

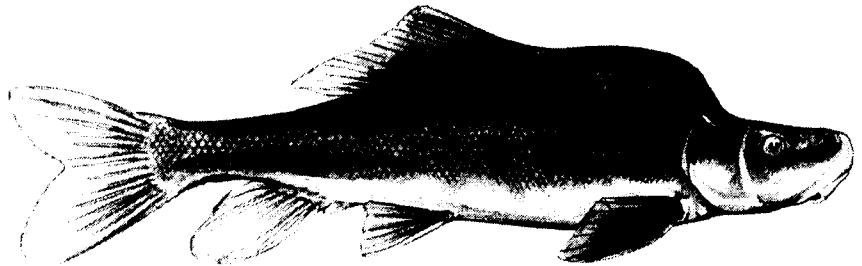
It's Fishin' Season

News stories tend to occur in clusters, with several stories about a particular topic suddenly appearing. For example, a number of news stories about fish recently surfaced. With six or seven at last count, the fish stories are running in a school.

Appropriately this open season for fish stories is occurring during the lazy days of summer, fishin' time for many folks. To give special focus to the season, the piscatory pieces are netted together into a special fish supplement, on pages 8 and 9.

Fish are newsworthy because they are significant in recent water resource decisions. Such decisions must reckon with the growing importance of environmental considerations. These include laws to protect threatened and endangered species, among which fish figure prominently.

Fish illustrations are by Mary Hirsch and appear in a poster titled, "Native Fish of Arizona, A Vanishing Legacy." The poster is available free from Tom Cain, Coconino National Forest, 2323 E. Greenlaw, Flagstaff, AZ 86004.



The Razorback Sucker (Xyrauchen texanus) is the second largest fish native to Arizona and one of the largest suckers in North America, typically growing to 30 inches and weighing six pounds, but occasionally exceeding 3 feet and 13 pounds. A segment of the Gila River is proposed as "critical habitat" for the Razorback Sucker.

Gila River's Critical Fish Habitat Designation Disputed

Along the Gila River from the New Mexico border to Coolidge Dam people are choosing sides in what appears to be another jobs-and-development versus the environment debate. The U.S. Fish and Wildlife Service has proposed that stretch of the Gila River as "critical habitat" for the Razorback Sucker (*Xyrauchen texanus*), a native fish once common in the river. Local irrigators and others fear the designation will interfere with their water rights and prevent development.

At the same time, Azco Mining, Inc. has proposed an open-pit copper mine, to be located north of the Gila River between Safford and Morenci. The mine pit would be 4,000 feet wide and 1,200 feet deep. Environmentalists oppose the mine because of possible contamination of the Gila River and its proposed critical habitat for the Razorback Sucker.

Listed as endangered by both federal and state agencies, the Razorback Sucker once was so abundant that it was fished commercially on the Gila, Salt and Verde rivers during the 1940s. Loss of habitat coincided with dam construction which began in 1911. Subsequent competition from exotic species caused sharp declines in the Razorback's populations. By the mid-1950s, habitat was reduced to two Colorado River reservoirs.

The Razorback Sucker has been listed as endangered since 1991, but the U.S. Fish and Wildlife Service proposed only in January 1993 to designate 130 miles of the Gila River as critical habitat. According to Leslie Fitzpatrick, a biologist with the U.S. Fish and Wildlife Service, the Razorback Sucker was one of four species of fish native to the Colorado River and its tributaries listed. At the time of the listing, Fish and Wildlife took the position that critical habitat for the species was "not determinable."

This position was disputed by the Sierra Club, whose Legal Defense Fund filed suit in November 1991 to force Fish and Wildlife to designate the habitat.

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A year later the court ordered the Service to publish proposed critical habitat designations within 90 days.

To comply with the court order, the Service published its proposed rules January 29, 1993, before completing the customary biological and economic studies. These studies are due out for public review in August. The court-ordered time schedule is very short for such a large and complex listing, involving critical habitat designation for four species in six states, and covering 2,000 miles of river.

During the public comment period, Fish and Wildlife received numerous comments from people in the Gila River area, including the Graham County Farm Bureau. The message of most of the comments was, "Don't do it." The reasons given seem to stem from a misunderstanding of the authority of the Service to protect critical habitat. People believe that the habitat would take water rights, prevent the use of water for development, force Safford to stop taking water from Bonitas Creek, and prevent future flood control projects. Actually, critical habitat rules only apply when federal action is necessary; therefore, most activities would be unaffected.

However, Donald Weesner, the Gila Water Commissioner, believes that designating the Gila River as critical habitat would be "detrimental to the operation of irrigation districts." He suggests that if a flood, like the one experienced this year, were to wash out irrigation diversion structures, the irrigation districts would not be allowed to rebuild, because they could not use heavy equipment in the river.

Sally Stefferud of the U.S. Fish and Wildlife Service agrees that the need to rebuild in the river after a flood may trigger a justifiable concern. Such rebuilding might require a federal permit. If a federal permit were required, critical habitat rules would apply. It is hard to predict how the rules would operate; however, they would not prohibit rebuilding. More likely, they would require some modification to

accommodate fish movement.

Attempts over the last decade to reintroduce the Razorback Sucker to the Gila River and elsewhere in Arizona have had limited success. The main problem with reintroduction efforts has been the existence of non-native species, such as catfish and carp, in the river. According to biologist Fitzpatrick, although millions of small fry were introduced over the past ten years, most were eaten within four to five days. In recent years, the fish have been introduced when they are larger, a practice that has produced better survival rates in other streams.



In addition to opposing designation of the Gila River segment as critical habitat for the Razorback Sucker, local irrigators also are at odds with environmentalists over Azco Mining, Inc.'s proposed Sanchez Copper Project. The mine is supported by many local groups, including the Graham County Board of Supervisors, Graham County Chamber of Commerce, and Gila Valley Irrigation District. Azco promises 210 jobs with a minimum salary of \$25,000 and annual purchases of local goods and services in excess of \$6 million.

The U.S. Bureau of Land Management (BLM) recently granted a permit to Azco for the mine. Margaret Jensen, the Gila Resource Area Manager for the BLM in Safford, stated that during the Environmental Impact Statement (EIS) process they examined the range of plausible scenarios for accidental contamination. They concluded that activities associated with the mine, which is one mile from the river at its nearest point, would have no impact on the river. Their study of possible acid spills demonstrated to their satisfaction that intervening factors, such as alkaline soils or flood

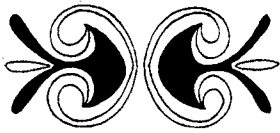
flows, would neutralize or dilute the acid to the level of no impact.

Representatives of the environmental organizations who have appealed the Azco permit dispute the BLM's conclusions. Peter Galvin, who signed the appeal on behalf of the Greater Gila Biodiversity Project of Silver City, New Mexico and the Southwest Center for Biological Diversity in Phoenix, is quoted in the "Arizona Daily Star" enumerating the ways contaminants could reach the Gila River from the mine. These include leaching from inadequately lined ponds, flood spills, airborne sulfuric acid, and delivery truck spills.

U.S. Fish and Wildlife, in its review of the EIS, raised the issues of possible groundwater contamination and contaminant spills in its comments. The agency has accepted the BLM response that the mine as planned would have no adverse impact on the river. As far as Fitzpatrick is aware, the EIS was not reviewed independently for Fish and Wildlife by a hydrologist.

The mine is also opposed by the San Carlos Apaches and Gila River Indian Community, who claim the mine will reduce flows in the Gila River, to which they have rights. In response Jensen stated that the groundwater studies performed during the EIS process showed that the mine would not interfere with the aquifer that is connected with the river. The aquifer the mine will tap for its groundwater pumping has an entirely different chemistry than the river. Jensen also stated that because the State of Arizona regulates groundwater, the Department of Water Resources (DWR), not the BLM, is the appropriate agency to consider the objections of the tribes. Azco Mining, Inc. is now applying to DWR and the Arizona Department of Environmental Quality for state permits. More groundwater studies are in progress.

Also, an appeal of the BLM's Azco Mining permit was filed by a local historian concerned about destruction of 38 archaeological sites identified in the area.



Water Vapors

In recent issues, we beseeched *AWR* readers for feedback, and our last issue prompted some, including a letter of clarification, a phone call correcting a minor fact, and an irate fax from a lawyer demanding a retraction.

Payson Piece Panned

What stirred two of the responses was our feature story on Department of Water Resources's proposed marketing criteria for CAP subcontracts (see April/May *AWR*, p.1). The story referred to an exchange involving the Town of Payson, a developer and the City of Scottsdale. In it, we paraphrased "highly placed sources" at the DWR as saying that the cash-for-contract transaction caught DWR by surprise. We also stated that Payson was not obligated to use funds from the transaction to enhance its water supply.

This provoked a five-page fax from Steven Hoffman of Steptoe & Johnson, counsel to the Town of Payson. Space limitations prevent its reproduction in full, but the following excerpt captures the gist of the complaint:

"(Your) article refers at several points to a proposed transaction concerning the assignment of the Town's CAP subcontract to the City of Scottsdale. Regrettably, the article contained several fundamental factual errors, and the Town hereby seeks a retraction and correction... Most objectionable to the Town is the following erroneous statement: 'While Payson has stated its intent to spend the funds received for its CAP subcontract on water supply development, it is not obliged to do so.' Nothing could be further from the truth... Payson has repeatedly proposed that exchange monies be used solely for water development purposes, and from the very first draft of the exchange documents, this limitation on expenditures has been contractually set in stone."

Hoffman listed six other relatively minor points, such as whether DWR was "caught by surprise" and whether the subcontract was transferred from Payson to a developer to Scottsdale or directly from Payson to Scottsdale.

A more measured response to the article was received subsequently:

"In the article entitled 'DWR Proposes CAP Marketing Criteria', the statement is made 'while Payson has stated its intent to spend the funds received for its CAP subcontract on water supply development, it is not obliged to do so.' This is an incorrect statement. The exchange agreement among the Town of Payson, Southwest Community Resources, Inc., the City of Scottsdale, The Central Arizona Water Conservation District, and the United States, requires the Town of Payson to establish an irrevocable trust fund for all monies received in the transaction. The money in the trust fund 'may only be used for purposes of defraying the expenses associated with investigating, planning, designing, constructing, acquiring and/or developing an alternate water supply to replace the CAP water assigned by Payson pursuant to this Agreement.' Any excess funds not needed for this purpose will revert to CAWCD.

"This is one of the most important elements of the Payson exchange, as it makes the transaction a 'water-for-money-for-water' exchange instead of a 'water-for-water' exchange."

Barbara R. Goldberg, Assistant City Attorney, City of Scottsdale

A check of our notes and phone calls to DWR officials confirmed that they said what we thought they said, and stood by those statements — what Payson claims is a water-for-water exchange they see as marketing. The crux of the disagreement appears to be whether money received in exchange for CAP subcontracts should be earmarked solely for acquiring supplies of a similar nature, i.e., new supplies transported into the area, or should be spent on development of local supplies, such as recharge of effluent.

So was the deal water for money, water for water, or water for money for water? The most accurate description (and certainly the ugliest) may be renewable non-local water for earmarked money for development of local or non-local water supplies.

Finally, an anonymous reader noted that the reported collapse of the I-95 bridge over the Gila River actually involved U.S. 95. (Thanks a lot, Sharon.)

New Sponsor Enlists

The Arizona Hydrological Society has joined the growing list of *AWR* sponsors. AHS is a non-profit organization with 360 members in three local chapters in Phoenix, Tucson and Flagstaff. AHS activities include monthly meetings for water resources professionals featuring a continuing education component, an annual symposium, speakers bureau, field trips, and student scholarships. A major AHS goal is establishing professional standards for the practice of hydrology in Arizona.



Arizona Water Resource is published ten 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.

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News Briefs

Riparian Advisory Committee Moves Forward

The Governor's Riparian Area Advisory Committee (RAAC), mandated by the 1992 Legislature, has been meeting monthly to deal with riparian protection issues. (See November *AWR*, p. 5, February *AWR*, p. 5 for background information.) The committee is charged with developing recommendations for the Governor and the Legislature regarding measures to protect riparian areas.

Committee work is being supplemented by studies conducted by three state agencies — an inventory of perennial and intermittent streams by Game and Fish, a study of impacts of various land uses by Environmental Quality, and a study of groundwater-surface water relationships by Water Resources. Pending completion of the studies in the fall of 1993, the committee will concentrate on gaining background information on what federal agencies and other states are doing, and on defining issues and desired outcomes.

Since the committee represents a broad cross-section of interest groups concerned with what happens in riparian areas — cattle growers, sand and gravel operators, mines, recreation, wildlife, etc. — considerable time has been spent in attempting to define the desired outcomes from various points of view. Some, for example, place a high value on preserving habitats and biological diversity, while others are focussed on economic values, protection of private property rights or the needs of downstream water users. While there is great diversity of opinion on the committee, members generally agree that all concerns must be considered in any proposed legislation or incentive programs.

Three broad types of actions are under consideration: 1) regulatory

programs to protect riparian areas, such as setting up a protected rivers system, developing water quality protection programs on a watershed basis, or land acquisition programs; 2) non-regulatory programs designed to provide incentives for private landowners to develop protection strategies, such as grant or loan programs, tax incentives, water banking for riparian protection or partnerships between public agencies and private landowners; and 3) changes in state laws to further riparian protection, such as measures to allow transfer of water rights for riparian protection uses, controls on groundwater pumping near streams and relaxation of various laws and regulations which encourage municipal effluent dischargers to remove their flows from watercourses.

RAAC meetings are open to the public. The committee hopes to meet in various parts of the state to gain public input on plan content. To be added to the mailing list, contact Kris Randall at DEQ 602-207-4310.

Repair of Dikes Adds to CAP Money Woes

Adding to the financial woes of the Central Arizona Project, Bureau of Reclamation officials have announced that at least \$32 million will be needed to repair flood control dikes near Phoenix. The 15-mile long Paradise Valley Detention dikes cost approximately \$10 million to build in the 1970s, but have since developed a series of cracks. This damage has been attributed to the use of low density materials in the foundation, resulting in uneven settling. Though the cracking occurred over many years, this winter's floods heightened concern over the integrity of the dikes. Their failure could lead to damage to the CAP canal itself, and flooding of portions of north Phoenix and Scottsdale.

The \$3 million first phase of the repair project was recently awarded to the Barnard Construction Company of Bozeman, Montana to reinforce a 1,100-foot section of the dikes. The section will be tested to determine if

seepage is causing further internal erosion. If no seepage is found, repairs will proceed along a 12-mile stretch where the dikes have cracked. Repairs are projected to take two and a half years.

Barnard Construction has estimated the total cost of repairs at \$32 million. However, Federal officials reportedly expect the total to be \$40 million or more. How the repairs will be financed has yet to be determined, but these costs come at a time when CAP is facing serious financial difficulty from lowered agricultural demand, along with \$150 million for repairs to six siphons and growing debate as to how the \$4 billion project will pay for itself.

Draft AWS Rules Trundle On

The Draft Assured and Adequate Water Supply Rules, having taken on a life of their own, continue to run a gauntlet of public review and comment. The Department of Water Resources reviewed more than 80 submitted comments addressing such issues as alternative groundwater allocation schemes and surface water legal availability. DWR held public forums in late June in each Active Management Area soliciting additional input on these subjects and others, and continues to seek additional input. In addition, passage of SB 1425 creating the Central Arizona Groundwater Replenishment District substantially changed the legislative framework within which the rules will be administered. Numerous changes are contemplated, although the basic structure of the rules likely will remain intact.

DWR also held public workshops in each AMA on the Economic Impact Assessment of the costs of implementing the rules. The assessment includes two components: a supply and demand analysis for the water providers in the AMAs, with emphasis on those providers with growth potential; and a regional impact analysis. A summary report of the analysis was released July 1st, with the deadline for comments

being August 20th. (To receive a copy of the Economic Impact Assessment Summary report, call the Tucson AMA at 628-6758.)

The current schedule for the rules includes completion of a draft rule package for review by the Governor's Regulatory Review Council in October, with public hearings possibly scheduled for spring 1994. Adoption is expected for the summer of 1994; the final hurdle will be review by the Attorney General's office. The mandated adoption date of January 1, 1995, still appears feasible. Stay tuned!

Cacti, Geology Thwart Terminal Storage Site

The preferred site for Central Arizona Project terminal storage southwest of Tucson appears to have been ruled out on the basis of biological and geological tests. The site has some 160 rare Pima Pineapple Cacti. This is the largest known cluster of the cactus, which has been nominated for endangered species status. In addition, a dropoff in bedrock beneath the site raises the risk of uneven settling and fissuring, creating a safety hazard.

A possible alternate site has been identified on the Pasqua Yaqui reservation just east of the preferred site. A preliminary examination of the site revealed about 90 Pima Pineapples, the second largest known cluster. If a land swap can be negotiated with the Pasqua Yaquis, an attempt will be made to mitigate the lost cactus habitat.

CAP Advisory Rump Group Deliberates

The Governor's Central Arizona Project Advisory Committee, having expanded in recent months from 28 original members to 34, apparently was too unwieldy to function effectively (see April/May *AWR*, p. 4). An unofficial rump group consisting of approximately a dozen committee members has formed to address seven basic issues regarding the future of the CAP.

Rump group members reportedly include the following: George Britton; Frank Brooks; Jim Bruner; Jim Feltham; Jim Henness; Mark de Michelle; George Miller; Jack Pfister; Karl Polen; George Renner; and Russ Schlittenhart. (See Dec. 1992/Jan. 1993 *AWR*, p. 6 for affiliations.) The group is being staffed by Department of Water Resources Director Rita Pearson and Deputy Directors Larry Linser and Herb Dishlip.

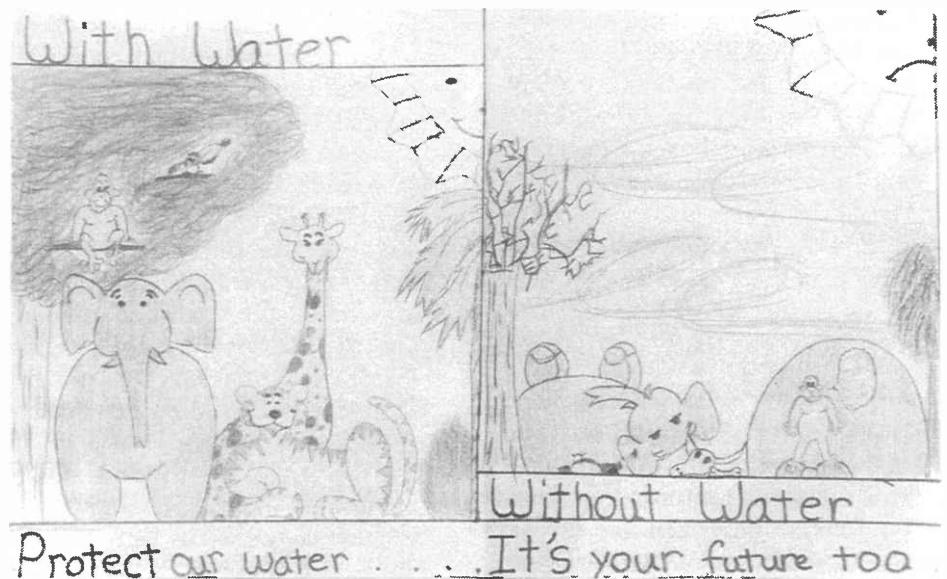
The seven policy questions on the rump group's agenda are:

- Should full utilization of CAP be a policy objective of Arizona? Is it achievable?
- How should the CAP be used to implement the goals of the Groundwater Management Act?
- Should it be State policy to subsidize CAP agriculture and to prevent the bankruptcy of the irrigation districts?
- Should CAP water be used for environmental purposes?
- Should additional CAP water be allocated for M&I uses?
- Should CAP water be made available to facilitate Indian water rights settlements?
- Should the State be looking for other sources of revenue (e.g., increased

property taxes) to fund solutions to the CAP problems?

The group's initial meeting featured a lively debate on the first four items, with consensus reached on the need to consider carefully environmental enhancements in any restructuring plan. One of the most contentious issues continues to be whether farmers should be subsidized to prevent default of their debt and maintain them as CAP users. The governor's office reputedly supports some level of agricultural relief, although identifying the source of necessary funds remains problematic.

DWR staff and de Michelle, co-chair of the full committee, are developing a policy paper to promote deliberations of the larger committee, which next meets on August 16. The Committee's working groups on Financial/Legal, Indian and Environmental Issues continue to meet. The Financial/Legal and Indian groups merged, however, when it became apparent that the principal obstacle to using CAP water to satisfy tribal claims was its price.



This is one of 81 Arizona entrants in this year's Powell Water Education Poster Contest. Teachers in the seven Colorado River basin states were encouraged to teach "water literacy" and have students create posters on this year's theme— "Water Makes Earth Our Home!" Two winners from each state will be included in a 1993-94 classroom calendar, and the Arizona winners met Governor Symington.

UA Honors Resnick, Harshbarger

The University of Arizona awarded Sol D. Resnick an honorary Doctor of Science degree from the University of Arizona on May 15 in recognition of his many and varied achievements in the field of hydrology, both internationally and in Arizona. His international work included projects in India, Thailand, Brazil, the Philippines, China and Israel.

Resnick joined the UA in 1957, a time of water resource management change in Arizona. He provided technical assistance to state and federal planners in settling litigation with California over Colorado River water. Also he had a role in developing the 1980 Arizona Ground Water Management Act.

Cosponsored by the WRRC and the Special Master, Arizona General Stream Adjudication, a Saul Resnick Internship was established in 1992 to support a graduate or law student while working with the Special Master. Resnick retired from the university in 1984 and is Director Emeritus at the UA Water Resources Research Center.

Also the UA recently honored former hydrology professor John W. Harshbarger by renaming the Geology and Mines building after him. He founded the UA Department of Hydrology and Water Resources, and contributed substantially to its national and international reputation. Harshbarger, who died in October 1991, was associated with the UA for more than three decades.

A First—Pima County Farmers Use CAP Water

Despite a refusal by all potential agricultural sub-contractors in the Tucson Active Management Area to sign contracts, Central Arizona Project (CAP) water is flowing onto fields in the AMA for the first time. The Santa Cruz Valley Water District's intertie between the CAP aqueduct and the Cortero Marana Irrigation District

(CMID) northwest of Tucson was completed and water began flowing June 19. CMID contributed \$50,000 towards the \$125,000 project, and is paying \$13 per acre-foot for the water. The Central Arizona Water Conservation District is covering the \$25 balance of the \$38 per acre-foot spot market price, in exchange for the indirect storage and recovery credits generated. SCVWD is negotiating with CAWCD to get first right of refusal on the recharge credits.

CMID consists of 12,500 total acres of mostly cotton irrigated with 23,000 acre-feet of surface water, groundwater, and effluent. This year, groundwater pumping will be reduced by diversion of 5,000 acre-feet of CAP water. CAP usage next year could total 10,000 acre-feet.



Gila Topminnow (actual size)

Start-up of the intertie was nearly derailed by concerns over the project's potential impact on the Gila Topminnow, an endangered fish. (See related stories, pp. 8&9.) After discussions and negotiations with the U.S. Fish and Wildlife Service, a \$6,600 fish screen was installed and a conditional one-year permit issued. The interim solution gives Fish and Wildlife time to complete a study.

Another intertie between the CAP aqueduct and BKW Farms in Avra Valley is scheduled to be up and running in August. BKW Farms is financing the temporary portable turnout, with SCVWD paying for the engineering work. As much as 8,800 acre-feet of CAP water could be used next year. BKW Farms does not have to install any fish screens or otherwise modify its planned operations as a result of the endangered species act because its fields are located farther from the Santa Cruz River and contain no tail water ponds.



Transitions

Gary Hansen is the first Water Resources Director for the Colorado River Indian Tribes. Prior to creation of the position in March, water matters were handled by the tribal attorney's office. Hansen had been practicing water law as a sole practitioner in Tucson. He has degrees in law and hydrology from the University of Arizona.

Among the challenges Hansen will tackle are drafting a tribal water code, creating a department of water resources and developing management plans for the reservation's irrigation projects. Top priorities include metering and rehabilitating the irrigation system and hiring a hydrologist/engineer.

The reservation, which straddles the Colorado River near Parker, has 80,000 irrigated acres of farmland and 717,000 acre-feet of Colorado River rights, which include nearly 25 percent of Arizona's allocation. Maximizing the value of that resource to the tribe is the overall goal. The tribe has been approached by the Ft. Howard paper company (see April/May *AWR*, p. 4), and is participating in discussions with the U.S. Bureau of Reclamation on the concept of a water banking system.

Chuck Huckelberry is the new general manager of Metropolitan Domestic Water Improvement District. Huckelberry replaces Jack Conovaloff, who resigned after less than four months on the job (see February *AWR*, p. 11). Huckelberry had worked for Pima County since 1974, most recently as Assistant County Manager for Public Works. After resigning from the county in April, he joined the consulting firm of David Evans and Associates, where he worked for two months.





Legislation & Law

Lake Powell Fine Sparks AG-DEQ Dispute

A \$1.3 million fine paid by Del Webb and ARA Leisure Services for dumping batteries, toilets, used appliances and boat and engine parts into Lake Powell during the 1980s has sparked a dispute between the Arizona Attorney General's office and the Arizona Department of Environmental Quality. At issue is who should have received the bulk of the fine. Arizona law dictates that fines for environmental violations be deposited into the state's Water Quality Assurance Revolving Fund or "state superfund", which finances environmental clean-up and water pollution abatement. The WQRF fund received only \$225,000 of the fine, with most of the balance going into the Attorney General's anti-racketeering fund. This resulted from the A.G.'s office allowing the marina operators to plead no contest to a criminal property damage charge rather than prosecuting them under the state's environmental laws.

Ed Fox, ADEQ Director, charged that Attorney General Grant Woods violated legislative intent by allowing the plea bargain and announced he will seek legislation next year to place all criminal penalties for environmental damage into the environmental fund. ADEQ pays the A.G.'s office for representing it in environmental cases, with most of the money coming out of the WQRF fund.

Circle K Funds LUST Testing, Cleanup Fund

Circle K, which has just emerged from bankruptcy, has agreed to contribute \$30 million over six years to test and clean up leaky underground storage tanks (LUST) at 2,300 former

convenience store sites located in 29 states. \$1.7 million of the fund is earmarked for remediation at 145 sites in Arizona, 18 of which have confirmed gasoline leaks. Many have yet to be tested for leaks.

The settlement, reached between Circle K, the U.S. Justice Department, the EPA, and state Attorneys General, is intended to provide relief to former franchise owners, who otherwise would be solely responsible for clean-up costs. Owners of land with former Circle K stores have one year to request up to \$3,000 for testing costs, an additional year to begin remediation if leaks are detected, and five more years to complete the work.

The number of leaky tanks and the extent of groundwater pollution are not known. Circle K estimates that 10 to 20 percent of its gasoline storage tanks leaked, but a justice department official claimed that figure was low. Circle K also will spend \$67 million to repair and replace fuel storage tanks at its remaining 2,500 stores.

Consolidated Water Declares Bankruptcy

Consolidated Water Utilities, Ltd. declared Chapter 11 bankruptcy on June 30. With 3,993 customers and revenues of \$2 million, Consolidated is one of the 10 largest Arizona Corporation Commission-regulated water companies and is the largest ACC-regulated utility to declare bankruptcy since 1979.

Consolidated has three water systems in Arizona: the Apache Junction System serving 2,059 customers in part of Apache Junction; the Parker Strip System serving 1,808 customers located along the Colorado River north of Parker; and the small Circle City System, with 126 customers and situated about 30 miles northwest of Phoenix.

Consolidated's problems date back to 1986, when the partnership that owns the utility purchased an office building. Contrary to ACC regulations, the partnership neither sought nor received ACC approval to take on the debt. Subsequently, Consolidated was unable to maintain sufficient ten-

ants, the market collapsed, and Consolidated defaulted on its loan.

Consolidated's owners purchased the building from their own real estate lawyers under terms they contend were fraudulent and constituted malpractice. They sued the law firm, which in turn appeared in Superior Court seeking an order allowing garnishment of the utility's assets, including customer utility bill payments.

Consolidated argued that because the debt was not approved by ACC, state law did not permit the default judgment to attach to utility assets. ACC stated the issue was outside its jurisdiction, and the court allowed garnishment of utility revenues.

Consolidated sought protection in bankruptcy pending the outcome of its lawsuit against its creditors. The partnership that owns Consolidated has filed a refinancing application with the ACC, which will be the basis for reorganization. A hearing on the plan is scheduled for September 8. During the interim, Consolidated states there will be no interruption in service, and that the current owners have no plans to sell the water utility.

Suit Claims Discharge to Agua Fria, Santa Cruz

A lawsuit was filed in May by the Arizona Center for Law in the Public Interest accusing the Air Force of polluting the Agua Fria River. The suit contends that discharge from the sewage plant at Luke Air Base regularly contains excess levels of chlorine, ammonia, mercury and selenium.

David Baron, assistant director of the Center, also claimed that Pima County's Ina Road sewage treatment plant occasionally exceeds permit limits in its discharges to the Santa Cruz River. Pima County long has argued that discharge levels to otherwise dry river beds are unduly strict, and has proposed drastically reducing or eliminating such discharges through re-use and recharge of effluent. Environmental groups oppose loss of such effluent-dominated streams and the riparian habitats they support.

Fish Supplement

CAP a Threat to Arizona's Native Fish

Decades of damming, diverting and disposing of waste in Arizona's rivers have left the state's native fish species in a precarious position. Operation of the Central Arizona Project (CAP) and related irrigation and recharge projects threatens to make a bad situation worse. Now, impending enforcement of laws designed to protect endangered and threatened species by preserving their habitat is jeopardizing established and proposed water projects.

The potential conflict between species protection and efficient operation of the CAP and mainstem Colorado River reservoirs has yet to become a major public issue. Currently, much of the discussion and debate is occurring within the Interior Department, between the Fish and Wildlife Service and the Bureau of Reclamation (BOR).

The 32 freshwater fishes native to Arizona range from 1.5-inch pupfish to the giant Colorado Squawfish, a six-foot minnow. Bottom-feeding catfish, insect-eating trout and algae-eating suckers all have one thing in common — they are in trouble. One species is extinct, 12 are listed as endangered, six are listed as threatened, and 11 are candidates for listing, leaving only two species with no special status.

When Europeans first arrived in what is now Arizona, rivers and streams teemed with fish. As late as the 1940s commercial fisheries operated on the Salt and Gila. But as surface waters were diverted and later dammed for agricultural and domestic purposes, formerly perennial rivers became ephemeral and habitat was lost.

Later, more aggressive non-native fish, mostly from the older Mississippi basin with its many species and highly competitive food chain, were introduced into the Colorado mainstem. The few species in the younger Colorado basin often could not compete. Habitat degradation helped tip the balance towards the non-natives.

While the dewatering of river sections caused by dams and diversions harmed migratory native fish, it placed a protective barrier between non-natives downstream and natives upstream. Now, the CAP and its diversion works are reconnecting sections of the Gila watershed, transporting species such as striped bass, white bass, grass carp, tilapia and threadfin shad. So many large fish have reached the Cortaro Marana area northwest of Tucson that aqueduct anglers have become a nuisance.

Section 7 of the Endangered Species Act requires that when any federal agency conducts, permits, or funds any action that may affect an endangered or threatened species, the agency must consult with Fish and Wildlife. BOR executing CAP contracts meets that definition. Although the law allows only 90 days for a biological investigation and another 45 days to write a formal opinion, the process can be extended indefinitely.

The ongoing Gila consultation, begun two and a half years ago, was triggered by a proposed transfer of water by which non-native fish could travel via the CAP aqueduct and Pima Lateral Feeder Canal to the Florence-Casa Grande Canal, then into the Gila, upstream to the San Pedro and finally into Arivaipa Creek. Seven native species are found in Arivaipa Creek, more than in any other stream in the state.

The Gila basin consultation excluded the Santa Cruz basin, which now will be the subject of a biological study because of a CAP-irrigation district intertie that could bring non-native species near the Santa Cruz (see Pima County Farmers, p. 6).

Once consultations are complete, solutions can include construction of physical barriers. Fish screens in Arizona have cost from a few thousand to hundreds of thousands of dollars. More elaborate systems incorporating waterfalls and electric barriers and fish population monitoring programs can cost millions. And all can be defeated by one fisherman carrying a bucket.

If physical solutions are not found, CAP uses could be curtailed. Currently at stake are use of CAP water by

the Gila River Indian Community and the San Carlos Apache Tribe, as well as indirect recharge projects in Pima County. Proposals to use CAP water to reclaim riparian habitats also might not get beyond the planning stage.

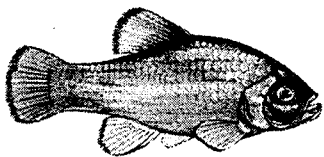
Of even greater potential consequence are rumors that the draft biological opinion on the Colorado River concludes that current operation of dams jeopardizes endangered species. BOR and Fish and Wildlife reportedly are at loggerheads, with Interior trying to solve the dispute in-house. A finding of jeopardy could impact water supplies throughout the southwest.

Biosphere Reserve to Protect Cienega

Mexican President Carlos Salinas created on June 10 a 4 million acre "biosphere reserve" in the upper Sea of Cortez (Gulf of California). The reserve encompasses the Colorado River Delta and the Cienega de Santa Clara, a marsh sustained by saline bypass water from the Wellton-Mohawk Irrigation District. Fishing now is prohibited in a 400,000-acre zone encompassing the delta and estuary, which is reserved for educational and research purposes. Fishing will be phased out over three years in a surrounding 2 million-acre buffer zone. The move is intended to protect the Vaquita, a small endangered porpoise, and the Totoaba, an endangered bottom-feeding fish, as well as to provide a refuge in which the area's decimated shrimp population can recover. Diminished catches have reduced the shrimp boat fleet in the northern Sea of Cortez from over 200 boats to less than 30 over the last four years.

The cienega which existed before the Colorado River was heavily dammed and diverted began to stage a comeback in the late 1970s. Over 100,000 acre-feet per year of brackish drainage water (2,000 ppm TDS) were diverted annually from the Colorado River pending operation of the Yuma desalination plant, originally scheduled for completion in 1978 (see May 1992 *AWR*, p. 1). Some 15 years later, the

cienea is 7,000 acres and still growing. Generally three feet deep or less, the vegetation lacks diversity, being dominated by salt-tolerant cattails. There is some concern that, without periodic dredging or controlled burns, it could become a 2-mile by 7-mile mass of cattails that even ducks will avoid.



Desert Pupfish (actual size)

Management plans for the cienega must await development of an understanding of the area's ecology, however, since no research has been done on the cienega until very recently. Currently, a bi-national research effort involving scientists from Centro de Ecologico in Hermosillo, University of Arizona's Environmental Research Laboratory, Arizona Game and Fish, U.S. Fish and Wildlife and the Bureau of Reclamation is studying the biology of the cienega (see Feb. *AWR*, p. 12).

What the cienega lacks in plant life, it makes up for in aquatic and bird life, including the endangered Desert Pupfish and the Yuma Clapper Rail. The cienega has been described as the most significant bird habitat on the Colorado River.

Completion of the Yuma Desalination plant now threatens the cienega with reduced flows of water with triple the salinity. Recent events indicate it is the desalination plant's future that may be in doubt, due to its outdated technology and high operating costs. They have prompted suggestions that one way to utilize some of Arizona's Colorado River allotment is to let more water cross the border into Mexico, thereby eliminating the need to operate the desalination plant and assuring a continued supply of water to the cienega (see Dec. 1992 *AWR*, p. 8).

Heritage Funds Buy Riparian Corridor

In its first major Heritage Fund land purchase, the Arizona Game and Fish

Department (G&F) moved to protect over 20 miles of riparian habitat along the Little Colorado River between Springerville and Lyman Lake, as well as habitat along upstream tributaries.

The 205-acre Wenima area encompasses prime habitat for the Little Colorado River Spinedace, a threatened species of fish. The area includes 35 acres (1.7 miles) of sensitive stream-riparian habitat and 100 acres of adjacent floodplain, as well upland habitats.

Costing \$894,500, this acquisition is G&F's first using Heritage Funds (augmented by Waterfowl Conservation Fund money). Under the statutory terms for using Heritage Funds, the land must be to protect sensitive threatened and endangered species.

Other wildlife or recreational needs, however, will not be ignored. In fact, in managing for the spinedace, habitat for other species will be greatly enhanced. Land-use conflicts will not be permitted if they significantly impact threatened and endangered species values. For example, the riparian corridor is being fenced to exclude cattle.

The transfer of land ownership from private to public will not reduce the local tax base. The annual tax on the entire 205-acre Wenima area (taxed as grazing land) was approximately \$30. This will be more than offset by tourism income to the area.

In fact, the seller recognized the financial benefits of an environmentally protected area. Rather than building a golf course along the riparian corridor, as planned, the seller offered the land to G&F believing the proximity of a wildlife refuge would increase his land values as much or more than a golf course and at much less cost.

In acquiring the Wenima purchase, G&F acquired two senior grandfathered water rights to the Little Colorado River as well as a water withdrawal contract for Becker Lake. The Wenima purchase will protect the entire riparian corridor-lake system by allowing G&F to manage for an assured instream flow throughout a 17-mile stretch of the river.

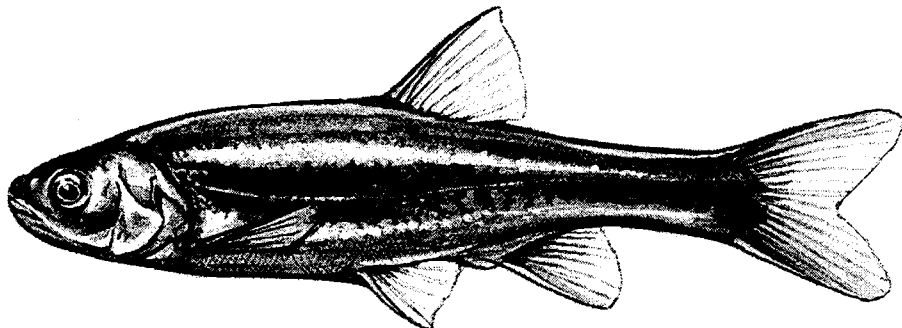
The riparian corridor between Becker Lake and Wenima is in an incised canyon, unsuitable for water-consumptive uses. Thus, the Wenima purchase will protect water rights for the entire corridor, which contains several significant archaeological sites. G&F evaluated establishing a hiking trail from Becker Lake to Lyman Lake, with archaeological and environmental educational information along the way.

G&F acquired the Wenima property after extensive public participation activities. A survey of residents of southern Apache County revealed that of the 87 percent of residents who had an opinion about the purchase, three out of four supported the purchase.

Future G&F plans include acquisition of the White Mountain Hereford Ranch, a 1,285-acre property located on several upstream tributaries of the Little Colorado River, southeast of Eager. The Spinedace is also found on this property. Plans include managing for the threatened Apache Trout and other wildlife, as well as recreation.

G&F has been offered other properties in the Little Colorado River drainage that may become part of an overall riparian protection program.

Norris Dodd and staff from the Region I Game and Fish Office contributed information for this article.



Little Colorado Spinedace (actual size)



Special Projects

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

Desert House Tests Desert-Compatible Home

Fitted in among such features as Cactus House, Succulent House, the Arizona Native Plant Trail and the display of South American Cacti, Desert House officially opened on May 14 at the Desert Botanical Garden in Phoenix.

A custom-designed dwelling for desert living, Desert House is an energy-and-water-efficient demonstration project that will monitor and evaluate features and new products as they are developed over a ten-year period. Desert House however is not intended to be futuristic, but was built with techniques and equipment readily available and at reasonable cost. Project officials stated the home would cost between \$110,000 to \$127,000 to build.

Desert House will be a live-in demonstration project, with a three-or-four-member family to move in at a later date. The family's use of the 1,657 square-foot house will determine the efficacy of the project.

Design that stresses energy efficiency is evident in the construction of Desert House's floor, roof and walls. The floor is a six-inch concrete slab with tiles and is surrounded by two inches of rigid interior insulation to separate it from fluctuating earth temperatures. The roof consist of layers of white reflective cementitious coating, aggregate, polyurethane water-sealer, insulating foam, contouring foam and a plywood deck, combined with 12-inches of fiberglass batt insulation below the deck. It has a total R-value of 40. Desert House walls are integra-

mass block, a concrete block filled with polyurethane foam.

Water efficiency also is stressed. A graywater system uses wastewater from showers, baths, bathroom sinks, and washing machine to irrigate the landscape. The graywater is first treated and stored in two tanks in the basement before being pumped into the drip irrigation system.



Also rainwater is harvested at Desert House. Rainfall runoff is directed toward planted areas and is also stored in a tank in the basement and pumped to the drip irrigation system. Appliances used at Desert House are medium-priced, with water-and-energy-saving features. There are low-flow shower heads, reduced-flow faucets,

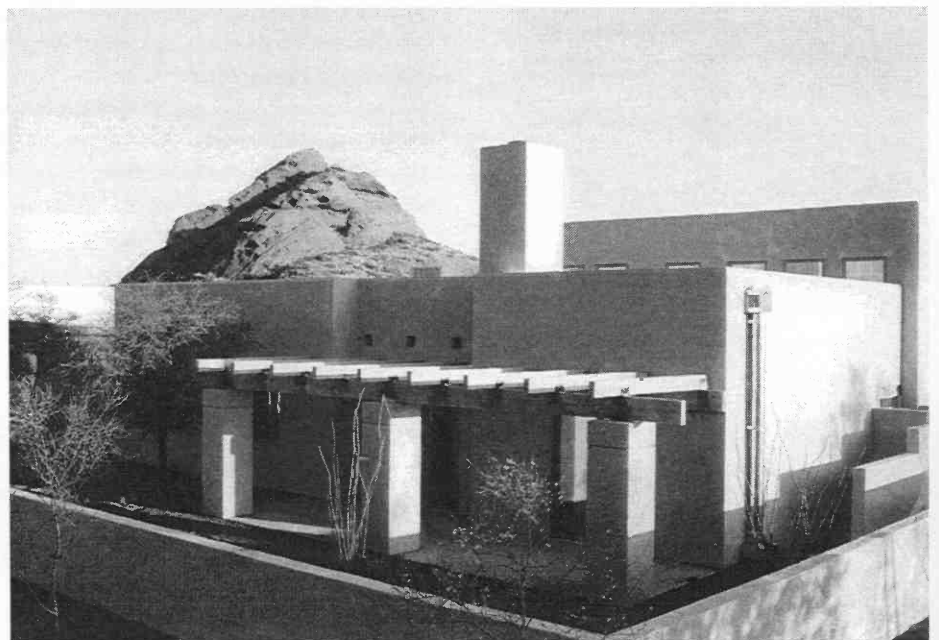
and toilets using only 1.6 gallons per flush instead of the usual five gallons.

An extensive water metering system is installed to measure water use in individual rooms such as kitchen and bathroom and also by individual appliances such as dishwasher, washing machine, and water heater.

Computer simulations indicate an efficiency-minded family living at Desert House would reduce its energy cost by 40 percent at today's rates. During the 10-year research phase of the project the actual energy consumption and related costs of a typical family will be verified.

Desert House is a follow-up of Casa del Agua, a Tucson house retrofitted with water-saving devices that has operated as a water conservation demonstration project since 1985. Sponsors of Desert House include the Desert Botanical Garden, Salt River Project, City of Phoenix Water Services Department, Arizona Department of Commerce Energy Office, University of Arizona's Office of Arid Lands Studies, Center for Desert Architecture and College of Architecture.

For more information on Desert House contact the Desert Botanical Garden, 1201 N. Galvin Parkway, Phoenix, AZ 85008; 602-941-1225.



Described as the desert home of the future, Desert House is to demonstrate the workings of an affordable energy and water efficient dwelling.



Publications

Managing the Flow to Better Use, Preserve Arizona Rivers

Joe Gelt. The above is Volume 6 Number 3 of *Arroyo*, a quarterly publication of the Water Resources Research Center. The discussion begins with the premise that river management is a strategy to promote cooperative river use among various, even competing interests, while at the same time protecting a river's natural or environmental values. The various methods of managing Arizona rivers then are described, from the building and operation of dams to public involvement in the decision-making process.

Individual copies—also subscriptions of *Arroyo*—are available without charge from the Water Resources Research Center, University of Arizona, 350 North Campbell Avenue, Tucson, AZ 85721; 602-792-9591.

Agriculture in the Arizona Economy

Julie P. Leones and Neilson C. Conklin. This 22-page report examines the economic contributions of the agricultural sector to the state of Arizona and its urban economies. Good overview of the role of agriculture in Arizona for those concerned with water, energy, taxation and environmental regulation policies.

The study was jointly conducted by The University of Arizona and Arizona State University with funding from the Arizona Department of Agriculture. It is available from John Wake, Office of Community Development and Promotion, Arizona Department of Agriculture, 1688 West Adams, Phoenix, AZ 85007; 602-542-0978.

Layperson's Guide to Ground Water

Water Education Foundation. The publication has sections on agricultural groundwater use, overdraft and subsidence, and highlights innovative methods local California agencies have implemented to manage their groundwater. It also includes a new section of ground water management. Available for \$4 from Water Education Foundation, 717 K Street, Suite 517, Sacramento, CA 95814; 916-444-6240

Colorado Water

Featuring water issues of concern to the state of Colorado, this new 5th edition has undergone a major revision. Some new features include: Groundwater Regulation and Administration, New Trends in Water Management, and Surface Water Regulation and Administration. It is a comprehensive water publication and has been a valuable resource of teachers, planners, water managers, civic leaders, elected officials, citizens, and the media.

Copies are \$5 plus shipping and handling, quantity discounts available, from the League of Women Voters, 1410 Grant St. B-204, Denver, CO 80203; 303-863-0437.

Description of the Central Arizona Project, April 1993

Likely Future Conditions Without Alternative Action, March 10, 1993

CAP Irrigation District Default and Bankruptcy Issues, April 16, 1993

Issues, Problems and Concerns—Solution Elements, April 16, 1993

Marketing Colorado River Water to California and Nevada Users, April 21, 1993

The Central Arizona Project is the *numero uno* water issue confronting Arizona today. The above series of reports acquaints readers with the background of the project, along with some recent developments.

The reports are available from Jan Coffman at the Arizona Department of Water Resources 15 South 15th Avenue, Phoenix, AZ 85007; 602-542-1554.

Drinking Water—Key Quality Assurance Program is Flawed and Underfunded

U.S. General Accounting Office Report to Subcommittee on Health and the Environment and Committee on Energy and Commerce, House of Representatives April 1993. This 36-page report illustrates deficiencies in the sanitary survey program for periodic inspections of U.S. public water systems. The most frequent deficiency cited in states' responses to GAO's questionnaire was inadequate cross-connection programs to ensure that potable water is not mixed with contaminated water. Other problems often cited are: (1) deficiencies in equipment maintenance and records, (2) shortfalls in water systems' general management and operations, and (3) inadequate protection of water sources.

The report is available from the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20884-6015; 202-512-6000.

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Arizona Department of Environmental Quality

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Central Arizona Water Conservation District

Salt River Project

Santa Cruz Valley Water District

Tucson Water

USGS Water Resources Division

Water Utilities Association of Arizona

Their contributions help make continued publication of this newsletter possible.

Call for Papers and Abstracts

The National Water Supply Improvement Association (NWSIA) announces a call for papers for the 1994 Biennial NWSIA conference to be held September 11-15, 1994, at the historic Breakers Hotel on the Atlantic coast in Palm Beach, FL. Some session topics include: seawater desalination, membrane softening, residual/treatment by-product management, and cost reduction and recovery. Send two copies of abstract, maximum of 300 words, double-spaced, by November 30 to Edward P. Geishecker, Technical Program Co-Chairman, Ionics Inc., 65 Grove St., Watertown, MA 02172; 617-926-2500.

The American Water Resources Association is accepting abstracts for the upcoming symposium, "Responses to Changing Multiple-Use Demands: New Directions for Water Resources Planning and Management" in Nashville, Tennessee, April 17-20, 1994. The symposium will address past, current, and future trends and activities in water use, management, and planning. Three copies of abstract, not to exceed 200 words, and a separate page including the full mailing addresses and a telephone number for each author should be submitted by August 16, 1993 to Jack Gordon, Technical Program Chairperson, Tennessee Technological University, Civil Engineering Dept., P.O. Box 5015, Cookeville, TN 38505; 615-372-3454.

The American Water Resources Association also is accepting abstracts for its upcoming summer symposium, "Effects of Human-Induced Changes on Hydrologic Systems," June 26-29, 1994 in Jackson Hole, Wyoming. Topics to be discussed include hydrologic effects of land use, water quality impacts of land use, competition between water users, in-stream flows, and water policy and management. Abstracts are not to exceed 250 words, with authors' full mailing addresses and telephone numbers submitted on a separate sheet. Three copies of an abstract should be submitted by August 16, 1993 to Victor Hasfurther, Technical Program Co-Chairperson, Dept. of Civil & Architectural Engineering, P.O. Box 3295, University of Wyoming, Laramie, WY 82071-3295; 307-766-2963.

Funding Available

The North American Wetlands Conservation Council funding packet is available. The packet provides the schedules, review criteria, definitions, description of information required in the proposal, and a format for proposals submitted for FY94 funding. Applications must be received by August 16, 1993. For the information package contact U.S. Fish and Wildlife Service, Publications Unit, 4401 N. Fairfax Dr., M/S 130 Webb, Arlington, VA 22203; or for information contact Robert Streeter, North American Wetlands Conservation Council, Arlington Square Bldg., Rm. 110. U.S. Fish and Wildlife Service, DOI, Arlington, VA 22203; 703-358-1784.

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