



# DIVINING ROD

NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

Vol. XXII, No. 2

August 1999

## Q & A with Retiring WRRRI Director Tom Bahr

*In his last days as Director of the New Mexico Water Resources Research Institute, Tom Bahr reflected on his 21-year tenure and candidly addressed questions posed by Divining Rod editor, Cathy Ortega Klett.*

*Cathy:* In your first address as Director of the New Mexico Water Resources Research Institute, you described your philosophy on the role of the research administrator. In essence you said you didn't believe it the duty of the research administrator to decide which water management scheme is best. You also said that the role of research in water resources management should be to assure that results of our water management actions are foreseen, that they are predictable, and that they are laid out in such a way that the public can look at the options and determine whether or not they are acceptable. Do you still hold that philosophy or has it been modified over your career?

*Tom:* I do recall that I did say those things—I think it was at my first water conference here in 1978 and I certainly still hold to the philosophy of balancing tradeoffs—probably more so now than 20 years ago. In fact, I preach it every chance I get. I've seen a number of academic researchers over the past 30 years who get so wrapped up in their particular area of expertise that



they lose sight of how the real world functions. I've come to learn that wise water management must consider a host of variables such as water rights/law, funding, political realities, hydrologic/chemical/biological constraints, jurisdictional constraints, personalities of the players, economics, risk and uncertainty, to name a few. Let me give you an example of the type of scientific recommendation that would cause a major credibility problem for a researcher. Say a research biologist, for example, makes a recommendation to maintain a constant lake level at Elephant Butte Reservoir for the purpose of enhancing largemouth bass productivity.

This may be a perfectly logical and sound scientific conclusion of a research project. A constant lake level would certainly allow for needed stability to support more aquatic vegetation and generally improve fish habitat. This is a good recommendation from the viewpoint of propagating and growing monster bass (and I do love to catch big fish myself). Maintaining a constant lake level, however, is simply not realistic from either a hydrological or meteorological standpoint, not to mention that constant lake levels could seriously impair the ability to meet legally mandated downstream water deliveries. This

*(Continued on page 2)*



(Continued from page 1)

researcher would not enjoy much credibility among professional water managers not to mention irrigators. I can think of other examples, but this is one that came up many years ago and it still stands out in my mind.

*Cathy:* In 1978 when you joined the New Mexico WRRI, major concerns demanding attention included water use efficiency in agriculture, water quality management research, saline water research, comprehensive economic and legal assessments of water management and technology transfer. Have we made headway in these areas? What research priorities do you see for New Mexico in the coming decade?

*Tom:* We have indeed made good progress in many of these areas. For example, there have been significant advancements in irrigation technologies and irrigation scheduling to the point where it is no longer so much a question of do irrigators have the technology and know-how to become more efficient, but rather a question of how best to remove the legal and institutional disincentives which keep irrigators from adopting these technologies. What I'm saying is that now saved water would no longer belong to the irrigator who saved it. Under current policy, it would be taken from the irrigator and be subject to appropriation by someone else. This is the "use it or lose it" issue that those of us in the water community are quite familiar with. In this case, technology seems to have out-paced policy.

As to the question of research priorities, I could list many for the coming decade. What is most important to me, however, is that whatever research priority is chosen should have a clear

and identifiable link to a "real world" water problem.

*Cathy:* You have been active in water policy at the state, regional and national levels. Has interaction between our state and federal governments changed significantly in water management over the past two decades?

*Tom:* Yes. There have been very major changes. The 1980s witnessed a phase out of the large-scale water projects in the west, and a gradual shift by the Bureau of Reclamation from building and operating projects into a new role of becoming water managers. Historically, the federal government had largely maintained a hands-off policy and recognized the primacy of state water laws as they related to water management. This was true up until the beginning of the Clinton administration. Federal water agencies have since begun to assert more and more authority in matters which were traditionally left to the states. A good example of this is the recent reluctance of the United States to recognize the jurisdiction of a New Mexico state court in the adjudication of water rights in the lower Rio Grande Basin, and their subsequent assertion in a federal court that the United States owns all of the water of the Rio Grande Project—even the tributary groundwater! I'm not at liberty to go into more detail on this subject because some of these matters are the

subject of current mediation, and a federal judge has placed a gag order on those proceedings. What I have said, however, is a matter of public record and it has state and local officials very concerned.

Another thing I would like to say is that it is my personal opinion that the current posture of the federal government in water matters is probably NOT a policy originating from the

current Commissioner of the Bureau of Reclamation, Eluid Martinez. Eluid, as most folks know, was a former State Engineer of New Mexico who had worked side by side with Steve Reynolds for many years. Eluid is a very skilled and capable water manager who is very sensitive to the prerogatives of

states to manage their own internal waters. I wouldn't be surprised if the Justice Department had a role in calling some of these shots.

*Cathy:* Would you like to give any advice to the new director of the New Mexico WRRI?

*Tom:* Yes. Get to know as many of the water managers in the state as soon as you can and maintain these contacts on a regular basis. Travel to every corner of the state and get to know what and where the problems are. Get to know the legislators. Don't just spend time getting to know the university researchers, although this is very important too. The WRRI Director needs to be the "window" to

**Because of pressure from radical environmental groups who regularly like to sue state and federal regulatory agencies if they do not move as fast as these groups would like, it is vitally important for these agencies to base their decisions on solid science and not cave in to the personal agendas of the green gestapo.**

(Continued on page 3)



(Continued from page 2)

the university water research community through which water managers look. The job is like an agent—you get people in need of a solution to their problem together with researchers who can help them solve their problems. You need to be very familiar with both of these groups.

*Cathy:* What is the outlook for federal and state research funding?

*Tom:* I wish I could be more positive on this question, but the outlook is not good for any significant increases either in state appropriations or our base funding from the USGS. Nevertheless, there are various opportunities for state and federal funding of specific projects. These must be pursued on a case by case basis.

*Cathy:* What do you see as the major water issues facing the nation in the next decade?

*Tom:* On a national scale, I think the major water issues will probably focus on water quality. Agricultural operations are being increasingly targeted by the EPA, especially feedlots, dairies and nonpoint source runoff from ranch and farm lands. Because of pressure from radical environmental groups who regularly like to sue state and federal regulatory

agencies if they do not move as fast as these groups would like, it is vitally important for these agencies to base their decisions on solid science and not cave in to the personal agendas of the green gestapo. That may sound like a harsh statement but that is the nature of the real world.

Water issues for the coming decade for the semiarid southwest will also deal with water quality but to a lesser extent. With increasing population putting an ever greater demand on very limited water supplies, water law and policy will be where the action is.

*Cathy:* Your tenure at the WRRRI has witnessed lengthy and expensive legal action concerning various water issues. Do you have hope for resolving our water problems in a less litigious manner?

*Tom:* I certainly have hope. One must recognize,

however, that lawyers have traditionally made their living off of conflict and that litigation has been the normal way conflicts were resolved. As long as there are conflicts there will be lawyers, although in my opinion I think we have too many lawyers. Having now participated in a formal mediation process, I seriously believe that a lot of litigation can be avoided. Sure, there are still going to be a few arrogant arm-waving bulldog lawyers who live and breathe to fight in a courtroom, but there are a growing number of lawyers who see the benefits of alternate dispute resolution

(ADR) methods. With the tremendous costs of protracted litigation, clients may find it far cheaper to use ADR and still protect their interests. There obviously are some interests which are so great that they will be litigated at any cost; however, I believe many conflicts can be hammered out successfully through mediation.

*Cathy:* You have mentioned that you will remain an active player in the New Mexico water community. What would you like to be doing in the coming years related to water issues?

*Tom:* I'd like to become a highly paid consultant! Seriously, I plan to do some consulting but only on those projects that are fun. I have fun, for example, when I see progress in finding regional solutions to water problems. We have made significant progress with the New Mexico-Texas Water Commission. I enjoy being a part of it, and would like to continue because it is fun. I've been told by many retirees that you must learn to say no or you will be busier than you want to be. I don't mind being busy, but I am looking forward to having a greater say in selecting those things I stay busy at. As a general rule I really enjoy working with honest and smart people who collectively can effect change for the better. But I also enjoy working with a rod and reel and with dishonest fishing buddies.

*Cathy:* Aside from water-related consulting projects, we understand you have developed some farming skills. Will we see you out in the Mesilla Valley irrigating your crops?

*Tom:* Perhaps, but you probably won't see me out there with a shovel and boots because I've installed a sub-

(Continued on page 8)



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

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

December 2-3, 1999  
La Fonda on the Plaza, Santa Fe

Sponsored by  
New Mexico Water Resources Research Institute  
and  
New Mexico Riparian Council

### Preliminary Program

#### Thursday Morning: The History of the Rio Grande Compact

- 7:30 Registration - La Fonda lobby
- 8:30 Opening Remarks  
**Bobby J. Creel**, Acting Director, NM WRRRI  
**Ondrea Linderoth-Hummel**, President,  
NM Riparian Council  
Santa Fe **Mayor Larry Delgado**
- 8:45 Keynote Address  
**Douglas R. Littlefield**, author of *Interstate  
water conflicts, compromises, and com-  
pacts: The Rio Grande, 1880-1938*
- 9:45 Other Historical Perspectives on the Rio Grande  
Compact  
**Phil Mutz, Fred Allen, Jim Williams**
- 10:15 Break
- 10:30 How We Dealt with the Drought of the '50s  
**Carl Faubion, Woodrow Gary, Ted Cox**
- 11:15 Tribal Perspectives on the Rio Grande Compact  
**Peter Chestnut**, general counsel, Acoma  
and San Ildefonso pueblos  
**Pueblo representative** to be announced  
**US Solicitor representative** to be announced
- 12:00 Lunch on your own

#### Thursday Afternoon: How the Rio Grande Compact Works

- 1:30 How Colorado Meets Its Obligations Under the  
Rio Grande Compact  
**Steve Vandiver**, Colorado Division of  
Water Resources
- 2:15 Hydrology and Key Accounting Components of  
the Compact  
**Conrad Keyes**, Environmental and Water  
Resources Institute
- 2:30 Surface Water Hydrology of the Rio Grande  
Basin  
**Lee Wilson**, Lee Wilson & Associates
- 2:45 Overview of the Groundwater Hydrology of the  
Rio Grande Basin  
**John Hawley**, Emeritus Senior Geologist,  
NM Tech, Bureau of Mines  
**Michael Kernodle**, geohydrologist
- 3:00 Current Water Budget of the Middle Rio Grande  
**Frank Titus**, consulting hydrogeologist  
**Steve Hansen**, Bureau of Reclamation
- 3:20 Break

(Continued on next page)



- 3:40 What is the Water Supply: Integrating Water Budget Studies  
**Deborah Hathaway**, Papadopulos & Assoc.
- 3:50 Albuquerque Basin Groundwater Criteria  
**John D'Antonio**, NM Office of the State Engineer
- 4:05 Paleohydrology of the Rio Grande  
**Neal Ackerly**, Dos Rios Consultants, Inc.
- 4:25 Current and Projected San Juan-Chama Water Use  
**Jaci Gould**, Bureau of Reclamation  
**John Stomp**, City of Albuquerque  
**Mike Hamman**, City of Santa Fe
- 7:00 Dinner Banquet - Terrazas Room, La Fonda  
*First Albert E. Utton Memorial Water Lecture*  
**Leon Metz**, Historian and Author

### Friday Morning: Planning for the Future and Meeting Compact Obligations

- 8:00 New Mexico's Obligations and Compliance under the Rio Grande Compact  
**Norm Gaume**, Interstate Stream Commission
- 8:45 Consequences of Noncompliance  
**Charles DuMars**, UNM School of Law
- 9:00 Do We Need Water Markets?  
**John Hernandez**, Professor Emeritus, NMSU  
**Lee Brown**, Professor Emeritus, UNM
- 9:30 Upper Rio Grande Basin Water Operations Review and Environmental Impact Statement  
**Lt. Col. Thomas Fallin**, Corps of Engineers
- 9:50 History and Significance of the Low-Flow Conveyance Channel: What is its Future?  
**Chris Gorbach**, Bureau of Reclamation
- 10:10 Break
- 10:30 Domestic Well Depletions  
**John Shomaker**, John Shomaker & Associates
- 10:45 Demographics and Projected Demands on the System  
**Jim Peach**, New Mexico State University
- 10:55 Opportunities and Constraints for Environmental Enhancement and Recreation along the Rio Grande  
**Jeff Whitney**, US Fish and Wildlife Service  
**Steve Harris**, Rio Grande Restoration
- 11:25 Rio Grande Compact (RGC) Commissioners: Issues and Concerns  
**Hal Simpson**, Colorado RGC Commissioner  
**Tom Turney**, New Mexico RGC Commissioner  
**Texas representative** to be announced

## Registration Form

To attend the 44<sup>th</sup> Annual New Mexico Water Conference, please complete one form for each person. Make checks payable to NM Water Conference and mail with form to NMWRRI-Water Resources Research Institute, MSC 3167, Box 30001, Las Cruces, NM 88003.

Registration must be received by **November 1, 1999** to avoid a late registration fee. The registration fee will be refunded if written notice of cancellation is received by November 22, 1999. A \$25 cancellation fee will be charged.

The full registration fee includes the day-and-a-half conference, all breaks, a dinner on Thursday evening, and a copy of the proceedings to be published within a few months of the conference.

Please check the following:

- Registration \$125 before November 1, 1999
- Registration \$150 after November 1, 1999
- Student registration \$40 before November 1, 1999
- Student registration \$50 after November 1, 1999
- Dinner ticket(s) for guest(s) \$40/guest
- I will be attending the dinner banquet on Thursday evening. (Please let us know if you will be attending as seating is limited and we would like to make dinner tickets available to as many non-conference participants as possible.) Guest tickets are available on a first come basis.

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Mailing address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone no. \_\_\_\_\_ Fax no. \_\_\_\_\_

Email address \_\_\_\_\_



## USGS Reports

The U.S. Geological Survey has published the following three New Mexico related publications since the last issue of the *Divining Rod*. 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. Call 303-202-4210 for price information.

**Summary of water-quality data for City of Albuquerque drinking-water supply wells, 1988-97** by Laura M. Bexfield, William E. Lindberg and Scott K. Anderholm (OFR 99-195).

Water-quality data collected over a ten-year period from 93 of the City of Albuquerque's drinking-water supply wells indicate that typical values of the numerous chemical and physical parameters studied for each well meet the U.S. EPA drinking-water standards. Laura Bexfield, USGS hydrologist, said the data collected "have shown us that although some water-quality parameters vary substantially for individual wells throughout the city, the typical values for those parameters meet maximum contaminant levels in each well." She also said that the data will be useful in future studies of the hydrologic system of the region. The report provides maps that show variation in groundwater quality throughout the city in a manner appropriate for water managers and city water customers alike.

**U.S. Geological Survey Middle Rio Grande Basin Study—Proceedings of the Third Annual Workshop, Albuquerque, New Mexico, February 24-25, 1999** by James R. Bartolino, editor (OFR 99-203).

This report documents preliminary results of research presented at the third annual technical workshop held in Albuquerque. The USGS Middle Rio Grande Basin Study is an effort by the USGS and other agencies to improve the understanding of the hydrology, geology, and land-surface characteristics of the Middle Rio Grande Basin. The report includes six chapters: an overview of the USGS program in the basin; a description of geographic data and analysis efforts; details on work being done to understand the hydro-geologic framework; a description of studies examining groundwater recharge; summaries of investigations of the groundwater flow system; and an overview of the New Mexico District Cooperative Program and related USGS studies.



**Plan of study to define hydro-geologic characteristics of the Madera Limestone in the East Mountain area of central New Mexico** by Dale R. Rankin (OFR 99-201).

The east mountain area covers 320 square miles in parts of Bernalillo, Sandoval, Santa Fe, and Tarrant counties. The study area has experienced dramatic growth in population and development over the past 20 years, and this trend is continuing.

Study activities include consolidating and evaluating existing information, expanding the well network, quantifying recharge to the Madera Limestone, quantifying discharge from the Madera Limestone, defining hydraulic properties of the Madera Limestone, and characterizing groundwater flow in the Madera Limestone. Other activities include remote sensing, developing a water budget by aquifer, consolidating geographical information system data, improving drilling records, using USGS data bases for storage and retrieval of information, updating the report "Ground water in the Sandia and northern Manzano Mountains, New Mexico," and involving neighborhood associations and residents with data collection.



The USGS also has published the first report in a new series of non-technical publications, *The Quality of Our Nation's Waters*. This series is designed to convey and relate major findings of the National Water-Quality Assessment (NAWQA) Program on water-quality issues of regional and national concern as well as to provide strong and unbiased scientific support for critical issues that stem from these findings regarding management and protection of water resources in diverse settings across the nation. The first report in the series focuses on nutrients and pesticides. The WRI has a copy of the report, USGS Circular 1225. For additional information on the report, contact Tim Miller, Chief of the NAWQA Program by telephone at 703-648-5716, by mail at USGS, 413-N National Center, Reston, VA 20192; or by email at [nawqa\\_info@usgs.gov](mailto:nawqa_info@usgs.gov).



## Three new projects funded by WRRRI

### Additional funding becomes available

In the last issue of the *Divining Rod*, we described two new water quality projects that were selected to receive funding through the 1999 New Mexico WRRRI Seed Money Research Program. *Hyperfiltration-Induced Precipitation of Sodium Chloride* under the direction of New Mexico Tech investigator Michael Whitworth and *Ultrafiltration Based Detection of Viruses and Cryptosporidium Oocysts from Environmental Water Samples* led by NMSU Professor Kevin Oshima were announced as projects slated for funding.

Because FY99-00 state funding has now been made available, three other projects also will be funded through the 1999 Program. Janie Chermak and Kate Krause of UNM's Department of Economics will receive funding for their project entitled, *Impact of Heterogeneous Consumer Response of Water Conservation Goals*. The researchers will identify statistically significant consumer characteristics that are factors of demand for water through a series of

economic experiments and surveys. They will then test consumer response to wide ranges of pricing options and econometrically model water demand incorporating the significant consumer characteristics into the model. Finally, they will design a conservation incentive program that allows individuals to choose their own best conservation alternatives while achieving the conservation program goals.

*Detection of Groundwater through Ultrasensitive Magnetic Measurements with Ultra-short Pulse Lasers* will be conducted by Jean-Claude Diels of UNM's Department of Physics. This project will explore the possibility of new, unknown sources of groundwater, and monitor the growth and decay of large aquifer layers. New methods of magnetic sensing will be employed. If successful, the final phase of the research will be to conduct an aerial survey to identify patterns associated with large bodies of surface water and search for signs of large underground bodies of water.

Eric Small of NMTech's Department of Earth and Environmental Science will receive funding for his project entitled, *Soil Moisture-rainfall Feedbacks in New Mexico*. To improve upon precipitation prediction systems, it is necessary to understand the different mechanisms that produce rainfall variability. Precipitation anomalies may be generated by the conditions of the land surface, including soil moisture, vegetation and snow cover. This project investigates how soil moisture, via land-atmospheric interactions, contributes to summertime precipitation anomalies in New Mexico. If springtime soil moisture conditions influence summertime precipitation in New Mexico, then observations of soil moisture during spring could be used to help predict the amount of precipitation that would accumulate during summer.

These one-year projects will serve as preliminary studies that will hopefully provide the foundation for more extensive work that will attract additional funding.

## Leon Metz to give first Albert E. Utton Memorial Water Lecture at Annual Water Conference

In honor of the memory of one of our most valued water colleagues, at this year's water conference we will inaugurate the Albert E. Utton Memorial Water Lecture. Al was a primary contributor to our knowledge and understanding of the benefits of the Rio Grande Compact. With his passing, an important colleague and mentor will no longer be present to enrich our investigation and understanding of the water resources of New Mexico. We are deeply indebted to his academic and professional contributions. Al gave many a colorful presentation at New Mexico water conferences over the past 30 years. To celebrate the enthusiasm Al brought to the fascinating history behind water issues and to foster his passion for intellectual discourse, we have arranged for one of the West's most sought after lecturers, Leon Metz, to deliver the first Albert E. Utton Memorial Water Lecture.

Join us on the evening of December 2, 1999 at 7:00 pm at La Fonda in Santa Fe for dinner and listen to Leon Metz give us his rendition of the lore behind the Rio Grande Compact. For information on tickets, call the WRRRI at 505-646-4337 or email eduran@wrrri.nmsu.edu.





*(Continued from page 3)*

surface drip irrigation system on my vineyard. I did this not for the primary purpose of conserving water, which by the way it does do well, but because of the convenience. This allows me to simply flip a switch on my irrigation well and go to my "day job." I'm soon going to be putting the system on a timer so I won't even have to flip the switch. Seriously, you can't just walk away from these systems even though they are convenient. They do require frequent attention, especially if a gopher bites a hole in a drip line. In any case, I like the system but, better yet, my grapes also like it.



*New Mexico WRRRI staff joined together to bid Tom Bahr farewell. From left: Bobby Creel, Cynthia Rex, Ellie Duran, Tom Bahr, Judy Bahr, Cathy Ortega Klett, Darlene Reeves and John Kennedy.*

### News Flash

Dr. Bobby J. Creel has been appointed New Mexico WRRRI Acting Director. Dr. Creel, who has been WRRRI Assistant Director since 1989, will serve as Acting Director until the Search Committee for the new WRRRI Director has completed its work and a permanent Director is named.

Bobby J. Creel, Acting Director

New Mexico Water Resources Research Institute

Catherine Ortega Klett, Editor

#### **DIVINING ROD**

New Mexico Water Resources Research Institute  
MSC 3167, New Mexico State University  
PO Box 30001  
Las Cruces NM 88003-8001

Nonprofit Organization  
U.S. Postage PAID  
Las Cruces, NM  
Permit 162