

# the divining rod

New Mexico Water Resources Research Institute

Volume 3, No. 1

Fall 1979

## High Plains Study Underway

The High Plains - Ogallala Aquifer Regional Study is now under way. This six-state program is being conducted under Public Law 94-587, Section 193, and includes portions of the states of New Mexico, Texas, Colorado, Kansas, Oklahoma, and Nebraska. The legislation resulted from the shared concern of the members of Congress from these states for the future of the High Plains area. Congress authorized the project to "study the depletion of the natural resources of those regions...presently utilizing the declining water resources of the Ogallala aquifer, and to develop plans, to increase water supplies in the area and report thereon to the Congress." The study is designed "to examine the feasibility of various alternatives to provide adequate water supplies to the area...to assure the continued economic growth and vitality of the region..."

The General Contractor for the study is Camp Dresser and McKee Inc. of Austin, Texas. Subcontracts for the New Mexico portion of the project have been awarded to three state agencies. The New Mexico Interstate Stream Commission will perform an evaluation of the water resources of the state's High Plains region. The New Mexico Energy and Minerals Department will study energy production and consumption impacts of the region. The WRRRI will be responsible for state agricultural and farm level research as well as impacts research.

Dr. Robert R. Lansford, Professor in the NMSU Department of Agricultural Economics, will be the Research Coordinator and Principal Investigator for both phases of the \$190,000 WRRRI contract.

The farm-level research effort will focus on techniques to evaluate existing crop and live-

stock budgets and modeling techniques, then define model assumptions and refine or develop models for the High Plains portions of the state. Plans will be developed for applying the models to dryland, irrigated irrigable lands, range livestock, and fed livestock, if necessary, over a 40-year period using 1977 as a base. Drs. A. A. Baltensperger, James R. Gray, and T. W. Sammis, all of the NMSU College of Agriculture will be investigators on this phase of the study.

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Six State Study Area

(Continued from p.1)

The "impacts" portion of the High Plains Study is the final synthesis of the many dimensions of the High Plains - Ogallala Aquifer Area Study. In short, it represents the integration of highly technical and sophisticated research findings into a meaningful policy decision-making context. The major purpose is to project, at the state level, likely economic adjustments and socio-economic impacts

## MEETINGS

Date: Nov. 4-8, 1979  
Subject: National Water Resources Association Convention  
Location: Denver, CO  
Contact: National Water Resources Association, 955 L'Enfant Plaza North Bldg., S.W., Washington, D.C. 20024

Date: Dec. 10-11, 1979  
Subject: National Symposium on Hydrologic Transport Systems  
Location: New Orleans, Louisiana  
Sponsor: American Society of Agricultural Engineers  
Contact: Dr. Eugene R. Perrier, General Symposium Chairman, USAE Waterways Experiment Station, P.O. Box 631, Vicksburg, Mississippi 39180, Phone: (601) 636-3111

resulting from changes in supplies and uses of water and energy resources under alternative policy scenarios.  
Dr. Shaul Ben-David,

Professor of Economics at the University of New Mexico, will join Dr. Lansford as Principal Investigator on this part of the study.



(L to R ) N. Gollehon, J. Fowler. and R. Lansford.

## Film Available to Groups

The WRRRI is pleased to make an outstanding new film, "Where Do We Go From Here" available to school and public interest groups throughout the state. The film, provided by the Office of Water Research and Technology and the Fish and Wildlife Service, examines the problems involved in the wise development of our natural resources. It describes and explains the activities of these two Department of the Interior agencies in providing viable ecological information needed by decisionmakers to

plan and carry out development activities with minimal damage, sometimes with actual enhancement of the environment.

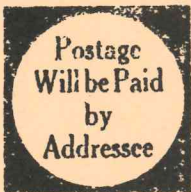
This film has been awarded the American Society for Information Science's Award as the Outstanding Information Science Film of 1978. Brochures describing this 15-minute 16 mm color/sound film, or the film itself can be obtained from Peter Herman, New Mexico Water Resources Research Institute, P.O. Box 3167, Las Cruces, NM 88003.

# WRRRI Leads Nation in OWRT Matching Grants

The WRRRI is again pleased to announce an outstanding program of granted research for the 1980 Fiscal Year. New Mexico led the nation in the amount of OWRT matching funds awarded to state-sponsored projects with a total of \$256,126. We are especially proud of this figure since these projects were in direct competition for funds with projects from the 53 other water institutes. In addition, WRRRI projects are supported by grants made from our OWRT annual allotment funds and other sources such as the New Mexico Interstate Stream Commission and the U.S. Fish and Wildlife Service. The list below shows the investigator, institution and title of our new and continuing projects for the coming year.

Douglas Clark, (UNM), "A Simplified Laboratory Training Manual for Water and Wastewater Treatment Plant Operators"; Theodore Sammis, (NMSU), "Effects of Decreased Watering on Crop Yields, Phase II"; Gary Cunningham Paul Kemp, (NMSU), "A Comparison of Salinity Induced Physiological Anatomical Characteristics Affecting Productivity in Halophytic and Glycophytic Gramineae"; Richard Cole, (NMSU), "The Impact of Grazing on the Quality of Water Flowing into a Recreational Stream"; George A. O'Connor, (NMSU), "Using Saline Water in New Mexico"; James L. Botsford, (NMSU), "Effect of Saline and Alkaline Water on Growth and Survival of *Rhizobium meliloti*"; Corale Brierley, James Brierley, (NMIMT), "Biological Methods to Remove Sel-

ected Pollutants from Uranium Mine Waste Water"; Richard A. Cole, Paul R. Turner, (NMSU), "Preliminary Assessment of Model Development for Optimization of Sport Fisheries in the Rio Grande of New Mexico"; Eric Pratt, David Carlson, Robin Peterson, (NMSU), "An Analysis of New Mexico Residents' Attitudes Toward Water Use and Monetary Trade Offs"; Peter Wierenga, (NMSU), "Long Term Effects of Trickle Irrigation"; Gerardo Gross, (NMIMT), "Recharge in Semi-Arid Mountain Environments"; Marvin L. Wilson, Bill Melton, (NMSU), "Evaluation of the Potential to Improve Alfalfa for Production Under Less than Optimum Conditions"; Lynn A. Branvold, Donald K. Branvold, Carl J. Popp, (NMIT), "Potential  
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# GRANTS

(Continued from p.3)

Effects of Increased Demand for Nuclear Energy--Transport of Heavy Metals, Nutrients, and Radioactive Species from the Grants Uranium Belt by the Rio San Jose-

Rio Puerco Drainage System"; William C. Lindemann, (NMSU), "Isolation and Control of Membrane Filter Degrading Micro-organisms"; Gary Cunningham, (NMSU), "Utilization of Brackish Water for Irrigation of Salt Grass, A Potential Forage Crop"; Albert E.

Utton, Gary D. Libecap, (UNM), "Economic Impact of Alternative Resolutions of Pueblo Indian Reserved Rights in the Rio Grande Basin"; Robert R. Lansford, T. W. Sammis, G. O. Ott, (NMSU), "Irrigated Agricultural Decision Strategies for Variable Weather Conditions."

## Reports

As many of you are aware, the Institute makes the findings of its projects available to interested parties in Technical Completion Reports. To date, there have been 107 such reports prepared by WRRRI sponsored investigators. Reports currently in print are provided at no charge. Those no longer in print are available for a copy charge of five cents per page. A complete list of Institute publications is available upon request.

# IMPORTANT... IMPORTANT...

Here at the WRRRI, we are taking a giant step forward (?) and putting our mailing list on a computer. We hope that it will make our mailing more efficient and increase our ability to keep up with address changes. IF YOU WISH TO CONTINUE TO RECEIVE THE DIVINING ROD, PLEASE FILL OUT AND RETURN THE CARD BELOW. Please indicate if you have changed address.

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## **Water Capsule**

The Technology Transfer Program of the Office of Water Research and Technology has provided a series of capsule reports highlighting research projects utilizing federal funds through various State Water Resources Research Institutes. The Brochures are illustrated with color photographs and graphics. The WRTI has limited numbers of the following five Capsules available for distribution.



### **Water Well Location by Fracture Trace Mapping**

This report describes a new technique of fracture trace mapping, developed at Pennsylvania State University that has proven to be a highly effective method for increasing the ratio of successful to unsuccessful water well drilling operations.

Where geologic conditions are right, utilization of earth fractures to determine water well locations can result in greatly improved water yields and significant savings in water supply development costs.

### **Conservation of Water, Chemicals, and Energy in Dyeing Nylon Carpet**

This capsule report demonstrates how one industry can reduce its water consumption by process modification. In addition to reduction of water use, a substantial reduction of energy and chemical requirements can be achieved by the process changes. The findings reported here were the result of a research project undertaken in the School of Textile Engineering of the Georgia Institute of Technology.



### **Water Conservation Devices- Residential Water Conservation**

This Capsule shows devices which help break old water wasting habits. It emphasizes both the savings in water and the savings in money that result from these conservation practices.



### **Water Factory 21**

Water Factory 21 combines technologies developed through the U.S. Department of the Interior's Office of Water Research and Technology (OWRT), and the U.S. Environmental

Protection Agency (EPA). This Capsule Report highlights the OWCD facility, which integrates the most advanced full-scale treatment technology available into the world's largest water reclamation system. This installation serves as a prototype of facilities for producing supplemental water during the twenty-first century, thus the name Water Factory 21.



### **Reverse Osmosis**

OWRT has been supporting the development of new technologies for water reuse and purification. One of these technologies is reverse osmosis. Significant technological progress has been made such that commercial reverse osmosis systems are now available to assist in the solution of water and waste treatment and water reuse problems for a variety of applications. Continuing research and further development efforts are required to reduce the overall costs and expand the areas of technical and economic use.



# Changing Faces at WRRRI

## COMING

Peter Herman has joined the WRRRI staff as Assistant to the Director. He received his Bachelor's and Master's degree in Biology from the University of Pittsburgh and his Doctorate in Botany - Microbial Ecology from the University of Missouri. Before coming to New Mexico, he held research positions at the University of Missouri and St. Louis University. He is looking forward to helping New Mexico's water research effort.

## GOING

After almost three years as Assistant to the Director, Gail Stockton has left the Institute to return to full time Graduate study. The Institute's



loss is the NMSU Department of Civil Engineering's gain. Gail will, however, continue working with water. Her research involves energy use by water heaters run with hard vs. softened water.

*Gail and Peter going over the material for this issue of the "Divining Rod"*

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**DR. THOMAS BAHR**, Director, New Mexico Water Resources Research Institute.

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