

ARIZONA WATER RESOURCES PROJECT INFORMATION

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THE BUREAU OF RECLAMATION CHANGES ITS NAME

The Bureau of Reclamation has changed its name to the WATER AND POWER RESOURCES SERVICE, to reflect changes in emphasis that have been made in the function of the agency.

"National needs and concerns now call for greater efficiency in the operation of existing structures and their integration in new programs for renewable resources and alternative energy," said Secretary of the Interior Cecil D. Andrus.

The Bureau of Reclamation's initial purpose of reclaiming arid western lands established on May 26, 1926, as amendments to the Reclamation Act of 1902, has expanded to a much broader responsibility for water and power resources management. Although water supplies in early reclamation projects were used primarily for irrigation, today project water augments domestic and industrial supplies and overall water quality is improved. To meet expanding needs in the future, it will be necessary to increase irrigation efficiency, water conservation, and the reclamation of wastewater.

The Water and Power Resources Service is responsible for 138 water and power projects, including 333 reservoirs. Some or all of the water is used from these by more than 16 million people, or 30 percent of the population of the 17 western states. Water from the projects also is used by more than 146,000 farms that have about 9 million acres of irrigated lands. Fifty hydroelectric plants in the Service generate more than 40 billion kilowatt-hours of energy each year. The projects are all initiated by locally autonomous water districts and communities that contract to repay a portion of the capital costs.

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GEOTHERMAL ENERGY IN ARIZONA

The word "geothermal" is derived from two Greek words, "ge(o)" meaning earth, and "therme" meaning heat; geothermal energy is simply the natural heat from the deep interior

of the earth. Arizona lacks such visible examples of geothermal energy as geysers, active volcanoes or natural vents belching steam. Instead, Arizona has a rather modest collection of moderately hot springs and wells with abundant physical and chemical evidence of enormous amounts of near-surface usable heat energy. About 14 million years ago, southern Arizona started to break up, and areas like the Tucson and Phoenix basins began to sink. The end result of this crustal breakup is high heat flow.

The Geothermal Group of the Bureau of Geology and Mineral Technology, 845 North Park Avenue, Tucson, Arizona 85719, has published a preliminary map of geothermal resources in Arizona, and is collecting detailed information on how this heat is distributed in specific areas. Some of the areas under investigation include the Safford-San Simon Basin; the Willcox, Tonopah, Hyder, Tucson and Phoenix basins; the Yuma area; the Kingman area; and the Springerville-St. Johns area. Although the Springerville-St. Johns area is on the Colorado Plateau, volcanism in the area has been repetitive for the past several million years, suggesting that the area has a long-standing association with a very deep-seated heat source.

The Geothermal Group has been collecting data including detailed measurements of well temperatures to help establish the rate of heat flow in the different areas, water samples to find chemical clues to the temperature and movement of water within the basins, and existing data as background for these studies. Upon recommendation of the Geothermal Group, the Water and Power Resources Service is drilling heat-flow holes in selected geothermal anomalies, beginning in Springerville.

The results obtained so far from the various investigations indicate that large volumes of moderately hot water (90-300 F) may be found at great depth in practically all of the deep basins in Arizona. Such waters could be used for heating and cooling communities or large buildings, for agriculture or food processing and for some industrial processes such as pulp and paper processing. A high-temperature reservoir possibly suitable for electric power generation has been identified at Clifton. Others may exist about 10,000 feet beneath most of the deep basins. These resources are unused, but existing technology could be used to develop them. (From an article by Alice Campbell, Fieldnotes 9(2): 7.)



NEWS RELEASE

The Arizona State Water Quality Control Council on January 30 filed revised water quality standards with Arizona's Secretary of State following the formal adoption of the revisions by the Council earlier in the month.

While the standards were being revised, citizens throughout the State participated in at least 15 public meetings and three public hearings to establish the regulatory framework for protecting the State's surface water.

Major revisions adopted by the Water Quality Control Council include modifications of the antidegradation policy, changes in the salinity policy, a strategy for setting nutrients standards, limits for "effluent dominated waters"—primarily consisting of treated discharges from sewage treatment plants—and provisions for enforcement of these revisions.

The Water Quality Control Council now will take steps to implement the revised standards. The Council supervises and controls the State's water quality management program. It is composed of members appointed by the Governor and members representing State agencies.

Persons interested in obtaining a copy of the revised water quality control regulations may write to Ambient Water Quality Unit, Bureau of Water Quality Control, Department of Health Services, 1740 West Adams, Phoenix, Arizona 85007, or call 255-1173. ★ ★ ★

CONFERENCES

Governor's Commission on Arizona Environment

The next workshop meeting of the Governor's Commission on Arizona Environment (GCAE) is Friday, 8:30 a.m., March 7, 1980, at the Ramada Inn, Tucson. The GCAE is charged by Executive Order to act as a clearinghouse and means of exchange of information relating to Arizona's environmental problems and solutions.

The GCAE Water Resources Committee will discuss the potential for low-water-use crops in Arizona as a water conservation measure, and producers of biomass for energy. Public participation is welcome.

Mine Reclamation Center Workshop

The two-day workshop for the industrial reclamationist will focus on the mechanics and practice of vegetative reclamation of mine waste and tailings. Presentations will emphasize reclamation activities in the hard-rock mining industry, as will the optional third-day field trip. To ensure that the workshop will be of practical value to participants from the mining industry, speakers will be selected who have had direct experience with the problems facing the industrial reclamationist.

Topics include: 1) regulatory situation; 2) site evaluation and preparation; 3) seeding and planting techniques; 4) species selection; 5) irrigation alternatives; 6) monitoring and evaluation; and 7) future needs and possibilities.

Contact Matts Myhrman or Richard Brittain for Information/Registration Forms/Room Reservation Forms at the Mine Reclamation Center, Office of Arid Lands Studies, University of Arizona, 845 North Park Avenue, Tucson, Arizona 85719, (602) 626-2086. Workshop is limited to 75 participants.

Deep Percolation Symposium

The Arizona Water Commission, Salt River Project, U.S. Water Conservation Laboratory, and the Arizona Section, American Water Resources Association, will sponsor a deep-percolation symposium in Scottsdale, Arizona May 1-2, 1980. Invited speakers will discuss quality and quantity of deep-percolation from irrigated fields and urban runoff on 1 May. The tentative agenda is listed below.

Welcome Address: Wesley E. Steiner, Arizona Water Commission.

Deep-percolation and groundwater management. Herman Bouwer, U.S. Water and Conservation Laboratory, Phoenix

Irrigation efficiencies. Allan D. Halderman, University of Arizona, Tucson

Evaluating evapotranspiration rates. Sherwood B. Idso, U.S. Water Conservation Laboratory, Phoenix

Groundwater recharge from urban runoff and irrigation returns. K. J. DeCook and L. G. Wilson, University of Arizona, Tucson

Deep-percolation measurements and techniques. Daniel D. Evans and Arthur W. Warrick, University of Arizona, Tucson

Groundwater modeling for recharge evaluations. Shlomo P. Neuman, University of Arizona, Tucson

Deep-percolation evaluation from groundwater modeling. Mike R. Long, John L. Boyer, and Terry M. Turner, Arizona Water Commission and Salt River Project, Phoenix

Deep-percolation and water quality—theory. James D. Rhoades, U. S. Salinity Laboratory, Riverside, California

Deep-percolation and water quality—field data. Kenneth D. Schmidt, Groundwater Consultant, Fresno, California

Preliminary analysis of DBCP—contamination in Maricopa County. Edward A. Nemecek, Arizona Water Commission

Problems and promises in urban runoff management. William J. McGuchin, McGuchin Drilling Company, Phoenix

A panel discussion on research needs and implementation on May 2 will conclude the symposium. Deep-percolation is one of the major unknowns in groundwater management. As a source of groundwater recharge, deep-percolation is an important consideration in the conservation of water and energy, but also poses a potential threat to groundwater quality.

The symposium will be held at the Safari Resort in Scottsdale, and will follow a three-day short course on groundwater and wells sponsored by the Salt River Project and the National Water Well Association. Rooms will be available at the Safari Resort for April 30, and/or May 1 (\$27/day single, \$35/day double).

Registration fee for the deep-percolation symposium, is \$35, which includes the proceedings. For further information on the symposium, contact Stephen Erb at the Arizona Water Commission (602-255-1586). For questions on the groundwater and wells short course, contact Gary Small at the Salt River Project (602-273-2826).

Hydrology Section, Arizona-Nevada Academy of Sciences and Arizona Section, AWRA

Thirty-three papers on hydrology and water resources will be presented at the Joint Session of the Hydrology Section, Arizona-Nevada Academy of Science, and Arizona Section, American Water Resources Association, to be held in Las Vegas, Nevada on April 11–12, 1980, at the MGM Grand Hotel. Authors and titles of papers are listed below.

- Use of radar as a supplement to raingage networks.* Herbert B. Osborn and J. Roger Simanton
- Application of the USLE under rangeland conditions.* J. Roger Simanton, Herbert B. Osborn and Kenneth G. Renard
- Estimating transmission losses in ephemeral stream channels.* Leonard J. Lane, Virginia A. Ferreira and Edward D. Shirley
- Wax water harvesting treatment improved with antistripping agent and soil stabilizer.* Dwayne H. Fink
- Water impoundment applications for SBR/Asphalt membrane systems.* Carlon C. Chambers
- Snowpack dynamics in Arizona's aspen forests.* Michael J. Timmer and Peter F. Ffolliott
- An evaluation of snowmelt lysimeters in an Arizona mixed conifer stand.* Gerald J. Gottfried and Peter F. Ffolliott
- Snow interception as affected by forest canopy variables.* Nader Biroudian
- Water quality analyses of the Colorado River corridor of Grand Canyon.* Brock Tunnicliff and Stanley K. Brickler
- Prediction of the chemical quality of streamflow by an interactive computer model.* William O. Rasmussen and Peter F. Ffolliott
- The value and importance of Arizona's wetlands.* Jon Rodiek
- Error analysis of evapotranspiration measurements.* Robert K. Hartman
- Character of earth fissure movement in south-central Arizona.* M. C. Carpenter and J. K. Boling Jr.
- Well-field design criteria for coastal sea-water development.* Barney P. Popkin
- Quantification methods developed in conjunction with the water use inventory of BLM administered lands in Arizona.* Marvin Goss
- Groundwater exploration in northeastern Arizona using Landsat imagery.* Kenneth E. Foster and K. James DeCook
- Exploration for salt water supply for shrimp aquaculture, Puerto Peñasco, Sonora, Mexico.* K. J. DeCook, S. Ince, B. P. Popkin, J. F. Schreiber and J. S. Summer
- Groundwater standards for Arizona.* Marc Bennett
- Changes in water rates and water consumption in Tucson, 1975–1979.* Adrian H. Griffin, James C. Wade and William E. Martin
- Irrigation management and water policy: Opportunities to conserve.* Harry W. Ayer and Paul. G. Hoyt

Socio-economic impacts of the safe drinking water act on Arizona's water systems. Richard S. Williamson

Evaluating and displaying watershed tradeoffs for management. Larry Schmidt and Rhey Solomon

Multiobjectives approach to river basin planning. Lucien Duckstein, Mark Gershon and Richard McAniff

Impacts of a new water resources management plan for Tucson, Arizona. R. Bruce Johnson

Hydraulic modeling for capital improvements planning. Stephen E. Davis

The northwest area water plant, Tucson, Arizona. Thomas M. McLean

The mound and valley water harvesting system: A potential mine reclamation alternative. Charles L. Constand and John Thames

Origin, development, and chemical character of a perched water zone, Harquahala Valley, Arizona. Charles G. Graf

Computerized depth interval determination of groundwater characteristics from well driller logs. Stephen Erb and Mike Long

The use of the 3-D velocity log in groundwater evaluation. Richard P. Chagnon

Hydrologic evaluation of topsoiling for rehabilitating Black Mesa coal mine lands. Frank G. Postillion

Storm water runoff quality in relation to land use, southern Nevada. William Woessner

Infiltration response to surface plant cover and soil invertebrae. Isobel McGowan

A review of stream channel recharge estimation techniques for arid areas. Susan J. Keith and Todd Rasmussen

Registration for the Joint Session will be held from 8 to 9 a.m., Friday, April 11, in the MGM Grand Hotel. The program will take place in the Bijou Room from 9 a.m. to 4:15 p.m., April 11, and from 9 a.m. to 12:45 p.m., April 12. The General Meetings of the Arizona-Nevada Academy of Science will be held during April 10–12, 1980. General registration will start at 3 p.m., Wednesday, April 9, in the Meeting Rooms Section of the MGM Hotel.

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PUBLICATIONS

Flood Monitoring and Management

The Arizona Section, American Water Resources Association (AWRA), recently published the Proceedings of a one-day symposium on "Flood Monitoring and Management." The publication consists of 10 papers given by experts from the public and private sectors and includes presentations on the Arizona flood prevention program, floodplain management in Arizona, early warning flood monitoring system in the Salt-Verde watershed, Tucson Basin, storm flows management in relation to industrial development, the U.S. Soil Conservation Service Small Watershed Program, dam safety and the Central Arizona Water Control Study.

Copies are available for \$7 by writing the Water Resources Research Center, University of Arizona, Tucson, Arizona 85721, attn: K. J. DeCook. Please make checks payable to Arizona Section, AWRA.

Stormwater Management: Quantity and Quality

This publication is an up-to-date volume that integrates the quality aspects and hydrological principles for water pollution control. Contents include meteorology, watershed and hydrological data; statistical descriptors and extreme events; hydrographs; flow routing; water quality responses due to nonpoint sources; stormwater management alternatives; management models/urban applications; management/rural applications; and receiving water quality assessment. Copies of the 383-page, illustrated volume are available for \$33.95 from Ann Arbor Science, P.O. Box 1425, Ann Arbor, Michigan 48106.

Annual Report on Water-Resources Data for Arizona Released

A compilation of surface-water, chemical-quality, and groundwater data, prepared by the U.S. Geological Survey (USGS), was released January 9, 1980. The report was prepared in cooperation with the State of Arizona and with other agencies.

The water-resources data report for Arizona for the 1978 water year contains discharge records for 241 gauging stations, annual peaks for 77 crest-stage partial-record stations, and discharge measurements at 58 miscellaneous sites; contents only records for nine lakes and reservoirs; stage and contents for one lake; elevations only for two lakes and reservoirs; gauge

height only for one lake and one head over a dam; 16 supplementary records, included with gauging-station records, consisting of monthend or monthly stage, contents, and evaporation of lakes and reservoirs, diversions, and return flows; two low-flow investigations; water-quality records for 87 continuous-record stations and 16 miscellaneous sites; water levels for 101 observation wells; and water-quality data for water from 189 wells.

The report is identified as U.S. Geological Survey Water-Data Report AZ-78-1 and is entitled "Water Resources Data for Arizona, Water Year 1978." The report is for sale to the public for a nominal fee from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Copies of the report are available for examination at USGS in Room 5A Federal Building, 301 West Congress Street, Tucson; Suite 1880, Valley Center, Phoenix; Building 3, 2255 North Gemini Drive, Flagstaff; 1940 South Third Avenue, Yuma; and Room 5312 National Center, 12201 Sunrise Valley Drive, Reston, Virginia.

Please address your news items or comments on the News Bulletin to any of the editors:

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