ARIZONA
WATER RESOURCE

Volume 4, No. 2 *February 1995*

Riparian Area Bird Declared Endangered

The little southwestern willow flycatcher is an emerging player in the ongoing effort to protect Arizona riparian areas. Recently listed by U.S. Fish and Wildlife as an endangered species, the flycatcher is considered an indicator species for southwestern riparian habitat conditions.

Listing the flycatcher as endangered prohibits "take" of the species. Take is defined as any action that would harm the species; e.g., shooting, killing, harassing, trapping or collecting. In addition, federal agencies must ensure activities they undertake, fund or authorize do not jeopardize listed species.

The endangered species designation is an important step in providing special protection for the flycatcher, and the process eventually could include identifying specific river or stream segments critical to the bird's recovery. Such a critical habitat designation expands protection to the species's habitat as well as the

continued on page 2

CONTENTS

Irrigating crops on the Gila River Reservation. Plans currently are underway to expand irrigated acreage (see story, p. 4). (Photo by Peter Essick.)

CAP, Interior Near Cost Agreement

The Central Arizona Project and the U.S. Department of Interior reportedly have reached an agreement in principal on repayment obligations, water allocations, and related issues. The conceptual agreement, which so far exists only in draft form, covers the following 15 points:

1. Arizona's total repayment obligation is limited to no more than $2 billion;
2. 687,000 acre-feet (a-f) of Arizona's Colorado River allocation is set aside for Indian settlements. This includes the 65,000 a-f of Municipal and Industrial (M&I) reallocation water. Those awarded reallocation water still may get water, albeit lower priority water. CAP will attempt to "shore up" the allocations with accumulated recharge credits;
3. Water reallocated to Indians retains its original use priority, thereby keeping municipal supplies firm. New Indian water has the priority of wherever it came from, which generally is agriculture. Only the 65,000 a-f of contributed reallocation water has M&I priority.
4. The federal government will not sell or transfer any CAP water (including tribal allocations) outside Arizona;
5. The federal government is responsible for a fixed percentage of OM&R costs, plus incremental, environmental, and other categories of use. Net result is a firm federal obligation to pick up 48.6 percent of OM&R costs, regardless of whether the federal government or Indians use the water. This arrangement ends after 25 years;

continued on page 2

Flycatcher, continued from page 1

species — and often provokes controversy.

The Greater Gila Biodiversity Project of Silver City, NM faults USFW for not establishing critical habitats for the flycatcher claiming that without them the bird surely will become extinct. In January 1992 a coalition of individuals and conservation organizations petitioned USFW to list the flycatcher as endangered, and a year later the agency proposed 650 miles of streams in Arizona, California and New Mexico as critical.

These proposed critical habitats included 90 miles of the San Pedro River and also segments of the Colorado River in the Grand Canyon, the Verde River, and the Little Colorado River in the White Mountains. The federal agency is holding off establishing critical habitat designations until July to allow for additional public comment.

Desert willow flycatcher and chick. (Photo: U.S. Fish and Wildlife.)

The critical habitat designation is not ensured. Dr. John G. Rogers, director of USFW's southwest region said, "We're hopeful that with strong state and federal cooperation, a riparian recovery strategy can be developed that will make designation of critical habitat unnecessary."

USFW granted the flycatcher endangered species status based on surveys that found only 300 to 500 breeding pairs in flycatcher breeding areas. USFW estimates that fewer than 1,000 breeding pairs remain.

USFW cites loss and modification of riparian habitat as a prime cause of the flycatcher's endangered status. Nest parasitism by the brown-headed cowbird and lack of adequate regulations are further justifications for the endangered species status.

Groups opposed to the flycatcher's listing include the Arizona Cattlemen's Association which fears a resulting reduction in grazing. The organization sponsored a study of a flycatcher population along a four-mile stretch of the Gila River on private lands in New Mexico.

Dennis Parker, an author of the study, contends that flycatchers can be found in significant numbers in areas not surveyed by USFW or other groups. Parker said "bad biology is being practiced" by those who listed the species as endangered.

While the flycatcher's fate is discussed, legislative efforts are underway in Washington to declare a moratorium on various environmental regulations, including the critical habitat designation. Such action could affect the flycatcher controversy.

CAP agreement, continued from p. 1

6. United States agrees to pay outstanding bills it owes on the Project from construction funds;
7. The federal government agrees to turnover the project headquarters building to CAP;
8. the amount CAP pays for filling Lake Pleasant behind New Waddell Dam is set and capitalized in the project rather than being paid outside of ceiling amount;
9. United States supports the "net billing concept." This means that if the federal government owes money to CAP and vice versa, the net amount owed is sent in one check by one party to the other. Generally, CAP will owe the federal government more than the federal government will owe it, so CAP will send one check for the net difference. Thus, no annual federal appropriation will be needed for the federal share of OM&R costs;
10. CAP is responsible for completion of the project using federal funds under the $2 billion ceiling. This includes terminal storage for the Tucson area, which will be built by CAP. This lessens the urgency to build it right now and cuts the federal government out of the loop. Terminal storage still is part of the Bureau of Reclamation's budget, and a federal appropriation will be necessary to construct the project.
11. United States agrees to sign the Letters of Agreement for excess water. This allows CAP's current pricing policies, including subsidized rates for surplus water to agriculture, to stand;
12. CAP agrees to make a $30 million up-front payment, and an additional payment of $15 million when the project headquarter building is turned over to CAP;
13. CAP agrees to forgo all claims related to siphon repairs;
14. The issue regarding Indian representation is settled by CAP agreeing to provide Indians a forum, and possibly a dispute-resolution process. Indians will not have a member on CAP; and
15. CAP will manage excess water, including water not ordered by all customers, including Indians.

The tentative settlement is being portrayed as a win-win-win agreement. CAP rate payers are provided certainty, the federal government gets significant water to pursue settlement of tribal water claims, and agricultural users of excess water retain current low rates. Most importantly, the agreement appears to significantly enhance Arizona's ability to pay for the CAP and provides the project a measure of financial stability. CAP does not anticipate having to request any property tax increase.

Water Vapors

The February issue of *AWR* reported that Tom Jensen had left the Grand Canyon Trust for a position in D.C. A reader tells us that Jensen will serve on the President's reconstituted Council on Environmental Quality.

The elusive Phoenix office of American Rivers has changed its phone numbers to the following: voice 602-234-9985; fax 602-234-3946.

James Phipps, Public Information Officer for the Flood Control District of Maricopa County, writes: "We enjoy your publication. Keep up the good work." (He then politely pointed out a typo.)

And Lori Woods, President, Recon Consultants, writes: "I wanted to let you know how often I've read and appreciated *AWR*. It is always so well-written and put together."

Bard Latest CAP Victim

Tucson continues to wrestle with the thorny issue of how best to use its CAP allocation, with consultants narrowing the options from nine to four (see story, p. 5). Meanwhile, a Water Consumer Protection Act initiative being circulated would ***really*** narrow the options. It would keep Tucson Water on groundwater for five more years and pretty much rule out future use of the City's $80 million treatment plant, which disinfects with ozone and chloramine.

Cornelius Steelink, Professor Emeritus, University of Arizona chemistry department, and member, Tucson Water Quality Expert Panel, sums up the dilemma facing Tucsonans.

CHLORAMINE
A Tucson Rate-Payer's Soliloquy
(with apologies to W. Shakespeare)

To chloraminate or not to chloraminate
That is the question.
Whether 'tis nobler in mind
to endure the taste and odor of
outrageous disinfectant,
Or to take aim against a swarm
of CAP bureaucrats,
And by initiative, end chloramine.

To gasp, to gag no more;
And by this vote to say we end
all stomachache
And the thousand chemical shocks
that flesh is heir to.
'Tis a cleansed water devoutly
to be wished.

To sip, to drink. Perchance to gulp.
Aye, there's the rub, for in that
gulp of CAP
What other salts may lurk, when we
have shuffled
Off this chloramine.

And Texas Gets the Rio Grande...

Before President Clinton used his executive authority to loan Mexico $24 billion, Congress was debating a $40 billion loan guarantee. Colorado Congressman Scott McInnis had drafted an amendment to the bail-out legislation requiring Mexico to forfeit 1.5 million acre-feet of water rights in the Colorado and other rivers if it defaulted on repayment. Instead, Mexico pledged as collateral revenues from OPEC, the national oil monopoly.

Seems to us we'd be better off with water rather than oil. For one thing, we could seize the collateral without having to invade. For another, oil is over-rated. You can't drink it, grow crops with it, or even jetski on it.

Golfer Finds Water Sub-par

LPGA Pro Caroline Keggi ran afoul of a water hazard close to home, and she wants the developer of Carefree Ranch assessed penalty strokes. Keggi has filed suit against the developer alleging that negligent design and construction of a water system led to her ingesting bacteria-contaminated water in early 1993, resulting in lingering illness, missed golf tournaments, and a lowered LPGA ranking.

The developer claims that the City of Scottsdale had taken over operation of the water system prior to the contamination incident. Some 150 residents of the system were alerted to contamination in March 1993.

That Number No Longer is in Service

As of March 19, the phone and fax numbers at the Water Center (and everywhere else in Arizona outside of Maricopa County) will change. The 602- area code will be replaced by 520-. The new prefix is optional until July 23, after which time the old prefix no longer will work.

Coming in Future Issues

Assuming Congress and the Arizona Legislature keep to their self-imposed 100-day deadlines, our next issue will review water-related bills passed and water-related bills enacted.

As always, your letters, faxes and e-mail on previous issues and new story ideas are welcome.

Arizona Water Resource is published 10 times per year by the University of Arizona's Water Resources Research Center. ***AWR*** accepts news, announcements and other information from all organizations concerned with water. Material must be received by the 14th of the month to be published in the following month's issue. Subscriptions are free upon request.

Arizona Water Resource Staff
Editor: Joe Gelt
Reporters: Holly Ameden, Barbara Tellman, Mary Wallace
Publisher: Gary Woodard

WRRC Director: Hanna J. Cortner

Arizona Water Resource
Water Resources Research Center
College of Agriculture
The University of Arizona
350 North Campbell Avenue
Tucson, Arizona 85719
602-792-9591; FAX 602-792-8518
Email: wrrc@ccit.arizona.edu

News Briefs

Tribal Irrigation Project Planned

Following a public comment period that ends March 17, the Bureau of Reclamation will prepare a draft programmatic environmental impact statement (DPEIS) for construction of a common use irrigation system on the Gila River Indian Community (GRIC). The system would serve lands identified in the Tribe's Master Plan as areas of potential agricultural development. This would include a maximum of 146,330 acres.

CAP-authorized funds allowed under the Colorado River Basin Project Act of 1968 (CRBPA) would fund the project. CRBPA authorized BuRec to assist in development of water delivery systems for Indian communities receiving CAP water. In 1992, GRIC formally contracted for 173,100 acre-feet of CAP water and investigations concerning delivery of the water commenced.

GRIC and BuRec determined that a common use irrigation system, capable of conveying existing and future surface water and groundwater resources in addition to CAP water, is likely to provide the maximum benefit. Plans also provide for the enhancement of wildlife habitat and riparian areas within GRIC, and for the rehabilitation and betterment of the San Carlos Indian Irrigation Project Joint Works.

The DPEIS, a general analysis of project alternatives, is expected to be completed and available for public comment in August. The DPEIS will be followed by development of more detailed design and construction plans for specific GRIC sites.

For more information concerning the DPEIS process contact Sandra Eto, Environmental Protection Specialist, Bureau of Reclamation, P.O. Box 9980, Phoenix, AZ 85058, 602-870-6771.

Assured Water Supply Rules Take Effect

Arizona Department of Water Resources' "Assured and Adequate Water Supply Rules" became effective February 7 (see June-July *AWR*, p.10). Designed to limit groundwater depletion by new subdivisions in Active Management Areas and promote Central Arizona Project water use, the new rules require new developments in AMAs to demonstrate access to an "assured water supply" (i.e., sufficient supply for 100 years). In addition, the rules establish guidelines for determining adequate supplies for new subdivisions outside of AMAs.

Under the new rules, designated water providers have 180 days, or until August 7, to apply for "Designation of Assured Water Supply." Cities and towns with CAP allocations must file an application by December 31, 1997 to maintain their designation status. Applicants may qualify for assured water supply through membership in the newly formed Central Arizona Groundwater Replenishment District (CAGRD).

ADWR has scheduled half-day workshops to explain the application process and assist those intending to apply. Workshops are scheduled for March 6, ADWR, third floor conference room, 500 N. Third St., Phoenix and March 16, ADWR, Tucson AMA conference room, 400 W. Congress, Suite 518, Tucson. The concerns of water providers will be addressed from 9:00-11:30 a.m., with concerns of subdividers and local platting entities discussed from 1:00-3:30 p.m. For information regarding CAGRD membership contact the Central Arizona Water Conservation District at 602-870-2333.

ADEQ Reorganizing — Again

Discussions are underway at the Arizona Department of Environmental Quality on reorganizing the agency to better structure the operating divisions along functional, rather than programmatic lines. This would be the fourth reorganization of the Agency within the last four years.

The move is geared towards increasing efficiency by replacing program-centric units (e.g., mine permitting) with functionally defined units. One possibility is creating four units within each of the three broad environmental areas of water, air, and land. These would consist of: permitting; remediation; compliance and enforcement; and support units. A more radical approach would establish single permitting, remediation, and enforcement sections for the entire agency.

Pinal Authority Forgoes Revenue, Spares IMS

Pinal County Augmentation Authority's Board voted unanimously to forgo $16,500 in pump tax revenues to avoid harming the Irrigation Management Service (IMS). The popular water conservation program works intensively with a small number of farmers each year to improve irrigation efficiencies.

IMS has received $90,000 each of the last four years from Arizona Department of Water Resources' conservation assistance grants. Revenues for the grant program are generated by a 50¢ per acre-foot groundwater pumping tax within the Pinal Active Management Area.

Two events drastically reduced available grant funds for 1995: the 1993 statute that created the Pinal County Augmentation Authority allocated half of all future pump tax revenues to the Authority; and subsidized rates for Central Arizona Project water and other factors led to a 30 percent drop in both groundwater pumpage and tax revenues for 1994.

IMS has secured its $90,000 budget for the current year by combining a conservation assistance grant of $33,500 with $20,000 carried over from previous years, $20,000 from the Bureau of Reclamation, and $16,500 in pump tax revenues the water authority agreed not to take. IMS is seeking new funding sources for future years.

Tucson Narrows CAP Use Options

The City of Tucson has narrowed the potential uses for its Central Arizona Project (CAP) water from nine to five. Dropped from further consideration are: rejecting CAP water and remaining solely on groundwater; delivering CAP water to copper mines that currently pump groundwater; exchanging Tucson's CAP water for Pinal County groundwater; and selling, leasing, or recharging CAP water outside Arizona's Active Management Areas. Each of these potential uses faced serious legal, economic and/or hydrologic problems.

Uses still being considered include: recharge of more CAP water through injection wells, spreading basins, and in-stream; sale, lease and indirect recharge of CAP water to local farmers; demineralization or other additional treatment; and blending CAP water with high-quality groundwater from the City's Avra Valley wellfield. The most controversial use still being considered is treatment and direct delivery using Tucson's existing water treatment plant. Direct delivery of CAP water in 1993 caused numerous problems, including corrosion damage to the distribution system and household appliances and plumbing fixtures.

The five remaining use options will undergo further economic, legal, and engineering analysis. It is anticipated that the final plan will involve a combination of two to four of the most acceptable uses. With a decision not likely for several months, Tucson Water is expanding its pumping capacity to meet upcoming summer demand.

Fort Expansion Fuels River Debate

Not long ago some Sierra Vista residents fretted that a controversy over San Pedro River flow could result in the closure of Fort Huachuca, the area's largest employer. About 13,000 military and civilian personnel work at Fort Huachuca.

That this was not an idle fear was confirmed by Secretary of the Interior Bruce Babbitt last fall when he visited the area and dropped a not-so-veiled hint that the fort could be closed down if longstanding groundwater disputes are not resolved.

Water disputes continue, however, and so does Fort Huachuca. In fact, the fort not only survived the recent round of base closures, it actually came out ahead. An additional 274 Army communications workers were assigned to the fort.

Some in Sierra Vista now have heightened hopes that Sierra Vista will become a national center for military intelligence and communications. Rep. Jim Kolbe wants other military-intelligence functions to be transferred to Fort Huachuca, including the Army's Defense Language Institute in Monterey, California.

Some accuse the federal government of sending mixed messages. In 1988 Congress created the San Pedro Riparian National Conservation Area to protect a 30-mile stretch of the river. Environmentalists are concerned that groundwater pumping in the area eventually will affect the flow of the San Pedro River, the largest undammed river in Arizona. The Southwest Center for Biological Diversity has sued the Army claiming it has not considered the effects of base expansion on decreasing water supplies.

Mercury Found in Peña Blanca Fish

Fishermen are being advised not to eat most fish species caught at Peña Blanca Lake after testing revealed mercury levels nearly three times the safety standard set by U.S. Environmental Protection Agency. The advisory, issued jointly by the Arizona Departments of Environmental Quality (ADEQ) and Health Services, does not extend to other recreational activities, or to trout, which are stocked in the 45-acre lake located nine miles northwest of Nogales.

ADEQ is investigating possible sources of the contamination, including nearby abandoned mine tailings, agricultural fungicides, and natural sources. Mercury is a toxic metal which accumulates in organisms and can affect nerves, brain, and kidneys.

The mercury advisory is the first one issued for an Arizona lake. Testing at nearby Patagonia Lake revealed no traces of mercury.

ADEQ Shuts Down Tombstone Waterline

The approximately 100 Sierra Vista area residents who have tapped into Tombstone's waterline from the Huachuca Mountains may lose their water supply due to a state order.

The Arizona Department of Environmental Quality ordered the antiquated waterline shut down because the surface water supply is delivered to homes without being filtered or chlorinated and may spread waterborne contaminants. The city has until June 1 to comply with the order. Those using the water are being notified of the pending action.

Winter Was Warm, Wet

As an unusually warm and wet winter nears its end, the water supply situation in the Colorado River basin appears mixed. In the upper basin, southwestern Wyoming has below-average snowpack and poor reservoir storage. Colorado also experienced sparse precipitation, except in the southwest part of the state. Utah's precipitation was well above average, but unseasonably warm temperatures melted snowpacks at lower elevations. Snowpack in the San Juan River basin of New Mexico is somewhat above normal, and streamflows in the San Francisco/Gila system are well above normal.

The suppy outlook is more positive in the lower basin. Nevada had a wet winter, and California officially ended its drought, as flooding replaced shortage as the principle water problem. Arizona's snowpack, precipitation and reservoir storage all look very good.

Special Projects

Individuals and organizations involved in water-related studies, pilot projects and applied research are invited to submit information for this section.

Tucson AMA Funds Augmentation and Reuse Projects

The Tucson Active Management Area of the Arizona Department of Water Resources announces projects to be funded under its 1995 Augmentation and Reuse Grant Program. Approximately $600,000 was available to fund projects aimed at developing additional water supplies and maximizing the use of renewable supplies.

Assessment of natural recharge, groundwater storage, and aquifer-storage properties in the lower Canada Del Oro Basin, Metro Water District. Contact: Michael Block.

Description: Gravity methods will be used to accomplish the following three objectives: 1) determine primary areas and volume of streamflow infiltration along the Canada Del Oro (CDO) Wash; 2) measure changes in the volume of groundwater in storage over the period of study for the basin; 3) estimate aquifer storage properties. The study will be conducted by Don Pool of the U.S.G.S. and one University of Arizona graduate student, with Metro reviewing work products, providing contract oversight and coordinating access to monitoring locations.

Background: Metro and several other entities interested in developing renewable supplies for the purpose of securing a 100-year Assured Water Supply are involved in the Northwest Replenishment Feasibility study, a study to assess the feasibility of recharging CAP water and/or effluent in the CDO watershed, the lower Santa Cruz River, and in Avra Valley. The applicant states that the gravity work funded with augmentation monies will provide area interests with information on primary areas of streamflow infiltration and rates of recharge along the CDO Wash, and on how artificial recharge may impact flood control measures.

Advantages: The technology involved in the project is innovative and potentially transferable; project may benefit larger feasibility study and other area providers.

IS&R improvement project: removal and construction of 9,400 feet of ditch pad and lining, BKW Farms. Contact: Ron Wong.

Description: Funds are requested for the replacement of existing small capacity conveyance ditches and irrigation laterals (20 inch in size) with larger (24-inch) capacity ditches and laterals needed to transport CAP water from the CAP canal. This project also will discontinue the use of approximately 1,350 feet of unlined ditch, thereby reducing conveyance losses. The total amount of concrete-lined ditch to be constructed is approximately 9,400 linear feet. The expanded capacity of the conveyance ditches and irrigation laterals will allow delivery of an additional 600 acre-feet of CAP water to the lowest elevation fields located within the permitted facility.

Background: BKW Farms is party to a Groundwater Savings Facility permit issued to the Central Arizona Project. In 1993 and 1994, CAWCD sold 250 ac-ft and 2,014 ac-ft, respectively, of excess CAP water to BKW Farms at a subsidized rate. In return, CAWCD accrues credits for the amount of groundwater which was not pumped by BKW Farms as a result of the in-lieu deliveries.

The City of Tucson applied in September 1994 for a Water Storage Permit at the CAWCD/BKW Farms facility, and proposes to store a portion of its CAP allocation at the facility. The permit application is in the processing stage.

Advantages: Project may lead to additional use of CAP water, and provide the City of Tucson with a means of taking an additional portion of its allocation; project is technically feasible; project is one of only a few construction and implementation proposals submitted that would result in increased use of CAP water in a timely manner.

RECLAIM Project — Research current costs & benefits of converting 150 acres of irrigated turf at 12 TUSD sites to effluent, Tucson Unified School District. Contact: Doug Crockett.

Description: The applicant applied for grant funds to hire two consultants to quantify the costs and benefits of converting 150 acres of turf at 12 TUSD sites from potable to reclaimed water. The project involves updating a 1990 study to quantify costs for connecting the sites to the reclaimed system, estimating costs for repairing the irrigation systems to successfully handle reclaimed water, complete equipment reviews and water audits to quantify distribution uniformity of existing systems, and exploring ways to finance the renovation and conversion to reclaimed water. If the conversion to reclaimed water takes place, the approximate groundwater savings would amount to about 450 ac-ft per year. The applicant has indicated that with the assistance of augmentation grant funds, the conversion could be completed on all 12 sites by 1997.

Background: Seven of the 12 TUSD sites are adjacent to the Tucson Water reclaimed system but have not been converted because of inadequate funds or antiquated irrigation systems. The City plans on extending the reclaimed system to the remaining five sites during the next several years. The school district's bond program does not include funds to repair or connect the 12 sites to the reclaimed system.

Advantages Secondary benefits include education and increased public awareness through the Resources Efficiency Awareness Program; project is cost effective, with economic benefits to taxpayers within the School District.

Geohydrological and geochemical studies for Lower Santa Cruz River and Canada Del Ora Recharge Project, Pima County Flood Control District. Contact: Julia Fonseca.

Description The Flood Control District submitted an application on behalf of the District, the City of Tucson, Metro Water District and the Town of Marana for geohydrological and geochemical work in the Lower Santa Cruz River (LSCR) and the Canada Del Oro (CDO) Watershed. The study will determine the suitability of near-surface soils at the LSCR site and the suitability of the vadose zone at both sites for recharge. In addition, the project will look at the chemical compatibility of CAP water with aquifer materials at the two sites, as well as effluent at the LSCR site. The final objective of the project is to determine the areal extent of groundwater quality changes in the aquifer resulting from recharge of CAP water in the CDO wash.

Background Investigations at the LSCR and CDO sites are part of the larger Northwest Replenishment Feasibility Study, which also includes a study already underway at a third site in Avra Valley. The larger study has drawn the support and cooperation of a large number of northwest area interests, several of which are in the process of developing submittals for an Assured Water Supply. The Bureau of Reclamation has also expressed interest in the larger study because of the CAP recharge and environmental/recreational components of the project, and has indicated that it will provide at least $400,000 toward the study.

Advantages Public cooperation and support for this project is significant, with many northwest area interests potentially benefitting from actual project implementation; there are potential environmental and recreational benefits to recharge at the sites proposed; the project has significant benefits regarding the resolution of water management issues for the Northwest portion of the Tucson AMA; the potential volumetric benefits associated with using the LSCR and CDO sites for recharge are significant.

Tucson Water Planning Constructed Wetlands Project

Plans are underway to design and construct an experimental wetlands/recharge facility that will use backwash water from Tucson Water's Roger Road Reclaimed Water Treatment Plant. An objective of the project is to treat wastewater to a suitable quality for direct use in the city's reclaimed water system. The wetlands project will also be an educational and recreational facility.

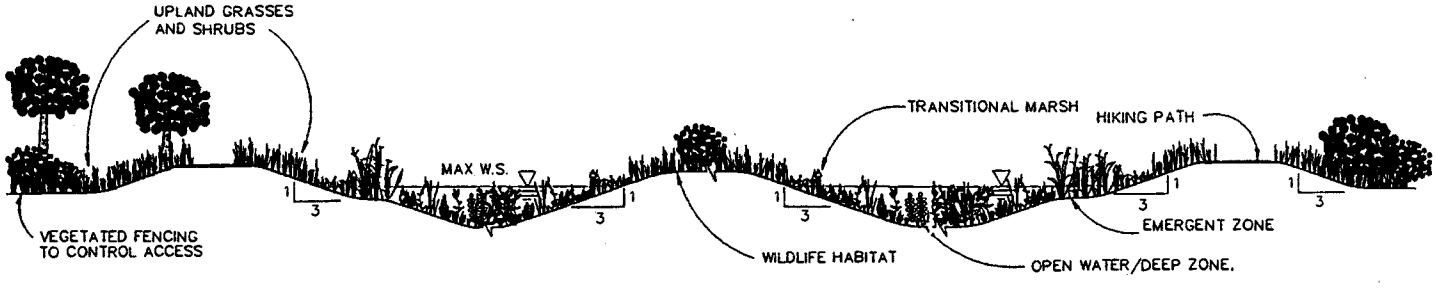
The Tucson Mayor and Council appointed a Citizens' Wetlands/Recharge Advisory Committee to provide community input. The committee advises the city as the educational and recreational components of the project are developed. (see Nov.-Dec. *AWR*, p. 4). After the January Advisory Committee meeting, consultants presented design concepts to the public at an open house.

The current concept calls for two small settling basins, with a winding channel to take water to the wetlands. The wetlands consist of two curvilinear basins containing both shallow and deep water areas. In the shallow water areas, plants such as cattails will grow, both sheltering wildlife and providing a rich environment for microorganisms to grow. The microorganisms will contribute to the further treatment of the wastewater. The deep water areas will contain open water for waterfowl.

Handicap-accessible paths will take visitors around one of the lakes, with several accessible blinds having views to the open water. The area around the wetland is to be planted with native trees and shrubs, and benches will be available for further viewing and listening.

An interpretive program will inform visitors about the wetlands and its vegetation and wildlife. School groups will be able to take advantage of educational opportunities offered by the facility. Packets are to be developed for teachers to help prepare students for the visit.

The project will be located on the east bank of the Santa Cruz River, south of Pima County's Roger Road Wastewater Treatment Plant. The design is expected to be finalized by May, with construction starting in late 1995 or early 1996. For more information, contact Ralph Marra, Tucson Water, 791-2689.



A schematic cross-section of the wetland, with native trees and other plants on the land; shallow water marshes with cattails and other dense vegetation; and deep, open water areas with submerged vegetation.

Publications

Water in Our Desert Community
This document provides a water curriculum with activities for grades 6 through 9. The activities supplement the regular course curriculum in the school systems and emphasize the Arizona Environmental Education Framework. The activities intend to strengthen students' awareness of the social, economic and environmental impact water has on all water users in Arizona. The curriculum was developed under a grant from the Arizona Department of Water Resources Conservation Assistance Fund. Free copies are available to educators within the Phoenix Active Management Area by contacting Lisa Helm, Arizona Municipal Water Users Association, 4041 N. Central Ave. Suite 900, Phoenix, AZ 85012; 602-248-8482.

Drought Management in the Changing West: New Directions for Water Policy - Conference Proceedings
The Western States Water Council cosponsored a conference in May focusing on western water resources management under prolonged drought conditions. Conference proceedings are available and include papers discussing ecological and energy concerns, river basin management, energy, fish and wildlife management, mitigation, planning and policy, urban water supplies, and virtual drought models. Copies are $25 and may be ordered from the International Drought Information Center, University of Nebraska, 241 Lw WW Chase Hall, P.O. Box 830728, Lincoln, Nebraska 68583-0728; phone Don Wilhite, 402-472-6707.

Radioactivity in the Environment — A Case Study of the Puerco and Little Colorado River Basins, Arizona and New Mexico
This report summarizes a four-year study of radioactive elements in water and sediments in the Puerco and Little Colorado river basins conducted by the U.S. Geological Survey (USGS). USGS concluded that although elevated concentrations of dissolved uranium were found in shallow, saturated sediments underlying the Puerco River, these concentrations are not due to past uranium-mining activates but instead are present naturally in rock and sediment in the Little Colorado River basin. USGS notes, however, that because a zone of groundwater contamination was found near the inactive mines and in the first few feet beneath the Puerco River, the greatest health risk is to residents using private wells that have not been tested. The report costs $4 (microfiche or paper) and may be purchased from USGS, Earth Science Information Center, Open-file Reports Section, Box 25286, MS517, Denver Federal Center, Denver, CO 80225. Copies are available for inspection at the Tucson, Tempe, Yuma and Flagstaff USGS offices.

Arizona Riparian Protection Program Legislative Report
This report was required by Senate Bill 1030 (A.R.S.§45-101) and provides a comprehensive assessment of the effects of groundwater pumping and surface water diversions on riparian areas and evaluates alternative regulatory programs that would provide measures of protection for riparian ecosystems. The report is being provided to the Governor, the Speaker of the House of Representatives, the President of the Senate and the 34-member Riparian Area Advisory Committee. A limited number of copies are available to the interested public at a cost of $75. To order a copy, contact Eva Figueroa, Arizona Department of Water Resources, Hydrology Division, 500 N. Third Street, Phoenix, AZ 85004.

The 13th Annual Water Law Conference Papers
The 13th Annual Water Law Conference was conducted February 2-3 and was sponsored by the American Bar Association's Section of Natural Resources, Energy and Environmental Law, in conjunction with the Western States Water Council and the Conference of Western Attorneys General. The conference addressed important developments in many aspects of water law including Bureau of Reclamation issues such as water spreading, contract renewals, and Reclamation Reform Act regulations.

Additional topics included the Endangered Species Act, expert testimony in water rights litigation, groundwater hydrology, and developments involving California's Mono Lake and the Snake and Columbia rivers. This document, which includes papers and comments by conference speakers, costs $55. For additional information on ordering, call 312-988-5724.

For copies of the following two reports contact Gail Kushner, Pima Association of Governments, 177 N. Church Ave., Suite 405, Tucson, AZ 85701: 602-792-1093. Government agencies and non-profit organizations generally are not charged for reports, but private companies usually are charged for reproduction cost.

Integrating Land Use Planning and Water Quality Planning: A Guide for Planners and Local Officials
In this report, Pima Association of Governments provides basic information necessary for local governments to integrate water quality concerns with land use planning. PAG describes ways that land use impacts water quality, summarizes applicable government regulations, discusses site design methods and planning tools, and lists agencies that are sources of relevant information.

Incorporation of Wellhead Protection Strategies into Planning Operations of a Southwestern Water Utility
As a follow-up to PAG's 1992 Wellhead Protection Demonstration Project, PAG assessed the contamination risks to Tucson Water wells and developed strategies for implementing effective wellhead protection.

Transitions

The Arizona Legislature has new chairmen, as well as some new committees. Committee chairmen that are handling most water-related bills are: **Russell Bowers** (R-Mesa), chair, **House Environment Committee**; **Becky Jordan** (R-Glendale), chair, **House Natural Resources and Agriculture Committee**; and **Jim Buster** (R-Yuma), chair, **Senate Natural Resources, Agriculture and Environment Committee**. The **Senate Government Reform Committee**, chaired by **Stan Barnes** (R-Mesa) and the **House States' Rights and Mandates Committee** chaired by **David Eberhard** (R-Peoria) are involved in attempts to redefine federal-state roles in enforcing environmental and water quality laws.

Tucson Water has completely reorganized its organizational structure and hired new top administrators since Director **Kent McClain** arrived last August. **James** R. **Stump** is the new Deputy Director of Tucson Water. He will oversee the daily operation of Tucson Water and supervise six administrators. Stump comes to Tucson Water from Florence, Arizona where he served as Finance Director. Previous positions include city manager of Coolidge, Arizona and director of four municipal water and sewer systems.

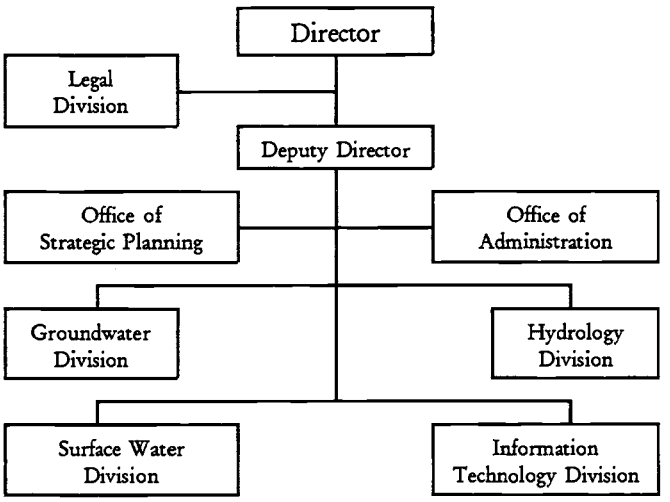
New administrators include **Jennifer Gillaspie**, who will run Water Operations. Gillaspie brings to Tucson Water a decade of experience with the U.S. Bureau of Reclamation, including work on the Central Arizona Project. **Sally Mapes** is the new Water Quality administrator. Mapes was the head of the Arizona Department of Environmental Quality's Compliance Section. **Craig Blair** assumed the position of Water Administration Administrator. Blair previously worked for a power utility in Minneapolis.

Angie Muñoz, Customer Administrator, and **Bill Wright**, Water Treatment Administrator, are holdovers from Tucson Water's previous top staff. The position of Planning and Engineering Administrator remains vacant.

Lester Snow, General Manager, San Diego County Water Authority, recently submitted his resignation in order to take the newly created position of **Program Manager, Bay-Delta Estuary**. Snow will officially be an employee of the U.S. Bureau of Recreation, but will have an office with the California DWR in Sacramento, as he seeks a long-term management plan for the estuary. Snow went to San Diego in 1988 from the position of Director of the Tucson Active Management Area, Arizona Department of Water Resources.

Beverly Beddow has left the Arizona Department of Water Resources where she served as Public Information Officer on a half-time basis. Replacing Beddow on a full-time basis is **Craig Sullivan**, who comes to ADWR from a position as Aide to Governor Symington.

The Arizona Department of Water Resources has undergone a **reorganization** aimed at streamlining the agency and emphasizing its role in surface water regulation. The former structure had two deputy directors; the new structure has a single deputy director and four assistant directors (see org. chart).



Joe Smith will be the deputy director. Smith came to ADWR from ADEQ last fall. Assistant Directors for the four divisions have not yet been named.

Under the new structure, the central planning office is being dismantled, with the Third Management Plan team coming under the direction of Steve Olson, who remains responsible for lobbying. Another component of central planning will become part of the new Information Technology Division, which will include both Management Information Systems (MIS) and Geographic Information Systems (GIS).

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

Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona Hydrological Society
Arizona Municipal Water Users Association
Central Arizona Water Conservation District
Geraghty & Miller
Salt River Project
Tucson Water
USGS Water Resources Division
Water Utilities Association of Arizona

Their contributions help make continued publication of this newsletter possible.

Announcements

Artificial Groundwater Recharge Symposium Scheduled

The Water Resources Research Center, Salt River Project and the USDA Water Conservation Lab are sponsoring the 7th Biennial Symposium on the Artificial Recharge of Groundwater. Titled *The Role of Recharge in Integrated Water Management*, the symposium will be held on May 17-19 at The Buttes, a mountaintop resort in Tempe, Arizona (note: the location has been changed from Scottsdale). Presentations will focus on effective recharge projects and on state-of-the-art methods for using recharge to manage water quality and quantity. Fees cover symposium admission, breaks, lunches, symposium proceedings, and a field trip to Granite Reef Underground Storage Project and the Scottsdale Water Campus. Early registration fee is $90; after April 30 registration costs $110. Early student fee is $55, with late fee of $90. For more information contact Mary Wallace, WRRC, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721; phone 602-792-9591.

Seminar Introduces Artificial Recharge

The American Society of Civil Engineers is conducting a seminar, *Introduction to Artificial Recharge*, to precede the above conference. The Seminar will provide a comprehensive technical overview of artificial recharge, including purposes, methods, investigation approaches, operations, regulatory issues, costs and selected case studies. Before April 16, fees are $195 for ASCE members and $215 for nonmembers; after April 16, $245 and $265, respectively. A ten percent discount is available for two or more registrations from the same organization. To register or for more information call ASCE Continuing Education at 1-800-548-2723, ext. 7959 or 212-705-7959.

Water, Wastewater Conference Set

The Arizona Water and Pollution Control Association is hosting its annual conference May 3-5 at the Sheraton Mesa Hotel, Mesa, Arizona. Sessions will be split between water and wastewater, with speakers from government agencies, universities and private companies. Topics include regulatory compliance, technical methodology and developments, case studies, and water quality. Conference rates are $68 or $140 per night (depending on room selection). Hotel registration is due April 3. For more information call 602-898-8300 or 800-456-6372; fax 602-964-9279.

Environmental Scholarships Available

To promote environmental education, the Southern Arizona Environmental Management Society is offering two $1,000 scholarships, one undergraduate and one graduate, for students pursuing a career in an environmental area. Applications must be made prior to March 24, 1995. To apply write to SAEMS, P.O. Box 41433, Tucson, AZ 85747; or call Ann Marie Wolf, 602-529-0080, or Dan Donegan, 602-798-1466.

Groundwater Seminar Scheduled

The Arizona Water and Pollution Control Association is conducting a seminar on current Arizona groundwater topics including aquifer assessment, well rehabilitation, permitting processes, recharge and groundwater treatment. Speakers include industry leaders such as Dr. Ken Schmidt. The seminar will be held March 17, 7:30 a.m.-4 p.m. at South Mountain Pointe in Phoenix. Cost is $40 for members, $50 for nonmembers. For registration forms contact Brian Peck, John Carollo Engineers, 3877 N. 7th St., Suite 400, Phoenix, AZ, 85014; phone 602-263-9500; fax 602-265-1422.

Riparian Council Calls for Papers

The Arizona Riparian Council's ninth annual meeting will be May 12-13 at Swiss Village Lodge, Payson, Arizona. The theme of the meeting is *Balancing Riparian Issues*, and papers are encouraged to address such issues as water supply, land use, and population growth. All abstracts, however, will given equal consideration. Interested presenters should submit a 250-500 word abstract by March 24. For additional meeting information or abstract submission forms contact Cindy D. Zisner, ARC, Center for Environmental Studies, Arizona State University, Box 873211, Tempe, AZ, 85287-3211; phone 602-965-2490; fax 602-965-0870.

Watershed Management, Wetlands Ecosystems Symposium

A national symposium, "Watershed Management and Wetland Ecosystems," will be held April 23-26 in Tampa, Florida. The goal of the symposium is to promote the management of wetlands in a watershed context, and the integration of wetland ecosystem management with broader watershed management efforts including floodplain management, stormwater management, water supply, water quality protection, recreation, and other efforts. Existing policies and programs will be examined along with implementation issues. Specific topics include implementation of President Clinton's wetland plan, Clean Water Act reauthorization initiatives, cost-effective watershed management, and improving cooperation between government agencies. For more information call John Kusler, 518-872-1804.

Calendar of Events

RECURRING

Arizona Hydrological Society (Phoenix). Mar. 14, 7:00 p.m. Spaghetti Company, 1418 N. Central Ave, Phoenix. Reservations required, RSVP Sandy Kuchan 602-966-2337.

Arizona Hydrological Society (Tucson). 2nd Tuesday of the month. Mar. 14, 7:00 p.m. Thomas Maddock, Hydrology and Water Resources Dept., UA, will give presentation on groundwater modeling. WRRC, 350 N. Campbell Ave., Tucson. Contact: Laurie Wirt 602-670-6231.

Arizona Water & Pollution Control Association. Monthly luncheon series. Topic: Surfing the Internet — An Online Experience. Mar. 21, 11:45 a.m. Reservation deadline: Mar. 17. Ramada Downtown, 475 N. Granada, Tucson. Contact: Brad Jurkovac 602-791-2544.

Arizona Water Protection Fund Commission. Mar. 28, 10:00 a.m. Cottonwood Civic Center, 805 North Main St., Cottonwood. Contact: Trish McCraw 602-417-2400.

Arizona Water Resources Advisory Board. To be scheduled. Contact: Craig Sullivan 602-417-2440.

Central Arizona Project. 1st Thursday of the month, 12:30 p.m. CAP Board Room, 23636 N. 7th St., Phoenix. Contact: Donna Micetic 602-870-2333.

City of Tucson Citizens Advisory Committee. 1st Tuesday of the month, 7:00 a.m. 310 W. Alameda, Tucson. Contact: Karen Alff 602-791-2666.

Maricopa Association of Governments / Water Quality Advisory Committee. Next meeting to be announced. Contact: Eileen Miller 602-254-6308.

Maricopa County Flood Control Advisory Board. 4th Wednesday of the month, 2:00 p.m. 2801 W. Durango. Phoenix. Contact: 602-506-1501.

Phoenix AMA, GUAC. Apr. 5, 9:30 a.m. 500 N. 3rd St., ADWR, Phoenix. Contact: Mark Frank 602-417-2465.

Pima Association of Governments / Water Quality Subcommittee. 3rd Thursday of the month, 9:30 a.m. 177 N. Church St., Suite 405, Tucson. Contact: Gail Kushner 602-792-1093.

Pima Co. Flood Control District Advisory Committee. 3rd Wed. of the month. Mar. 15, 7:30 a.m. Room A, 201 N. Stone, Tucson. Contact: Carla Danforth 602-740-6350.

Pinal AMA, GUAC. Mar. 16. 1000 E. Racine, Casa Grande. Contact: Dennis Kimberlin 602-836-4857.

Prescott AMA, GUAC. Mar. 27. 2200 E. Hillsdale, Prescott, Prescott. Contact: Phil Foster 602-778-7202.

Santa Cruz AMA, GUAC. Mar. 22, 9:00 a.m. 857 W. Bell Rd., Suite 3, Nogales. Contact: Placido Dos Santos 602-761-1814.

Tucson AMA, GUAC. Mar. 24, 9:00 a.m. 400 W. Congress, Suite 518, Tucson. Contact: Kathy Jacobs 602-628-6758.

Verde Watershed Association. To be announced. Contact: Tom Bonomo, VWA Newsletter Editor, c/o Verde R.D., P.O. Box 670, Camp Verde, 602-567-4121.

Yavapai County Flood Control District Board of Directors 2nd Monday of the month in Prescott, 255 E. Gurley St.; 4th Monday in Cottonwood, 575 E. Mingus. Contact: YCFCD, 255 East Gurley, Prescott, 602-771-3196.

UPCOMING

March 27-29, **Approaching the 21st Century — Doing it Right.** The Annual Conference of the Arizona Small Utilities Association (ASUA). YWCA Leadership Development Center, Phoenix. Early registration must be received by March 22. For more information contact ASUA, 1955 W. Grant Rd. Suite 125, Tucson, AZ 85745; phone 602-620-0230; fax 602-620-0601.

April 2-6, **Microirrigation for a Changing World: Conserving Resources/Preserving the Environment.** The Fifth International Microirrigation Congress and Exposition sponsored by the American Society for Agricultural Engineers (ASAE). Hyatt Orlando Hotel, Orlando, Florida. For information contact ASAE, 2950 Niles Rd., St. Joseph, MI 49085-9659; phone 616-429-0300.

April 23-26, **Water in the 21st Century: Conservation, Demand, and Supply.** The Annual Spring Symposium of the American Water Resources Association (AWRA). Red Lion Salt Lake, Salt Lake City, Utah. Early-bird registration must be received by March 17. For more information contact: AWRA, 950 Herdon Parkway, Suite 300, Herdon, VA 22070; phone 703-904-1225; fax 703-904-1228.

Submit calendar, announcement, or publication information to Holly Ameden at the WRRC; phone 602-792-9591; fax 602-792-8518.

Announcements, continued from page 10

National Watershed Conference Scheduled

The National Watershed Coalition is hosting its "Fourth National Watershed Conference" on May 21-24 at the Charleston Civic Center, Charleston, West Virginia. The meeting's theme is "Opening the Toolbox: Strategies for Successful Watershed Management." The conference will examine current watershed and floodplain management programs and ecosystem planning strategies, their commonalities and constraints, with a view toward using an integrated approach to water resource management.

Conference topics include: flood prevention while protecting natural resources; on-farm and watershed-wide water quality protection; partnership approaches to meeting watershed needs and opportunities; nonstructural flood control measures; and riparian corridor management and restoration. Registration is $185 before May 5, $225 after. For further information, contact Robert Raschke, Western Regional Office, National Association of Conservation Districts, 9150 W. Jewell, Suite 102, Lakewood, CO 80232-6469; voice 303-988-1810; fax 303-988-1896.

Water Protection Fund Seeks Input

The Arizona Water Protection Fund Commission will hold four March workshops to solicit further input on three guidelines presented in the Water Protection Fund Legislation. Questionnaires regarding these guidelines were mailed to interested parties; summaries of responses will be presented at workshops. Workshops will be March 15, 6:30-8:30 p.m., Tucson Public Library, Children's Room, 101 N. Stone Ave., Tucson; March 20, 7:00-9:00 p.m., ADWR, 500 N. Third St., Third Floor Conference Room, Phoenix; March 22, 7:00-9:00 p.m., City Council Chambers, 200 W. Cooly, Showlow; and March 23, 7:00-9:00 p.m., Cottonwood Civic Center, 805 N. Main St., Cottonwood. Contact Tricia McCraw, WPF Program Manager, 602-417-2460.

Santa Cruz AMA Seeks Conservation, Augmentation and Reuse Proposals

The Department of Water Resources, Santa Cruz Active Management Area, seeks applications for funding for conservation assistance, augmentation, and reuse projects which will benefit the AMA. Funding available for 1995 is estimated at $85,000. Applications must be received by May 12. For more information on the program, or to request a 1995 grant application packet, contact Lisa Jackson, 602-761-1814.

ARIZONA WATER RESOURCE

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

Address Correction Requested

NON-PROFIT ORG.
US POSTAGE
PAID
TUCSON, ARIZONA
PERMIT NO. 190

THE UNIVERSITY OF
ARIZONA
TUCSON ARIZONA