

Water Conservation Takes Offbeat Path

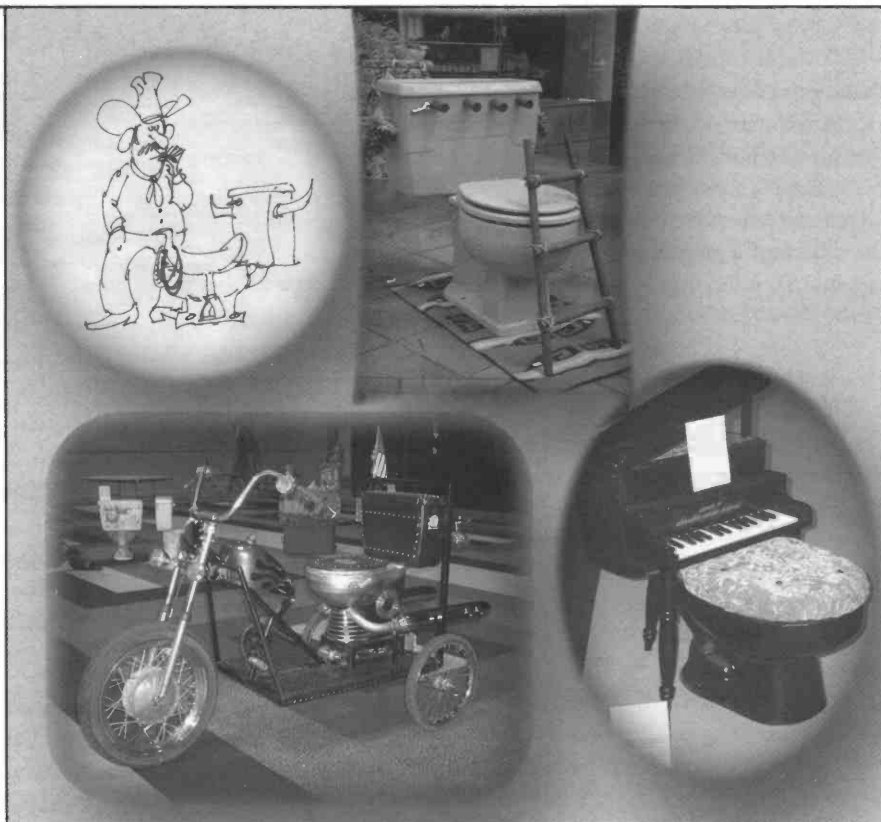
Potty humor is generally held in low esteem and very rightly so. Yet, when put to good use, say, in promoting water conservation, potty humor acquires some class and distinction. Its purpose becomes a timely, sensible message not a nervous chuckle. Potty humor comes out of the water closet.

At right are examples of potty humor that have taken on the worthy cause. By participating in the Path of the Painted Potty, a contest sponsored by the Santa Fe Rotary Club, these colorful commodes helped promote water conservation.

With water-conscience folks replacing their full-flow toilets by the low-flow kind, the city of Santa Fe had a number of full-flow toilets to discard. What to do? What some people viewed as an object best left at the land fill, some Santa Fe folks saw as a blank canvas, awaiting transformation through art and imagination. The Path of the Painted Potty contest was born, with the stated purpose "to build public awareness about the importance of water conservation while raising funds for Santa Fe area water conservation projects."

The public was able to view the completed works displayed at various Santa Fe locations. The contest ended Aug. 2 with a Grand Potty Pageant. Awards were presented and the potties auctioned off to highest

Continued on page 3



Photos: Dick Cooper; Illustration: Paul Coker Jr.

Negotiating Navajo Water Rights Raises Complex Law of the River Issues

Proposed terms could break new legal ground

by Joe Gelt

If, in fact, there were any doubts about the matter, negotiations now underway to settle Navajo water right claims could serve as a case study of the intricate and complex workings of water law. What further complicates the issue in this instance is that the area of the Navajo Nation to receive water from whatever settlements are worked out is located close to the boundary between the upper and lower Colorado River basins. The Law of the River, which determines the management and use of Colorado River water, including its allocation between basins, becomes an issue to be reckoned with.

The framers of the Colorado River Compact established a line of demarcation running through Lees Ferry, separating the upper and lower Colorado River basins. Serving as a hydrological boundary — and a rather arbitrary one at that — this line slices across the top of the Navajo Reservation, with some Navajo communities in the upper basin and some in the lower basin. The Navajo are now seeking water right settlements from New Mexico, an upper basin state, and Arizona, a lower basin state.

Consider also that Law of the River has generally been interpreted to forbid

Continued on page 2



C O N T E N T S

Water Vapors	3
News Briefs	4
Guest View	6
Legislation and Law	7
Publications	8
Special Projects	9
Announcements	10
Public Policy Review	11

Navajo...continued from page 1

moving Colorado River water between basins, with lower basin water to be used only in the lower basin and upper basin water for use in the upper basin.

The scene is set for complicated legal maneuvering, and you don't have to be a water lawyer to anticipate a long, winding road ahead.

Navajo-New Mexico San Juan River settlement

A tributary of the Colorado River, the San Juan River flows through the Four Corners area, draining nearly 16 million acres of New Mexico, Colorado, Utah and Arizona. Because it drains into Lake Powell the San Juan River is an upper basin tributary. It is the source of a proposed water supply project, to build a 250-mile pipeline from the river to Navajo communities in Arizona and New Mexico as well as to city of Gallup, New Mexico.

The Navajo-Gallup pipeline provides the potential for New Mexico and Arizona to resolve Navajo water right water claims and is, in fact, the centerpiece of a water rights settlement being worked out between the tribe and New Mexico. New Mexico would grant the tribe about 36,000 acre-feet of San Juan River water, to be delivered to Navajo communities in New Mexico via the pipeline. Although Gallup has no San Juan River rights, the city could purchase water from the Navajo.

The plan is not without complications. For New Mexico to take water from the San Juan River to serve Navajos in the northern portion of the Navajo Nation would entail a Colorado River transbasin transfer, from upper to lower basin. Thus the plan must contend with the aforementioned Law of the River and its prohibition against moving Colorado River water between upper and lower basins.

(The Law of the River's stricture on this matter is viewed by some as an incongruity. They point out that whereas moving water between upper and lower basins may run afoul of the law, Colorado River water can readily be transferred out of the basin for use in another basin. In this instance, San Juan River water could with less legal restraints be pumped to Albuquerque or Santa Fe, cities entirely outside the Colorado River basin, than to an area on the Navajo Nation which happens to be located on the wrong side of the upper basin/lower basin divide.)

In an effort to breach a possible impasse, the Upper Basin Commission, made up of representatives of states receiving upper basin Colorado River allocations, passed a resolution approving New Mexico's use of its San Juan River water in the lower basin for the Navajo-Gallup project. In making its resolution, the Commission is departing from the traditional interpretation of the Law of the River, to take what is in effect an unprecedented stand. The resolution, however, is project specific and stipulates moving Colorado River water between basins within a single state, not between two or more states. Congress must act upon the resolution before it can take effect.

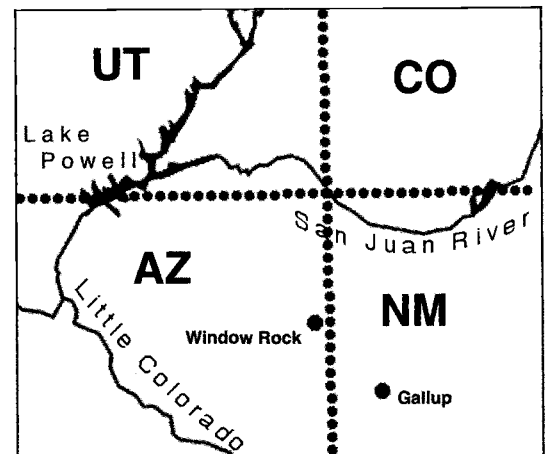
With a Navajo-New Mexico settlement in the works, the scene shifts to Arizona where Navajos living on tribal lands within the state, including those living in the Navajo capitol of Window Rock and Fort Defiance, need water supplies. Negotiations are underway between the tribe and the State of Arizona to define available water

supplies and to determine delivery to the area. With more options and variables to ponder, Arizona's water dealings with the Navajo are fraught with greater complexities than what confronts New Mexico. In the words of Gregg Houtz, an attorney with the Arizona Department of Water Resources, "There are a lot of legal hoops to jump through."

Arizona's San Juan River options

Step one in whatever settlement is worked out is to identify a water source. Water resources in that part of the country, the Four Corners area, are few and far between, with the San Juan River one of the few available supplies. An obvious solution then would be for Arizona also to tap into the San Juan River in New Mexico, with the water pumped through the proposed pipeline into Arizona for Navajo use. What might make sense hydrologically, however, must stand up to legal scrutiny or, in other words, negotiate looming legal hoops.

(The discussion is sidestepping an issue central to Arizona's use of the San Juan River. Any Arizona project relying on San Juan River water could sooner or later confront an uncertainty of supply. As upper basin states, Colorado, New Mexico and Utah have first priority



Map showing course of San Juan River

to the San Juan River, with Arizona having lesser priority. Where might that leave water users in Arizona relying on San Juan River water during years of reduced rain?)

With Arizona receiving allocations from both basins, the state could look into the option of providing the Navajo either upper or lower basin water. Flowing into Lake Powell, the San Juan River is an upper basin tributary that could be the source for Arizona's upper basin water allocation, to be delivered to the Navajo. Arizona, however, has a 50,000 acre foot right to upper basin water diverted in Arizona. To take its upper basin allocation from the San Juan River, which does not flow in Arizona, the state would need the approval of the Basin States, particularly New Mexico.

If approval were granted and if Arizona adopts this seemingly straight forward plan, the state would be in the same position as New Mexico, with its upper basin supplies designated for use in lower basin areas of the Navajo Nation. Arizona would need to come to terms with the Law of the River, to seek some sort of exemption or reinterpretation.

New Mexico has suggested a way Arizona might negotiate this

Continued on page 7



Water Vapors

WRRC News and Information

The Water Resources Research Center has several important future events to announce. Foremost among them is an event to honor an esteemed colleague, another is a spring conference and finally its administration of funding sources to support water research. Information about each is below.

WRRC hosts Sol Resnick event

To give Sol Resnick his due is not an easy task. With his world-wide experiences, especially his work in developing countries, his hydrological expertise, the esteem in which he is held by former students and colleagues, his unpretentiousness, not to mention his role in establishing the University of Arizona's Water Resources Research Center and his present status as its director emeritus, Sol is due much recognition and honor. The WRRC wants to acknowledge all that and more when it names its main conference room after Sol.

To commemorate the occasion, a Sol Resnick Dedication Program and Reception will be held Tuesday, Nov. 18, from 4:30 p.m. to 6:00 p.m., at the Water Resources Research Center, 350 N. Campbell Ave., Tucson. Sid Wilson, former Resnick student and general manager of the Central Arizona Project, will emcee the event. Included as part of the program will be a short seminar presentation, "Historical Overview of Sol Resnick and the WRRC."

"Irrigating India, My Five Years as a USAID Advisor," a book authored by Sol and his wife, Elaine, includes the dedication: "To all of our family and friends who have heard Sol's stories and wanted more..." We now want your Sol stories, recollections, tributes, anecdotes, pictures to include in an album, to be presented to him. Fax, email, mail or deliver album materials to Terry Sprouse at the WRRC by Nov. 11.

Mark your calendars and join us to honor and congratulate Sol. RSVP to Terry Sprouse at 792-9591 x13 or by email to tsprouse@ag.arizona.edu



Sharon Megdal, associate director of the Water Resources Research Center, discusses local water issues with first year graduate students in the University of Arizona's School of Architecture. The students, many from foreign countries, later visited Tucson's Clearwater Recharge Facility and the Sweetwater Constructed Wetlands, to further their water education. (Photo: Joe Gelt)

WRRC plans 2004 conference

Following its highly successful spring conference in Prescott, the Water Resources Research Center is now planning its next conference, to be titled, "The Future of Agricultural Water Use in Arizona." Scheduled for Wednesday, April 28, 2004 in Casa Grande, the event will be a joint venture involving WRRC and the University of Arizona's Department of Agricultural and Resource Economics. The conference is at its preliminary planning stage. More information will be announced as the program takes shape.

WRRC issues RFP

Also, it is that time of year again when the Water Resources Research Center invites proposals for research grants under the Water Resources Research Act, Section 104B. Only faculty members at the three Arizona state universities can submit proposals. See "Announcements," page 10, for information about the 104B program. The page-10 announcement also includes information about the availability of 104G funding.

Potty...continued from page 1

bidders. The grand prize was a water-saving washing machine.

An entry of special note was a fourth-grade group project. They created a water library. The back of the toilet was a bookshelf, and each student designed a book cover to be displayed on the shelf. Padded and graced with a lamp, the seat became a desktop. Each student wrote a poem about water conservation on a sheet of muslin toilet paper that was included as part of the exhibit. The project was displayed at the public library and was purchased by the New Mexico School for the Deaf in Santa Fe as a permanent installation in its library.

A book about water issues for use in middle schools is to be produced using funds from the \$50 entry fee, proceeds from the sale of the potties and support from matching grants. For information about the contest check the web site: <http://www.thepatboffain.tedpotties.com/>



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News Briefs

CAWCD Views Renaming as Ploy to Destroy Lake Powell

Perceiving an ulterior motive in the request, the Board of Directors of the Central Arizona Water Conservation District has taken a stand against efforts to rename Lake Powell to Glen Canyon Reservoir. The Coalition to Rename Lake Powell submitted the renaming request to the U.S. Board on Geographic Names.

In a letter to BGN objecting to the renaming, the CAWCD board stated "... it is clear to us that the effort to rename Lake Powell is part of a larger effort to decommission Glen Canyon Dam and drain Lake Powell."

The letter further stated, "The name 'Glen Canyon' denotes the reach of the Grand Canyon that environmental groups want to restore. The word 'reservoir' denotes a man-made feature. ... To put it simply, it would be easier to drain a 'Glen Canyon Reservoir' than a 'Lake Powell'. The proposal to rename the Lake in the name of linguistic purity masks a deeper motive to remove Glen Canyon Dam and eliminate Lake Powell from the face of the earth."

Among the reasons the coalition included on its renaming request was BGN duplicate naming policy. According to this policy the board will not approve a duplicate name in the same state or an adjacent state in close proximity. BGN does not consider this an issue since the other Lake Powell, although in adjacent Colorado, is located 300 miles away and thus not in close proximity.

The coalition also noted that "lake" is not an appropriate generic name for what is in fact a reservoir. The BGN, however, has no policy recognizing official definitions of generic terms. Roger L. Payne, BGN executive secretary, stated, "The Geographic Names Information System includes almost 70,000 entries classified as reservoirs, of which about 23,000 use the generic lake, about 22,000 use the generic reservoir. And there are other generic terms such as tank with about 15,000 entries."

The board will not be addressing the issue soon. Payne says routine requests take

a minimum of 4 months. "This one given its high-profile nature will take lot longer because we want to be sure we get all of the comments from interested parties."

Bugs, Goats Combat Invasive Plant Species

New Mexico is fielding a new weapon in its fight against the invasive salt cedar, a plant taking its toll of waterways throughout the West including Arizona. A small, brown leaf beetle that eats the pinked tipped branches of the salt cedar is being released along infested waterways in the state. The first release occurred in August when the U.S. Department of Agriculture and the U.S. Fish and Wildlife Service released about 600 beetles along the Pecos River near Artesia.

The beetles have proven themselves in Nevada where they ate the green off a 400-acre patch of the fast-growing salt cedar. Beetle test sites are also in Texas, Colorado, Utah, Wyoming and California.

Arizona has been at an impasse in its battle against the salt cedar, and Ed Northam, noxious weed coordinator for the Arizona Department of Agriculture, explains why. "We have been stymied by the willow flycatcher." With Southwestern willow flycatchers nesting in salt cedar, efforts to control the invasive plant threatens the endangered bird.

New Mexico officials, however, hope to release the beetle along the Rio Grande in areas of nesting flycatchers. Their expectations are that with the salt cedar gone, native grass and willows will return and provide the birds with nesting areas.

Northam is unsure whether beetles will work in Arizona. He says from information he has received southern Arizona might be too hot for the beetle. He says, "Any new work we do will probably be with moths."

Meanwhile several efforts are underway in Arizona to biocontrol invasive and nuisance species. The salvinia weevil, a pin-point-sized bug, has been introduced in segments of the lower Colorado River to combat the spread of giant salvinia, a rapidly



As part of National Water Education Day, Sept. 26, Project WET (Water Education for Teachers) conducted Arizona Water Festivals in Safford and Surprise. The above students at the Safford festival are engaged in activities with the Rolling River Trailer, to learn about their communities location within the Gila River watershed. Participating in the event were fourth grade students in the Safford, Thatcher, Fort Thomas, Duncan, Pima, Morenci, Alpine and Bonita school districts. Arizona's Project WET is a Water Resources Research Center program at the University of Arizona. (Photo: Ashley Klein)

growing aquatic fern that threatens to choke the river's flow. Also the Central Arizona Project is experimenting using 450 goats to eradicate weeds, including salt cedar, at its recharge basins.

EPA Tells Small Systems to Test Water

The U.S. Environmental Protection Agency is turning its regulatory attention to small water systems that hitherto have received more lenient treatment than larger utilities. The agency has put 22 small systems within Arizona on notice that they must test their drinking water for copper and lead to comply with provisions of the 1992 Clean Water Act. If not in compliance by the end of the year, they could face steep fines.

With most large and medium sized utilities in compliance, EPA is turning its attention to smaller utilities, those serving between 25 to several hundred customers. Small suppliers in Arizona who have received recent EPA notices serve about 2,800 people. Areas served by the utilities include

Strawberry, Buckeye, Sonoita and Douglas. EPA is requiring that the utilities test water coming from a sampling of home water pipes. The source of most lead and

copper contamination in the West is home distribution systems, often from lead pipes or copper soldering.

Cost has been a factor to discourage

small utilities from undertaking the testing. The cost for an in-home test is about \$30. The fine for not complying with the regulation can be as much as \$27,000 a day.

EPA Takes Action to Promote Water Conservation

EPA Considers Water-Efficient Product Labeling

In its effort to raise public awareness about wise water use, the U.S. Environmental Protection Agency is considering establishing a water-efficient product labeling program based on its Energy Star program. An Energy Star, which has consumer recognition value, is earned by an electric-using product if its energy use meets certain EPA standards.

What Energy Star does for efficient energy use the proposed program is expected to do for water conservation.

Tom Babcock, water conservation coordinator for the Phoenix Water Services Department, says "We have been pushing for a long time for some sort of similar standard, a promotional icon, if you will, for water efficiency. A lot of players have been involved to get somebody at the federal level to initiate this, and the Office of Water at EPA was the first to move forward and say this may be a good idea."

Many Arizona water providers have been promoting the program including the Tucson and Phoenix water utilities. The Conservation Committee of the American Water Works Association has taken the lead nationally to coordinate support for the program.

code through the energy side, and now EPA is looking to do something on the water side."

A water efficient product labeling program, however, will go beyond setting and listing of such standards to include their promotion, with consumers encouraged to look for a designated symbol or logo when purchasing a water using appliance. What water consuming information is currently provided often is included within fine print and/or is expressed in a formula difficult for the layperson to decipher.

Sheila Frace of EPA says at this point nothing is chiseled in stone. "We will be meeting with stakeholders, conducting research of product areas and product lines and doing some of the marketing research that is part and parcel of a labeling program. ... We want to be sure we are hearing all the pros and cons, all the pitfalls to avoid in the design of such a program."

Australia might provide a model for the U.S. effort. It has recently taken steps to implement an efficiency labeling system for appliances that is expected to reduce domestic water use by five percent and save \$600 million a year.

EPA to Promote Tenant Wise Water Use

EPA is proposing a regulatory change intended to encourage apartment dwellers to conserve water by having them billed for actual water usage. This seemingly obvious strategy is discouraged by present regulations that may impose a burden on apartment building owners who install submeters and bill tenants separately for water.

The present EPA policy derives from enforcement of the Safe Drinking Water Act. Under the SDWA, national primary drinking water regulations apply to public water systems (PWS) having their own water sources, or if they treat or sell water.

EPA has previously issued guidance stating that building or property owners who meet the definition of a PWS and receive water from a regulated public water system, with their tenants billed separately for the water, are in fact selling water. They are thus independently subject to safe drinking water requirements.

Applying a basic water conservation tenet, that consumers use less water if they are billed for what they actually use and not on just a flat rate, is thus discouraged

The EPA now proposes to change the policy to have a more limited application to submetering and the direct billing of residential tenants, thereby better promoting full cost and conservation pricing, with the result that more water will be conserved.

About 15 percent of Americans are apartment dwellers.

The proposed policy change is undergoing a 60-day comment period which began with an announcement in the Aug. 28 Federal Register. ■

"Our little mechanical friend ... part of my family"

This quote is from an owner of a Whirlpool washing machine describing her family's relationship with the appliance. Touchingly sentimental, the attitude complicates Los Angeles Department of Power efforts to encourage consumers to replace their conventional washing machines with a water saving-type of machine. Warm fuzzy feelings aside, LADP programs have resulted in the purchase and installation of more than 24,000 high-efficient washing machines in homes and business since 1998, saving about 415 million gallons of water. The above quote is from Michael J. Silverstein book "Trading Up," a book describing consumer preferences of contemporary Americans.

In setting water use standards for such a program, EPA has the option to review and possibly adopt the standards already existing in other federal programs. For example, the Energy Policy Act of 1990 includes water-using standards for certain types of products and appliances, with the rationale that energy is required to pump, treat and deliver water.

Babcock says, "We managed to get standards into federal



Guest View

AZ Stakeholders Wage High Stakes Battle Over Stream Navigability

Jack L. August, Jr., Ph.D., a historian in Northern Arizona University's Statewide Programs, contributed this Guest View.

In 1910 G.E.P. Smith, the acclaimed University of Arizona hydrologist, declared in a widely referenced and oft-cited report that the Santa Cruz River was an “ever dwindling stream.” As Arizona statehood approached, the hydrologist concluded that the river had diminished to such an extent—he labeled it a “brook”—that its middle basin tributary, Rillito Creek, looked far more promising as a future water source. As one recent scholar of the river asserted, at the time of statehood in 1912 the Santa Cruz River, which had provided water for residents, wildlife, and vegetation for thousands of years had ceased to flow, and inhabitants of the river’s three basins—upper, middle, and lower—began the nearly century-long search beyond the basin to secure supplemental supplies for future growth and development.

I discussed this information, and much more, while I served as an expert witness before the cumbersome named Arizona Navigable Stream Adjudication Commission. In this particular instance, Commission members, along with its attorney, listened to my testimony at the Nogales City Council Chamber, as I argued that the Santa Cruz was not navigable, nor susceptible to navigation, at the time of statehood, February 14, 1912. Further, I asserted that other mitigating circumstances, like the status of the Baca Float Land Grant Number 3, raised issues that suggested that portions of the upper Santa Cruz streambed—at least those that lay within Rio Rico properties—were privately owned. I stated that the legal and institutional history of the 100,000-acre Baca Float Number 3 “clearly demonstrates that private property rights were protected under the Treaty of Guadalupe-Hidalgo and the Gadsden Purchase, and that those property rights could not have passed in trust from the United States government to the State of Arizona.”

Two significant opponents to my argument, the State of Arizona and the Center for Law in the Public Interest, maintain that the river was navigable and therefore, the state should own the streambed. Immediately I felt the sting of cross-examination. “Dr. August, who hired you and how much are you being paid for your testimony,” the bright and assertive young attorney for the Center for Law in the Public Interest began as she tried to undermine my credibility with the Commission. Her tone was aggressive, unfriendly, and pointed. At that moment I realized that the stakes were high and that I was involved in a heavyweight fight over natural resources and private property that fell below the radar of the popular press. As I answered questions on direct testimony and later, cross-examination, I felt the stares of lawyers from the Salt River Project, Phelps Dodge, and environmental interests. Everyone in that small Nogales chamber, it seemed, took in each word, legal nuance, potential historical inaccuracy. What was I doing here?

It was historical oversight. Arizona’s pioneer legislatures, pre-

occupied with transforming a territory into a state, overlooked the issue of navigability of Arizona’s watercourses. This omission went unnoticed for nearly 75 years, when two claimants to Verde River streambed property asked a court to decide the rightful owner. The judge responded that he could not address the matter because he had no information about the Verde’s navigability or non-navigability at statehood. As a result, in the 1990s the ANSAC was formed in order to determine the navigability of Arizona’s 39,039 watercourses as of statehood, February 14, 1912. The determination of navigability or non-navigability of Arizona streambeds holds profound implications for private landholders in the State of Arizona.

The question of navigability is related directly to the “Equal Footing Doctrine” of the U.S. Constitution that asserts, among other things, that each state added to the union should be included on an equal footing with preceding states. Thus, each new state may own tidelands and the beds beneath its navigable streams. Put another way, the Equal Footing Doctrine suggests that the State of Arizona may own the streambeds within its boundaries that were navigable, or susceptible to navigation, at the time of statehood. Significantly, private citizens may own the beds of streams that did not support navigation at statehood. Therefore, it is essential that ANSAC determine which streams were navigable or susceptible to navigation as of statehood, and which were not.

Moreover, research suggests there are at least 100,000 clouded property titles related to streambeds in Arizona, and determining which watercourses were navigable at statehood—and which were not—is one of ANSAC’s two primary objectives. The Commission’s other chief goal is to determine the public trust values associated with those watercourses determined to have been navigable or susceptible to navigation at statehood. The Commission takes written testimony, oral testimony, analyses the evidence presented, then makes a final determination of navigability or non-navigability.

Stakeholders along the Salt and Gila, like those along the Santa Cruz, have intensified their resolve and are sharpening their legal strategies about navigability. Those involved in the hearings know that water, in its elegant simplicity, is at the same time inchoate and complicated, requiring the expertise of engineers, hydrologists, geologists, geomorphologists, historians, archeologists, and, of course, attorneys. And, as the Commission hearings attest, water is local, state, federal, and tribal. My most recent testimony concerning the middle reach of the Salt River, in which I represented the interests of the City of Tempe and Arizona State University, brought forward a growing number of competing interests. Salt River Project attorneys and their witnesses weighed in on these hearings, held in early April 2003, with vigor. As more testimony and evidence are submitted on the Salt and Gila rivers, and the implications of the ultimate determinations, one way or another, become clear, this unnoticed heavyweight fight will capture the public’s interest and command much attention from both private and public sectors. ■



Legislation and Law

Navajo...continued from page 2

legal thicket. In researching the Law of the River, New Mexico officials noticed that Congress, when it approved the Central Arizona Project, authorized Arizona to count water to be used in a projected power plant as upper basin water, even if the plant were built in the lower basin. As it turned out, however, the Page power plant was built in the upper basin. Congress therefore authorized an action that at the time did not occur.

Yet some argue that Congress had by its action approved Arizona's subsequent use of its upper basin water in the lower basin. In other words, it is OK to use upper basin San Juan River water for the Navajo. This is not a view favored by many state officials. Regardless of how that controversial view plays out, however, the Congressional authorization did in fact raise an important question: Does Congress have the power to unilaterally amend the Colorado River Compact? In this situation, Congress appeared to have done just that.

Various other issues arise if Arizona should decide to use its upper basin allocation. The state has a rather limited upper basin allocation (50,000 acre-feet) compared to its lower basin allocation (2.8 million acre-feet). Aside from the Navajo, the only other major water users in Arizona's upper basin are the Navajo Generating Station and the City of Page. The Navajo have an agreement with the generating station to manage tribal water supplies to ensure that sufficient upper basin water is available to maintain the plant's operations. Would the tribe by accepting 6,500 acre feet as part of an Arizona settlement threaten supplies to the power plant?

Also, the state needs to maintain sufficient water in its upper basin apportionment to meet whatever reserved rights the Navajo may later claim. Would allocating 6,500 acre-feet now deplete resources that might be need for future settlements?

Arizona considers lower basin supplies

Another option Arizona might pursue is to tap into the San Juan River, with water withdrawn designated as lower basin water rather than upper basin. Same river, same point of withdrawal, but now it is lower basin water flowing through the pipe. With its lower basin water for use in the lower basin, Arizona would be complying with the Law of the River, in at least that regard. Yet an obvious problem arises. The state would now have to find the means of taking delivery of its lower basin appropriation from an upper basin tributary, the San Juan River, without violating the Law of the River. This would be a formidable legal hoop to leap through, in need of the backing of the Upper Basin Commission, the three lower basin states and an act of Congress.

ADWR attorney Gregg Houtz says, "The seven Colorado River Basin states have not addressed this issue yet, although they are aware of similar proposals. There was recent discussion of the path of a Lake Powell pipeline to Black Mesa but that is no longer on the table."

If Arizona takes up the challenge and gains approval for this plan, the state would in effect be supplying the tribe with Central

Arizona Project water. More issues are thus raised. Present CAP customers would likely prefer that CAP water remain in the service area to ensure that all users equitably share the project's fixed costs. If CAP water for the Navajo is severed from the project, water users in the CAP service area would face increased fixed costs. Less objections would arise if any agreement worked out with the Navajo would ensure that the tribe pays its share of CAP fixed costs.

Through the Arizona Water Settlement Act, now wending its way through

Congress, a supply of CAP water has been identified for possible Navajo use. AWSA creates a 197,500 acre-foot CAP Indian water rights settlement pool, with

102,000 acre feet set aside for the Gila River Indian Tribe, 28,200 acre feet to the Tohono O'dham, and 67,300 acre feet for other Indian settlements. The act, however, prohibits the Secretary of the Interior from allocating these funds without an Indian water rights settlement in Arizona. Officials have generally considered that the 67,300 acre feet would be available for negotiating with the Navajo and Hopi tribes, with the assumption that the water would be diverted from Lake Powell, in Arizona. Dipping into the San Juan River in New Mexico adds a new twist to whatever deal might be worked out.

What might be called accounting problems also arise. The upper basin has a compact obligation to bypass to the lower basin 75 million acre feet over a 10 year period. How is upper basin San Juan River water, that for purposes of a settlement is considered lower basin water, to be figured into a river accounting system? Is it to be considered bypassed water even though it never in fact flowed to the lower basin? Not surprisingly, this is an issue The Law of the River doesn't address.

This may appear a seemingly slight matter, to be readily resolved through some administrative action. But Herb Dishlip, a consultant involved in the negotiations, warns of possible consequences if legal shortcuts are taken. He says, "A lot of people think these are administrative details, but that could create a lot of mischief. We are not sure where that kind of creative accounting might lead."

Another accounting issue has to do with power revenue. Water



San Juan River (Photo: Susi Burch)



Publications & On-Line Resources

Establishing Public-Private Partnerships for Water and Wastewater Systems: A Blueprint for Success

Published by the Water Partnership Council, this handbook offers information to communities considering partnerships with the private sector to meet water and wastewater needs. The publication provides information about the workings of such partnerships — at least from the perspective of private interests promoting partnerships. In this way the publication is self-serving, but valuable information is presented nonetheless. For example, an interesting point is raised by the statement, “Although the terms public-private partnership and privatization are often used interchangeably, they are not the same.” The free publication is available by calling 202-466-5445 or by visiting www.waterpartnership.org

EPA Reports on Public Attitudes and Research Goals

Survey tells of public drinking water attitudes

The U.S. Environmental Protection Agency released results of a public survey about the nation’s drinking water. EPA commissioned the Gallup Organization to conduct a nationwide telephone survey of 1,000 households during Aug. and Sept. 2002, and the results of the survey are included in the report titled, “Analysis and Findings of The Gallup Organization’s Drinking Water Customer Survey.” The survey assessed: general drinking water consumer knowledge; water use behavior; public confidence with information sources; and value placed on EPA’s right-to-know efforts. The survey can be obtained at: <http://www.epa.gov/safewater/consumer/pdf/>

Climate and Water Transboundary Challenges in the Americas

Editors, Henry F. Diaz and Barbara J. Morehouse

Consisting of papers presented at a conference in Santa Barbara,

California in 2000, this book discusses the impact of climatic variations on water resources and water resource management in the Americas, with a focus on border regions. The wide context enables readers to identify issues common to various border regions. At the same time, however, the U.S.-Mexico border gets a good proportion of the coverage.

Complex in any context, the topic of climate’s effect on water management and allocation gains increased complexity when border regions are studied.

University of Arizona scholars contributing to the volume include Andrew Comrie, Barbara Morehouse, and Terry Sprouse who is from the Water Resources Research Center. \$120. Kluwer Academic Publishers, <http://www.wkap.nl/>

Water: Science and Issues

The interdisciplinary focus of this four-volume encyclopedia of water encourages the broad perspective, with water viewed as a relevant topic in such fields as biology, chemistry, ecology, geography, geology, history, hydrology, economics, engineering, oceanography, international law, policy, planning and management. With 150 experts contributing more than 300 entries, the work provides information for a broad understanding of the complexities and interconnections of the water resources field. Relatively recent issues are addressed including security, globalization and pharmaceuticals in water supplies. This is a reference work with broad appeal, of interest to students and as well as water professional wanting to refresh and expand their knowledge about specific issues. Published by Macmillan Reference USA, the set is priced at \$350 if purchased before Dec. 31, and \$395 thereafter. For more information including ordering instructions check the web site: www.gale.com/macmillan

On-line Sources for Water News and Information

Sooner or later, publishers and editors of printed newsletters are up against the question: Would it be better to switch to an on-line version of the publication? Spiraling costs favor such a move. Further, appearing on-line, such newsletters seem more in the vanguard of the information age than a paper-ink-and-mailed version. At the same time, there is much to be said in favor of a printed newsletter, such as this one. In the interest of a balanced approach, the AWR newsletter notes below two free, informative, on-line sources of water information.

Safedrinkingwater.com NEWS

Billing itself as the “Premier newsletter for the drinking water quality community,” this free online drinking water newsletter provides up-to-date information on national, state and local drinking water issues; trends and regulations; as well as other newsworthy items from around the globe. Topics attracting frequent coverage include groundwater contamination, fluoride, arsenic, water security, microbiological issues, perchlorate, MTBE

and water research. Subscribers also receive Alerts! on breaking news. Subscribe to the newsletter by visiting www.safedrinkingwater.com and clicking “subscribe.”

California Water News

This free Brown and Caldwell newsletter mostly covers California water happenings but also provides information of broader significance, addressing regional issues or water affairs in general. With California and Arizona sharing an interest in various water issues, the newsletter’s coverage often has special interest to Arizona readers. Considering also that the water affairs of a particular state are not so specialized as to exclude the interest of other states, California water news can add to the water perspective of many out-of-state readers. The newsletter is available free to qualified individuals, including directors, board members and employees of water resources agencies; persons in public service and education who “need to know” about developments in the water resources field. Subscribe at www.bcwaternews.com



Special Projects

Studies Say Environmental Regulations Work

Regulations, and especially environmental regulations can be a hard sell, their usefulness often questioned and criticized, their effectiveness needing thorough documentation. Two recent studies, one by a federal agency and the other by a university researcher, examined the effectiveness of environmental regulations and report that they are indeed beneficial and accomplish valuable objectives.

(That both of the studies focus on air quality regulations does not mean their findings are not relevant to regulating water. Air and water are both environmental concerns, and ensuring their quality is the prime purpose for regulating them.)

An Office of Management and Budget report found that environmental regulations pay off, promoting improved health and other benefits to society, despite the costs imposed on industry and consumers. The study says enforcement of stricter clean-air regulations during the past decade provided economic benefits five to seven times greater than costs incurred in complying with the rules.

The dollar value of reductions in hospitalization and emergency room visits, premature deaths and lost workdays attributed to improved air quality were estimated between \$120 billion and \$193 billion from October 1992 to September 2002.

This is compared to the estimated \$23 billion to \$26 billion industry, states and municipalities spent to retrofit plants and facilities and to make other changes to ensure compliance with new clean-air standards. The standards were designed to significantly reduce sulfur dioxide, fine-particle emissions and other health-threatening pollutants.

The report takes a stand contrary to a previous OMB report issued last year that found a more even spread, with the costs of compliance with a given set of regulations about comparable to the public benefits. OMB admits to errors in the earlier report, including a miscalculation of the benefits of EPA's ambient air quality standards for ozone and particulate matter.

The recent report is said to be the most comprehensive federal study ever undertaken of the cost and benefits of regulatory decision-making.

Another study of environmental regulations found that they spur creativity, that they are a prime motivating force for innovation in environmental technology.

Margaret Taylor, assistant professor of public policy at the University of California, conducted a six-year study of how techniques developed for controlling the emission of poisonous sulphur-dioxide from fossil-fuel burning and for controlling nitrogen oxide emissions from vehicle exhausts. She found that without restrictions on emissions levels the techniques and technology would have evolved far more slowly, if at all.

Her study included examining a 1979 ruling that all new power stations or other plants emitting sulphur dioxide had to be fitted with systems to reduce emissions by 70 to 90 percent. Improved technology was soon developed to replace inefficient systems.

Taylor says her research shows that government regulation is likely more effective than even government sponsored research for stimulating invention. Even the anticipation of regulation acts to prompt innovative technology.

Research Says POU Treatment No Better Than Direct Tap

A recent study found that using point-of-use, in-home water treatment devices do not necessarily better protect water users from gastrointestinal illness than if they drank water directly from a well-run water district

Participating in the study were more than 1,200 healthy adults and children from 456 households in Iowa, all customers of the Iowa-American Water Company, which treats water from the Mississippi River.

Participants were randomly assigned to one of two groups, with one group using a top-of-the-line treatment device that combined a 1-micron filter with an ultraviolet light chamber for removing or neutralizing water-borne microbes. The second group used a so-called "sham device," identical in appearance to the active filter, but not treating or changing the taste of the tap water.


The devices were connected to the kitchen faucet, the major source of drinking water for most people. Participants were told to fill water bottles from the devices when bringing water to drink at work or outside the home.

After the first six months of the study, the devices were switched, with participants starting with the active treatment device getting the sham device and those using the sham device changed to the active device for the remainder of the trial. Neither participants nor researchers knew which device they were using during the phases of the study.

During the first six months, 707 episodes of illness were reported by those with the active device, with 672 episodes reported by those using the sham device. During the second half of the study, there were 516 and 476 episodes of illness reported in the active and sham device groups, respectively. Differences between the groups were not statistically significant.

The study focused on gastrointestinal illnesses, not longer term health effects that may be linked to chemicals such as lead and chlorine by-products. Also, the study included only a single water treatment system, greatly limiting any effort to generalize results to other utilities. Since people participating in the study were healthy no conclusions can be drawn about the value of POU water treatment systems for people with health concerns, including those with compromised immune systems.

The research team included researchers from the University of California, Berkeley, U.S. Environmental Protection Agency and U.S. Centers for Disease Control and Prevention.

For information on a related study reported in the "Emerging Infectious Diseases" journal check: <http://www.cdc.gov/ncidod/EID/vol8no1/00-0481.htm> 



Announcements

Call for Papers

Papers are being accepted for the juried article section of the "Small Flows Quarterly" magazine, the only magazine/journal devoted to onsite and small community wastewater issues. (i.e., communities with populations under 10,000 or communities handling less than one million gallons of wastewater flows per day). Papers in the following categories will be considered for peer review: technology/research; operation and maintenance; regulations; management; finance; and public education. For more information about research topics, submission guidelines, and publication deadlines, please contact Cathleen Falvey, juried articles editor, at 800-624-8301 or 304-293-4191, ext. 5526, or e-mail: cfalvey@wvu.edu. Or write to Editor, Small Flows Quarterly, National Small Flows Clearinghouse, West Virginia University, P.O. Box 6064, Morgantown, WV 26506-6064.

AHS Calls for Abstracts

The Arizona Hydrological Society has issued a call for abstracts for its second biennial symposium on scientific issues related to the management of landfills in arid and semi-arid regions, to be conducted March 17 - 20, 2004 in Tucson. Potential session topics include: VOC remediation; aerobic and anaerobic bioreactors; geophysical applications; regulatory update; and landfill stability. Contact Carie at caried@hgcinc.com to be added to the symposium email database. For additional information check the AHS web site: www.azhydrosoc.org. Abstracts are due by Nov. 21.

Call for Papers and Posters

A call for papers has been issued for "The Gulf of California Conference," to be conducted in Tucson, June 13-15, 2004. Specialists in various fields are invited to attend, from geology to oceanography, and from paleontology to ecology. The conference will include both plenary talks and contributed papers and posters. A special effort is being made to recruit speakers from Mexico, and limited funds are available to assist Latin American scientists. Conference topics include biodiversity, Colorado River Delta, conservation, estuaries/esteros, human dimensions, islands and monitoring. Deadline for poster and presentation submission is Dec. 1. For additional information check: www.gulfconference.org or contact Yajaira Gray at 520-883-3018 or email gulfconference@desertmuseum.org.



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WRRC Invites Research Proposals

The University of Arizona's Water Resources Research Center is accepting proposals for research grants under the Water Resources Research Act, Section 104B. Funded by the U.S. Geological Survey, Section 104B provides support for small research projects on water-related issues of state and regional importance. WRRC expects to receive about \$50,000 to fund projects, although the federal budget has not yet been approved, and we do not have exact figures.

Only faculty members at the three Arizona state universities may submit proposals. Researchers in any of the social, biological, physical, and engineering sciences and fields such as water management, water law, and public health are invited to apply. The start date for funded projects is March 1, 2004.

This year proposals must be submitted electronically via the National Institutes for Water Resources web site. Also an electronic copy and ten hard copies must be submitted to WRRC. Guidelines are available on the WRRC web site: <http://ag.arizona.edu/azwater/>

The deadline for submitting complete proposals is the end of the working day, Monday, November 24.

Applications will be reviewed by the WRRC external advisory committee and a group of technical reviewers experienced in the field of the proposal. The WRRC will make final award decisions on the basis of rankings from both groups and available funding.

Also, U.S.G.S. in cooperation with the National Institutes for Water Resources requests proposals for funding under 104G of the Water Resources Research Act, to support research on water supply and water availability. For planning purposes, the amount available for research under this program is estimated to be \$1,000,000, although there has not yet been a FY 2004 appropriation for this program. Any investigator at an Arizona institution of higher learning is eligible to apply for a grant through the UA WRRC. The RFP can be obtained at https://niwr.org/2004_104G_RFP. 104G proposals must be filed by Mar. 1, 2004.



Public Policy Review

by Sharon Megdal

Court Tells ADWR to Set Water-Use Standards for End Users

Time may be at hand to explore options to gallons per capita per day



For some time, the Arizona Water Company, the second largest private water company and eighth-largest water provider in the state, has been at odds with the Arizona Department of Water Resources regarding the municipal conservation program.

Its discontent sparked the utility's 1990 suit when ADWR adopted its Second Management Plan. The utility challenged the plans's water conservation strategy, claiming it was improper to impose gallons per capita per day (GPCD) requirements on municipal providers without directly regulating customers or end users by imposing limits on their water use. The utility also objected to ADWR including Central Arizona Project water within GPCD calculations.

Last year a Superior Court ruling stated that the provision of the management plan by which ADWR imposes maximum GPCD requirements "is vacated and set aside because it fails to address water utilization by end users." ADWR appealed.

In August, the Arizona Court of Appeals issued its ruling in *Arizona Water Company v. Arizona Department of Water Resources*. Although there were other issues involved in the appeal, the Appeals Court considered ADWR's GPCD policy as the central issue.

The three-person Appeals Court panel issued a split decision. While acknowledging the law includes no clear language definitively ordering ADWR to impose end-user conservation measures, the majority found that "it is difficult to read the provisions ... and not develop a firm conviction that the legislature intended just that."

Also at issue was whether the Groundwater Management Act allows ADWR to include CAP water in determining a utility's compliance with conservation requirements. The Appeals Court rejected Arizona Water Company's position, concluding that ADWR may include use of CAP water when determining GPCD.

Before discussing this opinion, I note that I am not a lawyer. Therefore, the following analysis and viewpoints are not constrained by extensive knowledge of case law.

Regarding the appropriateness of including CAP water in GPCD calculations, all three appellate judges agreed. A ruling otherwise on the issue of CAP water would have been at odds with the entire premise of groundwater management in at least the Tucson and Phoenix Active Management Areas, namely that CAP water is supposed to serve as a substitute for groundwater use and a source of water for a growing number of customers. Excluding CAP water for municipal purposes from calculations determining GPCD compliance would have signaled that it is permissible to use as much CAP water as desired, without consideration of reasonableness of that use or waste. This is at odds with state water use goals.

Regarding the GPCD conservation program, the Court found that the Legislature expected ADWR to develop "a comprehen-

sive management and regulation framework for all phases of the groundwater cycle." The Court directed ADWR to "return to the management plan drawing board and devise appropriate conservation measures ... that include end users." It is interesting the Court did not appear to conclude that including company-or utility-level GPCD requirements in the management plan was inappropriate. Rather, another layer of conservation requirements was ordered.

In my opinion, the minority opinion relating to the GPCD program is the one that makes the most sense. The dissenting judge agrees with ADWR's interpretation of the statutes: "The Department has interpreted the statutes as giving it the authority to regulate end users, but not mandating such regulation. Given the lack of specific statutory language to the contrary, its interpretation is reasonable." The dissent goes on to note that whether it makes sense for ADWR to regulate the end users was not addressed in the record before the Court and "is completely beyond our expertise."

Dissenting Judge Patrick Irvine states things so well that I am left with little choice but to quote him directly: "[It] is not clear to me that direct regulation of all end users is sensible water policy. ... The Groundwater Code recognizes that water providers are not in identical situations. ... Uniform end user restrictions throughout an active management area, or even a local service area, may not be the most effective conservation method. ... the resources devoted to creating and enforcing individual conservation requirements may be more effectively utilized in other ways. ... this is the type of decision the legislature has left to the Department, not to us."

I am not a big fan of the GPCD program. It has been fraught with difficulties. I support additional flexibility regarding participation in the non-per-capita-per-day program or alternative conservation programs. Many departmental resources have historically gone into development and enforcement of the program. Over 20 years after the passage of the Groundwater Management Act and in the face of declining budgets and increasing expectations regarding departmental activities outside of the AMAs, a modified approach to conservation may be appropriate.

The Governor's Water Management Commission had a hard time getting to a substantive recommendation regarding conservation. Its Final Report and Recommendations stated that many issues were raised regarding the existing conservation programs, and improvements to current programs were discussed. Yet the only recommendation that came forward was for initiation of "a process to develop a non-profit cooperative association to serve Arizona's need for effective water conservation throughout the State."

Even if ADWR's position is finally affirmed, there is justification for a renewed look at the municipal conservation program, particularly the GPCD program. One way or another, some rewrite of the statutes may be necessary. The parties should agree to work together to see that this be accomplished expeditiously. ■

Navajo...continued from page 7

taken from the San Juan River will not flow through the turbines at Glen Canyon, Hoover and Davis dams, to generate electricity. This represents an estimated \$50,000 annual loss.

Navajoes have options

Identifying water supplies and working out various hydrological and legal details is only part of the story. Much of the rest of the story has to do with negotiating with the Navajo which tribal claims would be settled by San Juan River water.

The Navajo's water rights to the Little Colorado River have been discussed as part of the Little Colorado River adjudication, along with those of the Hopis, San Juan Paiutes and Zunis. A long, arduous process, the adjudication has been basically on hold since the summer of 1999. Possibly San Juan River water could be a bargaining chip to help resolve some of the pending issues relating to the Navajo claims to the Little Colorado River.

That water from the San Juan River or, in effect, the Colorado River, is used to resolve claims to the Little Colorado River would present no legal complications. Using water from one river to resolve claims to another is a strategy used in the Gila River Indian settlement, with the tribe getting Colorado River water to resolve its claims to the Salt and Gila rivers.

Also the Navajos are presently involved in litigation with the federal government, to obtain recognition of tribal claims to the main stem of the Colorado River. Of possibly broad and far-reach-

ing consequences, the law suit could result in a rethinking of current state and federal water management policies and practices. Possibly San Juan River water could figure into negotiations with the Navajo over their claims to the main stem of the Colorado River.

Another option, one not fitting into the settlement scenario, involves the tribe buying or contracting its own Colorado River supply, possibly from Yuma or an irrigation district in the southern part of the state. The water right could then be transferred through Lake Mead up to Lake Powell, to the San Juan River. Water for Window Rock could then be obtained pursuant to a contract and not as the result of a tribal water rights settlements. Navajo water rights then would remain unsettled, awaiting further developments and possibly a more promising payoff.

This obviously would not be to the advantage of Arizona. With the federal government investing heavily in the building of the Navajo-Gallup pipeline, the state would likely expect that a water rights settlement would a precondition of the project.

Whatever settlement is finally worked out between the state and the tribe would then have to be approved by Congress. A further complication may then arise. Houtz explains: "Our concern is when you go Congress to confirm something like this and you need the concurrence of other states, you always ask what they are going to expect in return. How big a price is Arizona going to have to pay by going along with projects we are not sure about in, say, Utah or Nevada?" ■



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