

Private Property Rights Bill Signed, Impacts Debated

Governor Symington signed into law on June 1 a controversial private property rights bill that requires the Attorney General to draft guidelines for state agencies to analyze the impacts of new rules and regulations on private property use. When such impacts constitute a "constitutional taking" of private property, the State must compensate the owners.

There was wide-spread speculation that the governor might veto the bill, despite its support by clear majorities in both houses. The bill was opposed by the directors of ADWR and ADEQ. Critics described it as hideous, an outrage, the worst bill of the session, and the most anti-environmental legislation ever passed. Supporters contended that it would boost economic development, guarantee constitutional rights, and protect civil rights.

Two key legislators present their views on the new law and its impacts on water management in Guest Views.



Going out on a limb, meteorologists are predicting that El Niño will make this summer's monsoon wetter or drier than normal. The phenomenon occurred in 1983 and 1987, with differing effects. (Photo: Flandrau Planetarium)

1992 Session Produces Flood of Water-Related Legislation

From a water legislation perspective, the 1992 legislative session was one of the busiest ever. Approximately fifty bills addressed water resources topics. Many of the bills that finally were signed into law by the Governor will have substantial impacts on Arizona's water management. Others that were hotly debated but not passed no doubt will return for future legislatures to discuss. Let us review the more significant bills debated this session.

Alternative Conservation Program (H.B. 2452)

The Alternative Conservation Program legislation was the result of a consensus reached among agricultural water users, municipal representatives, and the Department of Water Resources (DWR). This bill addresses many of the uncertainties in the Groundwater Code regarding future water conservation requirements. The legislation consists of two components: The first is a non-per capita conservation program which certain municipal water providers may apply for in lieu of the current gallons per capita per day requirements. The second

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addresses conservation requirements for agricultural water users by specifying the amount by which agricultural water duties can be reduced during the Third, Fourth and Fifth Management Periods. It also allows certain municipal and agricultural water users to use water beyond their Second Management Plan conservation requirements if the water is not groundwater.

Water Exchanges (H.B. 2407)

The Department of Water Resources proposed this legislation in order to clarify the authority to exchange one type of water for another. Exchanges are classified as follows: existing exchanges will be grandfathered if they are registered with DWR; exchanges of no more than fifty acre-feet of water per year or involving effluent only are exempt; and exchanges that are not exempt or grandfathered will be subject to a noticing requirement, unless surface water is involved, in which case, a permit is required. The bill also establishes an accounting system to clarify how conservation requirements apply to water involved in exchanges.

Storage and Recovery Legislation (S.B. 1285, S.B. 1380, H.B. 2485, H.B. 2475)

Three new approaches to recharge, storage and recovery were approved by the legislature (see summary in March *AWR*, p. 4). The Santa Cruz County water interests proposed S.B. 1285, legislation that provides that effluent and CAP water discharged to maintain vegetation in a national park or monument will receive underground storage and recovery credits to the extent that recharge of the aquifer occurs (see June *AWR*, p. 7).

H.B. 2475 allows the Central Arizona Water Conservation District and private entities to recover water from an underground storage and recovery project outside the area of hydrologic impact. Until passage of this act, such entities could recover water stored underground only from within the area where the water has been physically recharged.

Originally proposed by the City of Scottsdale as H.B. 2485, S.B. 1380 creates an annual storage and recovery program to allow underground storage and recovery of untreated surface water within the same calendar year (see Feb. & March *AWR*, p. 4). This program will encourage the use of CAP and other surface water supplies by reducing the need to construct treatment plants, water delivery systems and back-up systems.

Riparian Area and Instream Flow Protection (S.B. 1030)

Riparian protection was a hotly debated issue this session (see April *AWR*, p. 4). Legislation to protect riparian areas and instream flows took a variety of forms during the session; in the end, however, no consensus was reached beyond the need for further study. As finally adopted in S.B. 1030, the Department of Water Resources, the Arizona Game and Fish Department, and the Department of Environmental Quality are directed to undertake studies regarding identification and protection of riparian areas and instream flows in the state.

The Game and Fish Department will map and classify riparian areas by December 1, 1993. The Department of Water Resources will undertake an evaluation of the effect of groundwater pumping and surface water diversions on riparian areas and will evaluate alternative regulatory programs by December 1, 1993. The Department of Environmental Quality will identify activities that impact riparian areas by October 1, 1993 and chair a 25-member Riparian Area Advisory Committee. The Advisory Committee must submit a report by December 1, 1994 recommending the scope and parameters of any necessary regulatory program and statutory provisions for a riparian area protection program.

Statewide Water Efficient Plumbing Act (H.B. 2440)

This bill was proposed by DWR with the support of a wide range of urban and rural water interest groups and plumbing industry representatives. It establishes statewide water conservation standards for toilets, urinals,

showerheads, faucets, evaporative coolers and decorative fountains (see Feb. *AWR*, p. 4). The standards were modeled after the standards used in many Arizona cities, other states, and the American National Standards Institute.

Omnibus Water Bill (S.B. 1102)

Each year DWR proposes technical modifications to Title 45 (Water) of the Arizona Revised Statutes. These modifications clarify existing provisions, streamline administrative process or address relatively minor issues. This year 19 items were identified and discussed through an ad hoc advisory committee process before submittal and passage by the Legislature (see May *AWR*, p. 4).

Other Water Related Bills

A number of bills addressing specific concerns also passed this session (see p. 6). These bills ranged from redefining "spill water" to clarification of the conditions for transferring of agricultural flexibility account credits. Two bills affecting the Tucson Active Management Area Water Augmentation Authority were passed (see p. 6). Another bill modified the state's statute of limitations to clarify CAWCD's right to sue over deteriorating siphons on the Central Arizona Project aqueduct system (see June *AWR*, p. 7).

Many of these new statutes will have specific impacts on Department operations. During the next several months DWR will be discussing how the legislation that was passed this session should be implemented.

Adapted from a legislative summary by Steve Olson, Executive Assistant to the Director, Dept. of Water Resources.

Who said that?

"You can lead a horse to water, but if you can get him to float on his back, you've got something."



Communications

This is a combined July-August issue of *AWR*; we'll return to our monthly schedule in September. The bi-monthly summer issue was planned on the assumption there would be a dearth of water-related news and activities to report. Instead, we expanded this issue to 16 pages to accommodate a veritable flood of news, much of it tied to actions of the recently adjourned legislature.

We are attempting to publish the *AWR* by the first of the month. However, when it appeared the legislature might not adjourn by mid-June, we had to choose between meeting our deadline and covering the legislative session now rather than in September. We chose the latter. Next year, we'll know better.

I am delighted to read your publication. The articles provide excellent historical information on the issues of the day. Each time I pick up an issue, I make a mental note to save it for future reference. I appreciate having all this information in one spot.

Marie Light, Hydrologist, Tucson Water

I read with great interest your article, "EPA Border Plan Released, Criticized" in the April issue of *AWR*. While I cannot comment on your critique of the EPA Border Plan, I do want to clarify a statement regarding the International Boundary and Water Commission appearing on page 2: "Also, there is a concern that a centralized water quality database under the IBWC may not be readily accessible to the public."

In the case of the recent sampling and analysis of the Nogales Wash, gathered with the cooperation of the Arizona Department of Environmental Quality (ADEQ), the study was funded in equal parts by the U.S. Section of IBWC, and ADEQ and was carried out with the understanding that Arizona may publish the data. The report on the study has not been completed. I will, of course, provide you a copy

when it is released. In other cases, we have cooperated with ADEQ and have made the appropriate water quality data available. For specifically requested investigations, the U.S. Section has carried out water quality measurements and released that information to EPA, ADEQ and local governments.

Occasionally the U.S. Section investigates water quality and compiles information along the border in preparation for pending binational agreements with Mexico. During IBWC negotiations some data are used to resolve specific border problems. The U.S. Section considers certain data to be privileged and does not release it during the deliberative stage of negotiations with Mexico. From a foreign policy perspective, withholding sensitive material during these discussions facilitates arriving at satisfactory commitments on the part of Mexico and the United States. This policy was not put into effect for the above-referenced Arizona sampling program.

Narendra N. Gunaji, United States Commissioner, International Boundary and Water Commission

I have read with great interest Arizona's deliberations with respect to increasing utilization of Colorado River water. This interests me both because of my past in Arizona water management and my current situation of being largely dependent on Colorado River water.

One issue I have noticed in these articles that causes concern is an appar-

ent unnatural fear of projects involving cooperation with California. Arizona needs to protect its entitlement to Colorado River supplies; however, the state must guard against provincial views which result in categorical rejection of projects beneficial to both states.

We in the water business know that in any major project, engineering and hydrology often take a back seat to politics and perception. However, if win-win projects which optimize the use of Colorado River Water are identified, they should be given due consideration. Joint California-Arizona projects which seek to recharge Colorado River water during wet years to improve yield in dry years may in fact be quite beneficial to both states. However, if we cannot overcome the perception problems, then these types of projects may not be seriously considered.

Arizona should never drop its guard in protecting its rights. But viewing California as the "evil empire" may negate water management projects that could ensure Arizona a reliable water supply 30, 50, or 100 years from now. As the arid southwest faces the 21st century, we need *increased* coordination, irrespective of jurisdiction boundaries. Costs, environmental considerations, and national politics have made water management harder, not easier. If we categorically close out certain partnerships, then our task becomes all the more difficult. Let's keep the communication channels open.

Lester A. Snow, General Manager San Diego County Water Authority



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News Briefs

Phoenix Water Treatment Plant Expanded

Phoenix has dedicated a \$21.7 million, 80 million gallon per day (MGD) expansion of its Union Hills Water Treatment Plant. "The addition, completed in April, increases the plant's treatment capacity to 160 MGD," says Mike Gritzuk, director of the Phoenix Water Services Department. "The additional capacity, will help meet the demand for water created by the growth of our community." The maximum rate at which Phoenix can draw upon its CAP allocation is 140 MGD. The additional capacity allows treatment of leased tribal water plus a small increment reflecting economies of scale.

The Union Hills facility gets water from the Colorado River via the Central Arizona Project canal. About 90 percent of the water used by Phoenix residents is surface water from the Salt, Verde and Colorado Rivers. The remaining 10 percent is groundwater from the city's wells. "This additional capacity to use surface water will help us protect our limited groundwater supplies and make better use of our CAP allocation," says Gritzuk.

The additional 80 MGD treatment capacity will help the city meet peak demand for water during summer months. The highest demand on record was 430 million gallons on June 28, 1990. To meet that demand, the Water Services Department used the majority of its wells and operated treatment plants at full capacity.

10 Colorado River Basin Tribes Form Partnership

Ten Indian Tribes with combined Colorado River rights of 2 million acre-feet have formed an alliance to assist them in developing and protecting tribal water resources along the Colorado

River. This includes the Ft. Mohave and Colorado River Indian Tribes, with 765,000 acre-feet of Arizona's Colorado River allocation. The Tribes, concerned that potential changes in the operation of the River may impair their ability to maximize their use of Indian water rights, are seeking a greater voice in the resolution of many unresolved issues on the River. In June, they submitted a position paper to the seven Colorado River Basin states outlining their concerns as a starting point for beginning discussions with the states.

For the past year, the seven basin states (CO, AZ, CA, NV, WY, UT and NM) have been discussing potential changes in administering the Law of the River that would allow water allocated to some states to be used by California and Nevada, where population growth over the last decade has created extraordinary demands for new water supplies. The central theme of these meetings has been the need to create some kind of marketing arrangement which could allow water to flow from areas where it currently is underutilized to areas of immediate need, without injuring the state's rights to develop their full allocations. Tribal representatives have not participated in these discussions. Representatives of the basin states have told the Tribes that they would respond to the concerns set forth in the position paper by July 10.

Fluoridation Issue Goes to Tucson Mayor and Council

On June 2, 1992, the City of Tucson's Citizens' Water Advisory Committee (CWAC) voted to recommend fluoridation of Central Arizona Project (CAP) water. The Committee also recommended that Tucson's Mayor and Council consider requesting that the Pima County Board of Supervisors place an advisory question on fluoridation on a future Pima County ballot.

Fluoridation was not an issue in the past because of the impracticalities of fluoridating a groundwater well-based system. CAP water will be delivered to Tucson residents beginning this fall. The U.S. Public Health Service cites

0.8 ppm as the optimum fluoride level recommended for dental health in Tucson; the level of fluoride in CAP water is approximately 0.4 ppm.

The fluoridation issue came before the Mayor and Council in January 1992 after the Pima County Board of Health and County Supervisors endorsed a resolution in favor of fluoridation. The City of Tucson is involved because Tucson Water is a City department.

CWAC, in performing its advisory role, formed the Fluoride Subcommittee to study the issue. Upon completion of their four-month study, the Subcommittee prepared a consensus report which was endorsed by the full Committee and submitted to Mayor and council.

A public hearing to receive public input on fluoridation of CAP water is tentatively scheduled for Monday, September 14, at 7:30 p.m. in the Council Chambers.

SLIM Proposals for Water Agencies Unchanged

Except for minor technical changes, final recommendations from the State Longterm Improvement Management (SLIM) Project for ADWR, ADEQ and the State Land Department are identical to those of the draft reports (see June AWR, p. 1). ADWR Director Betsy Rieke had agreed to eliminate Deputy Director positions at local AMA offices but advocated retaining other targeted positions. The governor now must act upon the recommendations.

ADEQ Proposes Waste Water Re-use Rules

ADEQ staff have completed a concept paper explaining proposed revisions to current rules regarding the reuse of reclaimed water. The proposed rules should clarify and simplify the process of obtaining authorization to reuse treated effluent.

The concept paper currently is undergoing internal review. It will be available for public distribution later in the summer. For additional information, contact Steve Pawlowski, ADEQ Rules Development, 602-207-2227.

Metro Water Customers Petition to Buy Company

Residents of Tucson's northwest side apparently will succeed in their petition drive to halt Tucson Water's purchase of Metropolitan Water Company (see Feb. & March *AWR*, p.3). The private water company agreed in the spring to be sold to the City of Tucson for \$14 million. Concerns of Metropolitan's 11,000 customers include Tucson Water's higher rates, loss of local control, and the quality of treated CAP water. The petition drive was made possible by a ruling by the Arizona Corporation Commission which delayed the sale to Tucson until October.

Organizers of the petition drive, which must collect signatures from a majority of the property owners in the water company's service area, are optimistic about meeting the goal before the July 6 deadline. "Getting people to sign this (petition) is like giving away ten-dollar bills," said County Supervisor Ed Moore, whose office is facilitating the effort. "We know that the price of water is going to go up anyway, but we'd rather have locally elected officials making the decisions affecting those costs," he said. Mayor Kathy Huffalt of Oro Valley said 57 percent of the city's 800 eligible land owners in the Metropolitan Water Company service area had signed the petition four days before the signature deadline. It appeared that sufficient signatures also had been gathered from residents of the larger unincorporated portion of the service area.

If signed by a majority of property owners in the area, the petition authorizes water customers to study the feasibility of creating a domestic water improvement district by purchasing Metropolitan. The water company currently pumps groundwater, but organizers also plan to acquire CAP water to recharge local aquifers. Maintaining the quality of the groundwater also is a concern of residents, according to Moore. "Nobody knows the effect of chloramines (used by the City of Tucson to treat CAP water) on groundwater. Tucson Water won't allow outside

testing of the water it delivers. How do we protect people?" Tucson Water has not commented on the petition drive, but a spokesperson noted that the water supply is rigorously tested in-house with periodic verification by outside labs.

CAWCD Approves In-lieu and Exchange Contracts

The Central Arizona Water Conservation District Board of Directors at its 25 June meeting in Tucson approved four in-lieu water recharge contracts with agricultural customers totalling 205,000 acre-feet. Under the terms of the contracts, Colorado River water will be used to irrigate fields in lieu of groundwater that otherwise would be pumped (see March *AWR*, p.1).

The Board also approved terms of a subcontract allowing 13 allottees to exchange their CAP water for local water. All but one of the allottees are in counties outside the CAWCD and therefore had paid no property taxes to fund the CAP. These allottees faced a December 31 deadline to sign their CAP contracts and pay substantial in-lieu of property tax payments or forego their allocations, which total 50,000 acre-feet. The subcontract allows the CAP water to be exchanged with other entities within the CAWCD without making these payments.



Mesa Xeriscape Garden Receives Recognition

The Mesa Xeriscape Demonstration Garden has been selected to receive a Certificate of Environmental Achievement from Renew America, a national environmental organization based in Washington, D.C. The Xeriscape Demonstration Garden, located on the grounds of Mesa Community College, is a joint venture between the City of Mesa, Mesa Community College and

Salt River Project.

The one-acre garden, which opened in April 1989, show the principles of Xeriscape, a water and energy efficient form of landscaping. There are 150 varieties of water-efficient shrubs and ground covers, 60 types of trees, three types of water-efficient grass, efficient methods of irrigation, and a native Sonoran desert section. The garden was chosen by leaders of the nation's environmental community in their "Searching for Success" contest. The award is presented to communities which demonstrate their success in protection the environment and serving as a model for other communities.

AHS Plans Seminar on Effluent and Wetlands

Wastewater disposal is a problem with a win-win solution when effluent is applied directly to wetlands. The marshland ecosystem acts as "filters" to purify the water, and organic matter and nutrients in effluent enhance vegetation growth in the marsh system.

The Arizona Hydrological Society, in coordination with the Flagstaff Chapter, is sponsoring a seminar from July 31 to August 2 to examine this phenomenon. The seminar will include speakers and visits to three wetlands where effluent currently is being applied.

Seminar emphasis will be on the important issues of design criteria, the value of a wetland as part of a wastewater treatment system, and the environmental regulations pertaining to wetland development using effluent. Site visits will include Pintail and Red-head Lakes, Jacques Marsh, and the Stone Container's effluent reuse study area. Attendance is limited to the first 60 people. The cost is \$60 for AHS members and \$85 for nonmembers.

For more information contact: Don Bills 602-556-7142 or Margot Hamilton 602-523-9078 or write the Flagstaff AHS Chapter at Box 355, 1109 South Plaza Way, Flagstaff, AZ 86001.





Legislation & Law

A G Demands Return of SAWRSA Funds

A letter from Attorney General Grant Woods to the Secretary of the Treasury demanding the return of the state's \$2.7 million contribution to a fund to help settle water claims of the Tohono O'odham Nation (formerly Papago Tribe) has raised concerns about impacts on the Southern Arizona Water Rights Settlement Act (SAWRSA) (see June AWR, p. 1).

Contributions to the Cooperative Fund totalling \$10 million were made by the State of Arizona, the City of Tucson, the federal government, farms and mines in 1982 as part of an accord to settle water claims brought by the southern Arizona tribe in 1975. The fund has grown to nearly \$20 million due to interest accumulation. The legislation establishing the fund stated that the lawsuit brought by the Nation had to be dismissed within three years, or the funds would be returned. The parties to the agreement have refrained from requesting that their contributions be refunded as a gesture of good faith while negotiations aimed at finally resolving the water claims continued.

The City of Tucson had no warning of the Attorney General's move, and legal council for ADWR apparently believed they had assurances that although the state's contribution to the fund was being scrutinized, no action would be taken without prior notice. The move raised fears that claims of Tohono allottees, who oppose the terms of the current settlement, might be bolstered. The allottees have threatened to file a \$74 million lawsuit against the City of Tucson and other regional groundwater pumpers.

Governor Symington questioned the wisdom of the move, and Senator McCain reportedly has requested Secretary of the Treasury Brady to not act on

the demand. The state's delegation currently is attempting to have the terms of SAWRSA amended so as to increase the flexibility with which the Tohono O'odham can put their water to use and to obtain a final dismissal of the lawsuit. No substantial progress on the amendments has been reported, but a hearing is scheduled for August 6.

Governor Vetoes "Dirty Water" Bill Again

The day after disappointing environmental groups by signing the private property rights bill, Governor Symington vetoed a bill that would have exempted storm runoff and water in CAP canals and other aqueducts from the state's surface water quality standards. He had vetoed a substantially identical "dirty water" bill a year earlier.

In his veto message, Symington cited progress in negotiations between Arizona and the U.S. Environmental Protection Agency (EPA) towards developing less stringent quality standards to water in canals. He stated that passing the bill might cause EPA to break off negotiations and impose tougher standards on the state.

Task Force Finds No Easy Solutions to CAP Underuse

The Governor's Task Force on CAP Issues has completed their work and, while not arriving at any consensus on how to deal with the state's current underutilization of its Colorado River allocation, has concluded that leasing water to California and/or Nevada is not in the best interests of the state.

Leasing Arizona's Colorado River allocation to California not only is a politically explosive idea, its legality is unclear. The complex body of court decisions, statutes, and regulations known as "the law of the river" arguably prohibits interstate transfers of Colorado River water. Thus, a legally secure lease would require amending the decree that came out of the landmark lawsuit, *Arizona v. California*.

An alternative approach has been suggested whereby Arizona would enter

into a forbearance agreement with California. In exchange for repayment assistance on the CAP, Arizona water users would agree to not increase their use of Colorado River water for a definite period during which time the water would be available to California as surplus flows.

The Central Arizona Water Conservation District reportedly is negotiating with the Metropolitan Water District of Southern California an agreement under which MWD would pay \$68 per acre-foot for CAWCD to recharge CAP water and receive recharge credits. In years of reduced Colorado River flows, CAWCD would pump the recharged water pursuant to the credits, thereby leaving surplus flows in the Colorado River for MWD to use.

Legislation Boosts Tucson Area Water Authority

Two bills passed by the legislature provide the Initial Tucson Active Management Area Water Augmentation Authority with the tools to create a permanent water district. Formation of the district still requires local approval.

S.B. 1380, which became a vehicle for Scottsdale's annual underground storage and recovery bill in the closing days of the session (see p.2), allowed the Authority's name to be shortened to the Santa Cruz Valley Water Authority and forgave a repayment obligation of pump tax revenues, which is consistent with legislation authorizing a replenishment district in Maricopa County.

H.B. 2225 contains governance and revenue provisions for converting the Authority from a municipal corporation to a political district. It creates a 13-member board of directors, 11 elected from districts of equal population within the Tucson AMA, and two appointed by the Boards of Supervisors of Pima and Santa Cruz Counties. The water district also can seek voter approval to levy limited property taxes to fund operations and projects.

A bill to create a water authority in the Pinal Active Management Area failed to pass this session.



Publications

Organization and Implementation Assessment of the FY 90-94 Water Quality Demonstration Projects.

This is the first in a series of evaluations designed to improve and communicate the role and impacts of programs conducted by USDA and state cooperators as part of the President's Water Quality Initiative. The purpose of USDA's demonstration projects is to accelerate producer adoption of agricultural practices that can reduce loadings of agricultural contaminants to ground and surface water.

Reports are available as long as copies last from Kay Rockwell, Cooperative Extension, University of Nebraska, Lincoln, NE, 68583-0703 or from Claude Bennett, Room 3428, South Building, USDA, Washington, D.C. 20250.

Water Supply and Demand in Arizona

Susanna Eden and Mary Wallace. Directed at a general audience, this issue paper discusses important elements of water resource management in Arizona. Described within are the sources of the state's water supplies, their uses, and management. The publication also discusses the major water policy issues challenging Arizona's water managers, planners, and policy makers in the final decade of the twentieth century.

Water Resources Research Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721; 602-792-9591. Up to two copies free. Call for pricing on larger orders.

Everything You Wanted to Know About Environmental Regulations...But Were Afraid to Ask

Another in the long series of "Everything-You-Wanted-to-Know..." books, this one is for communities of under 1,000 people. Created by the EPA Region VIII Small Community Workshop, the publication provides an overview of the EPA's regulatory and non-regulatory programs. It includes a section dealing with water programs, including drinking water, well-head protection, wastewater, and water and wetlands protection. The handbook (item # P000353) is available free from the Region VIII EPA Office, 303-283-1456.

The following three Rocky Mountain Institute water efficiency publications are available from: Publications, Rocky Mountain Institute, 1739 Snowmass Creek Rd., Snowmass, CO 81654-9199; or call: JoAnn Glassier or publications (303) 927-3851.

Water Efficiency: A Resource for Utility Managers, Community Planners, and Other Decisionmakers

This publication describes in detail the economics, technology, and implementation techniques of successful water efficiency programs. Highlighted are over 80 case studies from across the country, including tables, graphs and contracts. Pub # W91-18 (\$15)

Water Service Companies

Combine the environmental ethic with profit making motivation and a hybrid is born: environmental entrepre-neuring. This publication describes the latest developments in this movement, when companies install water-efficient equipment for free and take a percentage of the water savings. Pub # W92-12 (\$3)

Water and Energy Utility Partnerships

The booklet describes a new development in utility business culture when water and energy utilities work together to promote water efficiency. The concept is explained and case studies presented of actual programs operating in various areas of the United States. Pub # W92-13 (\$3)



Transitions

C.P. Patrick Reid becomes the director of the University of Arizona's School of Renewable Natural Resources on August 1. Reid has been chairman and professor in the Department of Forestry and interim director of the School of Forest Resources and Conservation in the Institute of Food and Agricultural Sciences at the University of Florida in Gainesville.

Todd C. Rasmussen is leaving the UA's Department of Hydrology and Water Resources, where he worked as an adjunct assistant professor to become an assistant professor of hydrology in the School of Forest Resources at the University of Georgia. Todd was known for his work with the Arizona Hydrological Society, including a term as Tucson Chapter president and producing their annual symposia, and for researching water quality problems along the Arizona-Sonora Border.

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Their contributions help make continued publication of this newsletter possible.



Guest Views

Two views on the potential impacts of the private property rights bill are presented. First, Mark Killian, a real estate broker from Mesa and Majority Leader of the Arizona House of Representatives:

More than 200 years ago, in "The Federalist Papers," Alexander Hamilton described the idea brilliantly: "It is a general principle of human nature, that a man will be interested in whatever he possesses, in proportion to the firmness or precariousness of the tenure by which he holds it..." In late May, Arizona Governor Fife Symington was confronted with a true "Hobson's choice." No matter what he did, he was certain to anger a sizable group of constituents. He could veto SB 1053, and disappoint many of his supporters who believe the right to use one's own private property in a lawful manner is something worth protecting. Or, he could sign the bill into law. He might alienate members of the environmental community and their sympathizers, who made the private-property rights bill into a litmus test for ecological purity. On June 1, the governor did the latter when he signed SB 1053 into law. He bought himself a pack of trouble from those who regard protection of private property rights as an inconvenience.

If this were a letter to Governor Symington, I'd tell him not to worry. I'm on the environmentalists' hit list and I haven't done anything to be ashamed of, either. I checked my record and I've voted for and/or sponsored most environment-related bills introduced in the 10 years I've been in the House. I'd also tell him to be proud he did the right thing in signing that bill. Keeping the government's hands off a law-abiding citizen's property is a worthy thing.

Back in the 9th century, the Danes had a saying that applies to this situation quite well: "He who feeds the hen ought to have the egg." The opponents of private property rights argue that the law will cause havoc and great expense on behalf of a problem that does not exist. Of course, I disagree, for a number of reasons.

The law requires the Attorney General to formulate a policy for screening certain state agency activities. The policy is aimed at identifying whether these proposed rules, orders or other actions constitute an infringement on individual's property rights under the U.S. and Arizona constitutions. If so, the effect would be known as a "regulatory taking." This concept first was identified in a 1922 U.S. Supreme Court case, *Pennsylvania Coal Co. v. Mahon*. The court simply said: "The general rule, at least, is that while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking." It was broadened to include temporary deprivation of the right to property in 1987 in

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A view from the other side of the private property line by David Bartlett, a Tucson attorney and Majority whip in the Arizona State Senate:

On June 1, 1992 the Governor signed into law Senate Bill 1053, the so-called "private property rights" bill. With that action a new, and as yet ill-defined, era in Arizona's efforts to conserve and protect water resources was started which overshadows virtually all other water-related issues, as well as every other environmental and public health regulation.

There was prolonged and heated legislative debate on this measure. Unfortunately, lost in the process was the precision and detail needed to determine exactly what this new law will do. There was no testimony as to any specific state "taking."

While I won't presume to offer definitive answers as to the effect of this statute, I would like to raise some of the questions which will unquestionably arise. This statute, requiring the attorney general to create new guidelines and offering a new private right of action, is truly a lawyer's field day.

It is undeniably the job of government to protect private property. The principles of private ownership of property are intrinsic to the American form of government and they are clearly protected in our federal and state constitutions. However, in those instances where the rights of one party conflict with another, government may need to regulate to protect one interest from another, or to protect the community from injury by the individual.

For example, government regulates water, in part, to protect the water supply and its quality for the entire community, although such regulations limit the private uses of individual water consumers.

The law puts private profits ahead of public protection.

Senate Bill 1053, however, contains two major flaws which are troubling: it is premature and dangerously vague. In addition, similar statutes have been vetoed or defeated in nearly every other state in which they were considered because of their added cost to the state.

This legislation is premature because the federal law in the area of "takings" is in flux. The United States Supreme Court has agreed to hear this term appeals by property owners who argue that governmental regulation has deprived them of the use of their property and are therefore constitutionally prohibited "takings." The Court's rulings will define the parameters of the takings clause in this context under federal law. It would have been prudent to wait for the Court's rulings before plunging ahead with a new vague standard of takings on its surface much broader than under current constitutional law.

Secondly, the legislation is so vague that no one is really sure what its effect will be. The law limits regulations for public health and requires a new cost benefit analysis that puts

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Mark Killian, cont. from page 8

another high court decision, *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*. The court ruled that the owner of a piece of property should be compensated if his Fifth Amendment rights are suspended improperly for a period of time.

Under *Pennsylvania Coal*, the right of government to regulate the use of property is affirmed. It also is limited to a reasonable length. But the landmark "takings" case involves a South Carolina man, David Lucas, who was barred from building homes on beachfront lots he purchased for that purpose. South Carolina also denied Lucas compensation for his loss. On appeal, the U.S. Supreme court supported Lucas' position in a 6-3 opinion issued in late June.

The *Lucas* decision goes a long way toward clarifying in people's minds just what this issue is all about. It steers a middle course between the extremes of allowing government unfettered power to abrogate private property rights and of permitting landowners to collect compensation if a zoning decision deprives them of the ability to site a landfill in a residential area.

There has been a tremendous amount of hyperbole generated by opponents of SB 1053. Dire predictions have been issued, envisioning farmers collecting compensation when the government bars the use of pesticides on their lands. Other fanciful scenarios have been ginned up with little purpose, apparently, other than to scare casual observers.

Take someone's land, pay for it. That's the whole concept.

That's not what those of us who support SB 1053 have in mind. Not at all. We want to know that people will be free to use their property in lawful ways and will not see their rights overridden by a government in the name of "greater public good."

If you want to take someone's land or restrict its use in such a manner that it loses its value, fine. If a higher use can be validated, that's also fine. All we ask is that the individual not be made to bear the entire cost of policies that protect all of society. Take someone's land, pay for it. That's the whole concept.

Another reason environmental radicals so opposed the new law is that it could mark a psychological turning point. From the first Earth Day through the 1980s, the environmental movement enjoyed an exhilarating rise from grass-roots organizations to multimillion-dollar mainstream foundations, from the picket lines to the boardrooms. The Sierra Club, Nature Conservancy and others became formidable public-policy entities, and they were successful in influencing the course of policy. Careers were made along the way, and the movement took on a new characteristic. But, "Environmentalism isn't about the environment" any more, says property rights advocate Ron Arnold of Bellevue, Washington. "It's about political power."

A few years ago, a new grass-roots movement began to spring up all over the nation, representing the little guy whose family and livelihood had been affected by restrictive action of government. Those who had fed the hen were tired of seeing someone else get the egg. Environmental radicals like to argue that those landowners who feel wronged by the government are perfectly free to go to court seeking relief. I'm afraid that with all the weapons they now have at hand, they forget what it was like to feel powerless. But now that he is beginning to band together, the little guy is starting to win a few. The *Lucas* decision and enactment of the Arizona private property rights act are important early steps in restoring balance to environmental policy.

I don't anticipate there will be any great upheaval. . .

We don't want to turn the clock back. A clean, safe environment is in everyone's interest. A lot of good had been done in the name of environmentalism. But the sense of fairness was lost along the way. SB 1053 restores a little bit of fairness. It says that if the government wants something from you, you'll be compensated fairly. That's why I like it.

I don't anticipate there will be any great upheaval as a result of SB 1053. The field will be a bit closer to level, the little guy will have a better chance. That's it. The environmental radicals are trying to take this issue to the voters in a referendum challenging SB 1053. If we have to fight this battle again, we will. I am fully confident our position has merit on its side.

I'm probably overstating the motives of the radicals when I say this (at least I hope I am.) But the ultimate outcome of the environmental movement — if left unchecked — could be pretty drastic. Karl Marx and Friedrich Engels said it in 1848: "The theory of the Communists may be summed up in a single sentence: Abolition of private property."

David Bartlett, cont. from page 8

private profits ahead of public protection. In the area of water management, there are great uncertainties over the effect of the legislation. Most instances of governmental regulation leading to an unconstitutional "taking" involve land use issues. Those principles do not readily lend themselves to water rights regulation. Some examples:

- A groundwater rightholder does not "own" the water beneath his land. The groundwater is owned by the public. A groundwater right is the right to use the water. Some will argue that the entire notion of private property protection is inapplicable to groundwater regulation, since the ownership of property does not extend to ownership of the groundwater percolating beneath it. Others argue that a groundwater right is a property right in itself, and that regulation may not eliminate the value of that right without just compensation. This

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Special Projects

Current water-related studies, pilot projects and applied research are summarized below.

Camp Verde Initiates Water Resources Plan

The Camp Verde Town Council has commissioned a water resources plan to ensure its water resources are efficiently managed, conserved, and developed. To be completed in phases, the plan will project water supplies and demands and propose alternative ways of meeting Camp Verde's management and planning needs.

Phase I of the Water Resources Plan is complete. This phase will assist the town of Camp Verde in evaluating current water and land management, potential impacts of current litigation and legislation on water rights, and future water uses and supplies. Additionally, current and long-term water resources planning alternatives have been proposed to ensure that future development is not adversely affected.

Unlike streams in most of Arizona, the streams that flow through the town of Camp Verde are perennial, seemingly providing an ample, reliable water supply for the area's current and future needs. However, as in all of Arizona, access to, and uses of the available water supplies in Camp Verde are limited by Arizona's legal and institutional framework. The description and evaluation of this framework, therefore, forms a significant portion of the Phase I report. Phase I of the Plan identified several threats to the area's current and future water supplies. These include: 1) the potential for ground water in the area to become subject to the ongoing water rights adjudication, 2) potential demands of instream uses, and 3) demands of downstream users. A major finding in Phase I, therefore, was that planning and management must address the need to protect water rights and

secure the offered CAP allocation.

The Phase I planning study also devoted considerable effort to evaluating potential impacts on land and water uses of the population growth projected for the area. Planners evaluated potential impacts of land ownership and flood plain zoning on the availability of land for development, as well as the potential water supplies that can be developed as irrigated lands are urbanized and the appurtenant water rights become available for conversion to municipal uses. Land requirements and water demands were also projected for turf and other potential users of non-potable supplies, to establish the potential for use of lower quality supplies, such as effluent.

The results of the planning study indicate that the projected increase in population in the Camp Verde area over the next 50 years will increase municipal, industrial, and turf water demands over ten-fold, from about 850 acre-feet per year to over 9,000 acre-feet per year. The evaluation further indicates that these demands can be met if all irrigation water rights appurtenant to irrigated lands are converted to municipal uses, the CAP allocation is developed through contracts and exchanges for municipal uses, and reclaimed waste water is developed for turf uses.

The report concluded with suggested short-term planning and management alternatives to assist the Town of Camp Verde in securing an adequate water supply to meet future demands.

For additional information contact Phil Briggs at Geraghty and Miller, Inc., 602-438-0883.

Computer System Aids River Adjudication

As a legal undertaking, the Gila River adjudication of appropriable water rights is nearly unmatched in complexity. Within a river system of over 24,000 potential claimants, the due process of discovery, reporting, comment, hearing, and ultimate decree of water rights has necessitated developing a computerized case management system.

In September 1991, the Arizona Department of Water Resources (DWR)

commenced development of this system, nicknamed the "Electronic Docket," for the Special Master of the general stream adjudication appointed by the Arizona Supreme Court. Presently nearing completion, the system incorporates 35 data entry screens on the agency's main-frame system that display such information as water right claims, DWR investigation findings, legal discovery, pleadings, assignment of cases, schedules for hearings, and contact addresses for parties in a massive relational database. Presently, the Clerk of the Maricopa County Superior Court is entering objections for the San Pedro River System Hydrographic Survey Report.

This system will be available to all parties in the Gila River and Little Colorado River adjudications, the clerks of both courts and the public. Upon completion, online users will be able to browse information and generate listings on appropriable water rights under adjudication. The case management system will serve as a model for eventual decree maintenance within Arizona.

For additional information contact George A. Schade at DWR, Adjudication Division, 602-542-1520.

ADEQ Studies Ag Nitrate Contamination

An Arizona Department of Environmental Quality report identified areas in Pinal and Maricopa Counties with groundwater nitrate levels that exceeded the Maximum Contaminant Level for drinking water. The report prompted USDA to initiate Hydrologic Unit Areas Projects (HUA) in both counties to address agricultural non-point source nitrate contamination. These projects are a joint effort involving the University of Arizona's Cooperative Extension and four agencies of the United States Department of Agriculture: the Extension System, Soil Conservation Service, Agricultural Stabilization and Conservation Service, and the Agricultural Research Service.

The projects' goal is to minimize or eliminate movement of nitrate to the aquifer. Practices which limit nutrient movement through the vadose zone best

accomplish this goal. Therefore, the HUAs' focus is on how different management practices affect the rate and depth of nitrate movement and to increase producer awareness of these practices.

Presently, the actual transport rate of nitrate through the soil profile is undetermined. Using a bromide tracer to track the depth of the water front, the "worse case" scenario estimates of free nitrate movement (nitrate not tied-up in biotic or abiotic systems) may be possible. Depth estimates then may be applied to improve management techniques to minimize future nitrate movement below the root zone.

Data are being gathered through field studies and grower attitude surveys. Historical trends in groundwater nitrate concentrations were assessed through the compilation of a database.

The data collection phase was designed to provide information to growers on the impact of practices on water quality. The next phase will emphasize producer "think tanks" to address the findings of the cooperator studies.

For additional information contact: Jack Watson, Extension Water Quality Specialist, or Katie Reffruschinni, Research Specialist at the UA Maricopa Agricultural Center, 602-568-2273.

Toilet Studies Gauge Conservation Potential

The long-awaited Stevens Institute report on in-tank toilet retrofit devices has been released. *Alternative Flushing and Retrofit Devices for the Toilet*, which was funded by Metropolitan Water of Southern California, analyzes the water savings, costs, and performance of 29 in-tank devices, categorized as follows: fixed and variable-volume displacement devices; mechanical devices with fixed, variable, or user-controlled cycle times; and dual-flush devices.

The study found that water savings in the laboratory averaged one gallon per flush, with a range of 0.6 to 1.4 gallons per flush. Cost of the devices ranged from 24¢ to \$20. The devices also varied considerably in ease of in-

stallation and ease of use.

The discounted cost per acre-foot of water conserved varied across device categories from \$162 to \$519. Displacement devices (bags and dams) were most cost-effective; mechanical devices with variable and user-controlled cycle times were least cost effective. In general, the more complex the device, the lower the cost-effectiveness, with bags and toilet dams faring best.

With average savings of one gallon per flush and an expected life span of five years for most devices, the report concludes that the potential for long-term, cost-effective water savings of in-tank devices does not match that of 1.6 gallon ultra-low-flow toilets (ULFs), which save 3.5 gallons per flush and have 20-year life spans. The report's executive summary concludes "the role of these (in-tank) devices can be best described as a complementary, interim strategy for agencies that are not yet ready to implement more efficient long term ultra low flush toilet programs."

Ongoing research at Casa del Agua, a water conservation demonstration project jointly funded by the UA's Arid Lands and Tucson Water, supports these findings. When first opened in 1986, the house had a non-standard 1.0 gallon per flush toilet (see figure below). In 1988, this was replaced with a

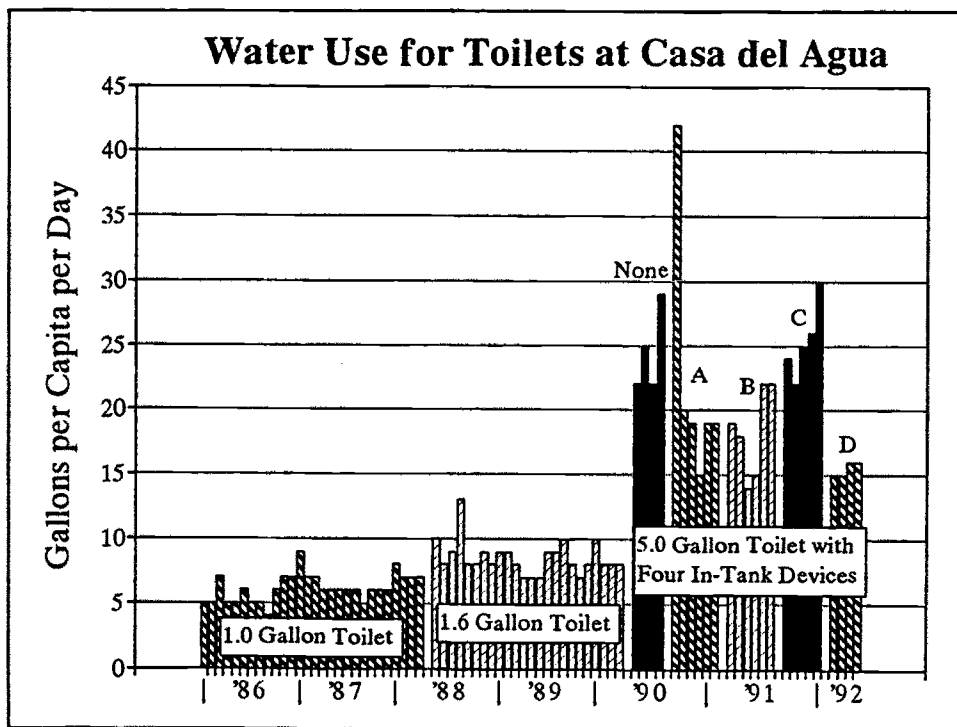
commercially available 1.6 gallon ULF toilet. In mid-1990, the ULF was replaced by a standard 5.0 gallon toilet, in which various in-tank retrofit devices are being tested.

The data reveal that the ULF toilet did in fact reduce water usage by two-thirds over the standard 5.0 gallon toilets. In-tank devices show varying performance, but none provide the level of conservation of the ULF. Some in-tank devices provide little or no water savings, and poorly designed or improperly installed devices may actually increase water usage. For further information, contact Martin Karpiscak at the UA's Office of Arid Lands, 621-1955.

Xeriscape Video

A new Water Resources Research Center (WRRC)/Cooperative Extension video on Xeriscaping will be available in July. The video describes opportunities for water conservation in the arid West and shows the transformation of a typical high water-use residential landscape into a water efficient Xeriscape. The half-hour documentary is designed to acquaint people with the methods of efficient water use in the landscape.

The project was a collaborative effort of the WRRC and Cooperative Extension and was partially funded by



Tucson Water. Entitled "Xeriscape: The Emerging Frontier", the program examines briefly the lifestyles and water-use patterns of the West's growing population, then shifts focus to illustrate the seven Xeriscape principles as it follows the retrofit of a conventional residential landscape. These principles include: water-wise planning and design, soil improvements, plant selection, practical turf areas, efficient irrigation, mulching, and appropriate maintenance.

"Our intention with this project is to give people living in semi-arid regions a good look at practical alternatives to conventional landscaping ideas," stated producer/director Todd Sargent, WRRC research specialist. The program was written by Cooperative Extension's Patsy Waterfall and Bob Abel.

Devising new strategies to conserve water is increasingly important, especially in the West, where many communities are struggling to meet the demands of a rapidly increasing population. Since one-third to one-half of urban residential water-use occurs outside the home, many communities are turning to landscape for water savings.

The video can be obtained from Agricultural Science Communications at the University of Arizona, Tucson.



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bill's proponents argue it will tilt the argument for the user. I fear that it will be a long time and may require costly litigation before we know its full ramifications. The agency directors who testified against the legislation feared they would be in a catch-22 situation as to all environmental regulations.

- The state and federal courts have upheld the 1980 Groundwater Management Act and held that the Act was not an unconstitutional "taking" of property. Some will argue that this decision is dispositive of the issue. Others will counter that as regulation of groundwater increases as we approach the deadline to achieve safe yield, it will cross over the line between permissible regulation and an impermissible "taking" of property.

- As the Department of Water Resources struggles to promulgate assured water supply rules, questions will arise again. Effective assured water supply rules are the cornerstone of

any water management policy that would achieve safe yield. Some maintain that the threshold rule prohibiting growth based on mined groundwater is an essential and reasonable regulation. Others will argue that at the point that a rightholder's historic right to pump and use groundwater is reduced to the point that the land may not be developed or used in an economically viable way, an impermissible taking has occurred.

- The questions will arise again in the context of protection of riparian areas. If regulations are proposed to protect flowing streams located on public property that is under lease to private parties, or adjacent to private property, some will argue that private property rights are infringed. Others will argue that protection of riparian areas on public land is in the greater public interest and that regulation is necessary and reasonable. Does it matter whether the regulations direct that a certain water flow be maintained? Does it matter whether the private activity is an economically-based one, such as grazing or sand & gravel operations that have severe adverse effects to protecting streams?

It will, in short, intimidate and delay public protection from private abuse of our public land, water and air.

- Another troublesome and unanswered question is the role of the Attorney General. It is unclear whether the attorney general's role of giving advice extends to supervision of agencies' programs or direction on policy issues. In the area of water management, this ambiguity could put the attorney general's office and the agencies in a difficult position. For instance, it is the mission of the Department of Water Resources to protect the State's water supply. That may conflict with the mission of the State Land Department to protect and maximize the income of the Trust.

These few examples of the uncertainty engendered by the legislation will undoubtedly lead to a slow-down by agencies in performing their statutorily mandated responsibilities. It will add to the administrative burden in rule-making and carrying out programmatic duties. It will require that key agency personnel devote their time to evaluating their new duties rather than carrying out existing duties. It will, in short, intimidate and delay public protection from private abuse of our public land, water and air.

I would have preferred that problems with government intrusions on private property had been identified and dealt with on a case by case basis. There was no testimony as to state "takings" in any committee that considered this legislation. This scattershot approach cripples all functions of state government on the basis of a vague interest in protecting private property that is yet undefined and will cost literally millions of tax dollars to decide.


Certainly these matters will become the topics of litigation and, I suspect, there will be citizen-sponsored efforts to repeat Senate Bill 1053. However, regardless of what takes place, the reality is that Arizona now faces uncertainty in our efforts to conserve and protect water.

July 1992 Arizona Water-Related Events


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 AZ Rainforest CAWCD	3	4
5 Casa del Agua	6 Yav. Flood Cont.	7 Tucson CWAC Conservation Lec	8	9 Gila Box, Phoenix <--- Dam Safety	10 Tuc Water Auth WUAA Conference --->	11
12 Casa del Agua	13 <--- New Tech-	14 AZ Hydrological Conservation Lec niques in Water	15 Phx AMA, GUAC Sciences Workshop	16 AZ Rainforest PAG Water Qual (runs through the	17 24th) --->	18
19 Casa del Agua	20	21 Conservation Lec	22	23	24 Gila Box, Safford Tuc AMA, GUAC	25
26 Casa del Agua	27 Yav. Flood Cont.	28 Conservation Lec <--- New	29 Directions in	30 Clean Water	31 Policy --->	1 Aug Landscaping

August 1992 Arizona Water-Related Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2 Casa del Agua	3 Yav. Flood Cont. <--- Water	4 Conservation Lec Tucson CWAC Forum '92 --	5 ----->	6 AZ Rainforest CAWCD	7	8
9 Casa del Agua	10 <--- Principles &	11 Conservation Lec AZ Hydrological Applications of	12 Modeling Chemical	13 Reactions in	14 Tuc Water Auth Ground Water -->	15
16 Casa del Agua	17 <--- Transport &	18 Conservation Lec Fate of Organic	19 Chemicals in Multi-	20 AZ Rainforest PAG Water Qual Pinal AMA media Systems ->	21	22
23 Casa del Agua	24 Yav. Flood Cont.	25 Conservation Lec	26	27	28	29 <--- 21st Century
30 Water Manage-	31 ment-The Pieces &	1 Sept How They Fit --> <--- Indian Re-	2 Sept served Water	3 Sept Rights Claims -->	4 Sept	5 Sept



Calendar of Events



RECURRING

Arizona Hydrological Society. 2nd Tuesday of the month. Water Resources Research Center, 350 N. Campbell Ave., Tucson. Contact: Mike Block 602-792-1093.

Arizona Rainforest Alliance. 1st & 3rd Thursdays of the month. UA Student Union Rm. 280, Tucson. Contact: Jeff/Julia 602-621-6401; 738 N. 5th Ave., Tucson 85705.

Arizona Water Commission. No meeting scheduled for July. Meetings held at ADWR, 15 South 15th Ave., Phoenix.

Casa Del Agua. Water conservation tours hourly Sundays noon to 4 p.m., 4366 N. Stanley, Tucson. Contact: 602-881-3939.

Central Arizona Water Conservation District. First Thursday of the month, 12:30 p.m.. Central Arizona Project board room, 23636 N. 7th Street, Phoenix. Contact: 602-870-2333.

City of Tucson Citizens Water Advisory Committee. 1st Tuesday of the month, 7:00 a.m. 310 W. Alameda, Tucson. Contact: Trish Williamson 602-791-4331.

EPA. Fundamentals of Environmental Sampling and Field Sample Screening for Entry-Level Technicians, Scientists and Engineers. Various times and locations, contact your local EPA office.

Phoenix AMA, GUAC. 15 July, 9:30 a.m. Phoenix AMA Offices, 15 South 15th Ave., Phoenix. Contact: Mark Frank 602-542-1512.

Pima Association Of Governments / Water Quality Subcommittee. 3rd Thursday of the month, 9:30 a.m. 177 N. Church Ave., Tucson. Contact: Gail Cushner 602-792-1093.

Pinal AMA, GUAC. No July meeting, next meeting 20 August, 7:00 p.m. Pinal AMA Office, 901 E. Cottonwood Lane, Suite B, Casa Grande. Contact: Tom Carr 602-836-4857.

Prescott AMA, GUAC. Meeting not yet scheduled for July. Prescott AMA offices, 1316 Iron Springs Road, Prescott. Contact: Phil Foster 602-778-7202.

Tucson AMA, GUAC. Meeting date tentatively set for 24 July, 9:00 a.m. Tucson AMA offices, 400 West Congress, Suite 518, Tucson. Contact: Linda Stitzer 602-628-6758.

Tucson AMA Water Authority. 2nd Friday of the month, 7:30 a.m. Water Resources Research Center, 350 N. Campbell Avenue, Tucson. Contact: 602-326-8999.

Yavapai County Flood Control District. 1st Monday of the month in Prescott; 4th Monday of month in Camp Verde. Contact: YCFCD, 255 E. Gurley, Prescott 86301.

JULY

7 July (Tue) **Drip Irrigation - Getting Started.** Carl Kominsky, Landscape Architect and Irrigation Consultant. Contact: Tucson Water Conservation Office 602-791-4331.

9 July (Thu) **Gila Box Advisory Committee.** 10:00 a.m. - 4:00 p.m., BLM Arizona State Office, 3707 North 7th St., Phoenix. Contact: Diane Drobka 602-428-4040.

9-10 July (Thu-Fri) **Dam Safety Conference.** Phoenix. AZ Dept. of Emergency. Contact: Ethel De Marr 602-231-6221.

10 July (Fri) **Water Utilities Association of Arizona.** Luncheon meeting at the Prescott Sheraton Resort, 1500 Highway 69, Prescott. Contact: 602-234-1315.

13-17 July (Mon-Fri) **Water Resources and Environment: Education, Training and Research.** Fort Collins, CO. Contact: Janet Lee Montera, Civil Engineering Dept., CSU. Fort Collins, CO 80523, 303-491-7425.

13-24 July (Mon-Fri) **New Techniques in Water Sciences Workshop.** Denver, CO. Contact: John Hubbard, Director, NSF-USGS Faculty Enhancement Workshop, Earth Sciences, SUNY-Brockport, Brockport, NY 14420, 716-395-2636.

14 July (Tue) **Relationships Between Groundwater and Riparian Plant Communities.** Julie Stromberg of the ASU Center for Env. Studies will be speaking. AZ Hydrological Society. 7:30 p.m., pizza will be served at 7:00 p.m., Water Resources Research Center, 350 N. Campbell Ave., Tucson.

14 July (Tue) **Designing Xeriscapes.** Paul Serra, Environmental Designer. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

21 July (Tue) **Be Water Smart.** Linda Smith, Interior Conservation Specialist, Tucson Water Conservation Office. 7:00 p.m. College of Nursing, Room 117, enter UMC Main Library and follow the signs, Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

24 July (Fri) **Gila Box Advisory Committee.** 10:00 a.m. - 4:00 p.m., BLM Safford District Office. Contact: Diane Drobka 602-428-4040.

28 July (Tue) **CAP Water And Your Landscape.** Terry Mikel, Extension Agent, Agriculture, UA/Maricopa County Cooperative Extension. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

28-31 July (Tue-Fri) **New Directions in Clean Water Policy.** Universities Council on Water Resources annual meeting. Charlottesville, VA. Contact: UCOWR Exec. Dir.'s Office, 4543 Faner Hall, So. Illinois University at Carbondale, Carbondale, IL 62901, Attn: Margery Robinson 618-536-7571.

AUGUST

1 August (Sat) **Landscaping: Timers and How to Use Them.** J.D. DiMeglio, 9:00 a.m. - noon, 4101 N. Campbell Ave., UA Meat Lab Complex, Campus Agricultural Center, Tucson. Contact: Tucson Water 602-791-4331.

3-5 August (Mon-Wed) **1992 National Conference on Irrigation and Drainage Engineering: A Component of Water Forum '92.** Hyatt Regency Baltimore, MD. Contact: Edwin T. Engman, Code 974, NASA Goddard Space Flight Center, Greenbelt, MD 20771, 301-286-5480.

3-5 August (Mon-Wed) **1992 National Conference on Resources Planning and Management: A Component of Water Forum '92.** Hyatt Regency Baltimore, Baltimore, Maryland. Contact: Mohammed Karamouz, Civil Engineering, Pratt Institute, 200 Willoughby Avenue, Brooklyn, NY 11205, 718-636-3436.

4 August (Tue) **Greywater: An Untapped Resource.** Martin Karpiscak, PhD., Office of Arid Land Studies, UA College of Agriculture. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

10-14 August (Mon-Fri) **Principles and Applications of Modeling Chemical Reactions in Ground Water.** Colorado School of Mines, Golden, CO. International Ground Water Modeling Center. Contact: Short Course Coordinator, IGWMC, Colorado School of Mines, Golden, CO 80401-1887, 303-273-3103.

11 August (Tue) **Landfill and Underground Storage Tank Leak Detection Methods.** Dr. Glenn Thompson, President of Tracer Research Corporation will be speaking. AZ Hydrological Society. 7:30 p.m. Water Resources Research Center, 350 N. Campbell Ave., Tucson.

11 August (Tue) **Maintaining And Managing Irrigation Systems.** Carl Kominsky, Landscape Architect and Irrigation Consultant. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

17-20 August (Mon-Thu) **Transport and Fate of Organic Chemicals in Multimedia Environmental Systems.** Golden, CO. Contact: Dr. Helen Dawson, CO School of Mines, Golden, CO 80401, 303-273-3402.

18 August (Tue) **Planting, Staking, And Maintenance.** Jack Kelly, Urban Forester, Trees For Tucson, J.D. DiMeglio, Owner, Horizon's West Landscape Company. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

25 August (Tue) **CAP Water and Your Landscape.** Terry Mikel, Extension Agent, Agriculture, UA / Maricopa County Cooperative Extension. 7:00 p.m. Du Val Auditorium, University Medical Center, 1501 N. Campbell Ave., Tucson. Contact: Tucson Water Conservation Office 602-791-4331.

29 August-1 September (Sat-Tue) **21st Century Water Management-The Pieces and How They Fit.** Monterey, CA. Contact: Lynda Dale Herren, CA Dept. of Water Resources, Division of Local Assistance, 1020 Ninth Street, First Floor, Sacramento, CA 95814, 916-327-1654.



UPCOMING

1-3 September (Tue-Thu) **2nd Symposium on the Settlement of Indian Reserved Water Rights Claims.** Albuquerque, NM. Sponsored by the Western States Water Council and the Native American Rights Fund. Contact: Norm Johnson, Western States Water Council, Creekview Plaza Ste A-201, 942 E. 7145 South, Midvale, Utah 84047, 801-561-5300.

10-11 September (Thu-Fri) **Arizona Water 2000.** Arizona Hydrological Society and the Commission on the Arizona Environment. Sedona, AZ. Contact: Bruce Mack 602-236-2579 or Commission on the AZ Environment 602-542-2101.

13-15 September (Sun-Tue) **New Mexico Conference on the Environment.** Sponsored by New Mexico Environment Department. Albuquerque, NM. Contact: Conference Coordinator, UNM Institute of Public Law, 1117 Stanford NE, Albuquerque, NM 87131.

13-17 September (Sun-Thu) **INTECOL International Wetlands Conference.** Columbus, OH. Contact: William Mitsch, School of Natural Resources, 2021 Coffey Road, Ohio State University, Columbus, OH 43210.

13-17 September (Sun-Thu) **The National RCWP Symposium.** Rural Clean Water Program. Orlando, FL. Contact: National REWP Symposium, c/o The Terrene Institute, 1000 Connecticut Ave., NW, Suite 802, Washington, DC 20036.

15-18 September (Tue-Fri) **Environmental Assessment of Mountain Streams.** Allenspark, CO. Sponsored by Rocky Mountain Hydrologic Research Center. Contact: Conference Services, Rockwell Hall, Colorado State University, Fort Collins, CO 80523.

30 September - 2 October (Wed-Fri) **National Water Works Association Annual Meeting/Exposition.** Las Vegas, NV. Contact: National Ground Water Association, 6375 Riverside Dr., Dublin, OH 43017, 614-761-1711.

2-3 October (Fri-Sat) **Western Regional Instream Flow Conference II.** Jackson Hole, WY. Contact: Suzanne Van Gytenbeek, Trout Unlimited 307-733-0484.

5-7 October (Mon-Wed) **Irrigation and Water Resources in the 1990's.** U.S. Committee on Irrigation and Drainage. Scottsdale, AZ. Contact: USCID, 1616 Seventeenth Street, Suite 483, Denver, CO 80202, 303-628-5430.

16-22 October (Fri-Thu) **Interdisciplinary Approaches in Hydrology and Hydrogeology.** 1992 Annual Meeting of the American Institute of Hydrology. Portland, Oregon. Contact: AIH, 1992 Fall Meeting, 3416 University Ave. SE, Minneapolis, MN 55414-3328, 612-379-1030.



Announcements

Research Funding Available

The Water Environmental Research Foundation is soliciting proposals in the following ten areas: 1) fate and reduction of toxic chemicals in wastewater treatment; 2) sludge management; 3) fate of volatile organic compounds; 4) optimization of municipal and industrial waste water system performance; 5) biomonitoring and aquatic ecological risk; 6) pretreatment; 7) water reuse; 8) wastewater nutrient removal; 9) small wastewater treatment systems; and 10) nonpoint source pollution.

Send a letter requesting complete Requests for Proposal(s) to: Water Environment Research Foundation, RFP Announcement, 601 Wythe St., Alexandria, VA 22314-1994; FAX: 703-684-2492. Deadline: Aug. 28, 1992

The Bureau of Reclamation is soliciting proposals for preliminary studies on desalting and water treatment systems for specific applications at specific sites in the Western United States. Request the BAA in writing or by facsimile. (CBD 5/21) For additional information contact: Ann Fleckenstein, Bureau of Reclamation, Acquisition Operations Branch, Code D-7813, Denver Federal Center, P.O. Box 25007, Denver, CO 80225-0007; Phone: 303-236-8041; FAX: 303-236-8630. Deadline: about Aug. 13, 1992.

1992 Student Paper Competition

The American Water Resources Association, Hydrolab Corporation of Austin, Texas, and the Universities Council of Water Resources have come together to reward students for their achievements. Two awards are offered:

Award #1, given by Hydrolab Corporation, will be for the Best Student Paper Presentation at the Annual AWRA meeting November 1-5, 1992, in Reno, Nevada. All students who have had a paper accepted for presentation at the Annual Meeting will be eligible for consideration for this award.

Award #2, given by UCOWR and AWRA, includes two awards - one for the best undergraduate paper and one for the best graduate paper on any water resources topic - publication of the paper in the Association's journal, the *Water Resources Bulletin*; and a travel expense stipend to attend the Annual Conference in Reno, Nevada.

Each award includes a prize of \$250 and one year's membership in AWRA. The deadline for submission is September 15. For information contact: Peter Black 315-470-6571.

Call for Papers

American Water Resources Association summer joint symposium on "Water Resources Education: A Lifetime of Learning" and "Changing Roles in Water Resources Management and Policy" will be held June 27-30, 1993 in Seattle.

Abstracts are due Aug. 31, 1992. Send education symposium abstracts to N. Earl Spangenberg, College of Natural Resources, University of Wisconsin-Stevens Point, Stevens Point, WI 54481; Phone: 715-346-2372; FAX: 715-346-3624. Send changing roles symposium abstracts to Donald F. Potts, School of Forestry, University of Montana, Missoula, MT 59812; Phone 406-243-6622; FAX: 406-243-4510.

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