to the By-Products, Educators Workshop, Headwaters Fort Mandan Visitor Center, Washburn, North Dakota

### September 12–14 and 14–16, 2005

Mercury Measurement in Combustion Flue Gases Short Course, EERC, Grand Forks, North Dakota

### September 19–21, 2005

Air Quality V: Mercury, Trace Elements, SO<sub>3</sub>, and Particulate Matter Conference, Arlington, Virginia

**For more information: [www.undeerc.org](http://www.undeerc.org)**

# EERC research programs recognized

## RRWMC earns two honors

The EERC's Red River Water Management Consortium® (RRWMC®) has been recognized for its efforts addressing critical water management issues.

The first award, the John Meagher Ecology Award from the University of North Dakota (UND) Facilities Department, honored the RRWMC's Regional Storm Water Coordination Team for their efforts to educate local and regional communities about storm water pollution prevention and help them meet their mandated obligations.



*The EERC's Dan Stepan, Senior Research Manager; Lisa Botnen, Research Scientist; and Kirk Williams, Research Engineer, accept the John Meagher Ecology Award from Paul Clark, Associate Director, UND Facilities.*

The EERC also accepted an award on behalf of the Grand Forks County Commission recognizing its work on the Kellys Slough National Wildlife Refuge Wetland Development Project, a collaboration with the Grand Forks County Water Resource District, private landowners, township boards, the U.S. Fish and Wildlife Service, the North American Wetland Conservation Act, Ducks Unlimited, the National Fish and Wildlife Foundation, the North Dakota Natural Resources Trust, the Grand Forks County Wildlife Federation, the Grand Forks County Highway Department, and Cargill, Inc.

The EERC assisted in addressing local concerns regarding the expansion of Kellys Slough, which would provide additional opportunities for wildlife habitat, ecotourism, environmental education, and an increased local floodwater storage area.

The EERC also developed a series of fact sheets to promote the project. The Red River Basin Commission presented the outstanding project award during its annual summit in January.

“Receiving awards such as these means recognition of the

strategic value of EERC projects and of the great things we do to protect the environment and enhance the quality of life for all citizens,” said EERC Director Gerald Groenewold.

## Coal ash research recognized

The EERC received an award for outstanding research on coal combustion products (CCPs) and for outstanding public outreach April 13 at the World of Coal Ash Conference in Lexington, Kentucky.

The Coal Combustion Products Partnership (C<sup>2</sup>P<sup>2</sup>) Award for Research recognized the EERC's excellence in measuring mercury and other air toxic elements released from CCPs and expanding the uses of coal ash for a wide variety of commercially viable and environmentally friendly applications. The EERC had the first comprehensive research program to measure the release of mercury from CCPs and has dedicated the past 7 years to the issue.

“We are honored to be recognized for our expertise in measuring the release of mercury from coal utilization by-products,” said EERC Senior Research Advisor Debra Pflughoeft-Hassett. “With the installation of mercury control technologies on our nation's coal-fired power plants, the EERC's work in this area is timely and will facilitate informed by-product management decisions.”

As part of the award, the EERC's Coal Ash Resource Center Web site ([www.undeerc.org/carrc](http://www.undeerc.org/carrc)) was also recognized. The site provides general coal ash-related information to the public, serves as a technical resource for those involved in the coal ash industry, and highlights the EERC's coal ash research program.



*U.S. Environmental Protection Agency Assistant Administrator for Solid Waste and Emergency Response, Thomas Dunne, third from right, presented the C<sup>2</sup>P<sup>2</sup> award to the EERC's Coal Ash Research Team, including, from left, Tera Buckley, Marketing Research Specialist; David Hassett, Senior Research Advisor; Debra Pflughoeft-Hassett, Senior Research Advisor; and at right, Bruce Dockter, Manager, Fuels and Materials Research Laboratory; and Eric Zacher, student research assistant.*