

Tribal Water Rights Symposium Held

The second Symposium on Settlement Indian Reserved Water Rights Claims was held in Albuquerque, NM on September 1-3, 1992. Sponsored by the Native American Rights Fund and Western States Water Council, the symposium drew some 250 people from across the country. The symposium focussed on negotiating Indian water rights settlements, and included discussions of alternative dispute resolution techniques, marketing, and jurisdiction over water use.

As of 1992, nine negotiated settlements have been passed by Congress, affecting tribes in Arizona and four other states. Three other settlements, affecting two Arizona tribes and the Northern Cheyenne Tribe, are pending before Congress. Another 23 negotiations are underway across the West.

A key issue facing Indian tribes across the West is whether to participate in the crafting of these settlements or to litigate their water rights claims in court. The water rights claims of

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Papago (Tohono O'odham) women fill their ollas from a hand-dug well on the San Xavier District of the Tohono O'odham Reservation southwest of Tucson. The date is uncertain, but the length of rope indicates very shallow groundwater. Today, depths to groundwater beneath the District average several hundred feet.

(Photo: Arizona Historical Society Library)

Agriculture Woes, CAP Underutilization Subject of Casa Grande Meeting

The problems confronting irrigation districts in Pinal County are astoundingly similar to problems in commercial real estate, according to Governor Fife Symington. The Governor spoke at a September 22 meeting of farmers, state and local officials and water experts in Casa Grande. The meeting was sponsored by the Pinal County Governmental Alliance. The financial woes of irrigation districts with Central Arizona subcontracts are a major cause of the CAP's current underutilization and may threaten its long-term financial security. Delaying the federal declaration of substantial completion of the CAP is the Governor's immediate objective, and he reported "good progress" in negotiations with Secretary of Interior Lujan.

The meeting's featured speaker, Professor Paul Wilson of the University of Arizona's agricultural and resource economics department, chronicled the decisions and events leading to the current crisis. Owners of less than half the irrigated acreage in central Arizona voted to switch from pumped groundwater to CAP water. The higher cost of CAP water and concerns regarding the

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some tribes may not be amenable to settlement. From physical characteristics such as topography to cultural differences, reservations and the Indians who reside on them have differing needs for, and views of, water. But in many cases, Indians and surrounding water users can benefit from negotiating, rather than litigating claims.

When properly crafted, Indian water rights settlements can benefit both tribes and surrounding communities by laying the groundwork for integrated water management, better intergovernmental relationships between tribes and others, and stronger economies in both non-Indian and Indian communities.

However, each of the parties has different objectives in approaching negotiations. States generally want an accurate record of water rights, some type of enforcement system based upon prior appropriation, and the ability to plan for unallocated water. Indian tribes generally are seeking a secure and reliable supply of water, jurisdiction over water use on the reservation, flexibility in putting that water to use, and some funding for water resources development. Non-Indian water users often are seeking certainty in their water rights. The federal government wants to minimize budgetary impacts.

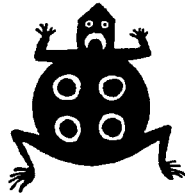
Specific suggestions for recognizing these objectives and improving the negotiation process were provided at the conference. Many agreed that technical information about water supplies and demands and other basic data in an area are crucial, including a full sharing of information among the parties. A fair and open forum where anyone with an interest in the negotiations could participate also is essential. Negotiations often are shrouded in secrecy and conducted behind closed doors.

State governments can take an active role in establishing this process. Oregon facilitated negotiations with the Warm Springs tribe through a memo of understanding in spring of 1991, and also facilitates negotiations through efforts at regional offices. In addition, a public advisory group composed of environmental, irrigation, power, and

other interests was formed.

Negotiations most often break down when one party feels its interests cannot be met. Gilbert Jones of the Fort McDowell Reservation stated that his tribe broke off negotiations with the State of Arizona at one point because tribal interests were not being respected.

Just what tribal interests are in a negotiated settlement was a primary topic. Tribal attorney Dan Israel saw three essential elements to an Indian settlement — a sufficient quantity of water, a management plan to govern use, and the ability to put water to a productive use. One point stressed by a number of participants is that Indians should have flexibility in water use.



Many agreed that too often management issues were placed on the “back burner.” Attorney Howard Funke, who helped negotiate the Fort Hall agreement, stated that management issues were included in the Fort Hall negotiations. First, however, the State of Idaho created an “open playing field” for the negotiation process by passing a House Concurrent Resolution in support of the process. Under this settlement, the tribe and state worked out administrative details over water use and management, including a \$22 million Sovereignty Fund, joint memberships on water management boards, and also by “institutionalizing water data reporting in a non-threatening manner.”

Some of the key issues tribes and states face when confronting management issues include who determines quality of water, jurisdiction questions, particularly the rights of any non-Indians on reservations, and also how water is used on the reservation. (Many Indian reservations in the West are “checkerboarded,” with non-Indians holding substantial portions of land on a reservation.)

The issue of water use on the reservation is becoming increasingly important as tribes seek to put water to vari-

ous uses, including instream uses. Many agreed that it is unfair, as a matter of policy, for tribes’ rights to use water to be more restricted than non-Indian water users. The recent Wyoming Supreme Court decision in the *Wind River* case was cited as an example. In this case, the court ruled the tribe must use “new” water for agricultural purposes first.

This question of limits on tribal rights also arose during discussion of marketing, particularly intrastate leasing of Colorado River water. The Tohono, Salt River, and Fort McDowell settlements contain limited leasing provisions. In addition, 10 tribes along the Colorado River in seven states have begun discussing off-reservation leasing. Some concern was expressed on the part of state officials that off-reservation leases will benefit California at the expense of the other basin states. Others argued that leasing water was a good source of income for tribes when no funds are forthcoming from the federal government. And others saw leasing as one more avenue for Indian water to be transferred to support non-Indian economic development.

Issues of leasing Indian water often are addressed in Congress, the “final” player in Indian water rights settlements. Because negotiated settlements directly affect Indian property interests, Congress must approve each settlement. Consequently, as Patricia Zell, Chief Counsel for the Senate Select Committee on Indian Affairs noted, settlements often get caught up in a larger debate over other issues and Congress “will tear apart settlements and dissect settlements.” She suggested good working relationships be established with the relevant congressional members.

Balancing entities and interests in Indian water rights settlements is difficult. As the parties wrestle with meshing these different objectives, efforts to improve water management and the economic health of the reservation sometimes fall by the wayside. The consensus was that settlements reflecting the distribution of political power in an area rather than tribal and community interests in improving water management ultimately will fail.

Ag. Woes cont. from page 1

Reclamation Reform Act were the principal deterrents. And less than half the CAP-eligible acreage is being farmed in 1992. Declining yields coupled with unfavorable cotton prices and rising costs have created economic stress, a situation aggravated by white fly infestation. In addition, farmers with CAP-eligible acreage often have available some lower-cost alternatives to CAP water.

As a result, CAP water deliveries to irrigation districts peaked in 1989 (see Table below). The apparent surge in deliveries projected for the current year is largely the result of the CAWCD's in lieu recharge program, which lowered water prices for farmers (see May AWR, p.1). The program was intended to be temporary, and the price charged for the water barely covers operating costs.

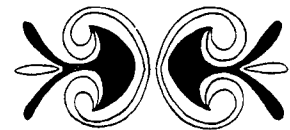
Why didn't more people anticipate the current problems? Some of the factors, such as depressed cotton prices and white flies, were difficult to foresee. But Wilson pointed out that key assumptions in CAP feasibility studies were seriously flawed. All acreage was assumed to be farmed every year; unrealistically high acreages of high-valued crops such as lettuce were assumed; and demand for CAP water was considered to be highly price-inelastic, meaning that farmers would continue to pay for it regardless of its price or the availability of lower-price alternatives. The cumulative effect of these and other

assumptions resulted in water demand and revenue projections that justified the project.

The prognosis for the irrigation districts is not optimistic under current conditions. Without restructuring of their debt or other relief, some are heading toward bankruptcies. Irrigation districts are legally municipalities in Arizona; default on bond payments could hurt the credit ratings of local governments throughout the state. The impact on Pinal County's economy would be noticeable, but not ruinous. The economy has become diversified over the last two decades, with the agriculture sector currently accounting for only 5 percent of total County wages.

Impacts on the CAWCD's obligation to pay off its federal debt are more difficult to gauge. Projected increases in water sales revenues of 80 percent this year and 68 percent the following year do not appear credible. In addition, the current glut of surplus electrical power in the southwest appears to have rendered infeasible the option of selling CAWCD's unneeded Navajo Generating Plant power at a substantial profit.

Wilson's report is to be completed in the second half of this month. At the same time CAWCD and the Department of Water Resources reportedly are reviewing their water supply and demand projections. Once the problem is better defined, the difficult search for solutions likely will resume, with a greater sense of urgency.



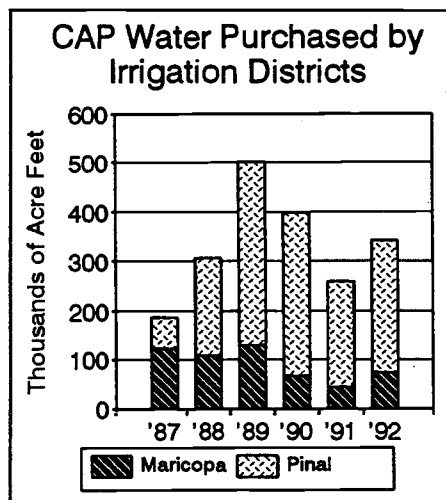
Communications

October is Clean Water Month. It's also the final month of campaigning before the November 3 general election. Lost in all the hoopla over hotly contested national, state and local races is election of five of the Central Arizona Water Conservation District's 15 board members.

Eleven residents of Maricopa County filed the necessary 200 nominating signatures and signed affidavits to enter the non-partisan race. Information on candidates for the unsalaried board positions proved elusive; what we did unearth is presented on page 5. Now you can be the only one on your block to cast informed votes for what may become high-profile positions.

For the second month in a row, we received no interesting or even amusing letters to the editor. (The flattened road kill slipped under our door in the dark of night does not count.) Remember, this is your newsletter. Faxed letters are encouraged. Anonymous, non-malicious letters also will be considered. Write us!

While we are letterless, a guest view piece was submitted. In keeping with our policy of airing even heretical viewpoints, we present Frank Welsh's views on the CAP on page 8. Enjoy.



Arizona Water Resource is published monthly, except for January and August, by the University of Arizona's Water Resources Research Center. AWR accepts news, announcements and other information from all organizations concerned with water. All material must be received by the 14th of the month to be published in the following month's issue. Subscriptions are free upon request.

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News Briefs

Basin States and Tribes Meet in Albuquerque

Representatives of the Colorado River basin states and the basin's ten Indian tribes met in Albuquerque in September to discuss water use issues especially the possibilities of water rights leases (see July/August *AWR*, p.4). The meeting was closed to the public.

Participants say that while the tone of the meeting was cordial, no specific proposals were discussed. Tribal representatives proposed meeting quarterly with the states, although no future meeting date was set. Tribal representatives are drawing up a Memorandum of Understanding (MOU) between the participating tribes outlining an agreement on procedures to follow in the discussions over the next 12 months, and are assessing specific proposal ideas for off-reservation leasing.

The September meeting is the first time Indian tribes have been invited to participate in the on-going discussions between the basin states.

Tucson Water Directed to Fluoridate CAP Water, Sell Metropolitan Water

On September 14, Tucson's City Council voted by a 4-3 margin to fluoridate Central Arizona Project water. The vote followed a lively public hearing during which opponents warned of health risks and characterized fluoridation as forced medication of the masses, while proponents portrayed fluoridation as a highly cost-effective way to improve children's dental health.

Tucson Water intends to implement fluoridation during the summer of 1993, which is consistent with a Citizens' Water Advisory Committee recommendations to wait until the new treatment plant is in operation for at least six months. The annual cost of fluoridation

is estimated to be \$49,000, which will increase Tucson Water customers' bills two to three cents per month.

At another Council session, the Mayor and Council voted unanimously to buy and immediately re-sell Metropolitan Water Company to a northwest-side domestic water improvement district recently established for that purpose (see July/August *AWR*, p. 5).

CAP Utilization is AWRA Symposium Topic

CAP utilization, this season's hot topic, is the subject of a symposium sponsored by the Arizona Section of the American Water Resources Association. Speakers representing diverse viewpoints include members of the Governor's Task Force and others who have been active and vocal in addressing the problems of under-utilization and threatened financial instability. Morning speakers will set the stage for an exchange of ideas. Afternoon discussions will focus on a search for solutions.

The symposium, entitled "Central Arizona Project Utilization — A Dialogue," will be held in Tucson on October 30. The \$35 registration fee covers the symposium, lunch and a copy of the proceedings. To register or for additional information contact Ken Foster, Office of Arid Lands Studies, University of Arizona, 845 N. Park Ave. Tucson, AZ 85719; 602-621-1955.

Chino Valley Hydrologic Study Nears Completion

The Bureau of Reclamation has completed the field work on an \$800,000 hydrologic study of the Big Chino Wash area north of Prescott, and is in the process of writing the final summary of the work, which should be available as a public document by year's end.

The study was commissioned by the City of Prescott to help assess the feasibility of a proposed water rights exchange associated with the Ft. McDowell Indian Settlement.

According to Darrell Ewing, who has been overseeing the study from the Bureau's Denver office, "There's a

tremendous amount of water in the Big Chino basin, but based on what we know, we still can't guarantee to the Secretary (of Interior) that the proposed groundwater pumping won't affect the spikedece habitat in the upper Verde River." Spikedece is a species of fish protected in Arizona and New Mexico.

Prescott has proposed exchanging its CAP water for the right to pump groundwater in the Big Chino wash, near the headwaters of the Verde. The City holds an option to buy the Big Chino Ranch (see June *AWR*, p. 4). "Unless we could guarantee the continuation of the species, I think we'll have to recommend to the Secretary that we don't think it (the exchange) is a good idea," Ewing said.

Preliminary results from the field work had suggested that groundwater beneath the Big Chino Ranch was hydrologically separated from the Verde.

A Rose by Any Other Name. . .

The term lacks verve and dash, and even worse, most people have no idea what it means. So to better convey what is meant by nonpoint source pollution some clean water groups are advocating a change in terminology to something more descriptive. They suggest that it be called "polluted runoff."

This issue was addressed at a recent Environmental and Energy Study Conference forum where the National Resources Defense Council suggested the new term. According to Diane Cameron, a council lobbyist, speaking of polluted runoff would "give the average person on the street a more vivid picture of just what we are talking about." She claims that the EPA is receptive to the change.

But Don Shroyer, acting section manager of nonpoint sources in the Arizona Department of Environmental Quality, finds the present term useful. He says its use helps distinguish between point and nonpoint pollution, a distinction that is lost with the proposed renaming. He believes educational efforts can explain to the public the meaning of nonpoint source pollution.



Legislation & Law

Groundwater Transfer Legislation Challenged

A complaint filed on September 18 in Maricopa County Superior Court by Phoenix Agro-Invest challenges 1991 legislative amendments restricting the transfer of groundwater from outlying basins to Active Management Areas. The action seeks declaratory and injunctive relief against the State and the Department of Water Resources from certain provisions of the groundwater transfer legislation. The complaint alleges that Title 45, Article 8.1 of the Groundwater Code constitutes special legislation and is unconstitutional under both the Arizona and U.S. Constitutions. The action also seeks damages against the State for the unconstitutional taking without just compensation of property owned by Martori's Phoenix Agro-Invest in the McMullen Valley Groundwater Basin.

The complaint was served on the State and the Department of Water Resources because of concerns over the statute of limitations. However, the parties are preparing a stipulation to postpone the obligation to file an answer to the complaint pending further discussions regarding legislative solutions.

Private Property Rights Bill May Be Suspended

A coalition of some 40 groups called Take Back Your Rights has gathered 71,000 signatures to place on the ballot a referendum on Arizona's new Private Property Rights bill. 52,771 valid signatures are needed to put the issue to voters. Because ballots for next month's election already are printed, the issue would be on the 1994 ballot, with the law suspended in the interim.

Efforts to repeal SB 1053 were backed by 22 state legislators, 14 environmental groups, county supervisors,

neighborhood groups, public health organizations, and others. Supporters of the legislation have hinted that they would attempt to pass an essentially identical bill in the next session.

The controversial law's broad and vague language was thought likely to have a chilling effect on state agencies including the Departments of Water Resources and Environmental Quality (see July/August *AWR*, pp. 1, 8-9).

11 Vie for CAWCD Board

Eleven Maricopa County residents are seeking five seats on the Central Arizona Water Conservation District's board of directors at the November 3 general election. The CAWCD operates and maintains the CAP.

Maricopa County has 10 members, Pima County four, and Pinal County one. Five members are elected every two years and serve six year terms. No member will be elected in 1992 or 1994 from either Pima or Pinal counties.

Two board incumbents, both former governors, are among the candidates: Jack Williams, current board president; and Sam Goddard, attorney and chair of the state's Democratic Party. Board members not seeking re-election are Roderick McMullin, Rebecca Buehl, secretary, and Elzada Darter.

Other candidates are: Marvin Andrews, retired Phoenix City Manager and past chair, Phoenix GUAC; John Brady, vice-president, Anderson-Clayton, a large cotton ginning firm; Grady Gammage, Jr., an attorney familiar with state lands issues; Paul Gardner, vice-president, Water Utilities Association of Arizona; Michael Kielsky; Virginia Korte, general manager, Korte Chevrolet and trustee, Desert Botanical Gardens; Dan Sophy, attorney; Jim Weeks, union official and spouse of ACC member Marcia Weeks; and Bill Wheeler, executive director, Central Arizona Project Association, former chair, AZ Water Commission, and retired civil engineer who worked on CAP feasibility studies.

Utah's CUP — Engineering Dream Becomes Fiscal Nightmare

When the Central Utah Project (CUP) was authorized by Congress in 1956, the estimated cost was \$330 million. 36 years and \$1 billion later, the half-finished project is being infused with reforms unimaginable even a decade ago. Begun as a huge Cadillac of a federal water project in the Bureau of Reclamation's heady dam-building days, CUP is being dramatically redesigned as a Volkswagen.

CUP's history parallels the Central Arizona Project's. CUP proponents developed a mythology that became unchallengeable. Diverting the Colorado River was seen as the only route to a secure water future. Reporters writing negative stories about the CUP were subject to personal attacks; academics questioning its costs were ostracized; and for decades no politician dared criticize it.

CUP reflected the view that a centralized technocratic bureaucracy could better spend public resources and design projects to meet future needs than the public at large. The state believed that federal money diverted into Utah would pay handsome dividends. Studies and assumptions were made to justify continuation of the project, not to analyze or question it. The CUP's top-down design featured showcase dams and power generating facilities; only late in the process did the Bureau talk to the farmers who were to use the water. The Bureau's own benefit-cost analysis revealed a cost of almost \$4,000 per acre of irrigated land. Since farmers could not afford the water, irrigation facilities would have to be subsidized by power revenues.

Today, \$150 million of irrigation components will never be built unless the Central Utah Water Conservancy District convinces reluctant farmers to contract for 90 percent of the water. Still, local support for the CUP remains strong. In 1985, residents of 12 counties voted overwhelmingly to triple their indebtedness to keep CUP alive. Whether the real costs are understood remains to be seen.

The CUP's environmental costs finally led to the Bureau's removal from the project. The last straw was the discovery that 85 percent of the money appropriated for the Bonneville component of the project had been spent, while only 3 percent of the environmental mitigation money had been spent, or mis-spent, as critics charged. Environmentalists enrolled enough congressional support in the late 1980s to stop funding for three years, and to get consensus for dramatic reforms in the project. Funding for many of these reforms, including a significant environmental mitigation program, is pending in the Omnibus Water Bill now before Congress.



Special Projects

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

Tribe Studies Effects of Glen Canyon Dam

The Glen Canyon Environmental Studies (GCES) program is interpreting the downstream impacts of the Glen Canyon Dam. As part of the program, the Hualapai Cultural Resource Department is developing an historical overview to interpret how tribal traditions and culture are being affected by the controlled flow of the Colorado River.

The department is interviewing tribal members including elders to gather information and to record their views of the situation. Persons interviewed are asked to comment on seven topics: Hualapai ancestry within the Grand Canyon; wildlife; plant life; effects of recreation on the river; sacred sites; archaeological sites and human remains; and the extent of their knowledge of the Glen Canyon Dam.

Recorded information will enable the department to document the extent to which the fluctuating flow of the Colorado River is disruptive to Hualapai historical and cultural traditions. For example, the traditional value of various plants will be determined. If such plants are threatened, this represents a cultural loss to the Hualapai people.

Also various sites have been identified with historical value to the Hualapai. Some of these sites, at times including burial grounds, are now threatened by the flow of the river.

This information is to be included as part of the GCES and will be incorporated with the results of other studies, with all input to be used to assess the impacts of the operation of the Glen Canyon Dam. For additional information, contact Loretta Jackson of the Hualapai Cultural Resource Department at 602-769-2254.

Low 4 Program Lowers Water Use

The purpose of the Low 4 program--low water, cost, maintenance, and energy--is to help reduce Tucson Water's per capita water use by encouraging multifamily and commercial/industrial users to reduce their landscape water use. The Low 4 program is aimed at the 400 highest water users in each class.

Between 1980 and 1989 annual usage within the service area of multifamily as a percent of total usage rose from 17 to 21 percent, while commercial/industrial remained the same. For the same time period, single family use decreased from 51 to 46 percent.

Low 4 offers assistance to the owners, managers, and landscape maintenance staff of large multi-family and commercial/industrial facilities. By targeting the water consumption decision-makers (property owners and managers), as well as the water consumption facilitators (landscape maintenance professionals), Low 4 provides a unique approach to the problem of outdoor water use. Public education rather than regulation is basis of the Low 4 program.

The program emphasizes water audits along with offering the technical information necessary to make water-saving changes. Outreach and training workshops are provided to professional management and landscape staff to promote implementation of such changes. Since the inception of the program in 1990, Low 4 has visited over 300 sites and has completed 200 water audits.

Potential savings are substantial, but owners and managers must believe that by making changes their interest is served and that alternative irrigation and landscape practices can result in attractive landscapes that keep vacancy rates low. More importantly, it must be demonstrated that savings due to reduced water use and reduced maintenance costs will amortize retrofit and conversion costs over a reasonable period of time.

For more information about the Low

4 program contact Patricia Waterfall, Water Resources Research Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85719; 602-622-7701.

Riparian Areas Studied, Interpreted

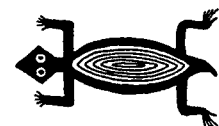
In response to Arizona's new riparian law, Arizona's Game and Fish Department is developing a statewide map of riparian vegetation along stretches of surface perennial flows. Dr. Lee Graham of the University of Arizona's Office of Arid Lands Studies is conducting aerial videography of identified perennial stretches. UA and AFG staff will then review the aerial videography along with LANDSAT photos to interpret vegetative growth. The vegetation will be interpreted according to a modified version of a classification system originally described by Brown, Lowe, and Pase (1979).

Field crews will assist in interpreting features from the aerial videography. If an image on a map is unidentifiable, a field crew will locate, identify, and photograph the feature. This process is called ground truthing. Random ground truthing will also be done to ensure the accuracy of the videos.

The mapping phase of the study also includes identifying land ownership and land use associated with the identified riparian areas. Land ownership information already is generally available in ALRIS, a state GIS system. General land use information will be collected from a variety of sources.

The agency will utilize outside consultants to assist with development of a method for evaluating wildlife functions and values associated with riparian vegetation in Arizona.

Additional information on the project is available from Ruth Valencia, Arizona Game and Fish Department, Non-game Branch, 2222 West Greenway Road, Phoenix, AZ 85023; 602-789-3510.





Publications

The Western Public Lands: An Introduction

Sarah Bates. The historical development of public lands in the American West is described and the public lands' resources and their uses are inventoried. A lengthy bibliography of recent relevant publications is included. The publication represents an initial step of the Natural Resources Law Center's public lands use research and education program. Copies are available from the Natural Resources Law Center, University of Colorado School of Law, Campus Box 401, Boulder, CO 80309-0401; 303-492-1297.

Dictionary of Water Well Driller's Terms

Marvin Glotfelty, editor. Someone unfamiliar with well driller's lingo may have trouble sorting out the difference between a float plate and a float valve or a surge block and impression block. The same person will wonder at such terms as monkey board, alligator grab, dog house, rat hole, and spider. The Arizona Well Water Association has come to the rescue with a helpful dictionary, available for \$5 (plus \$1 for shipping and handling if ordered by mail). Contact Dorothy Rice, 602-952-8854, or write to Arizona Water Well Association, 3875 N. 44th St., Suite 102, Phoenix, AZ 85018.

Arizona's Effluent Dominated Riparian Areas: Issues and Opportunities (Publication date: October 1992)

Barbara Tellman. This publication discusses Arizona riparian areas with flow depending largely on effluent. State and federal laws and regulations affecting that flow are examined, from the water quality and quantity standpoints. The author analyzes aspects of state and federal water quality laws which encourage removal of effluent from streams and also examines the incentives in Arizona's groundwater and surface water laws to remove water from streams (including effluent) as well as the impacts of not legislating regulation of effluent. The concluding chapter describes opportunities for preserving these areas within the current legal and regulatory framework as well as opportunities for changing that framework. Also included is discussion of the role of constructed wetlands as substitutes for riparian habitat.

Single copies are available free from the Water Resources Research Center, University of Arizona, 350 N. Campbell, Tucson AZ 85721; 602-792-9591; FAX 602-792-8518.

1991 Arizona Agricultural Statistics

This is the 27th annual edition, and its goal is to provide quality and detailed information about varied aspects of Arizona's agriculture. Topics include crop and livestock summaries, farm income indicators, and weather. Free copies are available from Arizona Agricultural Statistics Service, 201 E. Indianola, Suite 250, Phoenix, AZ 85012; 602-640-2573.

Rillito Recharge Project Report: An Evaluation of Recharge Techniques

Prepared by CH2M Hill for the Arizona Department of Water Resources in cooperation with Tucson Water and Pima County Flood Control District, this publication evaluates and compares the technical, institutional, and economic advantages and disadvantages of artificial recharge techniques by surface methods in arid climates. The document provides potential rechargers with guidelines for implementing recharge projects.

A limited number of free copies (one per entity) is available from Placido Dos Santos, ADWR, 400 W. Congress, Suite 518, Tucson, AZ 85701; 602-628-6758.



Transitions

Tom Carr has been promoted from Director, Pinal Active Management Area Office, Department of Water Resources, to Assistant Deputy Director for Program Planning and Management, a new position whose creation is consistent with Project SLIM recommendations. Mr. Carr remains responsible for the State-Wide Water Assessment. A draft is undergoing internal review, with release scheduled for December.

Dennis Kimberlin replaces Tom Carr as Director of the Pinal AMA Office. Mr. Kimberlin has been with DWR since 1981, most recently as Manager, Operations Division in Phoenix.

Bruce Davis takes over as manager of DWR's Operations Division. Davis was the manager of the Water Management Support Division which is being disbanded as part of the "SLIM" reorganization.

Steve Rossi left his DWR position as Head of Special Studies in July to take a position with Project SLIM. Rossi had been on loan from DWR to Project SLIM during the previous year.

Arizona Water Resource is financed in part by sponsoring agencies, including:

Arizona Department of Water Resources
Central Arizona Water Conservation District
Salt River Project
Tucson AMA Water Augmentation Authority
Tucson Water
USGS Water Resources Division
Water Utilities Association of Arizona

Their contributions help make continued publication of this newsletter possible.



Guest Views

A critic of western water policy, Frank Welsh believes that bureaucracy and special interest politics are responsible for the water crisis in the West, not nature. This thesis is developed in his book, How to Create a Water Crisis. Below is Welsh's contribution to resolving the CAP question.

As authorized in 1968, the Central Arizona Project consisted of 300 miles of canals and four large reservoirs. The environmental destruction reaped by its construction is obvious. It severed migration routes for large animals and destroyed the habitat of smaller creatures like the desert tortoise.

It could have been worse. If the 1970s version of the CAP had been completed, Charleston Dam would have destroyed more than 100 miles of the San Pedro River's riparian habitat, an area now set aside as the San Pedro National Conservation Area. Hooker Dam would have backed water into the Gila Wilderness Area. In addition, Orme Reservoir would have inundated ten miles of the Salt and 15 miles of the Verde River. Most of the Fort McDowell Yavapai tribal lands would have been flooded, along with the nesting sites of three of the then-remaining seven pairs of bald eagles in the Southwest, 20 percent of Arizona's Grey Hawks and numerous Zone-tailed and Black Hawks.

Today the CAP's major environmental impact is its waste of energy.

These most devastating portions of the CAP were stopped by a dedicated coalition of environmentalists, taxpayers and Native Americans. Today the CAP's major environmental impact is its waste of energy. It could, however, lead to major environmental destruction

if Arizonans aren't apprised of our real water crisis.

Agribusiness still consumes more than 80 percent of Arizona's water while returning only 2 percent to our income. Half the farmland is in surplus crops that we pay farmers not to grow. A 1973 book by University of Arizona economists began questioning the wisdom of importing water. This culminated in a 1980 report which stated that if farmers had to pay the cost, "...the results may well be disastrous." Martin et al also noted that "the problem will be the costs for delivery systems from canal to farm headgate."

In spite of these warnings, farmers contracted for CAP water and some are going bankrupt. They now want the cities to bail them out through increased taxes. Arizona plans to impose a pump tax to permit the retirement of agricultural lands. This might not be necessary if we simply permit farmers to go bankrupt. We don't bail out the hundreds of small businesses which file for bankruptcy each month in Arizona.

Cities don't need more water if they continue to conserve and change some archaic laws. The renewable waters of the Salt and Verde Rivers can support New York City's 7 million people, twice the present population of Arizona. Due to laws made more than a century ago, these waters belong to the land and are controlled by large landowners. Shortly after the turn of the century, these lands will be almost totally urbanized and the cities should have control.

Tucson can keep mining its groundwater for several centuries before it is depleted to a level of 1,200 feet (CAP water is being pumped 2,000 feet uphill). We have reached groundwater at depths of 5,000 feet and more.

Nevada is proposing a \$2 billion project to pump groundwater to Las Vegas and Reno. California is planning to build Auburn Dam and the Peripheral Canal to make up for the loss of CAP water, and still is considering damming its last free-flowing rivers in the north. These new water sources will cost substantially more than CAP water.

Leasing CAP water to California or Nevada at a profit could help Arizona's budget crisis, rescue farmers from

bankruptcy, and/or reduce our property taxes. Since the pumplift from the Colorado River to California is 500 feet less than the CAP, and Nevada groundwater would be pumped uphill, energy would be saved. New environmental destruction also would be prevented.

Legal conditions permitting this interstate transfer already have been met, according to National Water Commission studies. Law professor Ralph W. Johnson in 1971 advised the Commission of three different ways to affect a market exchange: 1) by an apportionment compact among the states sharing the river of origin; 2) by interstate litigation among those states; or 3) by congressional apportionment among those states.

Note that while any one of these is adequate, Arizona and California have met all three conditions. The 1922 Colorado River compact was the first interstate stream compact in the nation's history. The 1963 Supreme Court case *Arizona v. California* was the interstate litigation. Congressional apportionment occurred with passage of the Boulder Canyon Project Act of 1928.

The alternative to this mutually profitable sharing could be disastrous for the environment. In the early 1960s a California construction firm began promoting the North American Water & Power Alliance (NAWAPA) to bring water from Alaska. The plans include Oak Creek reservoir.

The West is surely developed — and has anyone tried homesteading lately?

Such a grandiose project most likely would be built by the U.S. Bureau of Reclamation. This bureaucracy was created by a 1902 homestead law whose purpose was to develop the West. With Los Angeles, Phoenix, Denver, etc. the West is surely developed — and has anyone tried homesteading lately?

One of the best ways to protect Arizona's environment would be to repeal the Bureau of Wrecklamation. It is a bureaucracy looking for a purpose—a most dangerous entity.

October 1992 Arizona Water-Related Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 CAWCD (meets in Casa Grande) <-- Arizona Environmental Law ---->	2 <-- Western Regional Environmental Law ---->	3 Instream Flow --->
4 Casa del Agua	5 Yav. Flood Control <--- Irrigation and	6 Tucson CWAC Phoenix AMA, GUAC Water Resources <-- Jurisdictional	7 in the 1990's ---> Delineation of	8 Wetlands in the	9 Maintaining Forest Biodiversity Tucson Water Auth. <-- Conference American West ---->	10 on Environmental
11 Casa del Agua Entrepreneurship	12 <-- Flood	13 AZ Hydrological Plain Hydrology	14 Using HEC-2	15 PAG Water Quality Pinal AMA, GUAC <-- Walking through the 16th)	16 the Environmental --->	17 AZ Water Well Association Tightrope ---> <-- Interdisciplinary
18 Casa del Agua Approaches in	19 Agri-Buss. Council <-- Principles & Applications of MOD-Hydrology and	20 <-- NWRA of MOD-Hydrogeology (runs	21 61st Annual FLOW and Accom- through the 22nd) ->	22 AZ Water Commission Conference ---> panying Models ---> <-- Rangeland Land Use Changes	23 Tucson AMA, GUAC <-- Keep On Watershed in the Western	24 Keeping On ---> Management ---> Sonoran Desert
25 Casa del Agua Border Area --->	26 Yav. Flood Control <-- National Rural	27 Water Association <-- Changing Collection, Treatment <-- Groundwater	28 Annual Conference-> Climate and Water Disposal Contamination	29 Resources ---> of Liquid Wastes -> from Petroleum	30 CAP Utilization Water Law & Policy <- Natl Onsite Waste- Hydrocarbons --->	31 water Recycling -->



Calendar of Events



RECURRING

Arizona Hydrological Society. 13 October, 7:30 p.m. Randy Tuffs will be speaking on Karchner Caverns. Water Resources Research Center, 350 N. Campbell Ave., Tucson. Contact: Mike Block 602-792-1093.

Arizona Water Commission. 22 October, 9:00 a.m. Meetings held at ADWR, 15 South 15th Ave., Phoenix.

Casa Del Agua. Water conservation tours hourly, Sundays noon to 4:00 p.m., 4366 North Stanley, Tucson. Contact: 602-881-3939.

Central Arizona Water Conservation District. 1st Thursday of the month, 12:30 p.m. The October meeting will be held in Casa Grande. 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.

Phoenix AMA, GUAC. Meeting tentatively scheduled for 6 October, 9:30 a.m. ADWR, Phoenix AMA Conference Room, 15 South 15th Avenue, 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 Kushner 602-792-1093.

Pinal AMA, GUAC. 15 October, 7:00 p.m. Pinal AMA Office, 1000 E. Racine, Conference Room. Casa Grande. Contact: Dennis Kimberlin 602-836-4857.

Prescott AMA, GUAC. No meeting scheduled for October. Prescott City Council Chambers, 201 South Cortez, Prescott. Contact: Phil Foster 602-778-7202.

Tucson AMA, GUAC. Tentatively scheduled for October 23, 9:00 a.m. Tucson AMA offices, 400 West Congress, Suite 518, Tucson. Contact: Linda Stitzer 602-628-6758.

Santa Cruz Valley Water District (formerly Tucson AMA Water Authority). 9 October, 9:00 a.m. Nogales City Council meeting room, 777 N. Grand Ave. Contact: Warren Tenney 602-326-8999.

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



OCTOBER

1-2 (Thu-Fri) **Arizona Environmental Law.** Federal Publication Inc. Scottsdale, AZ. Contact: 202-337-7000 or Miss J.K. Van Wycks, Federal Publications Inc., 1120 20th Street NW, Washington, DC 20036.

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

5-7 (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.

6-9 (Tue-Fri) **Jurisdictional Delineation of Wetlands in the American West.** Seattle, WA. American Fisheries Society. Contact: Mr. Leidy 415-744-1970.

9 (Fri) **Arizona Water Resources Committee Annual Meeting—Maintaining Forest Biodiversity.** Sunburst Resort, Phoenix. Contact: AWRC 602-250-2879.

9-11 (Fri-Sun) **National Conference on Environmental Entrepreneurship.** The Common Ground Project of Prescott College. Prescott, AZ. Contact: Prescott College, 220 Grove Ave., Prescott, AZ 86301; 602-778-2090.

12-16 (Mon-Fri) **Flood Plain Hydrology Using HEC-2.** Tempe, AZ. ASU Center for Professional Development. Contact: Center for Professional Development, Arizona State University, Tempe, AZ 85287-7506; 602-965-1740.

15-17 (Thu-Sat) **Eighth Annual Tri-State Seminar On-The-River: Walking the Environmental Tightrope.** Laughlin, NV. Contact: Tri-State Seminar Registration, c/o Pat Nelson, P.O. Box 48468, Phoenix, AZ 85075-8468.

17 (Sat) **Arizona Water Well Assoc.** 8:00 a.m. Francisco Grande, Casa Grande. Contact: Dorothy 602-952-8116.

17-22 (Sat-Wed) **Interdisciplinary Approaches in Hydrology and Hydrogeology.** Portland, OR. Contact: Helen Klose, American Institute of Hydrology, 3416 University Ave. S.E., Minneapolis, MN 55414-3328; 612-379-1030.

19 (Mon) **Agri-Business Council of Arizona Annual Reclamation Meeting.** Meeting will be followed by golf tournament. Chandler, AZ. Contact: David Iwanski 602-231-9224.

19-22 (Mon-Thu) **Principles and Applications of MODFLOW and Accompanying Models.** Golden, CO. International Ground Water Modeling Center/Colorado School of Mines, Golden, CO 80401.

20-23 (Tue-Fri) **Management of Hazardous Substances.** Rocky Mtn. Mineral Law Foundation. Breckenridge, CO. Contact: RMMLF, Porter Administration Bldg., 7039 East 18th Ave., Denver, CO 80220; 303-321-8100.

20-23 **National Water Resources Association 61st Annual Conference.** Denver, CO. Contact: NWRA, 3800 N. Fairfax Drive, Suite 4, Arlington, VA 22203; 703-524-1544.

22-24 (Thu-Sat) **Rangeland Watershed Management.** Society for Range Management. Safford, AZ. Contact: Bill Brandau or Clay Templin at 602-428-4040.

22-25 (Thu-Sun) **Land Use Changes in the Western Sonoran Desert Border Area: A Regional Forum.** Lincoln Institute of Land Policy. Ajo, AZ. Contact: Sonoran Institute, 6842 East Tanque Verde, Suite D, Tucson, AZ 85715; 602-290-0828.

23-25 (Fri-Sun) **Keep on Keeping On.** Arizona Association for Learning in and about the Environment Annual Conference. Prescott, AZ. Contact: Debra Howell, Grand Canyon University, College of Education, 3300 W. Camelback Rd., Phoenix, AZ 85017.

26-28 (Sat-Mon) **National Rural Water Association's Annual Technical Conference.** Louisville, KY. Contact: 405-252-0629.

27-29 (Tue-Thu) **Changing Climate and Water Resources.** 1992 Southeast Regional Climate Center Symposium. Charleston, SC. Contact: Mr. D.J. Smith, Southeast Regional Climate Center, 1201 Main Street, Suite 1100, Columbia, SC 29201; 803-737-0849.

27-29 (Tue-Thu) **Collection, Treatment and Disposal of Liquid Wastes.** Austin, TX. Contact: University of Texas at Austin, College of Engineering, ECJ 10.324, Austin, TX 78712; 512-471-3506.

27-30 (Tue-Fri) **Groundwater Contamination from Petroleum Hydrocarbons.** Austin, TX. Contact: University of Texas at Austin, College of Engineering, ECJ 10.324, Austin, TX 78712; 512-471-3506.

30 (Fri) **Central Arizona Project Utilization - A Dialog.** Tucson, AZ. Arizona Section American Water Resources Association. Contact: K.E. Foster, UA Office of Arid Lands Studies, 845 N. Park Ave., Tucson, AZ 85719; 602-621-1955.

30 (Fri) **1992 Annual Water Law and Policy Conference: Moving Water in Colorado.** Denver, CO. Contact: Institute for Advanced Legal Studies, University of Denver College of Law, 7039 E. 18th Ave., Denver, CO 80220.

30 October-1 November (Fri-Sun) **National Onsite Wastewater Recycling Association Annual Meeting.** Orlando, FL. Contact: 813-644-3228.

UPCOMING



1-5 November (Sun-Thu) **Managing Water Resources During Global Change.** 28th Annual Conference & Symposium sponsored by the American Water Resources Association. Reno, NV. Contact: Michael C. Fink, Director of Meetings, AWRA, 5410 Grosvenor Lane, Suite 220, Bethesda, MD 20814-2192; 301-493-8600.

2 November (Mon) **Water Reuse Symposium.** The Embassy Suites at Rural and the Freeway, Phoenix, AZ. Sponsored by the Salt River Project. \$20 fee. Contact: Jan Miller, 602-236-5745 or Mario Lluria, 602-236-5520.

2-6 November (Mon-Fri) **Geographic Information Systems in Ground-Water Modeling.** Golden, CO. Contact: International Ground Water Modeling Center/Colorado School of Mines, Golden, CO 80401.

4-6 November (Wed-Fri) **Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Restoration.** Houston, TX. Contact: National Ground Water Association 614-761-1711.

5-6 November (Thu-Fri) **37th Annual New Mexico Water Conference.** Toas, NM. Contact: New Mexico Water Resources Research Institute, Box 30001 - Dept. 3167, Las Cruces, NM 88003.

17 November (Tue) **HAZWASTE 92: A Symposium.** Phoenix. Arizona HAZWaste Society and AZ Dept. of Environmental Quality. Contact: Peter Allard, 602-263-0045.

17-18 November (Tue-Wed) **First Annual Midwest Water Quality Workshop.** Des Moines, IA. Contact: Steve Oberle, 214 Soil Tilth Lab, Iowa State University, Ames, IA 50011; 515-294-2421.

17-19 November (Tue-Thu) **Environmental Drilling, Ground Water Monitoring and Sampling: A Field Practice Course.** Atlanta, GA. Contact: Env. Education Enterprises Institute, 2764 Sawbury Blvd., Columbus, OH 43234; 614-792-0005.

18-20 November (Thu-Fri) **Water Environment Federation's Joint Conference on Pollution Prevention.** Dallas, TX. Contact: 703-684-2400.

27-29 November (Fri-Sun) **Earth Rally.** Scottsdale Civic Plaza. Sponsored by the City of Scottsdale Office of Environmental Affairs. Contact: 602-585-4408.

2-3 December (Wed-Thu) **Successful Tools for Environmental Negotiations 1992-1993.** Washington, D.C. Contact: RESOLVE, 1250 24th Street, N.W., Washington, D.C. 20037-1175.

7-11 December (Mon-Fri) **Sedimentation Engineering Using HEC-6.** Tempe, AZ. ASU Center for Professional Development. Contact: Center for Professional Development, Arizona State University, Tempe, AZ 85287-7506, 602-965-1740.



Announcements

Calls for Papers

A symposium to examine the ecology and management of the hot desert rangelands of southwestern United States and northern Mexico will be held in Phoenix July 29-31, 1993. Symposium topics include weather, riparian areas, hydrology and soil erosion, and revegetation of disturbed lands. Title, author(s), and 250-300 word abstract of proposed papers must be submitted by November 1, 1992 to Lamar Smith, School of Renewable Natural Resources, University of Arizona, Tucson, AZ; 602-621-3803; FAX 602-621-8801.

Plans are underway for the 6th symposium on artificial recharge of groundwater — "Purpose, Problems, and Progress" — to be conducted in Phoenix on May 19, 20, and 21, 1993. A call for papers has been announced, with Oct. 30 as the deadline for submitting abstracts. Three copies of an abstract are to be submitted to the Technical Committee, 1993 ARGS, Water Resources Research Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721. For additional symposium information including abstract specifications call 602-792-9591.

ADWR's Pinal AMA Office Relocated

As of September 28, 1992, the Pinal Active Management Area office is located at 1000 E. Racine Place, Casa Grande, Arizona 85222; Phone is 602-836-4857, Fax is 602-836-9208. The office is located off of Trezell, south of Kortszen Road.



The University of Arizona
Water Resources Research Center
Tucson, Arizona 85721

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TAMA Water Authority Becomes Santa Cruz Valley Water District

The Tucson Active Management Area Water Augmentation Authority became a water district as of September 30 as a result of ARS § 48-4805 passed last session granting potential taxation authority. The Board voted at its September 24 meeting to change the name to Santa Cruz Valley Water District. The Water District's address and phone number are unchanged.

NSF Offers Graduate Research, Postdoctoral Fellowships

The National Science Foundation offers three-year graduate fellowships in science, mathematics and engineering. Awards are granted as graduate fellowships, minority graduate fellowships, or women in engineering awards. The stipend and allowances include a \$14,000 stipend, for a 12-month tenure, and a tuition waiver at U.S. institutions (or up to \$7,500 at foreign institutions). A \$1,000 international research travel allowance is also available.

The application deadline is November 6, 1992. Program information should be available from academic deans, departments, or financial aid offices. Or contact the Fellowship Office, National Research Council, 2101 Constitutional Ave., Washington, D.C. 20418; 202-334-2872.

The National Science Foundation offers postdoctoral fellowships in chemistry and earth sciences, as well as for studies to be conducted in NATO countries in the areas of mathematical, physical, biological, engineering, and social sciences, and the history and philosophy of science. For additional information contact the Fellowship Office. (See above entry for address.)

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