

# DIVINING ROD

NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

Vol. XXIII, No. 3

November 2000

## NMSU president visits WRRRI

Except for an emergency root canal during his first day on the job, New Mexico State University's 20th President, Dr. G. Jay Gogue, has lost no time getting acquainted with the university's students, faculty and staff.

During his first visit to the WRRRI on August 3, the Institute staff described the history and mission of the Institute as well as its current programs and initiatives.

President Gogue is well versed in natural resources issues. He received bachelor's and master's degrees in Horticulture from Auburn University and a Ph.D. in Horticulture from Michigan State University.

For the past five years, Dr. Gogue was Provost at Utah State University and a tenured professor in the Department of Forest Resources. Prior to his Utah State post, he was Vice President at Clemson University where he administered programs in the College of Agricultural Science and College of Forest and Recreation Resources.

Before heading to Clemson University in 1986, Dr. Gogue worked for the U.S. Department of the Interior as Chief Scientist for the National Park Service, leading scientific programs involving professionals from the biological, physical, and behavioral sciences.

Dr. Gogue and his wife, Susie, spent a good deal of time this summer traveling throughout New Mexico, meeting with citizens and becoming more familiar with the state's history and culture.

"I've been impressed by the friendliness, the hospitality, the openness, and kindness the people have shown,,," he said. Las Cruces, he noted, is the largest town he and Susie have lived in.



*Karl Wood, WRRRI Director (left) and WRRRI Associate Director Bobby Creel (right) gave new NMSU President Gogue a tour of the Institute.*

### INSIDE

**WATER CONFERENCE PROGRAM**

Page 2

**AQUIFERS IN SOUTHWESTERN NEW MEXICO STUDIED**

Page 5

**NEW MEXICO WATER-RELATED REPORTS AVAILABLE**

Page 7



# 45<sup>th</sup> Annual New Mexico Water Conference

## Water, Growth and Sustainability: Planning for the 21<sup>st</sup> Century

### Preliminary Program

#### Monday Afternoon, December 4

- 2:00 - 5:00  
Tour of Santa Ana Pueblo Restoration Project -OR-  
Tour of City of Albuquerque's North I-25 Reuse Corridor
- 5:00 - 6:30  
Reception for new WRRD Director, Dr. Karl Wood  
Grand Pavilion, Hyatt

#### Tuesday Morning, December 5

- 7:00 am  
Registration begins, Pavilion Court
- 8:00 Welcome  
**Karl Wood**, Director, WRRD  
**Jim Baca**, Mayor of Albuquerque
- Overview of State and Western Water Issues**
- 8:15 Water Issues in the West  
Commissioner **Eluid Martinez**  
U.S. Bureau of Reclamation
- 9:00 Water Issues Facing New Mexico  
**Tom Turney**  
New Mexico State Engineer
- 9:20 Environmental Issues Facing New Mexico  
**Peter Maggiore**  
New Mexico Environment Dept.
- 9:40 International Border Water Issues  
**Luis Mario Gutierrez**  
Junta Municipal de Agua y Saneamiento, Ciudad Juarez, Chihuahua
- 10:00 **Break**

#### Water and Growth Issues Around the State of New Mexico

- 10:30 Tribes and Pueblos  
**Nelson Cordova**, Taos Pueblo  
**Fidel Lorenzo**, Pueblo of Acoma  
**Peter Chestnut**, general counsel, Acoma and San Ildefonso Pueblos
- 11:00 Northwestern New Mexico  
**Randy Kirkpatrick**  
San Juan Water Commission
- 11:15 Southwestern New Mexico  
**Stan Bulsterbaum**  
Deming native, Interstate Stream Commissioner
- 11:30 Lower Rio Grande Basin  
**Len Stokes**, water consultant, City of Las Cruces
- 11:45 Tularosa Basin  
**Pat McCourt**  
City Manager, Alamogordo
- 12:00 Luncheon Address  
WRRD Director **Karl Wood**  
Sendero Room

#### Tuesday Afternoon, December 5

- 1:30 Lower Pecos River Basin  
**Tom Davis**  
Carlsbad Irrigation District
- 1:45 Lea County  
**Dennis Holmberg**  
Lea County Water Users
- 2:00 Middle Pecos River Basin  
**Fred Hennighausen**  
Pecos Valley Artesian Conservancy District

- 2:15 High Plains  
**Lee Tillman**  
Eastern Plains Council of Governments
- 2:30 Northeast  
**Les Montoya**  
Las Vegas County Manager
- 2:45 Northern New Mexico/Acequias  
**Paula Garcia**  
New Mexico Acequia Association
- 3:00 City of Santa Fe  
**Craig O'Hare**  
Water Programs Administrator
- 3:15 **Break**
- 3:45 *Inside New Mexico*  
**Ernie Mills**, moderator  
**Fidel Lorenzo**, Pueblo of Acoma  
**Ray Powell**, State Land Office  
**Tom Turney**, State Engineer  
**John Stomp**, City of Albuquerque  
**Subhas Shah**, Middle Rio Grande Conservancy District  
**Joe Stell**, New Mexico House Agriculture, Water and Natural Resources Committee

- 5:15 - 7:00 pm  
Reception, Sendero Room  
Hosted by Hydrosphere Inc.

#### Wednesday Morning, December 6

- 8:15 Center for Sustainability of Semi-arid Hydrology and Riparian Areas  
**Gary Woodard**  
Assistant Director for Knowledge Transfer
- 8:30 Demographics of New Mexico and the New Mexico/Texas/Ciudad Juarez Border Region  
**Jim Peach**  
New Mexico State University



8:50 Middle Rio Grande Basin  
**John Stomp**, City of Albuquerque  
**Eileen Grevey Hillson**, Governor's  
 Blue Ribbon Task Force on Water  
**Subhas Shah**, Middle Rio Grande  
 Conservancy District

9:20 New Mexico Rural Water Users  
 Association  
**Matt Holmes**  
 Executive Director

9:35 The Impact of Domestic Wells  
**Larry Webb**  
 City of Rio Rancho

9:50 Soil and Water Conservation District  
**Debbie Hughes**  
 Executive Officer

10:10 **Break**

**Federal Agencies Respond to New Mexico's  
 Current Water Issues**

10:40 U.S. Geological Survey  
**Linda Weiss**  
 District Chief

11:00 International Boundary and Water  
 Commission  
**Debra Little**  
 Engineer, US Section

11:20 U.S. Bureau of Reclamation  
**Mike Gabaldon**  
 Albuquerque Area Manager

11:40 U.S. Army Corps of Engineers  
**Lt. Col. Raymond G. Midkiff**  
 District Engineer

12:00 U.S. Fish and Wildlife Services  
**Joy Nicholopoulos**  
 Field Supervisor

12:20 Questions from Participants

12:30 Box Lunch, Pavilion Court

### Wednesday Afternoon, December 6

1:30 Water Banking Workshop

4:30 Closing Comments  
 WRRRI Director **Karl Wood**

## Registration Information

To attend the 45<sup>th</sup> Annual New Mexico Water Conference, please complete one form for each person. Mail form to **NMWRRI-Water Conference, MSC 3167, Box 30001, Las Cruces, NM 88003** with check, purchase order, or credit card information.

The full registration fee includes the two-day conference, the water banking workshop, optional tour on Monday, all breaks, receptions on Monday and Tuesday evening, lunch on Tuesday and Wednesday, and a copy of the proceedings to be published after the conference.

### Registration Form

Name \_\_\_\_\_  
 Affiliation \_\_\_\_\_  
 Mailing address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone No. \_\_\_\_\_ Fax No. \_\_\_\_\_  
 E-mail address \_\_\_\_\_

Registration fees: \$150 registration includes the optional tours, lunch on Tuesday, box lunch on Wednesday, receptions on Monday and Tuesday evening, water banking workshop, and a copy of the proceedings. Student registration is \$50. If you want to attend only the Water Banking Workshop, the fee is \$30. Return form to: NMWRRI Water Conference, MSC 3167, Box 30001, Las Cruces, NM 88003 or fax to 505-646-6418.

- Registration \$150
- Student registration \$50
- Tuesday luncheon ticket(s) for guest(s) \$30/guest
- Wednesday box lunch ticket(s) \$20/guest
- Water Banking Workshop only \$30 (includes lunch)

Choose ONE of the following optional tours scheduled for Monday, December 4, if you are interested. Transportation from the Hyatt Regency to the facilities will leave at 2:00 pm and should return to the Hyatt by 5:00.

- I would like to attend the Santa Ana Pueblo - *this tour currently is full but if you would like to put your name on a waiting list, please check*
- I would like to attend the City of Albuquerque's North I-25 Reuse Corridor tour.

- check enclosed
- purchase order enclosed
- Please bill my credit card  
 Type \_\_\_\_\_ No. \_\_\_\_\_  
 Expiration date \_\_\_\_\_  
 Signature \_\_\_\_\_



## Upcoming Conferences

**December 5-6, 2000**, New Mexico Water Resources Research Institute, *45th Annual Water Conference - Albuquerque*

January 3-5, 2001, American Society of Agricultural Engineers, *2nd International Symposium and Exhibition on Preferential Flow - Honolulu*

January 3-5, 2001, American Society of Agricultural Engineers, *Soil Erosion Research for the 21st Century - Honolulu*

February 17-24, 2001, Society of Range Management, *2001: A Range Odyssey - Kailua-Kona, Hawaii*

June 10-15, 2001, International Water Association, *5th International Conference: Diffuse/ Nonpoint Pollution and Watershed Management - Milwaukee*

Sept. 11-13, 2001, Wessex Institute of Technology, *River Basin Management 2001 - Wales, UK*

### CLE Credits Pre-Approved for Water Conference

The Minimum Continuing Legal Education Board has preapproved the 45<sup>th</sup> Annual New Mexico Water Conference for 15.6 general credit hours. The conference, "Water, Growth and Sustainability: Planning for the 21<sup>st</sup> Century" will be held at the Hyatt Regency Albuquerque on December 5-6, 2000. CLE credit forms will be available at the registration desk.



## WRRRI welcomes Michelle Cattaneo

NMSU freshman Michelle Cattaneo began working at the WRRRI this fall as a student assistant. Michelle will be mailing reports as requests are received, assisting in the institute's reference room, and helping out in general. She will be at this year's water conference helping videotape presentations.

Michelle was born and raised in Carlsbad and is studying agriculture and business at NMSU. She has been active in 4-H and FFA activities throughout her school years. Recently Michelle spent a week in Louisville, Kentucky competing at the National FFA Convention in the Parliamentary Procedure Contest. She and her Carlsbad team mates won the New Mexico state title and placed at the highest level, gold, at the Louisville competition.

The WRRRI staff is fortunate to have a student assistant with Michelle's energy and enthusiasm.





## Border aquifers in southwestern New Mexico studied

### WRI publishes EPA-funded report

Shared surface and groundwater resources along the boundary between southern New Mexico and northern Mexico present numerous problems to both countries. Rapidly increasing demand for groundwater to supply growing populations has resulted in declining groundwater levels. Contamination of surface and groundwater in the region is a continuing major concern. The solution to many of the problems will require the cooperation of both nations and an adequate understanding of these resources. As a first step to addressing these issues, the U.S. Environmental Protection Agency has funded two binational studies of the water resources along the transboundary corridor.

In the first study, the New Mexico Water Resources Research Institute cooperated with the Texas Water Development Board to undertake a study that characterized binational aquifers in parts of far west Texas, south central New Mexico, and northeastern Chihuahua, Mexico. Technical and administrative assistance and data were provided by the Comision Nacional Del Agua, Junta Municipal de Agua y Saneamiento de Ciudad Juarez, International Boundary and Water Commission, and Comision Internacional de Limites y Aguas. Results of the project, with detailed maps of the aquifers, are presented in the report, "Transboundary Aquifers of the El Paso/Cuidad Juarez/Las Cruces Region,,," available for a nominal cost from the WRI.

More recently, the EPA funded a follow-up study to continue characterizing binational aquifers in southwestern New Mexico. Data were prepared for sharing through an international exchange with the Republic of Mexico. Both studies

looked at quantifying the natural and induced chemical quality of each aquifer, determined the direction of groundwater flow, and developed Geographic Information System (GIS) coverages.

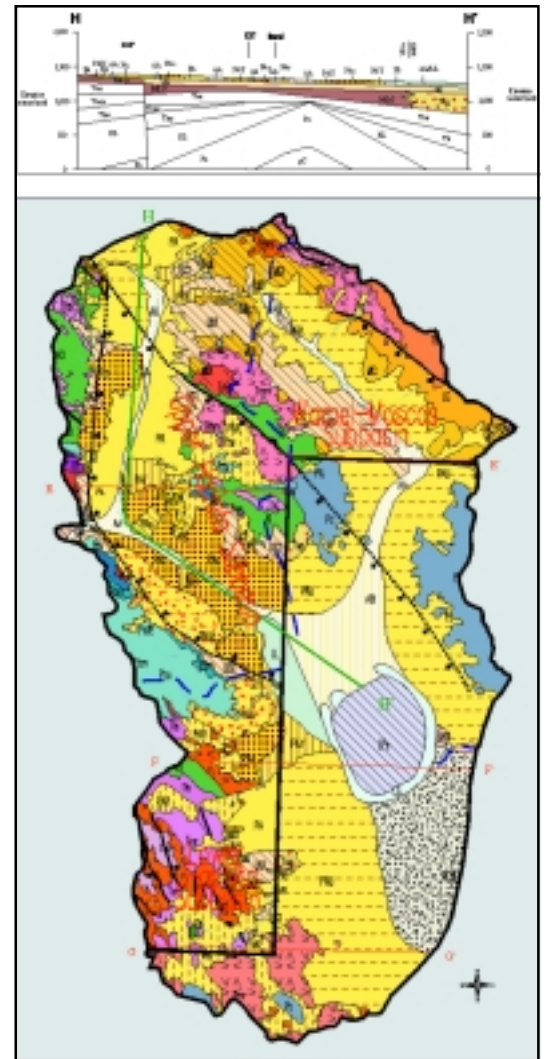
The report for the latest study, "Trans-International Boundary Aquifers in Southwestern New Mexico,,," contains 50 full-color maps depicting various characteristics of the study area. The report comes with a CD-ROM containing data that was used to create the maps. The report

also is available on-line at [wri.nmsu.edu](http://wri.nmsu.edu) in Adobe Acrobat (PDF) format.

John Kennedy, one of the principal investigators remarked, "Adequate data on groundwater resources in southwestern New Mexico were sorely lacking. For the first time, we were able to gather data from a number of state and federal agencies and incorporate the data into a digital format so that we could generate maps that were useful to the project team and to the

*(continued on page 6)*

*Hydrogeologic framework of the Hachita-Moscós Basin. Colors correspond to the surface and subsurface geology. Top picture is the cross-sectional view (H-H') of the basin; the bottom picture is the plane or map view of the basin's surface geology.*





water planners in the region. The USGS (U.S. Geological Survey) provided data from their groundwater monitoring program. The USGS data contains the location, physical characteristics, and in some cases, water quality data for wells monitored in southwestern New Mexico. The Office of the State Engineer provided GPS (Global Positioning System) data for wells that it monitors for the purpose of water-level measurements.,,

The study demonstrated that only three aquifers, Mimbres, Hachita-Moscós, and San Bernardino, have significant trans-international boundary aquifer components. All pre-development or pre-1910 groundwater discharge was southward into Mexico and was estimated at 14,050 acre-feet annually. For most of the past century,

a significant portion of that flow has been intercepted by irrigation wells in the Deming, Hermanas, and Columbus-Palomás areas. Current flow is estimated to be about 7,550 acre-feet annually.

The estimates of relatively good quality groundwater stored in the basins is a little over 30 million acre-feet. This may be a high estimate because at many locations, the upper basin-fill of the aquifer is fine grained and semiconfined to confined, which limits the amount of water that can be recovered with current water-well technology. The recharge to these aquifers is estimated to be 90,000 acre-feet annually, indicating that only 0.2% is being replenished.

Generally, the groundwater quality of the aquifers is fairly good. How-

ever, the rock types create a complex and highly variable environment that contributes to irregular distributions of salinity. Analysis of groundwater samples for these aquifers is very limited and insufficient time-series data make it difficult to evaluate trends. Data collection efforts will need to be expanded as well as long-term monitoring programs.

For more information on the project, contact John Kennedy at the New Mexico Water Resources Research Institute at 646-8012. Check the WRI web site at [wri.nmsu.edu](http://wri.nmsu.edu) to see a copy of the report, which can be viewed in Adobe Acrobat (PDF) format.

## Students receive research awards

Middle and high school students gathered at New Mexico Tech this past spring to compete in the 2000 New Mexico Science and Engineering Fair. The WRI presented savings bonds and certificates to students with exemplary water-related research projects.

It was obvious from the displays prepared by the students and the knowledge they demonstrated during interviews that they had worked very hard on their projects over many months. Many of the students expressed interest in modifying their projects for next year's competition. They also indicated that they plan to study a science-related field in college.

WRI award winners included:

### Senior Level:

1st Place: Natasha Begay, Wingate High School - *Microbial and Chemical Analysis of Surface Water on the Navajo Reservation*

2nd Place: Paul Rossman, Deming High School - *Plants Eat Sewage Too: Phase II*

### Junior Level:

1st Place: Ivy Wilkin, Hofacket Mid High School, Deming - *Riverbed Lead*

2nd Place: Ashley Hester, Father James B. Hay Catholic School, Alamogordo - *Questionable Water*





## Reports and web sites worth checking

### USGS reports

The U.S. Geological Survey has recently published several New Mexico related publications and national reports of interest to our area. Copies are available for inspection at the USGS District Office in Albuquerque (5338 Montgomery Blvd NE, Suite 400). The Water Resources Research Institute library also has the reports on file. They may be ordered from the USGS, Federal Center, Box 25286, MS 517, Denver, CO 80225. You may call 1-888-ASK-USGS for price information.

The USGS has issued its *National Research Program in the Hydrologic Sciences* summary report. The report describes several research efforts including: "Use of Environmental Tracers to Track Nitrogen Contamination," "Ground-Water Movement in Fractured Rock, Microbial Activity," and "Transport in Ground Water, and Selenium: Rocks, Ducks, Microbes and Membranes." Contact the WRI for a copy of this report (Circular 1195).

Reprints of several articles related to the USGS NAWQA Nutrient Synthesis project are available from the WRI. They include: "Estimation of nitrate contamination of an agro-ecosystem outwash aquifer using a nitrogen mass-balance budget," by L.J. Puckett and others, "Nutrients in groundwaters of the conterminous U.S., 1992-1995," by B.T. Nolan and J.D. Stoner, and "Effects of stream channel size on the delivery of nitrogen to the Gulf of Mexico," by R.B. Alexander and others.

The feature article by Dr. Richard Johnson and others, "MTBE To What Extent Will Past Releases Contaminate Community Water Supply Wells?," appeared in a recent issue of Environmental Science and Technology. Contact the WRI for a copy of the article.

Other New Mexico related publications recently issued by the USGS include: "Determination of infiltration and percolation rates along a reach of the Santa Fe River near La Bajada, New Mexico," by C.L. Thomas and other (WRIR 00-4141); "Results of well-bore flow logging for six water-production wells completed in the Santa Fe Group aquifer system, Albuquerque, New Mexico, 1996-1998," by C.R. Thorn (WRIR 00-4157); "Electromagnetic surveys to detect clay-rich sediment in the Rio Grande inner valley, Albuquerque area, New Mexico," by J.R. Bartolino and J.M. Sterling (WRIR 00-4003); and "Geothermal hydrology of Valles Caldera and the southwestern Jemez Mountains, New Mexico," by F.W. Trainer and others (WRIR 00-4067).

The USGS is installing and monitoring specialized observation wells in the aquifer within the Middle Rio Grande Basin. These specialized wells, called piezometers, are designed to determine water-level changes and direction of water movement within the aquifer. A web page containing a summary of water-level information from these piezometers can now be reached through the USGS New Mexico District home page at <http://nm.water.usgs.gov>.

### Proceedings available

#### The Rio Grande Compact: It's the Law!

The 44th Annual New Mexico Water Conference Proceedings are at the printer at press time and should be ready for distribution by the time you receive this copy of the *Divining Rod*.

All those who participated in last year's water conference held at La Fonda in Santa Fe on December 2-3, 1999 will receive a copy of the Proceedings.

Those wishing to purchase a copy of the Proceedings can send a check for \$15.75 payable to "NMWRI - Conference Proceedings" to:

NMWRI  
Box 30001, MSC 3167  
Las Cruces, NM 88003

The Proceedings also are available via the WRI's homepage at: <http://wri.nmsu.edu>.





## Water Festival 2000

The Water Resources Research Institute was one of 80 exhibitors at *Water Festival 2000*. The festival was held in mid-October at the New Mexico Farm and Ranch Heritage Museum in Las Cruces. Over 1,800 students from the Las Cruces area attended the day-long program. Presenters represented environmental and governmental organizations and gave interactive and educational presentations on such topics as the water cycle, water culture and history, aquifers, and water conservation.

Also featured at the Las Cruces festival was a reception and the premiere showing of "When Water Works for Health," a documentary produced by the Paso del Norte Health Foundation.

The event was sponsored and coordinated by Waste-Management Education and Research Consortium (WERC) with additional financial support provided by the U.S. Bureau of Reclamation and the U.S. Environmental Protection Agency.



*Cathy Ortega Klett of the WRRRI prepares a presentation for elementary school-age children (right). Students at the middle-school level discussed water-related careers (above).*



The ***Divining Rod*** is published by the New Mexico Water Resources Research Institute.

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