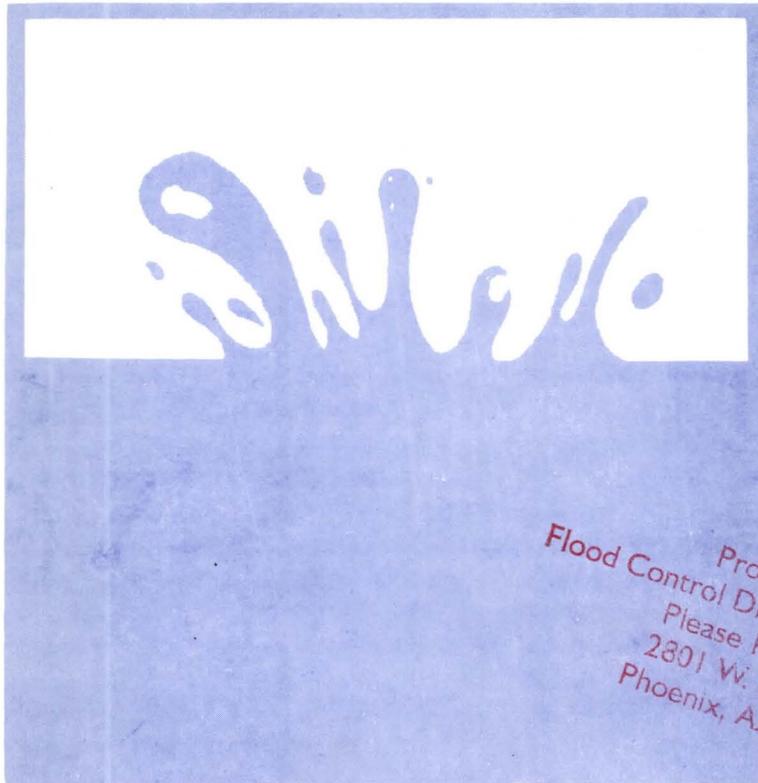


Arizona State University
College of Law
ALUMNI ASSOCIATION

PRESENTS:

ARIZONA WATER LAW SEMINAR



Flood Control District of
Phoenix, AZ 85009

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

MODERATOR:

Kathleen Ferris

Bryan, Cave, McPheeters & McRoberts

Former Director Arizona Department of Water Resources

Saturday, October 15, 1988

8:30 a.m. — 4:30 p.m.

- * Credit for Continuing Legal Education Credits are being applied for with the State Bar of Arizona.
- * This course is approved for 6 COJET hours for mandatory judicial education by the Supreme Court of Arizona.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

INTEROFFICE MEMORANDUM

Subject: Arizona Water Law Seminar
Trip Report

File: Travel

To: MFR

From: SLSmith

Date: Oct 25, 1988

On Saturday October 15, 1988 I attended the Arizona Water Law Seminar sponsored by the Arizona State University College of Law Alumni Association. The seminar was presented at the ASU College of Law from 8:30AM to 4:30PM.

The seminar was presented using a panel delivery/discussion format. The overall theme of the seminar centered around the provision of water for future growth of the State.

The first presentations and discussions covered the issue of water transfers from one region to another within the State, and the economic and social impacts the transfer has on the losing political jurisdiction. During this panel discussion, positions of a water losing County were presented to counter the positions presented by an attorney for a gaining City and a water resources technical person representing an association of cities.

There was a technical and legal presentation and discussion of the general adjudication of water rights of the upper Gila River and the relationship between surface water and the pumping of groundwater from wells adjacent to the river. The trend presented by the courts indicates that surface-water-rights granted under federal law requirements will be given a greater level of protection from adjacent pumping than rights granted in accordance with State law requirements. A decision in the Maricopa County Superior Court would indicate that pumping from a well adjacent to the river would be considered an adverse use of surface water counter to a federal granted right to an Indian Community if the pumping, during a 90 day pump test, reduces the stream flow by 50 percent or more. The burden of proof in such cases is on the pumper.

There were discussions concerning the issues of protecting water quality in the ground, remedial actions to clean up groundwater, how to select a consultant engineer to help in groundwater quality studies, and what the future holds with respect to legal action by the "Arizona Center for Law in the Public Interest" on these issues. There was an expression of growing concern that the ADEQ has been without leadership as a result of the political turmoil at the State level of government since it was authorized and formed, and the lack of leadership has had a detrimental effect on the process of planning, developing, and publishing criteria for adequate regulation to protect the groundwater.

The seminar closed with a presentation discussion of the second management plan for the Phoenix Active Management Area. The second management plan covers the period 1990-2000 and tightens up the requirements for conservation and the definitions used in determining authorized water usage.

Adjudication of Rights to Gila River -

1. Percolating ground not subj to approp.
2. Subflows are subj to approp.

Two kinds of law

1. Where fed claims || State Court will give greater protection to
2. Where no fed claims || fed rights than to state water rights.
Will put AZ law on hydrologic basis

David S. Baron - Issue, Upcoming

1. Groundwater Quality - EQA
 - a. No one in charge - no director
2. Revenue Source for State Superfund
 - a. Deadline on cleanup of sites.
3. Protection of riparian areas
 - a. Instream flow reservations - 37 applications pending
 - b. Consider public interest before issue consumptive rights.
4. Water transfers.
5. Augmentation efforts
6. Wilderness
7. Surface Water Quality
 - a. Pre treatment
 - b. Numeric standards
 - c. Pesticide registration

Water Law Seminar

Oct 15, 1988

ASU College of Law Alumni Association

Roger Manning -

1. Water transfers are necessary and have historic base of water management.
2. Code provides for transfer of rights and transport
3. Issue - Loss of tax base
 - a. Voluntary in-lieu (taxes) payments
4. Issue - Conserving Water (limit 3 acre ft/acre proposal)
 - a. Min pool establish
 - b. Limit
 - c. Restricted vs Unrestricted basins.
 1. Critical watershed or Envir concerns
 2. Basins where potential for dev is min.
 - d. Demonstration of need
 1. Permit system?
5. Issue - Third Party Impacts.
 - a. Economic impacts other than taxes
 - b. When do impacts occur?
 - c. Who is the damaged party? How to quantify?
 - d. Who pays? How to pay?

Steve Suskin - LaPaz 4400 sq miles; 5% private land - 50% of which has been purchased by out of County interest.

1. Scottsdale 1984 purchase of Planet Ranch for water
2. Transfer of water is inevitable.
 - a. Proposals for fees
 - b. Quantifying lost opportunities

BIBLIOGRAPHY

SELECTED USEPA GUIDANCE DOCUMENTS

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", USEPA Draft March 1988.

"RCRA Ground Water Monitoring Technical Enforcement Guidance Document", USEPA/National Water Well Association, September 1986.

"A Compendium of Superfund Field Operations Methods", USEPA, Report EPA/540/P-87/001.

"Superfund Federal-Lead Remedial Project Management Handbook", USEPA, Report EPA 15401 G-87/001, December 1986.

"Remedial Action at Waste Disposal Sites", USEPA Report EPA/625/6-85/006, October 1985.

"Handbook for Evaluation of Remedial Action Technology Plans", USEPA Report EPA/600/2-83/976, August 1983.

"Handbook: Ground Water", USEPA Report EPA/625/6-87/016, March 1987.

Arizona State University
College of Law
ALUMNI ASSOCIATION

PRESENTS:

ARIZONA WATER LAW SEMINAR



MODERATOR:

Kathleen Ferris

Bryan, Cave, McPheeters & McRoberts

Former Director Arizona Department of Water Resources

Saturday, October 15, 1988

8:30 a.m. — 4:30 p.m.

- * Credit for Continuing Legal Education Credits are being applied for with the State Bar of Arizona.
 - * This course is approved for 6 COJET hours for mandatory judicial education by the Supreme Court of Arizona.
-

TABLE OF CONTENTS

Arizona Water Law Seminar.	I
Program Outline	
Biography of each Speaker.	II
I. Arizona Department of Water.	1
Resources: An Agenda for the Future	
II. Water Transfers: Perspectives	11
on Balancing the Needs of Urban and Rural Arizona	
III. General Adjudication of Rights	24
to Use Waters of the Gila River: The Groundwater/Surface Water Dilemma	
IV. Water Quality/Environmental Issues	67
V. The Second Management Plans.	105

ARIZONA WATER LAW SEMINAR PROGRAM OUTLINE

- 8:00 - 8:30 a.m. Registration and material distribution
- 8:30 a.m. Welcome and introduction of moderator
- 8:45 a.m. I. Arizona Department of Water Resources: An Agenda for the Future
C. Laurence Linser, Acting Director, Arizona Department of Water Resources
- 9:15 a.m. II. Water Transfers: Perspectives on Balancing the Needs of Urban and Rural Arizona
Panel: Donald D. Denton, La Paz County Supervisor; Roger S. Manning, Arizona Municipal Water Users Assoc.; Kathleen Ferris, Bryan, Cave, McPheeters & McRoberts
The members of the panel have been involved in lengthy negotiations to develop legislation to protect the right to transport groundwater and address the concerns of rural areas. The panel will discuss the merits of various proposals now under consideration.
- 10:05 a.m. Break
- 10:20 a.m. III General Adjudication of Rights to Use Waters of the Gila River: The Groundwater/Surface Water Dilemma
- A. The Hydrology - An Overview
Jeff Trembly, Arizona Department of Water Resources
- B. The Law - An Overview and Critique
John D. Leshy, Professor of Law, Arizona State University College of Law
- C. Positions of the Parties
Panel: Jennele M. Morris, City of Glendale; M. Byron Lewis, Jennings, Strouss & Salmon; Bill Swan, Office of the Solicitor, Department of the Interior
On May 20, 1988, Maricopa County Superior Court Judge Stanley Goodfarb heard oral arguments on the issue of whether and to what extent rights to use groundwater will be determined in the Gila River general adjudication. The decision on this issue could have far-reaching impacts on groundwater users.
- 12:05 p.m. Lunch break
- 1:30 p.m. IV. Water Quality/Environmental Issues
- A. Department of Environmental Quality: Practical Effects of Current Policy Directions in Rulemaking
Roger K. Ferland, Strelch, Lang, Weeks & Cardon
Directions of the Department of Environmental Quality in developing rules on groundwater protection permits, water quality standards and other issues and how you may be affected.
- B. Remedial Actions and Responsibility for Clean-Up of Contaminated Water Supplies
James G. Derouin, Meyer, Hendricks, Victor, Osborn & Maledon
CERCLA/SARA and the Arizona superfund and how liability is assessed.
- C. Picking a Groundwater Consultant for Water Quality Issues
Philip C. Briggs, Geraghty & Miller
Tips on selecting a consultant and what a consultant can (and cannot) do for you.
- D. An Environmental agenda: Upcoming Issues
David S. Baron, Arizona Center for Law in the Public Interest
Observations on the issues environmentalists are raising and will raise in the next few years.
- 3:15 p.m. Break
- 3:30 p.m. V. The Second Management Plans
Panel: Herb Dishlip, Deputy Director, Arizona Department of Water Resources; Betsy Rieke, Jennings, Strouss & Salmon
In May, 1988, the Department of Water Resources proposed management plans for the second management period (1990 - 2000) for all Active Management Areas. These plans include new mandatory conservation requirements for water users, a water quality assessment and management program and an augmentation and reuse program. The panel will present the major concepts of the plans and discuss the implications for water users.

SPEAKERS

Kathleen Ferris is an attorney with the law firm of Bryan, Cave, McPheeters & McRoberts in Phoenix, Arizona. Ms. Ferris' practice emphasizes water matters. From 1985 to 1987 she was the Director of the Arizona Department of Water Resources where she had previously served as the Department's first Chief Counsel. Before joining the Department, Ms. Ferris was the Executive Director of the Arizona Groundwater Management Study Commission which was established in 1977 to rewrite Arizona's groundwater laws.

Herb Dishlip is Deputy Director for Water Management for the Arizona Department of Water Resources. He previously served as Assistant Deputy Director and as Pinal Active Management Area Director. He has worked for the Bureau of Reclamation in Arizona and Colorado. Mr. Dishlip is a graduate civil engineer and a registered professional engineer.

Jeff Trembly received his B.A. in Geology from Colgate University in 1978 and his M.S. in Geosciences from the University of Arizona in 1982. He is employed by the Adjudications Division, Arizona Department of Water Resources.

Donald D. Denton has been a member of the Board of Supervisors for La Paz County, Arizona since 1982. He previously served as a member of the Yuma County Planning & Zoning Commission and is currently a member of the Colorado River Floodway Task Force. Mr. Denton holds a B.S. degree in Business Administration from California State University of Long Beach and is a real estate broker and developer.

James G. Derouin joined Meyer, Hendricks, Victor, Osborn & Maledon as a partner and head of its Environmental Department after nearly 20 years of intensive environmental law practice in Wisconsin and Arizona. He has worked on a broad range of sophisticated environmental issues and has represented clients such as G. D. Searle & Company, Dow Chemical, DuPont, the Salt River Project, and the City of Phoenix. He was a key negotiator of the Arizona Environmental Quality Act (1986) and is currently steering committee chairman for an Arizona Superfund site involving more than 100 generators and transporters.

M. Byron Lewis is Chairman of the Natural Resources and Environmental Department of Jennings, Strouss & Salmon. Mr. Lewis helped draft legislation authorizing the Central Arizona Water Conservation District. He assisted in the development of the Water Rights Registration Act of 1974 and the Stock Pond Registration Act of 1977. Mr. Lewis received his B.S. from the University of Arizona, in 1964, and his J.D., from the University of Arizona College of Law, in 1967.

Betsy Rieke joined Jennings, Strouss & Salmon in 1987 as a member of the Natural Resources Department. She was formerly Chief Counsel for the Arizona Department of Water Resources. In that capacity she served as legislative liaison and participated with the Director of Water Resources and Deputy Directors in developing the Department's legal positions. She was instrumental in drafting the first groundwater management plans for the active Management Areas. Betsy currently represents the Salt River Project in the Arizona Legislature on water and environmental matters.

John D. Lesly is a Professor of Law at A.S.U. Since 1980, Professor Lesly has taught courses in Water Law and Natural Resources Law. He previously served as Associate Solicitor for the Department of the Interior (1977-80), Regional Counsel for the Natural Resources Defense Council in California (1972-77), and as a Trial Attorney in the Department of Justice (1969-72). He received his A.B. and J.D. from Harvard University.

David Baron received his bachelors degree from Johns Hopkins University in 1974 and a J.D. degree, cum laude, from Cornell Law School in 1977. He clerked for a federal appeals judge in Ohio before moving to Arizona in 1978, where he was an assistant attorney general specializing in public health law. In 1981 Mr. Baron joined the Tucson office of the Arizona Center for Law in the Public Interest where he participates in litigation and advocacy on behalf of environmental and consumer interests. He is the Assistant Director of the Center.

Jennele M. Morris is the Assistant City Attorney for water matters for the City of Glendale. She was previously an associate with the law firm of Bill Stephens & Associates P.C. She received her B.A., with highest distinction, and her J.D., with highest distinction, from the University of Arizona. She has clerked for the Honorable Monroe G. McKay of the Tenth Circuit Court of Appeals and practiced environmental law in the United States Justice Department's Division of Land and Natural Resources. She was one of the founding members of the Environmental and Natural Resources Law Section of the State Bar.

Phillip C. Briggs is a Senior Consulting Hydrologist in the Phoenix, Arizona office of Geraghty & Miller, Inc. Prior to joining Geraghty & Miller he was Deputy Director of Engineering and Chief Hydrologist for the Arizona Department of Water Resources for 19 years. He also was a Hydraulic Engineer with the United States Geological Survey for six years. Mr. Briggs holds bachelors and masters degrees in Civil Engineering from Arizona State University, and is a registered civil engineer in Arizona.

Roger K. Ferland is a partner with the law firm Strech, Lang, Weeks & Cardon. He graduated from Lewis and Clark College, magna cum laude (1968), and Duke University School of Law, cum laude (1974). From 1975 through 1981, Mr. Ferland was employed as Administrative Counsel to the State Department of Health Services and as an Assistant Attorney General and senior counsel in the Environmental Protection Section of the Attorney General's Office. Mr. Ferland is the primary author of the so-called Hawke Bill that was the basis for the State's Environmental Quality Act.

William H. Swan is an attorney-advisor in the Office of the Solicitor, U.S. Department of the Interior. He specializes in the areas of water rights, Indian law, reclamation law, and environmental law. Mr. Swan represents all Interior Department agencies within Arizona regarding water rights, and he is actively involved in representing the interests of the United States in both the Gila River and Little Colorado River Adjudications.

C. Laurence (Larry) Linser worked for the California Department of Water Resources from 1959 to 1973 in a variety of engineering and planning functions. Since 1973 he has been employed by the Arizona Department of Water Resources and its predecessor, the Arizona Water Commission. He has served in a variety of positions including Chief of Water Rights Administration and Planning, and Deputy Director of Planning & Adjudication. On April 8, 1988 he was appointed Acting Director of the Department.

Roger S. Manning is the Executive Director of the Arizona Municipal Water User's Association, a voluntary association of larger cities in the Phoenix metro area. The Association's purpose is to present the perspective of its members regarding Arizona water issues. Mr. Manning, who has been involved with Arizona water issues for 12 years, has held positions with the League of Arizona Cities and Towns, the Maricopa Association of Governments, and the Southeastern Arizona Government's Organization. Mr. Manning holds a B.A. and M.A. in Geography from the University of California at Davis.

I. ARIZONA DEPARTMENT OF WATER RESOURCES:
AN AGENDA FOR THE FUTURE

C. LAURENCE LINSER, ACTING DIRECTOR
ARIZONA DEPARTMENT OF WATER RESOURCES

DRAFT ONLY

- O U T L I N E

WATER LAW SEMINAR
OCTOBER 15, 1988
WATER LAW SEMINAR
ASU COLLEGE OF LAW ALUMNI ASSOCIATION

By: C. Laurence Linser
Acting Director
Department of Water Resources

NO ONE CAN PRECISELY SET FORTH TODAY WHAT THE FUTURE AGENDA SHOULD BE FOR THE OVERALL MANAGEMENT OF ARIZONA'S WATER RESOURCES. THE CRYSTAL BALL ISN'T THAT CLEAR. IF ANYTHING IS CERTAIN IT IS UNCERTAINTY AND THAT THE PROJECTIONS OF PARAMETERS THAT AFFECT OUR WATER USE AND SUPPLY WILL NOT BE 100 PERCENT CORRECT. THE POLICY, INSTITUTIONS, AND LAWS THAT DIRECT THE WATER COMMUNITY IN ARIZONA MUST BE FLEXIBLE.

THE PROGRAM OUTLINE FOR TODAY'S SEMINAR IS IN ITSELF AN AGENDA FOR THE FUTURE. THE TOPICS THAT WILL BE ADDRESSED ARE ISSUES ON THE FRONT BURNER IN THE WATER ARENA FOR 1988 AND SOME WILL CONTINUE TO BE THERE FOR SOME TIME. THOSE OF YOU IN ATTENDANCE TODAY WHO ARE NOT INVOLVED IN WATER ISSUES ON A DAY TO DAY BASIS WILL TODAY GAIN AN UNDERSTANDING OF THE MAJOR ISSUES AND CONTROVERSIES THAT FACE POLICY MAKERS IN ARIZONA.

BEFORE WE TRY TO SPECULATE ON WHAT THE FUTURE AGENDA SHOULD BE FOR ARIZONA, I BELIEVE IT WOULD BE HELPFUL TO REVIEW SOME HISTORY. WHAT HAS BEEN OUR AGENDA OF THE PAST AND HOW DID WE FARE IN FOLLOWING THAT AGENDA?

IN 1948, THE ARIZONA INTERSTATE STREAM COMMISSION WAS ESTABLISHED FOR THE PURPOSE OF SECURING ARIZONA'S RIGHTS TO COLORADO RIVER WATER. THE COMMISSION ALSO WAS GIVEN THE RESPONSIBILITY FOR STATEWIDE WATER RESOURCES PLANNING. WHILE THIS STATE AGENCY HAD RESPONSIBILITY FOR PLANNING, THERE WAS NO SIGNIFICANT ACTIVITY IN THIS REGARD DURING ITS 23 YEARS OF EXISTENCE.

IN 1971, THE ARIZONA WATER COMMISSION REPLACED THE INTERSTATE STREAM COMMISSION AND RESPONSIBILITIES AND AUTHORITIES OF THE AGENCY WERE EXPANDED.

*Wes Steiner
came to AZ*

ONE OF THE FIRST TASKS OF THE WATER COMMISSION WAS TO INITIATE THE DEVELOPMENT OF A STATE WATER PLAN. IN 1975, PHASE I OF THE ARIZONA STATE WATER PLAN WAS PUBLISHED. THIS WAS THE FIRST COMPREHENSIVE DOCUMENT WHICH SET FORTH AN INVENTORY OF WATER RESOURCES, THEIR CURRENT USES AND ASSOCIATED PROBLEMS. THE PHASE I REPORT SHOWED CLEARLY THAT WE WERE CONSUMING ALMOST TWICE AS MUCH WATER AS WAS BEING SUPPLIED BY MOTHER NATURE ON THE AVERAGE. IT ALSO SHOWED THAT THE LARGEST USER OF WATER IN ARIZONA WAS AGRICULTURE. WHILE THESE FINDINGS SHOULD NOT HAVE BEEN A SURPRISE TO ANYONE KNOWLEDGEABLE OF THE SITUATION, THEY DID GAIN A GREAT DEAL OF ATTENTION.

FOLLOWING PUBLICATION OF PHASE I, THE WATER COMMISSION SET OUT ON DEVELOPING PHASE II WHICH WAS TO SET FORTH ALTERNATIVE

FUTURES AVAILABLE TO THE STATE. THIS STUDY WAS PUBLISHED IN 1978.

FROM THE OUTSET, IT WAS THE WATER COMMISSION'S INTENT TO PUBLISH A PHASE III REPORT WHICH WOULD BE AN EVALUATION OF POTENTIAL WATER RESOURCE MANAGEMENT PLANS. THIS WAS THE WATER COMMISSION'S AGENDA.

HOWEVER, THE BEST OF PLANS CAN GO FOR NAUGHT. IN 1976, THE ARIZONA SUPREME COURT RENDERED THE ^{Farmer's Investment Co} FIFCO DECISION. THIS DECISION RULED IN FAVOR OF FARMERS INVESTMENT COMPANY, A USER OF GROUNDWATER FOR AGRICULTURAL PURPOSES, AND AGAINST THE CITY OF TUCSON AND MINING INTERESTS IN PIMA COUNTY. THIS CREATED A NEW AGENDA FOR THE STATE. THIS NEW AGENDA CALLED FOR THE DEVELOPMENT OF A GROUNDWATER MANAGEMENT CODE WHICH WAS TO BE DEVELOPED BY A GROUNDWATER MANAGEMENT STUDY COMMISSION. IN EFFECT, THE BALL WAS HANDED OFF FROM THE ARIZONA WATER COMMISSION TO THE GROUNDWATER MANAGEMENT STUDY COMMISSION. THE STUDY COMMISSION CONSISTED OF APPOINTEES FROM VARIOUS WATER USING INTERESTS AND MEMBERS OF THE LEGISLATURE. IT WAS THE EFFORTS OF THIS COMMISSION THAT BROUGHT ABOUT THE GROUNDWATER MANAGEMENT CODE WHICH, IN ITSELF, SETS FORTH FOR THE MOST PART OUR FUTURE AGENDA.

BEFORE THE GROUNDWATER MANAGEMENT ACT, OUR AGENDA WAS DEVOTED TOWARD EVALUATING POSSIBLE LAWS AND INSTITUTIONS TO MANAGE WATER RESOURCES. SUBSEQUENT TO IMPLEMENTATION OF THE CODE, OUR AGENDA IS FOCUSING ON IMPLEMENTATION OF THE ACT AND DEVELOPING PROGRAMS TO ACHIEVE THE GOALS SET FORTH IN THE ACT.

TURNING NOW TO THE TOPIC OF MY PRESENTATION - AN AGENDA FOR THE FUTURE. THIS AGENDA CAN BE DIVIDED INTO GOALS THAT WE MUST ACHIEVE AND FURTHER SUB-DIVIDED INTO TASKS THAT MUST BE UNDERTAKEN TO ACHIEVE THESE GOALS. FIRST - THE GOALS.

THERE ARE FOUR BASIC GOALS OR OBJECTIVES THAT WE MUST ACHIEVE. THE GOALS THAT I HAVE IDENTIFIED ARE NOT NEW. THEY ARE OFTEN BROUGHT UP IN DISCUSSIONS RELATIVE TO WHAT WE MUST ACCOMPLISH TO ASSURE A DEPENDABLE WATER SUPPLY FOR THE FUTURE.

THE GOAL THAT STANDS FOREMOST AND IS IDENTIFIED AS THE PRINCIPAL GOAL OF THE GROUNDWATER MANAGEMENT ACT IS THAT WE MUST *1 ACHIEVE SAFE YIELD IN AREAS WHERE THERE IS MAJOR URBAN DEVELOPMENT. THAT GOAL WAS ESTABLISHED IN THE GROUNDWATER MANAGEMENT CODE IN 1980 AND CONTINUES TO BE AN IMPORTANT OBJECTIVE FOR THE STATE. CURRENT LAW REQUIRES THAT THE PHOENIX, TUCSON, AND PRESCOTT ACTIVE MANAGEMENT AREAS MUST BE BROUGHT INTO SAFE YIELD BY THE YEAR 2025.

SOME AREAS OF THE STATE ARE ALREADY AT SAFE YIELD AND ARE EXPECTED TO MAINTAIN THAT BALANCE. THESE INCLUDE AREAS THAT ARE DEPENDENT ALMOST IN THEIR ENTIRETY ON SURFACE WATER. MOST NOTABLE AREAS ARE THOSE ALONG THE COLORADO RIVER. OTHER AREAS SHOULD AT SOME POINT IN TIME ACHIEVE SAFE YIELD BUT IT IS UNNECESSARY TO DEVELOP INTENSE MANAGEMENT PRACTICES TO BRING ABOUT THE BALANCE BETWEEN SUPPLIES AND USES. AT THIS TIME IT

DOESN'T MAKE ANY SENSE TO IMPLEMENT INTENSIVE MANAGEMENT PROGRAMS TO ASSURE SAFE YIELD IN BASINS WHOSE WATER SUPPLY IS USED ALMOST ENTIRELY FOR AGRICULTURAL PURPOSES AND THOSE ECONOMIES ARE BASED ALMOST IN THEIR ENTIRETY ON AGRICULTURE.

THE SECOND GOAL IS THAT OF QUANTIFICATION OF ALL SURFACE * 2
WATER RIGHTS IN THE STATE. THE MOST NOTABLE RIGHTS THAT ARE UNQUANTIFIED ARE THOSE OF THE FEDERAL RESERVES IN ARIZONA. THE INDIAN COMMUNITIES HOLD THE LARGEST QUANTITY OF UNQUANTIFIED RIGHTS. IT IS IMPOSSIBLE FOR US TO DEVELOP A COMPLETE PROGRAM FOR MANAGEMENT OF OUR WATER RESOURCES UNLESS CERTAINTY AS TO THE RIGHTS TO PUT THIS WATER TO USE. TWO PROGRAMS ARE UNDERWAY TO ACHIEVE THIS OBJECTIVE. THE FIRST IS THE ADJUDICATION OF WATER RIGHTS IN THE GILA AND LITTLE COLORADO RIVER WATERSHEDS. THE SECOND IS THE NEGOTIATIONS TOWARD SETTLEMENTS OF WATER RIGHTS ON CERTAIN INDIAN RESERVATIONS. WE HAVE MADE A GREAT DEAL OF PROGRESS ON BOTH FRONTS IN THE LAST 10 YEARS AND WE MUST CONTINUE TO PURSUE BOTH AVENUES FOR RESOLUTION OF THIS MAJOR ISSUE.

A THIRD GOAL IS TO PROVIDE INSTITUTIONAL, LEGAL AND * 3
STRUCTURAL MECHANISMS FOR THE DISTRIBUTION OF WATER SUPPLIES. WHICH WILL MAXIMIZE THE ECONOMIC, SOCIAL AND ENVIRONMENTAL RETURNS AVAILABLE TO THE STATE AND YET REACH THE GOAL OF SAFE YIELD. THIS MUST BE ACCOMPLISHED WITHOUT CREATING UNNECESSARY OR SEVERE ECONOMIC, ENVIRONMENTAL, OR SOCIAL IMPACTS TO THE RURAL ECONOMIES OF ARIZONA. A GIANT STEP TOWARDS ACHIEVING THIS GOAL WILL BE REALIZED WHEN THE CENTRAL ARIZONA PROJECT IS COMPLETE;

HOWEVER, MUCH REMAINS TO BE DONE AS WE ARE FACED WITH THE COMPOUNDING EFFECT OF GROWTH AND NEW DEMANDS TAKING PLACE IN THE AMA'S WHERE SAFE YIELD IS TO BE REALIZED BY 2025.

*4 A FOURTH GOAL IS TO PROTECT THE EXISTING SUPPLIES AVAILABLE TO ARIZONA. THIS PROTECTION MUST BE BOTH FROM A QUANTITY AND QUALITY PERSPECTIVE. WE CANNOT AFFORD TO LOSE OR DESTROY EXISTING SUPPLIES. NEITHER CAN WE AFFORD TO ALLOW OUR SUPPLIES TO BE LOCKED UP WITHOUT THE OPPORTUNITY FOR USE UNDER THE PROPER CIRCUMSTANCES. WE MUST NOT PASS LAWS OR ADOPT RULES THAT FOREVER PREVENT THE USE OF AN AVAILABLE SUPPLY. WE MUST ALSO PROTECT OUR INTERSTATE SUPPLIES. WE ARE CONFIDENT THAT ARIZONA'S RIGHTFUL ENTITLEMENT TO THE COLORADO RIVER IS FIRMLY ESTABLISHED BY WHAT IS KNOWN AS THE "LAW OF THE RIVER", HOWEVER, THERE ARE THOSE WHO DO NOT SEE THE "LAW" AS INVIOATE. WATER RIGHT HOLDERS AS WELL AS ENTREPRENEURS IN THE UPPER BASIN, MOSTLY IN THE STATE OF COLORADO, HAVE BEEN EXPLORING THE POSSIBILITY OF LEASING OR SELLING WATER OUTSIDE THE BASIN. THIS IS NOT LIMITED TO LIGHTWEIGHTS. INDIAN TRIBES AND THE DEPARTMENT OF THE INTERIOR VIEW THE LEASING OF INDIAN WATER ACROSS STATE AND IMPACT BOUNDARIES AS A MEANS TO CREATE A REVENUE STREAM TO ASSIST THE INDIAN COMMUNITIES. ARIZONA CANNOT AFFORD TO ALLOW WATERS THAT, FOR THE MOST PART, WOULD GO UNUSED IN COLORADO TO BE SOLD AND DELIVERED TO A USER IN CALIFORNIA OR ELSEWHERE IN THE WEST.

TURNING NOW TO SOME OF THE MANY TASKS THAT MUST BE UNDERTAKEN TO ACHIEVE THE GOALS AND OBJECTIVES.

ONE TASK WHICH SHOULD BE OBVIOUS IS THE CONTINUED IMPLEMENTATION OF CONSERVATION PRACTICES. WATER CONSERVATION IS AND MUST REMAIN THE CORNERSTONE OF OUR MANAGEMENT EFFORT. THE SECOND MANAGEMENT PLAN WILL ESTABLISH STRONG AND EFFECTIVE CONSERVATION PROGRAMS. THEY MAY BE A LITTLE PAINFUL FOR SOME BUT THEY ARE AN ESSENTIAL ELEMENT OF ARIZONA'S WATER RESOURCE MANAGEMENT PROGRAM. CONSERVATION SHOULD NOT BE LIMITED TO USERS IN THE AMA'S. ALL USERS OF WATER IN THE STATE, FROM YUMA TO HOLBROOK, MUST BE RESPONSIBLE FOR WISE USE OF THE LIMITED RESOURCE. MANDATORY CONSERVATION AS IS REQUIRED IN THE AMA'S SHOULD NOT BE NECESSARY. EACH USER SHOULD RECOGNIZE RESPONSIBILITY IN THIS AREA.

ANOTHER TASK BEFORE US IS THE IMPLEMENTATION OF GROUNDWATER RECHARGE TO THE EXTENT THAT SURPLUS WATERS OR UNUSED SUPPLIES ARE AVAILABLE AND SUCH RECHARGE WILL NOT EXACERBATE WATER QUALITY. IN THE PAST 10 YEARS, OVER 50 MILLION ACRE FEET OF WATER HAS FLOWED PAST ARIZONA TO THE GULF OF MEXICO IN THE COLORADO RIVER. IT WOULD HAVE BEEN IMPOSSIBLE TO CAPTURE A SIGNIFICANT PERCENTAGE OF THIS VOLUME FOR RECHARGE INTO OUR BASINS. BUT EVEN ONE PERCENT WOULD HAVE AIDED IN OUR EFFORTS. WE MUST NOT LOSE SIGHT OF THE FACT THAT SURPLUS FLOWS DO EXIST AND WILL EXIST IN THE FUTURE. WE MUST BE PREPARED TO CAPTURE THOSE FLOWS AND RECHARGE THEM TO THE EXTENT THAT IT IS ECONOMICALLY FEASIBLE.

ARIZONA'S LAWS AND THE INTERPRETATION OF THOSE LAWS MUST BE SUFFICIENTLY FLEXIBLE TO PROVIDE A FRAMEWORK FOR THE REDISTRIBUTION OF SUPPLIES. IN OTHER WORDS, WATER TRANSFERS MUST BE ALLOWED. EQUITABLE DISTRIBUTION OF AVAILABLE SUPPLIES IS ESSENTIAL. WE CANNOT LET THIS ISSUE DROP. THE TASK BEFORE US IN THIS REGARD IS TO ESTABLISH A FRAMEWORK FOR FUTURE REDISTRIBUTION OF SUPPLIES.

ALSO, IT IS TIME FOR ARIZONA TO COMPLETE THE ALLOCATION OF ARIZONA'S ENTITLEMENT TO COLORADO RIVER WATER. THERE IS A SUBSTANTIAL AMOUNT OF COLORADO RIVER WATER WHICH IS UNCONTRACTED FOR AND SOME THAT IS UNALLOCATED.

WE MUST EVALUATE THE PROCESS FOR CONTRACTING OF ARIZONA'S UNUSED ENTITLEMENT FOR COLORADO RIVER BEGAN IN THE MID 1970'S MORE THAN 13 YEARS AGO. THE JOB IS STILL INCOMPLETE. THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT AND THE BUREAU OF RECLAMATION SHOULD PROCEED WITH THE FINAL CONTRACTING OF THE ORIGINAL ALLOTMENT OF CAP WATER. THE STATE MUST THEN RECOMMEND A REALLOCATION OF THE UNCONTRACTED FOR SUPPLIES. THE STATE MUST ALSO TAKE A LOOK AT WATER SUPPLIES THAT HAVE BEEN RESERVED FOR USES ALONG THE COLORADO RIVER AND RECOMMEND CONTRACTS FOR THIS SUPPLY HOLDING A SMALL AMOUNT IN RESERVE FOR UNFORESEEN DEVELOPMENTS ALONG THE RIVER. THIS WILL PROVIDE CERTAINTY AS TO WATER AVAILABILITY TO THE GROWING COMMUNITIES ALONG THE COLORADO RIVER AND TO THE USERS OF CAP WATER.

ANOTHER TASK WHICH WE MUST UNDERTAKE SOON IS TO ESTABLISH AN UNDERSTANDING OF WHAT IS SAFE YIELD. SAFE YIELD IN THE GROUNDWATER CODE IS BROADLY DEFINED AS A BALANCE IN THE ACTIVE MANAGEMENT AREAS BETWEEN LONG TERM SUPPLIES AND USES. DOES THIS MEAN THAT THERE WILL BE NO DRAW-DOWN OR OVER-DRAFT IN SMALL POCKETS OF THE AMA'S - THAT EACH WELL MUST ONLY WITHDRAW THE EXACT AMOUNT IT IS RECHARGED TO THAT WELL? I THINK NOT. BUT HOW MUCH OVERDRAFT SHOULD BE ALLOWED IN CERTAIN AREAS OF A BASIN? IT CERTAINLY SHOULD NOT BE ALLOWED IN A MAGNITUDE WHICH WILL CREATE DAMAGES AND CAUSE PROBLEMS WHICH ARE SPECIFICALLY TO BE AVOIDED OR PREVENTED IN ACTIVE MANAGEMENT AREAS, i.e. SUBSISTENCE, AND WATER QUALITY DEGRADERS. THE ANSWER IS NOT AN EASY ONE BUT WE SHOULD PURSUE DEVELOPING AN UNDERSTANDING IN MORE DETAIL OF WHAT IS SAFE YIELD.

A LONG TERM TASK ON OUR AGENDA HAS TO BE THE CONTINUED ADJUDICATION OF ALL WATER RIGHTS IN THE STATE. AS I INDICATED EARLIER, THERE IS A NEED TO DETERMINE CERTAINTY FOR BOTH STATE RIGHTS AND FEDERAL WATER RIGHTS. THE ADJUDICATION PROVIDES THE MECHANISM TO ACHIEVE THIS CERTAINTY. WE MUST NOT TIRE OF THIS EFFORT AND CONTINUE ITS PURSUIT WITH VIGOR.

TO ACHIEVE OUR MANAGEMENT GOALS, IT IS NECESSARY TO PURSUE A PROGRAM FOR AUGMENTATION OF SUPPLIES. AUGMENTATION WAS INCLUDED IN THE GROUNDWATER MANAGEMENT ACT BECAUSE IT WAS RECOGNIZED AS A NEEDED PROGRAM TO ACHIEVE A BALANCE BETWEEN SUPPLIES AND USES. WE MUST LET THE IMAGINATION RUN. NO STONE SHOULD BE LEFT

UNTURNED AS TO HOW WE CAN AUGMENT OUR LIMITED WATER SUPPLIES. WEATHER MODIFICATION MUST BE VIEWED AS A LONG TERM PROGRAM. THERE ARE A LOT OF NAYSAYERS RELATIVE TO THE POSSIBILITY OF WEATHER MODIFICATION BEING AN EFFECTIVE PROGRAM BUT I BELIEVE IT HAS SOME POTENTIAL FOR BOTH OUR WATERSHEDS IN ARIZONA AND FOR THE COLORADO RIVER WATERSHED FOR SUPPLEMENTING THE COLORADO RIVER SUPPLIES. VEGETATIVE MANIPULATION MUST ALSO BE VIEWED AS A POSSIBLE METHOD OF AUGMENTING SUPPLIES. THERE ARE MANY DRAWBACKS ASSOCIATED WITH THIS CONCEPT BUT THERE ARE ALSO MANY BENEFITS. WE MUST PUT TO USE AND RECHARGE AVAILABLE EFFLUENT SUPPLIES AND STORM WATER RUN-OFF. IN SHORT, WE MUST NEVER DROP OUR RESOLVE FOR AUGMENTATION.

THE LAST AND FINAL TASK WHICH INVOLVES EVERYONE IS TO BE OBJECTIVE IN OUR PURSUIT OF WISE WATER MANAGEMENT. EVERYONE IN ARIZONA MUST RECOGNIZE THE NEEDS OF THE STATE. THE CITIES, THE INDUSTRIES, THE INDIAN COMMUNITIES, THE AGRICULTURAL COMMUNITIES, THE RANCHERS, ALL MUST LIVE AND WORK TOGETHER AND SHARE IN THE LIMITED SUPPLIES THAT ARE AVAILABLE.

Policy of state is to grant "instream" flow rights. The issue is unclear as to how to issue, who to issue to, how to quantify. Dept is pursuing how to define the issues.

II. WATER TRANSFERS: PERSPECTIVES ON BALANCING
THE NEEDS OF URBAN AND RURAL ARIZONA

KATHLEEN FERRIS

STEVE SUSKIN (SUBSTITUTING FOR DON DENTON)

ha Paz. Count Atty

ROGER S. MANNING

Water Transfers: Perspectives on Balancing
the Needs of Rural and Urban Arizona

Kathleen Ferris*

Introduction

In recent years several entities have acquired land in rural areas of Arizona with the intent of transporting water withdrawn from that land for use in the Phoenix and Tucson areas. Rural communities are concerned that this practice - known as water farming - will deprive them of sufficient water for future growth and adversely affect their economies.

Those intending to transport water maintain that the state's metropolitan areas will need imported water to satisfy the requirements of Arizona's Groundwater Code. Furthermore, they argue some of the concerns of the rural communities are unfounded.

The water transfer problem has become the water issue of the late 1980s and, unless agreeably resolved, promises to be a major issue for years to come.

*Bryan, Cave, McPheeters & McRoberts
3636 North Central Avenue
Phoenix, AZ 85012

This outline summarizes why water transfers are necessary, sets forth current law governing the transportation of groundwater and identifies the most important issues requiring resolution.

Why Transfers Are Necessary

A. Arizona's Major Water Problem

1. Arizona's major water problem is an imbalance between the water we consume and our dependable supply.
 - a. Arizona's average rainfall is less than ten inches per year.
 - b. We rely on groundwater for 60% of our water supplies.
2 m' acreft/yr supply for 10M people
2. Arizonans annually consume about 2 million acre feet more groundwater than is replenished.

B. Arizona Groundwater Code

1. Enacted in 1980.
2. Primary goal: halt the mining of groundwater in the most heavily populated areas of state where the overdraft is most severe.

- a. These areas are known as Active Management Areas or AMAs.
 - b. Four AMAs established by the Code (A.R.S. § 45-411)**:
 - (1) Phoenix
 - (2) Tucson
 - (3) Prescott
 - (4) Pinal
3. In AMAs, the Code:
- a. Regulates all rights to withdraw groundwater (§ 45-451).
 - b. Prohibits the irrigation of land that was not irrigated during a specific historical period (§ 45-452).
 - c. Prohibits the sale of subdivided or unsubdivided land unless there is an assured (100-year) water supply for that land (§ 45-576).
 - d. Requires the Department of Water Resources to adopt a series of five management plans for each AMA designed to achieve a management goal (§ 45-563).

** All statutory references are to the Arizona Revised Statutes.

4. Provisions most affecting water transfers:

a. Safe-yield management goal for Phoenix, Tucson and Prescott AMAs (§ 45-562).

- (1) Safe-yield is a long-term balance between the amount of groundwater withdrawn in the AMA and the amount of groundwater replenished (§ 45-561).
- (2) Goal must be achieved by year 2025.

b. Assured water supply.

- (1) Until December 31, 2000, cities and towns that have signed contract for Central Arizona Project (CAP) water are deemed to have assured water supply. A developer of land to be served by the city or town need not obtain a Certificate of Assured Water Supply from the Arizona Department of Water Resources (DWR).
- (2) Beginning January 1, 2001, DWR may review whether a city or town has an assured water supply and may refuse to redesignate the city or town as having an assured water supply.

(3) Because of safe-yield goal, the city or town may not rely indefinitely on mined groundwater to show an assured water supply.

c. Because of the combined effect of the safe-yield goal and the assured water supply provisions, cities and towns must look for sources of water outside the AMA in order to provide an assured water supply for their customers.

C. How Much Imported Water is Needed

1. Best case scenario

- a. Cities of Phoenix, Scottsdale and Mesa have already acquired about 72,000 acre feet per year.
Have not started to transport
- b. In order to meet projected overdraft in the year 2025 in the Phoenix and Tucson AMAs, water users must acquire for transportation an additional 100,000 acre feet per year.

2. Many variables will adjust the need upward including:

- a. Future population in the Tucson and Phoenix AMAs may be greater than current projections.

- b. Settlement of the water claims of Central Arizona Indian Tribes will undoubtedly require additional water supplies.
- 3. Very possible that 400,000 to 500,000 acre feet of imported water will be required.
- 4. It is important to recognize that:
 - a. The acquisition by cities of agricultural land within the AMA that is irrigated with groundwater will not give the cities additional water supplies.
 - b. Cities in AMAs are required to conserve water.
 - c. Cities in AMAs may not use imported water to fill new artificial lakes.
 - d. Actual transportation to the AMAs of substantial quantities of water will not begin until well into the next century.
 - e. Modifying the safe-yield goal or the assured water supply provisions will have serious water management consequences and will eventually increase the need for water transfers.

Current Law Governing Transportation of Groundwater

A. In Active Management Areas

1. A person may withdraw groundwater only pursuant to:
 - a. A grandfathered right (§§ 45-461 - 45-482).
 - b. A permit issued by DWR (§§ 45-511 - 45-528).
 - c. For cities, towns, private water companies and irrigation districts, a service area right (§§ 45-491 - 45-498).

2. A person who has the right to withdraw groundwater may generally transport groundwater:
 - a. Within a sub-basin of an AMA without payment of damages (§ 45-541).
 - b. Between sub-basins of an AMA or away from the AMA subject to payment of damages (§§ 45-542 - 45-543).
Exception: groundwater withdrawn pursuant to a Type 1 Non-Irrigation is not subject to payment of damages.

B. Outside of Active Management Areas

1. Any person may withdraw groundwater for reasonable and beneficial use (§ 45-453).
 - a. Ownership of land is not required. Access to a well site is sufficient.
 - b. The amount of groundwater a person may withdraw is not quantified.
2. Any person may transport groundwater:
 - a. Within a sub-basin of a basin or, if there are no sub-basins, within a basin without payment of damages (§ 45-544).
 - b. Between sub-basins or away from the basin subject to payment of damages (§ 45-544).
3. Retirement of irrigated land is not required to transport groundwater. Groundwater may be withdrawn and transported from desert land.

C. Damage Rules Applicable to All Transportation

1. A person claiming damages must bring an action in court to recover (§ 45-545).

2. Neither injury to or impairment of the water supply of any landowner shall be presumed from the fact of transportation.
3. In determining whether there has been any injury and the extent of any injury, the court must consider all acts of the person transporting groundwater toward the mitigation of any injury.
4. The court may award reasonable attorneys' fees, expert witness expenses and fees and court costs to the prevailing party.

Major Issues Requiring Resolution

A. In Lieu Taxes and Bonding

1. Under the Arizona Constitution, municipal property is exempt from property taxes (Article 9, Section 2, Constitution of Arizona).
 - a. Existing law authorizes cities and towns to make voluntary contributions in lieu of property taxes (§ 9-404).

- b. Since cities may, but are not required to make in lieu payments, the counties in which cities have purchased water farms are concerned about their tax base and about their ability to bond on the basis of permissive in lieu payments.
2. All parties agree cities should be required to make in lieu payments in a way that allows counties to bond.
- a. Difficult to develop law that does not violate the Constitution.
 - b. A proposed provision would have:
 - (1) Prohibited a city or town from transporting groundwater away from the county unless the city or town had made in lieu payments.
 - (2) Required the city or town to enter into a 20-year intergovernmental agreement with the county committing the city or town to make in lieu payments for 20 years.

B. Limitation On Amount That May Be Transported

1. Under current Arizona law there is no limit on the amount of groundwater a person may withdraw in a basin outside of an AMA and transport away from the basin.
2. Some proposals:
 - a. Eliminate "well-site" pumping and transportation by specifying the maximum amount of groundwater that may be withdrawn per acre of land owned or controlled in the basin for transportation to an AMA.
 - b. Reserve a portion of the groundwater in the basin for uses in the basin.
 - c. Prohibit transportation of groundwater from certain basins to an AMA for uses by cities, towns and private water companies.
 - d. Require that a person intending to transport groundwater to an AMA must demonstrate the need for the imported water prior to commencing transportation.
3. These and other proposals are still being discussed.

C. Protection of Local Groundwater Users Against Damages

1. Under current law, a groundwater user may bring an action in court to recover damages caused by the transportation of groundwater away from the basin.
2. In areas outside AMAs there are no regulation of the drilling of new wells that may interfere with existing wells.
3. One proposal is to limit in areas outside AMAs the distance from an existing well a new well may be drilled.

D. Third-Party Impacts/Compensation for County of Origin

1. Counties are concerned they will suffer adverse economic impacts from water farming claiming:
 - a. Insufficient water will be left in the county for future growth.
 - b. No development will occur on lands purchased for the purpose of transporting water.

2. Those wishing to transport groundwater believe a county should be compensated if it suffers adverse economic consequences from the transportation of water, but do not agree with the counties that the level of impact will be as significant as claimed. In fact, they argue there may be no impact or even a positive impact in some cases.

3. While many compensation proposals have been advanced, those involved have been unable to reach any agreement.

Conclusion

Representatives of the affected interests are working to develop comprehensive legislation to address the complex and divisive issue of water transfer. With a lot of hard work and a great deal of compromise, these negotiations will hopefully produce a solution all can support.

III. GENERAL ADJUDICATION OF RIGHTS TO
USE WATERS OF THE GILA RIVER:
THE GROUNDWATER/SURFACE WATER DILEMMA

JEFF TREMBLY
JOHN D. LESHY
JENNELE M. MORRIS
M. BYRON LEWIS
BILL SWAN

General Adjudication of Rights to Use Waters of the Gila River:
The Groundwater/Surface Water Dilemma
The Hydrology - An Overview
Jeff Trembly, Arizona Department of Water Resources
October 15, 1988

I. The Interrelationship Between Streams and Aquifers

A. Types of streams

1. Ephemeral -
 - a. flow only in response to precipitation
 - b. losing reach - recharge aquifer
2. Perennial
 - a. flow year round
 - b. gaining reach - receives discharge from aquifer
3. Intermittent
 - a. seasonal flow
 - b. may receive aquifer discharge

B. How changes in groundwater levels may alter stream types

1. Rising levels increase length of perennial streams
2. Falling levels may change streams from perennial to ephemeral

II. Quantifying the Effects of Wells on Streams

A. Types of interference

1. Direct - cone-of-depression intersects the stream
2. Indirect - cone-of-depression intercepts water flowing toward the stream

B. Numeric Methods of calculating stream depletions caused by pumping wells (Groundwater modeling)

1. Requires a computer, a good deal of basic data about the aquifer, and time for testing and calibration
2. May accurately "model" even complex aquifer systems and provide a predictive tool for the future

C. The analytic method

1. Assumptions
 - a. Uniform, undisturbed, horizontally infinite aquifer
 - b. Fully penetrating stream and well with straight boundaries and perfect uniform connection with the aquifer along those boundaries
 - c. Horizontal groundwater flow and constant pumping rates with no changes in the aquifer due to pumping
2. Facts required about the pumper
 - a. distance to the stream
 - b. length of pumping time
3. Facts required about the aquifer
 - a. T - transmissivity - ability to transmit water - measured in units of ft²/day
 - b. S - storage coefficient - ability of aquifer to store water - has no units
4. Results of Analytic method
 - a. Ratio between depletion rate of stream and pumping rate of well at any instant
 - b. Ratio between volume of stream depletion and total volume pumped at any instant
5. Fine-tuning of the analytic method
 1. Tilted water table
 2. Aquifer boundary

III. Preliminary Analysis of the Court Order of September 9, 1988

A. Appropriable Sub-Flow

1. "... in or close to that younger alluvium, the volume of stream depletion would reach 50% or more of the total volume pumped" "... period of withdrawal is equivalent to 90 days of continuous pumping..."
2. Bright-line approach to designate areas of appropriable sub-flow
3. An example from the San Pedro

B. Wells Subject to Federal Claims

1. "... all stream users or diversions of either surface water or groundwater which significantly affect those sources reasonably available on, at, or near the federal parcel..."
2. One possibility for exclusion - geologically isolated non-tributary alluvial aquifers

NOTE: I am, along with co-author James Belanger, Esq., preparing an article based generally on the following outline, entitled "Arizona Law Where Ground and Surface Water Meet," that will be published in the A.S.U. Law Journal's first issue appearing in the Fall of 1988.

GROUNDWATER/SURFACE WATER INTERCONNECTIONS IN ARIZONA

LAW AND POLICY

© John D. Leshy, Professor of Law, Arizona State University

I. A "peculiar fact of history" (Sax, Water Law, Planning and Policy, 1968, p. 449) is the contrast between hydrogeologic reality and the Western common law's dual system of appropriation rights (applying to surface waters and underground streams) and groundwater rights (percolating groundwater subject to landowner ownership). The law has, according to one authority, created a "hydrologic bicycle" instead of conforming the hydrologic cycle. Moses, "Basic Groundwater Problems," 14 Rocky Mt. Min. L. Inst. 501, 503 (1968).

A. This resulted partly because, at the time the common law principles were established, there was substantial ignorance of possible hydrologic interrelations and a corresponding inability to predict or account for their effects on ground or surface water. (For the views of thoughtful but ignorant ancients like Plato, Aristotle and Homer on groundwater hydrology, see Moses, supra, at 501-02.)

B. It also resulted because, in many cases when these principles were applied, the effects of interrelatedness may have been insignificant; e.g., groundwater withdrawals were too small or remote to affect stream flow, especially before the widespread use of high-speed pumps.

C. It should also be noted that the distinction between surface and percolating groundwater may pose no problems where the two categories are not interrelated hydrologically; e.g., the percolating groundwater may not be part of the hydrologic cycle, but rather geologically deposited in what might be called dead storage, not affecting and unaffected by surface flows.

II. Complications for unified management:

A. Hydrogeologic complexity, or how hydrologist/con-

sultants can get rich.

1. Surface water diversions may impair groundwater pumping from hydrologically connected aquifers.
2. Surface water diversions may be impaired by pumping from hydrologically connected aquifers.
3. It should be noted that either surface or pumped groundwater may be used in such a way as to add to supplies of the other. (Who may lay legal claim to that additional supply is beyond the scope of this paper - the problems being addressed here are complicated enough.)
4. The causation problem -- how much is the impairment of one the result of the other?
5. The temporal problem -- how long does the hydrologic connection take to manifest itself?
6. Gathering the data and its cost; e.g., "stream depletion factors," computer modeling and the like.
7. Allocating the burden of proof -- are the facts in a typical case likely so complex that who has the burden of proof is probably going to lose? Is there a typical case, or are they like snowflakes (all different)?
8. Remedy problems. What if the adverse effects are irreversible because of, say, compaction of the aquifer? How can the delay between a change in stream diversion or groundwater withdrawal, and its effect on the aquifer or stream, be taken into account?

B. Legal complexity, or how lawyers can get rich.

1. Underground "streams" are, like surface streams, subject to appropriation. Though undoubtedly rare in nature, "underground streams" as conventionally understood may exist; e.g., water flowing in lava tubes. But the legal definition does not have to conform to convention; at the time the concept was formulated, ignorance of groundwater hydrology was the rule.

2. Regardless of what law applies to groundwater not in underground streams, the larger the category of underground streams, the more unified the water management system. This raises the issue of how far the concept of an underground stream or lake (and the appropriability of groundwater) can be pushed. See Maricopa County MWCD v. Southwest Cotton Co., 39 Ariz. 65, 4 P.2d 369 (1931); modified, 39 Ariz. 367, 7 P.2d 254 (1932), (sharply restrictive view of the concept of underground streams; first, "the presumption is that underground waters are percolating in their nature;" second, to establish the existence of an underground stream, it must be shown that such underground waters "have a definite bed, banks and current" the location of which must be shown "with reasonable certainty;" and third, all this must be proved "by clear and convincing evidence").

3. Cf. Pima Farms v. Proctor, 30 Ariz. 96, 245 p. 369 (1926); City of Los Angeles v. Hunter, 156 Cal. 603, 105 p. 755 (1909) (expansive view of the concept of an underground stream). See also Corker, "Groundwater Law, Management and Administration," (Background Study for the National Water Commission, 1971), p. 146 ("Distinctions which have no reality in the physical universe, but which must nevertheless be established as a result of 'evidence' by a trier of fact or an administrator, are arbitrary.") Corker also describes the result in cases like Los Angeles v. Hunter as "a sensible result in spite of, not because of, the law." Id., p. 297, note 3.

4. See also A.R.S. §§ 45-180-192, a 1974 statute requiring registration with the state of all uses of or claims to the "public waters" of the state. § 184 says that registration of a claim is prima facie evidence (creating a rebuttable presumption) of the accuracy of the claims, "[e]xcept as to the appropriability of the claimed water." Does this exception solidify Southwest Cotton's rule that underground water is presumed not appropriable, or does it implicitly limit Southwest Cotton by

establishing there is no presumption one way or the other?

III. How dual is the dual system or, what happens when the twain meet? See generally Davis, "Wells and Streams: Relationship at Law," 37 Missouri L. Rev. 189-245 (1972).

A. Are pumpers of percolating groundwater protected against injurious subsequent appropriations of surface streams? Compare Maricopa County MWCD v. Southwest Cotton Co., *supra*, 39 Ariz. 65, 4 P.2d 369 (1931); with Arizona Game & Fish Dept. v. Ariz. State Land Dept., 24 Ariz. App. 29, 535 P.2d 621 (1975). And see In the Matter of Reinhard and Buena Vista Pub. Serv. Corp. (Decision of Director, DWR, July 19, 1984) (denying application to appropriate unappropriated water as "not in the interests of the public" where it would reduce groundwater recharge in an active management area downstream).

B. Are surface appropriators protected against injurious subsequent initiation of pumping of "percolating" groundwater? See generally Davis, *supra*, 37 Missouri L. Rev. at 205-16; cf. Corker, *supra*, pp. 146-47 ("to forbid diversion of a surface stream, but to permit the stream to be depleted by a nearby well which taps the same source of water, is an absurdity"); cf. Southwest Cotton, *supra*, 4 P.2d at 97, asking whether groundwater pumping "tend[s] to diminish appreciably and directly the flow of the surface stream."

1. Though this remark in Southwest Cotton seems to be in the context of defining whether the water is of the "subflow" of a surface stream (and thus subject to appropriation) it is, so interpreted, arguably inconsistent with other parts of the same opinion defining an underground stream in more traditional, mechanical terms (as a "watercourse" with a "well-defined bed and banks, and a current..."). It may be, in fact, that Southwest Cotton establishes a tripartite classification of underground water (a hydrologic tricycle?), consisting of (a) underground streams (defined as a watercourse, with bed, banks, etc., and subject to appropriation); (b) percolating groundwater, not subject to appropriation; and (c) the subflow of a surface stream

(defined as groundwater with a direct and appreciable connection with the surface stream).

2. The third category may not be formally subject to the appropriation system; i.e., one does not need a permit to pump. But such pumping would be subject to curtailment in order to protect users of the hydrologically connected surface streams.

3. It is also worth noting that this category could be large; indeed, larger than the category of percolating groundwater, depending upon how "direct" and "appreciable" are defined. It might in fact be functionally the same as the concept of "tributary groundwater" in Colorado.

4. This may indeed have been the intent of the Southwest Cotton court, because it closed its opinion with a strong statement that protection of surface water rights at the expense of groundwater pumping should be the guiding principle: ("the effect...will be to lessen somewhat the number and size of future irrigation projects depending upon pumped water, [but that] is more than compensated by the establishment of certainty and security for the vastly more important surface projects now existing, and which will doubtless exist in the future").

5. The net effect might be that Southwest Cotton adopts, as part of Arizona common law, something like the appropriation system for most groundwater in the state. The considerable experience with such unitary systems in other western states; e.g., Colorado and New Mexico, could be looked to for guidance.

6. On the other hand, it is possible to read Southwest Cotton as saying that surface users are always preferred over pumpers of "tributary" groundwater, no matter who was first. If that is so, then the appropriation system does not sort out who has preference; rather, tributary groundwater users are always subordinate to surface users.

7. On still another hand, the decisions in the Game and Fish Dep't and Reinhard and

Buena Vista cases, see III. A. above, both prefer existing groundwater pumpers to new surface appropriators. In fact, they may even have the effect of preferring new groundwater pumpers (or pumpers of increasing volume) over new surface appropriators. Does that turn Southwest Cotton on its head?

8. On yet another hand, the opinion of the Arizona Court of Appeals in England v. Ally Ong Hing, 8 Ariz. App. 374, 446 P.2d 480 (1968), although not a paragon of clarity, can be interpreted as holding that the owner of a surface water appropriation is protected against the action by another that dries up the source of the appropriated surface water while it is still underground, only if the surface appropriator establishes that underground water feeding the surface source is an underground stream in accordance with the stiff Southwest Cotton test.

9. If Southwest Cotton is read as establishing a substantial measure of protection for surface appropriators against interference by pumpers of percolating groundwater, what is the effect of Bristor v. Cheatham (II), 75 Ariz. 227, 255 P.2d 173 (1953), holding that percolating groundwater is not subject to appropriation? Southwest Cotton could be implicitly modified or overruled in part by Bristor II, or the cases might be reconciled by saying that while percolating groundwater is technically not subject to appropriation, the landowner's right to pump percolating groundwater is contingent upon non-interference with prior appropriation rights in surface streams. If you say this is functionally much like an appropriation system, you would be right.

10. If Bristor II is read as limiting Southwest Cotton, doesn't Town of Chino Valley v. City of Prescott (II), 131 Ariz. 78, 638 P.2d 1324 (1981), appeal dismissed 457 U.S. 1101 (1982), limit Bristor II? Chino Valley doesn't exactly establish an appropriation system for percolating groundwater in Arizona, but it does say an overlying landowner has no protected property rights until pumping begins. Thus it establishes at least some

elements of the appropriation system for percolating groundwater.

IV. The effect of the Arizona Groundwater Management Act

A. This Act seemingly maintains the duality between surface and percolating groundwater (A.R.S. § 45-101(4), (6)), but is that a mirage? If Southwest Cotton created not a dual, but a tripartite classification of groundwater (see III.B., above), does the Groundwater Code undo that classification, and create instead a relatively rigid, and hydrologically absurd, dual system? On the other hand, the Groundwater Code was probably intended only to preserve existing law applicable to surface or appropriable water, which included Southwest Cotton, whatever it means.

B. What on (or under) earth does § 45-451B mean? (The groundwater code "shall not be construed to affect decreed and appropriative water rights.") See, e.g., Higdon & Thompson, "The 1980 Arizona Groundwater Management Code," 1980 Ariz. St. L.J. 621, 645-47.

1. Note the Act clearly does apply to and seems to restrict some uses of surface water; e.g., § 45-452A.

2. Does a restriction on surface appropriations in order to protect earlier initiated pumping constitute a forbidden "effect" on appropriative rights? Is the state prevented from granting permission under the groundwater code to drill a new well, where the new well could have an adverse effect on surface streams and appropriative rights? Or are these things lawful because they do not legally "affect" appropriative rights. In short, does "affect" in § 451B mean legal effect or actual effect? They may not be the same.

C. Can new AMAs be designated because of concern about the effect of groundwater pumping on surface supplies? A.R.S. § 45-412A(1) says that a new AMA may be created if management is "necessary to preserve the existing supply of groundwater for future needs." If use of the existing supply of groundwater is constrained by the need to maintain hydrologically connected surface flows in order to satisfy prior appropriations, is this enough to warrant creation of an AMA under this section? It would seem so, if the legal constraints in effect create a scarcity of groundwater even when it is

physically abundant.

D. Can the Department of Water Resources certify the existence of an "assured water supply" under A.R.S. § 45-676 when the supply in question is of percolating groundwater hydrologically related to surface water that is already appropriated? Cf. the Department's position regarding AWS review in the upper San Pedro basin (not an AMA), to the effect that physical availability is not the same thing as legal assurance.

E. Can or must the well spacing requirements for new or replacement wells in active management areas, see A.R.S. §§ 45-597-604, be administered in such a way as to protect surface appropriations from interference? In developing rules and regulations under the well regulation article, the Director must "consider, among other things, water quality, cones of depression and land subsidence." § 45-603.

F. The Code also authorizes a program, starting in the year 2000, for "artificial groundwater recharge" inside AMA's, and authorizes the Department to provide "incentives" for such a program. A.R.S. § 45-566.A.4. Water artificially recharged from natural streambeds may well become part of the subflow or otherwise subject to (or protected by?) the appropriation system.

V. Federal Law: Does the federal reserved rights doctrine, in situations where it comes into play, influence or dictate answers to these questions different from how state law would answer them?

A. See, e.g., Cappaert v. United States, 426 U.S. 128, 143 (1976) (The United States "can protect its water from subsequent diversion, whether the diversion is of surface or groundwater"); see also In the Matter of Determination of Conflicting Rights to the Use of Water from the Salt River, etc., 484 F.Supp. 778, 783-84 (1980); rev'd sub nom San Carlos Apache Tribe v. State of Arizona, 668 F.2d 1093 (9th Cir. 1982); rev'd sub nom Arizona v. San Carlos Apache Tribe, 463 U.S. 545, 571 (1983); United States v. J. Ed Smith, 625 F.2d 278, 280 note 3 (9th Cir. 1980).

B. For other examples of the federal government exercising its paramount power to prevent the pumping of groundwater otherwise lawful under state law in order to protect an overriding federal interest, see, e.g., Brophy v. United States, 231 F.2d 437 (9th Cir. 1956) (landowner receiving stored surface water from federal project may not pump groundwater where

that would interfere with the operation of the project); 43 U.S.C. § 1524(e) (CAP authorization, imposing some federal restrictions on groundwater pumping from, inter alia, "aquifers affected by irrigation in the [project's] service area."

C. Given the location of Indian reservations in Arizona, and the magnitude of their potential Winters' rights, federal law may substantially preempt state law here, whatever state law turns out to be.

1. But important questions remain somewhat unresolved. For example, whose law fixes the burden of proving that, say, pumping of groundwater pursuant to state law would or would not adversely affect a federal reserved water right? If there is a presumption in state law against interconnectedness, does this apply to federal claims? Or is, as a matter of federal common law, the burden on the non-federal pumper? Or will federal common law simply borrow state law rules? Cf. 25 U.S.C. § 194: "In all trials about the right of property in which an Indian may be a party on one side, and a white person on the other, the burden of proof shall rest upon the white person, whenever the Indian shall make out a presumption of title in himself from the fact of previous possession of ownership." For those unfamiliar with Indian law, this seemingly racially discriminatory statute is almost certainly constitutional. See Morton v. Mancari, 417 U.S. 535 (1974). See generally Wilson v. Omaha Indian Tribe, 442 U.S. 653 (1979) (state is not a "white person" within § 194, and state law should be borrowed as rule of decision in dispute over title to riparian land). For decisions on remand upholding the Indians' claim, see Omaha Indian Tribe v. Wilson, 614 F.2d 1153 (8th Cir.), cert. denied 449 U.S. 825 (1980); United States v. Wilson, 523 F.Supp. 874 (N.D. Iowa 1981).

VI. The effect of this issue on general stream adjudications.

A. Will these proceedings in effect adjudicate rights to some percolating groundwater as well? See A.R.S. § 45-252A (purpose of general adjudications is to "determine...the nature, extent and relative priority

of the water rights of all persons in the river system and source"); § 45-251(4) (river system and source means "all water appropriable under § 45-131 and all water subject to claims based upon federal law"); and § 45-253(A)(2) ("the director [of DWR] shall assist the court in determining the scope of adjudication by recommending the portions of the river, its tributaries and any other relevant source subject to the adjudication") (emphasis added).

B. If they do not, will they fail in their objective of determining water rights, including rights based on federal law, in the adjudicated area?

C. If they do, will that make scarcely manageable proceedings unmanageable?

VII. Prescription: What should the result be? According to a noted early water law expert, "legal disposition in ignorance or disregard of this connection [between groundwater and surface flow] cannot prosper." Wiel, "Need for Unified Law for Surface and Underground Water," 2 S. Cal if. L. Rev. 358, 369 (1929). Arizona has prospered, but can definitive resolution of these issues be long postponed?

See National Water Commission, Water Policies for the Future (1973), p. 233 ("Recommendation No. 7-1: State laws should recognize and take account of the substantial interrelations of surface water and groundwater. Rights in both sources of supply should be integrated, and uses should be administered and managed conjunctively. There should not be separate codifications of surface water law and groundwater law; the law of waters should be a single, integrated body of jurisprudence.") See also Higdon & Thompson, supra, at 666 (the distinction between surface water and percolating groundwater, "rooted in history but long abandoned in reality, must be reexamined if any meaningful unitary attempt at water management in Arizona is to be made.")

Assuming it is wise to have the law conform to hydrologic reality (in the abstract, who can disagree with that?), here are some options:

A. Wholly unified management.

1. Are the "water wheel" and Templeton doctrines relevant here? See, e.g., Colorado Springs v. Bender, 148 Colo. 458, 366 P.2d 552 (1961) (an appropriator of groundwater, like one of surface water, "must establish some reasonable means of effectuating his

diversion"); Alamosa-La Jara Water Users Protective Ass'n. v. Gould, _____ Colo. _____, 674 P.2d 914, 931-36 (1983) (senior surface appropriators may in some circumstances be required to pump hydrologically related groundwater instead, in order to maintain their rights); Templeton v. Pecos Valley Artesian Conservancy District, 65 N.M. 59, 332 P.2d 465 (1958) (surface appropriators may, if they choose, be allowed to pump hydrologically related groundwater in some circumstances); see also Langenegger v. Carlsbad Irr. Dist., 82 N.M. 416, 483 P.2d 297 (1971) (same result, though hydrologic connection more attenuated than in Templeton); but cf. Durand v. Reynolds, 75 N.M. 497, 406 P.2d 817 (1965) (proposed switch to wells denied because water to be pumped not shown to be connected to surface water).

- a. Do or should these doctrines work underground, by allowing (or forcing) surface appropriators to pump groundwater instead?
- b. What if the surface appropriations are based on protecting instream flows, or are in a location where groundwater pumping is unavailable as an alternative?
- c. Should new pumpers of groundwater be required, in appropriate cases of a hydrologic connection, to purchase existing surface water rights in order to pump? This is apparently required in New Mexico. See Gisser, "Groundwater: Focusing on the Real Issue," 91 J. of the Political Economy pp. 1001, 1023-26 (1983).

B. Largely unified management -- the concept of "tributary groundwater" (Colorado) (see, e.g., Harrison & Sandstrom, "The Groundwater - Surface Water Conflict and Recent Colorado Water Legislation," 43 Colo. L. Rev. 1 (1971)). Southwest Cotton, supra, might be seen as recognizing "tributary" groundwater in Arizona, especially if its discussion of the subflow of surface streams (see III.B., supra) can be read as embracing groundwater that is hydrologically related

laterally, as well as parallel, to the surface stream.

C. Aggressive application of the "public interest" criterion for new surface appropriations (or transfers or changes of use) that threaten groundwater. See, e.g., Arizona Fish & Game Dep't. and Reinhard and Buena Vista, § III.A. supra.

D. Aggressive application of the Groundwater Code to safeguard surface supplies through groundwater use restrictions.

E. Some policy issues.

1. To what extent should existing, long-standing pumpers of percolating groundwater be grandfathered or otherwise protected? It's relatively easy to implement a new system prospectively, but Arizona has had a half-century of heavy reliance on groundwater that creates some interests of at least an equitable nature.

2. Unifying surface and most groundwater would not necessarily mean that prior surface appropriations are fully protected against subsequently initiated pumping. DWR could decide, for example, that the effects of such subsequent pumping are too small or too remote in time to warrant restrictions. Colorado has decided, for example, not to regulate pumping that won't have an effect on surface waters within 100 years, but if the effect will be felt within 40 years, it may be regulated.

3. It may be inefficient to protect relatively small volume surface flows at the expense of curtailing pumping of vast quantities of percolating groundwater. This concern with efficiency is a major part of the underlying basis for the "water wheel" and Templeton doctrines, which seek to optimize use of both groundwater and surface water by allowing or requiring the interchange between surface diversions and pumping under some circumstances.

4. In some situations, however, there is an additional policy issue; namely, the extent to which the relatively few remaining surface flows in Arizona streams should be preserved

for fish, wildlife, recreation and environmental reasons.

5. There may also be some enormous administrative complications regardless of the solution adopted. If surface uses are preferred, and pumpers of percolating must curtail pumping or buy out downstream surface appropriators, who do they buy out, at what price, and what proportion should each of the (possibly many) pumpers bear? If pumpers are legally preferred, and surface users must buy out pumpers in order to protect surface flows, the same questions are raised in reverse.

VIII. What institutions should answer these questions? Options:

- A. Courts, by adjudication
- B. Legislature, by legislative clarification
- C. Executive, by regulation and determinations under existing law; e.g., Arizona Groundwater Management Act.

IX. Are any constitutional rights in property implicated by the effort to find solutions?

1. It is possible to argue, with a perfectly straight face, that the Arizona constitution forbids the recognition of an overlying landowner's inchoate rights to groundwater. See Arizona Const., Art. XVII, § 1 ("The common law doctrine of riparian rights shall not obtain or be of any force or effect in the state.") (emphasis added).; Compare Bristor v. Cheatham (I), 73 Ariz. 228, 240 P.2d 185, 203 (1952) (DeConcini, J., concurring in part and dissenting in part) ("I see no connection" between the reasonable use doctrine of percolating groundwater and the doctrine of riparian rights abolished by the Constitution); with Bristor v. Cheatham (II), 75 Ariz. 227, 255 P.2d 173, 182 (1953) (Phelps & Udall, J.J., dissenting) ("the riparian right doctrine has long been repudiated in this jurisdiction" and should not apply to percolating groundwater). And see Bocuillas Land and Cattle Co. v. Curtis, 213 U.S. 339, 345 (1909) (Holmes, J.) (an Arizona statute generally adopting the common law "is far from meaning that

patentees of a ranch on the San Pedro are to have the same rights as owners of an estate on the Thames.")

2. Moreover, the constitution's rejection of riparian rights was arguably the implicit basis for the Arizona Supreme Court's decision in Town of Chino Valley v. City of Prescott (II), 131 Ariz. 78, 638 P.2d 1324 (1981), appeal dismissed, 457 U.S. 1101 (1982), that "there is no right of ownership of groundwater in Arizona prior to its capture and withdrawal from the common supply and that the right of the owner of overlying land is simply to the usufruct of the water."

3. Even if a body of groundwater is not subject to the appropriation system (if it's deemed "percolating" groundwater) the teaching of Chino Valley II seems to be that the state may regulate existing or forbid new withdrawals, without running afoul of the constitutional protection given property rights. Where such regulation or prohibition may be necessary to protect prior appropriations of surface waters or underground streams, the state has significant police power available to provide such protection. This may be highly relevant in carrying out any reforms to deal better with hydrologically connected surface and percolating groundwater.

X. Conclusion:

To promote discussion, I offer the following personal observations and opinions, without pretending to be anywhere near to the ultimate wisdom on the matter:

A. We already have in Arizona a largely unified system of managing ground and surface water. We just do not yet fully realize we have it (or do not want to admit it.) The issue will plainly not disappear; e.g., the Indians and many downstream surface appropriators may have a large incentive to argue for unified management, to restrict upstream and up-gradient pumping, and the Department of Water Resources must continually address this question in a spate of contexts, as noted earlier.

B. The Department ought aggressively to take the lead in promoting unification in its administrative

policies, as it has begun to in some areas (see, e.g., §§ III.A. and IV.D. above).

1. DWR should not depend upon the legislature for guidance.

a. The sheer complexity of the issue may be beyond legislative attention or competence.

b. The legislature will lack consensus on this issue. Although the groundwater code might be offered as an example of the legislature coming to grips with a knotty problem, it must be remembered that the groundwater code was drafted almost wholly outside the normal legislative process, precisely because the legislature was paralyzed by division of opinion. Also, the code was in part the result of a federal threat to withhold CAP construction funds. (An aggressive administration in Washington could make the same threat today to promote clarification of the groundwater/surface water connection in law, because of the Indian interests at stake, but I would be surprised if it did).

c. Arriving at a consensus is also difficult because this issue is not one where interest groups are neatly arranged on different sides. Some farmers take water from streams, some pump groundwater, some do both. Ditto for cities and Indians.

d. History shows that the Arizona legislature has, like most legislatures, usually not acted in water law reform absent a crisis of some proportion. The current issue doesn't measure up, at least yet.

2. DWR should not depend upon the courts for guidance.

a. Waiting for judicial solutions means delay, perhaps measured in decades.

b. There are definite limits to case-by-case adjudication; what may be the answer in one situation, or one code section, may not apply elsewhere.

c. The courts generally have a poor track record on these issues, especially in Arizona.

C. Most likely, the Indians will force the issue in court if no one else does. Lack of unified management of ground and surface waters plainly threatens at least some Indian water rights claims to surface flows. The interests of non-Indian downstream users may be similar to Indians; e.g., they might seek protection of their surface rights so that groundwater pumpers upstream could not interfere with the stream with impunity. Environmentalists also have reason to argue for unified management, where surface flows are threatened by groundwater pumping.

1. Despite what some perceive as a trend toward limiting the Winters doctrine that forms the basis for Indian claims, there is absolutely no indication the Supreme Court will abolish the doctrine. Those who believe abolition is inevitable are taking a large gamble, with potentially disastrous (from their perspective) results.

2. Moreover, though the adjudication of Indian claims seems now safely locked into state courts, this does not change the law that applies, only the character of the initial decision maker (a state rather than federal judge). The U.S. Supreme Court has repeatedly admonished state courts that they must apply the Winters doctrine; and that it will, if necessary, review the application of Winters to ensure it is done fairly. And the Arizona Supreme Court said a few months ago: "Indian rights are conferred by federal law, and it is federal substantive law which our courts must apply to measure those rights in the state adjudication...where state law conflicts, it must give way. Our courts have neither the intention nor the power to

overturn the Winters doctrine or any other federal rule which supports the Indian claims." United States v. Superior Court, 144 Ariz. 265, 697 P.2d 658, 670 (1985) (citation omitted).

3. If non-Indians in state court argue successfully at the trial level against applying Winters, or for an extremely narrow reading of it, the net result may well be simply to delay completion of the adjudication for a decade or more, as appellate courts reverse for error. (The Denver Water Board several years ago persuaded a Colorado trial court handling a complicated general adjudication that the Winters doctrine was not binding on it; the net result was a several year delay in completing the adjudication until the error could be reversed on appeal).

D. On the merits, my personal opinion is that federal law is rather clear, as indicated in § V above. It is highly unlikely that the Supreme Court could be expected to ignore a physical connection between ground and surface water as a matter of federal law, when the price of such refusal to recognize hydrologic reality is a substantial diminution or even elimination of Indian claims. I will put it in even stronger terms: it is whistling in the dark, even irresponsible, to predicate the adjudication of Indian and non-Indian water rights (or, in the interim, state administration of its various regulatory controls on water management) on the hope that the Supreme Court will give its nine-year-old, unanimous (per Burger, C.J.) decision in Cappaert v. United States a narrow reading in the Indian context. Just about all the signs are to the contrary -- the more recent so-called anti-Indian decisions have been in wholly different contexts or narrowly procedural.

E. The "no-action" alternative is not, on balance, a good one for DWR. I think the outcome is fairly certain that unified management will be forced on the state by the courts in many stream systems where Winters claims exist. Though this would not dictate unification everywhere in the state, it would probably be too bad -- not unworkable, but at least confusing -- if a major part of the state was under unified management as a result of the Winters doctrine while a different set of rules was applied elsewhere.

1. Waiting for the courts to say what seems inevitable may be tempting as a convenient way to get rid of a hot potato, but the consequence is delay measured not just in months but perhaps in decades.

2. A delay of such magnitude would, among other things, undermine the implementation of many parts of the groundwater code. It would, further, permit substantial new investments in water using facilities (homes, factories, etc.) that will ultimately have to be dealt with, at potentially great cost. Postponing resolution of the issue for decades would, in short, make meaningful solutions even more painful and expensive than they might be now.

F. DWR already has substantial authority to act. Besides its multifarious responsibilities under the groundwater code, it also has general authority to administer surface water rights. From a broad perspective, the legislature has delegated substantial responsibility to DWR to solve Arizona's water problems, of which this is an important one.

1. This is not to say water user interests would acquiesce if DWR takes the bull by the horns; many would protest loudly. And DWR's judgments would be subject to judicial review, so it ought not be flip or arbitrary.

2. But this is an area that cries out for the expertise and sensitivity of an administrative agency, and the courts may well be expected to give substantial (although not complete) deference to agency solutions that aim toward unified management.

G. Managing a unified system is not easy; it is fraught with controversy and expense and will make some lawyers and consultants wealthy. Knotty problems of equity and efficiency will be posed. But managing a resource in at least rough conformity to reality is, generally speaking, preferable to managing it in opposition to that reality.

1. I have not made a detailed study, but it is probably a fair bet that the most effective water management systems in other states are unitary; effectiveness being measured, over the long term, by stability, maximum

protection for investments and safeguarding environmental quality and general economic health. Such systems may not be elegant (indeed, they may be full of red tape and controversial) but are probably better than the alternatives.

2. Such systems may promote efficiency in water use by facilitating imaginative programs of conjunctive use, artificial recharge, and the like.

3. Clearly there would be pain; some existing uses may have to be curtailed and money may have to change hands if some uses are to be maintained. But pain will be visited on some anyway; if a dual system is maintained, stream appropriators may see their rights wither away without recourse. It is really not a complete answer to say that the stream user always had a contingent right -- contingent on the water being there to satisfy the use. A person who bought land expecting to pump groundwater, who may have to be told now he may not pump in order to protect surface flows, had a contingent right too -- after all, under the reasonable use doctrine that landowner had no remedy if his neighbor pumped his groundwater supply into oblivion (so long as the neighbor used it on his land).

ASU COLLEGE OF LAW ALUMNI ASSOCIATION

WATER LAW SEMINAR

III. GENERAL ADJUDICATION OF RIGHTS TO USE WATERS OF THE
GILA RIVER: THE GROUNDWATER/SURFACE WATER DILEMMA

C. Positions of the Parties

1. Valley Municipalities Represented by Jennele
Morris

CITIES' THREE BASIC POSITIONS

- I. The Arizona court has jurisdiction to adjudicate wells pumping subflow or pumping from definite underground channels, but not wells pumping percolating groundwater. The latter are governed by the 1980 Groundwater Code, not by the adjudication statute.
- II. The McCarran Amendment does not require inclusion of percolating groundwater.
- III. Percolating groundwater is not subject to claims based on federal law, nor is it subject to the reserved rights doctrine.

I. THE ARIZONA COURT HAS JURISDICTION TO ADJUDICATE WELLS PUMPING SUBFLOW OR PUMPING FROM DEFINITE UNDERGROUND CHANNELS, BUT NOT WELLS PUMPING PERCOLATING GROUNDWATER. THE LATTER ARE GOVERNED BY THE 1980 GROUNDWATER CODE, NOT BY THE ADJUDICATION STATUTE.

A. Remedy Requested

- 1. Instruct DWR that "river system and source" includes surface water, subflow and water from definite underground channels, and wells pumping from these sources.
 - a. "River system and source" is defined as "all water appropriable under §45-141 and all water subject to claims based upon federal law." A.R.S. §45-251(4).
- 2. Adjudicate only wells:
 - a. With underlying surface water filings (applications or permits to appropriate, certificates of water right, pre-1919 water rights registrations), or court decrees--on the assumption that presence of a surface water filing is a good indicator that well pumps appropriable water.
 - b. Designated by DWR as pumping subflow or from definite underground channels after investigation.

3. Under alternative 2(b), when DWR list is published in HSR, anyone can object to wells left out, master can hold hearing, objector must prove well is pumping appropriable water.
 4. Motion is for exclusion of groundwater wells from adjudication stage of proceeding, not dismissal of well owners.
 - a. Court maintains jurisdiction over well owners as parties, thus providing jurisdiction in enforcement actions should any arise.
 - b. These wells need not even be listed in the HSR--HSR should only list wells to be adjudicated.
 5. Among wells to be excluded are those pumping so-called "tributary groundwater".
 - a. This term, which comes from Colorado law, is misused in Arizona.
 - b. Groundwater from tributary aquifers is not appropriable in Arizona, thus not within the "river system and source".
 6. Wells may still be subject to jurisdiction in enforcement actions, even if they are not adjudicated.
 - a. There is no need to adjudicate wells in order to protect state appropriative or federal reserved rights. Such rights can be protected under Cappaert and Southwest Cotton principles.
 - b. Impact of groundwater pumping on surface supplies should be dealt with at the time interference claims arise, if ever.
 - c. No need to adjudicate all wells now because of possible interference claims against some wells later.
- B. The Groundwater Code preempted the field, so Court would be usurping legislative power if it adjudicates percolating groundwater.
1. Application of Groundwater Code is reduced to extent wells are included in adjudication.

- a. Thus, adjudication of wells usurps legislative power.
2. One can acquire an appropriative right to pump subflow from a well; such water is not subject to the Groundwater Code. A.R.S. §45-451(B).
 - a. Groundwater Code was not intended to regulate appropriable water or decreed water rights; and adjudication statute was not intended to regulate percolating groundwater.
 - b. Legislature has established two distinct systems for surface water and groundwater regulation. Only Legislature can change it.
 3. Any claim of judicial authority to prioritize and regulate groundwater use conflicts with the Groundwater Code under which:
 - a. Priority dates are irrelevant.
 - b. Groundwater use outside AMAs is limited only by what is reasonable and beneficial (reasonable use doctrine)
 - c. Landowners outside AMAs can commence new pumping at their discretion. A.R.S. §45-453
 - (1) Anyone can go out and drill a new well.
 - (2) DRW's pamphlet fails to recognize this dormant groundwater right.
 - (3) Another reason to wait until enforcement stage to deal with wells--all holders of groundwater "rights" are not in the proceeding yet.
 - (4) "Well owners" are not the same as "groundwater right holders".
 - d. The capture of diffused percolating groundwater before it reaches subflow is permitted--no need to file an application to appropriate.
 - (1) Analogy to sheet flow doctrine.

- e. Well owners can change the location of their wells.
 - (1) Can drill replacement well the day after the adjudication decree is entered.
 - (2) This is true even within AMAs.
 - (3) By serving well owners, you have not "pinned down" the groundwater.
- f. Anyone can drill an exempt well--§45-454.
 - (1) 35 gpm/10AF per year limit.
 - (2) Could be the day after the adjudication.
- g. Cities, water companies and irrigation districts have "service area rights" -- the right to withdraw and transport groundwater anywhere within their service areas.
 - (1) See A.R.S. §45-402(26)(27), §45-492 and §45-494.
 - (2) Cities can transport water between sub-basins and move their wells from one sub-basin to another -- the day after the adjudication decree. §45-543, 45-598.
- h. Type 2 rights -- A.R.S. §45-464.
 - (1) Withdrawal of type 2 rights can be from any location within the AMA.
 - (2) Type 2 rights can be moved anywhere within the AMA.
 - (3) Type 2 rights are non-appurtenant and can be bought, sold and leased.
 - (4) At least 100,000 acre feet of type 2 rights in Phoenix AMA alone.
- i. Code authorized various groundwater withdrawal permits.
 - (1) Code assumed situations might arise necessitating such permits.

- (2) Inimical to the notion of first in time, first in right.
- j. Recharge and recovery.
 - (1) Recovery permits allow recovery of groundwater placed there previously.
 - (2) Prime locations in Maricopa County are in areas of the Agua Fria and Salt River just below Granite Reef Dam.
 - (3) Will affect existing hydrology and therefore court's decree.
4. Safe-yield: the be-all and end-all groundwater regulation.
 - a. Early in next century all pumpers will be "off the pump".
 - (1) Code requires withdrawals not exceed natural recharge (safe yield).
 - (2) Natural recharge in Phoenix AMA is 10,000 AF.
 - (3) Withdrawals in Phoenix AMA in 1980 were 1.37M AF.
 - (4) To lower withdrawals to equal natural recharge will require draconian reductions in groundwater pumping.
 - (5) Statewide figure for overdraft is 2.5M AF (includes all AMAs).
 - b. To extent wells are decreed in the adjudication, application of the Groundwater Code is reduced—§45-451(B). This would interfere with attainment of safe yield.
 - c. Remember, the Feds blackmailed Arizona into passing the Groundwater Code.
5. Separation of powers: While the Arizona Supreme Court may reverse prior Arizona decisions, it cannot reverse the Groundwater Code.

a. Need for conjunctive management must be addressed to Legislature, not the adjudication court.

(1) Legislature can provide for adjudication of support system for surface water rights, but it will have to amend the adjudication statute and the Groundwater Code.

(2) Legislature can choose to protect surface water from diminution by groundwater pumping--e.g., by establishing new AMAs.

(a) Tribes can petition to establish new AMAs also.

(3) Government's pitch for conjunctive management make sense in states where groundwater is appropriable and subject to adjudication; but in Arizona, Legislature has

(a) created a completely distinct management system for groundwater; and

(b) limited the court's jurisdiction over groundwater in the adjudication statutes.

6. Groundwater Code created protectable property rights.

a. Grandfathered rights--if you were pumping before, you have a vested right to continue pumping, which you can lease or sell, and which can be moved.

b. Legislature established a pump tax to generate a fund to purchase and retire these new vested rights, so eventually all groundwater pumping in AMAs will disappear and safe-yield will be attained.

(1) Legislature recognized a property right by providing a fund for its "taking".

7. Is it worth it?
 - a. Adjudication of surface water systems is worth it in view of comprehensive groundwater management system established by Legislature.
 - b. Since Legislature has preempted the field, i.e., taken the lead in dealing with the problem, the court need not worry about it.
 - c. The groundwater problem will go away:
 - (1) Conservation requirements will get stricter.
 - (2) Substitute water sources will have to be used.
 - (3) Grandfathered rights will be retired.
 - (4) Safe-yield will be attained.

II.

THE MCCARRAN AMENDMENT DOES NOT REQUIRE INCLUSION OF PERCOLATING GROUNDWATER

- A. Lack of authority that percolating groundwater must be included in an adjudication to meet McCarran's comprehensiveness requirement.
 1. There apparently has never been a McCarran adjudication of groundwater--even in states that provide for it.
 - a. e.g., Higginson.
 2. No case law.
 - a. Eagle County--says nothing about groundwater.
 - b. Idaho ex rel. Higginson v. United States, 14 Ind. L. Rep. 5095 (Dec. 1987)-- does not even discuss groundwater.
 - (1) Even though Idaho statute provides for adjudication of groundwater, Idaho has apparently not attempted to adjudicate groundwater. Idaho Code §42-1406A(1).

- c. Under federal cases, state adjudication of water rights under McCarran need not be all-inclusive, either in terms of users, uses, potential claimants, or parts of a river system.
- 3. Neither the McCarran Amendment nor its legislative history mention groundwater or wells; all they were thinking about was stream water.
- 4. Essence of comprehensiveness requirement: to insure federal interests are adequately protected.
 - a. Claims of interference with reserved rights can be probably be brought at any time, e.g., Cappaert.
 - b. Proceeding must be general enough to adjudicate federal reserved rights.
- 5. Judge Richey believed state adjudication could not be comprehensive unless it included state law groundwater claims.
 - a. In other words, she held that McCarran imposes a co-extensiveness requirement.
 - b. Her decision was unpublished, unappealed and it goes against the weight of authority.
 - c. Judge Cordova held otherwise in Matter of the Determination of Conflicting Rights, 484 F.Supp. 778 (D. Ariz. 1980).
 - d. Judge Cordova's conclusion is supported by decisions in other federal cases.
 - e. Neither Judge's interpretation of state law is controlling on the adjudication court.
- B. McCarran will be satisfied if we adjudicate:
 - 1. All water appropriable under state law, including all surface water, subflow, and water in definite underground channels including wells pumping from such sources; and
 - 2. All federal rights and claims.

3. Exclusion of state law groundwater pumpers will not destroy comprehensiveness under McCarran.
- C. Court's question: How can this be a comprehensive adjudication if we do not at least consider tributary support of groundwater from the new (younger) alluvium?
1. Cities' position: "groundwater" pumped from the "younger alluvium" could be subflow and thus appropriable. If it is, McCarran requires its inclusion. McCarran does require inclusion of "tributary support"--subflow--of surface flow.
 - a. Adjudication statute requires inclusion of "all water appropriable under §45-141," and subflow is appropriable.

III.

PERCOLATING GROUNDWATER IS NOT SUBJECT TO CLAIMS BASED ON FEDERAL LAW, NOR IS IT SUBJECT TO THE RESERVED RIGHTS DOCTRINE.

- A. Only two types of claims based on federal law:
1. Federal reserved rights claims.
 2. Federal statutes, treaties or other enactments granting groundwater rights.
 - a. Tribes have pointed to only one federal enactment--the Ak-Chin Settlement.
- B. Federal reserved rights do not extend to groundwater.
1. Cappaert carefully refrained from extending reserved rights doctrine to groundwater.
 - a. The water in the pool was surface water.
 2. After Cappaert, there is a federal reserved right to surface water, and the right to protect that surface water from subsequent diversion.
 - a. This is not a right to groundwater; it is a right to protect surface water against interference caused by pumping of water which is directly hydrologically-connected to it.

- C. United States v. New Mexico and tightening of the reserved rights doctrine.
1. Congress has historically deferred to state law in the area of water rights.
 2. Supreme Court has been restricting, not expanding the reserved rights doctrine. U.S. v. New Mexico, Nevada v. U.S.
 3. Supreme Court is defining reserved rights doctrine in a manner which is compatible with state law.
 - a. Primary purposes.
 - b. Entirely defeated.
 - c. Necessary.
- D. Proper deference to state law requires that, in the absence of governing federal law (and there is none), the doctrine of reasonable use governs Indian groundwater use.
1. In absence of controlling federal law on tribal groundwater rights, court can borrow state law: the doctrine of reasonable use. Wilson v. Omaha Indian Tribe.
 2. Inconsistent results of applying state law to define the federal right cannot be avoided.
 - a. Policy of deference to state law demands that Arizona not be forced into a mold which would only be appropriate in a state where groundwater is expressly subject to appropriation and adjudication.
 3. Hallett Creek, 749 P.2d 324--court allowed U.S. claim of riparian rights under state law for its reserved lands in California.
 - a. Took account of peculiar nature of California law.
 - b. U.S. argued it had the same riparian rights under California law as any other ordinary proprietor. The court agreed.
 - c. Court noted historic deference to state law in determining rights to water on federal lands.

4. Tribes' backup position in this case: it has the same reasonable use rights under Arizona law as any other ordinary proprietor.
 - a. Cities agree with tribes' backup position, as do most parties; but this is a right based on state law, not "based upon federal law" (§45-251(4)).
5. Current Justice Department policy: the Olson Memorandum.
 - a. federal rights that can be asserted are limited to:
 - (1) Federal reserved rights, and
 - (2) Rights implied from specific congressional directives, and
 - (3) Federal rights to water will not be found simply by virtue of the ownership, occupation or use of federal land without more.
 - b. Tribes have pointed to only one specific congressional directive. Other than that, their groundwater rights are based on state law, not "based upon federal law" (§45-251(4)).
6. Tribes' backup position (reasonable use doctrine) imposes fewer limits on them than reserved rights doctrine (e.g., PIA).
 - a. Ability to pump groundwater may be the answer to the shortage of surface water to satisfy federal reserved rights claims.

BYRON LEWIS' OUTLINE FOR
WATER LAW SEMINAR RE. GROUNDWATER/SURFACE WATER DILEMMA

- I. What wells should remain in the adjudication.
 - A. All wells in the Younger alluvium should be adjudicated. (Only 50% - 90 day test wells).
 - B. All wells in the tributary aquifer pumping one acre-foot or more per annum should remain in the adjudication for future administration purposes. (50% - 90 day test wells)
 - C. All wells in nontributary aquifers should be dismissed.
- II. Reserved rights to groundwater.
 - A. No case of final binding authority has determined that groundwater is subject to the reserved rights doctrine.
 - B. The United States Supreme Court has always attempted to make the reserved rights doctrine compatible with State law.
 - C. Wilson v. Omaha Tribe, Federal policy of adopting State law to decide Federal questions.
 - D. Wilson criteria: (1) no need for a uniform Federal rule, (2) Federal policies or functions would not be frustrated, (3) application of a Federal rule would have a negative impact on existing State relationships - clearly mandates adoption of State law re use of percolating groundwater.

- E. State law - Chino Valley v. Prescott - no protectible property interest in groundwater prior to capture and withdrawal; however, under reasonable use doctrine, overlying landowners have a right to capture and use groundwater for the benefit of their land.
- F. If Federal claims to groundwater defined in terms of reasonable use doctrine, those claims do not have to be decided in the adjudication.

William H. Swan
Office of the Solicitor
Department of the Interior

The Groundwater/Surface Water Dilemma
The Federal Position

I. Introduction

A. Nature of the problem - most, if not all, of the groundwater users within the Gila River watershed have been served with notice of the adjudication and have filed protective claims. Now, as a result of a motion for summary judgment, the court must decide whether to adjudicate those claims vis-a-vis the federal claims, or to eliminate some or all of those users from the adjudication phase of the proceeding.

B. The state adjudication statutes provide that the adjudication will determine "the extent and priority of the rights of all persons to use water in any river system and source." 45 A.R.S. 251 1. River system and source is defined as "all water appropriable under §45-141 and all water subject to claims based upon federal law" (emphasis added). 45 A.R.S. 251 4.

C. By limiting the adjudication to "appropriable" water, the legislature apparently intended to exclude the users of percolating (non-appropriable) groundwater, except to the extent necessary to adjudicate the federal claims.

D. From the federal perspective, this problem has two parts:

1. Assuming that the reserved water rights doctrine extends to groundwater, which groundwater users adjacent to federal reservations are necessary for a complete determination of the federal rights and in order to provide protection of the federal rights?

2. Assuming that the government holds reserved water rights to certain quantities of surface water, which upstream groundwater users are necessary for a complete determination of the federal rights and in order to provide protection of the federal rights?

II. Discussion

A. Importance of the court's decision

1. This dispute parallels the dispute addressed in a recent Idaho decision. Idaho ex rel. Higginson v. United States, No. 39576 (District Court, Twin Falls, October 14, 1987); 14 I.L.R. 5095 (December 1987); Appeal pending.

2. As in Higginson, the Arizona legislature did not give precise direction as to the scope of the proceeding. That was left to the court's discretion.

3. Also as in Higginson, the important consideration here is the impact of the statute that waives the government's immunity from suit. 43 U.S.C. §666 (the McCarran Amendment).

4. In order to maintain jurisdiction over the government, the state proceeding must be a complete adjudication of all water rights within the river system. The question here is: What is necessary in Arizona for a complete adjudication of rights (particularly the federal rights)?

5. As set forth in Higginson, if the court eliminates users that are necessary for the determination of "claims based upon federal law," the federal government may argue that the waiver of immunity has been nullified and that it must therefore be dismissed from the proceeding.

B. Reserved rights to groundwater

1. While the question has not been decided at the Department of the Interior, the Department of Justice has taken the position that the reserved rights doctrine extends to groundwater as a matter of law (see cases cited in the government's briefs). However, this question is more appropriately addressed in the context of the factual situations surrounding each of the reservations. Justice argues that Congress has impliedly recognized that the doctrine applies to groundwater in the Ak Chin settlement legislation.

2. This question is particularly relevant in Arizona where many reservations, and non-federal entities as well, survive solely off of groundwater (e.g., the City of Tucson, Air Force bases, Indian reservations and national monuments).

3. In order to reduce the impact of the quantification of reserved water rights, the court will need to rely on all sources, including groundwater. Thus, recognizing that the doctrine extends to groundwater may actually be helpful to the court in some situations.

5.

4. If the doctrine extends to groundwater, then all adjacent groundwater users should be included in the proceeding in order to determine their relative rights and to provide protection for the federal rights if those rights are senior.

C. Protection of surface water rights

1. Diminution of surface water sources by upstream groundwater pumpers is not a new development in Arizona (e.g., the Santa Cruz River).

2. If the government holds reserved rights to certain quantities of surface water, the Cappaert decision stands for the proposition that such rights may be protected from the withdrawal of hydrologically connected groundwater. Cappaert v. United States, 426 U.S. 128 (1976).

3. The question is whether upstream groundwater users should be included in the adjudication phase of the proceeding, in order to determine their relative rights, or whether the government must wait for the enforcement stage in which to protect its decreed rights.

(a) The Department of Justice has argued that the enforcement stage is too late, and that such a process results in piecemeal proceedings.

(b) Compare, for example, the present effort to enforce the Gila Decree.

(c) The Akin decision directed the courts to avoid piecemeal determinations. Colorado River Water Conservation District v. United States, 424 U.S. 800 (1976).

(d) Is it appropriate to allow junior users to detrimentally rely on uses that may be cut off in an enforcement proceeding initiated years later?

(e) Even if the process is difficult, reason dictates that all relative rights should be determined now, not later.

4. If protection of senior reserved rights is required, what law should the court apply?

(a) The Supreme Court has held that federal reserved water rights are determined by federal law. Cappaert v. United States, supra.

(b) The Department of Justice has asserted that state law does not apply, and that it is not necessary to borrow state law to develop the federal rule.

(c) Justice has argued that federal common law exists and should be followed by the court, or developed where necessary. See for example Cappaert v. United States, supra.

III. Summary

A. The conclusion resulting from the above-outlined analysis is that the court should retain all groundwater users in the adjudication phase of the proceeding.

B. Some groundwater users may eventually be excluded on the basis that they do not pump appropriable water or they have no connection to the determination of "claims based upon federal law." But these are factual determinations which are not susceptible to resolution via summary judgment.

C. Any decision which eliminates users that are necessary to the determination of "claims based upon federal law" may threaten the state court's jurisdiction over the United States under the McCarran Amendment.

IV. WATER QUALITY/ENVIRONMENTAL ISSUES

ROGER K. FERLAND
JAMES G. DEROUIN
PHILIP C. BRIGGS
DAVID S. BARON

STATUS REPORT: PROTECTION OF WATER QUALITY
IN ARIZONA

By Roger K. Ferland
STREICH, LANG, WEEKS & CARDON

I. Introduction

- A. EQA became effective August 13, 1986.
 - 1. Five-year adoption process.
 - a. Prior groundwater protection rules challenged.
 - b. Stalemate between business, agricultural, environmentalists led to initiative.
 - c. Governor Babbit, Larry Hawke and David Baron -- consensus building.
 - 2. Not self-executing - 17 sets of rules.
 - a. Transition unclear -- what permitting requirements apply?
 - 3. Goal: Where are we now? Where are we likely to be going? When? What are likely to be the "tough" issues?

II. Overview of Water Quality Protection Provisions of EQA

- A. Surface Water Quality.
 - 1. Permit programs authority.
 - a. NPDES (49-203.A.2).
 - b. Nonpoint source discharges (49-203.A.3).
 - 2. Surface water standards.
 - a. Standards for all priority (§307; 33 U.S.C. §1317) toxics by 1/1/90 (49-222.B).
 - b. Numeric and narrative standards (49-221.0).
- B. Aquifer Water Quality.
 - 1. Protects only water in aquifers (49-201.2).

2. All aquifers assumed to be used for drinking water and protected accordingly (49-224.B).
 - a. Process for changing aquifer classification from drinking water onerous (49-224.C and D).
 - b. Primary MCLs adopted automatically (49-223.A).
 - c. Pollutants for which no MCLs can have standards adopted by DEQ on own initiative (49-223.B) or in response to petition (49-223.C).

3. Permit programs primary enforcement mechanism.
 - a. UIC (49-203.A.5) and UST (49-1001 et seq.) authority.
 - b. Aquifer protection permits.
 - (1) Permits for most activities that pollute groundwater (49-241.A and B).
 - (2) Two standards must be met for permit:
 - cannot violate aquifer quality standards (49-243.B.2).
 - must install best available demonstrated control technology (BADCT) (49-243.B.1).
 - (3) Recharge projects need not demonstrate BADCT, reuse projects exempt from permits (49-243.C, 49-250.B.8).
 - c. General aquifer protection permits -- permit by rule (49-245).
 - (1) Based on BMPs for category of sources.
 - (2) Covers urban runoff, storm sewers, small septic tanks (49-246.B) and certain agricultural activities (49-247).

C. Remedial actions under WQARF (State Superfund).

1. Patterned on federal Superfund.
 - a. Cleanup cost liability for responsible parties -- owners, operators, generators, etc. (49-283.A).

- b. Fund for cleanups where no identifiable RP (49-282.B.2).
- 2. Difference from federal Superfund.
 - a. Narrower definition of operator (49-283.B).
 - b. Mitigation of nonhazardous releases (49-286).

III. Current Status of Rulemaking and Legislation

A. What has been adopted.

- 1. Aquifer boundaries (R18-11). *Yield 5gal/day defines aquifer*
 - a. Confirmed difficulties with reclassification.
- 2. Public participation and administration (R18-1).
 - a. Ex parte provisions too broad to allow for settlement.
 - b. Does not cover rule development procedures.
- 3. WQARF administration (R18-7).
 - a. Does not add to statute.
 - b. Confusing procedures -- particularly for site evaluations.
 - c. Ignores major issues.
 - (1) Settlement policy
 - De minimis settlement.
 - Covenants not to sue.
 - Settlement mechanism.
 - (2) Non-hazardous pollutant mitigation.
 - (3) Voluntary cleanups.
 - (4) How clean is clean?
 - d. Will need additional rulemaking.

B. What is late?

- 1. Aquifer protection permit rules (R18-9).
 - a. Over a year late.

- b. April 1989 adoption.
 - c. Parallel BADCT guideline adoption.
 - d. Appears to cover the subject.
 - (1) Problem with recharge permit interface.
 - (2) Negotiated permit -- will utilize BADCT guidelines as presumptively applicable.
 - (3) Unclear how much new information existing groundwater permittees will have to submit.
 - (4) How will alert levels, contingency plans, WQARF interface, general permit requirements work? Still unclear.
 - e. Should BADCT be in rules?
2. Triennial review of surface water quality standards (R18-11).
- a. At least a year late.
 - b. 1/1/90 deadline for toxics.
 - (1) Severe shortage of data for many substances.
 - (2) Almost no site-specific data.
 - May consider "local water quality characteristics on toxicity of specific pollutants" (49-222.C).
 - Is flow intermittent, ephemeral?
 - Is mixing zone appropriate?
 - c. Narrative v. numeric standards.
 - (1) How to enforce narrative standards.
 - d. Issue critical because surface standards become discharge limits.
3. Agricultural BMPs (R18-9).
- a. At least a year late.
 - b. General permits cannot proceed but not due until July 1989 (statutory deadline) -- may not be met.

4. Revised Wastewater Reuse rules.
 - a. Should be adopted in parallel with aquifer protection permit rules.
 - (1) Alternative permit program.
 - b. Current rules discourage reuse -- inconsistent with DWR water management goals.
 - c. Outside technical advisory concept paper.
- C. What's ahead?
 1. DEQ Legislative agenda.
 - a. Categories of industrial facilities cannot sell, transfer or close without DEQ "clean" certification -- ECRA.
 - b. Eliminate requirements for surface standards for all toxics.
 - c. Evaluation of collective impact of wells, power to disapprove additional wells.
 - d. UST amendments -- 10% state matching to access LUST trust fund, financial responsibility and cost recovery authority.
 2. Regulatory agenda.
 - a. Aquifer water quality standards.
 - (1) Adopt new primary MCLs.
 - (2) Standards for sodium, chloride, TDS and sulfate? Why, when many toxics unregulated?
 - (3) Adoption by April 1989.
 - b. UST.
 - (1) Adoption of EPA rules allows these rules to proceed.
 - (2) Statutory authority for financial responsibility, remediation unclear.
 - c. NPDES/UIC.
 - (1) Does State want delegation?

-- local control, should be part of overall water quality protection program, should be considered in water resource planning.

-- adequate resources available? additional delays?

d. Nonpoint source BMPs.

(1) How to enforce?

(2) Are BMPs necessary?

IV. Overriding Themes and Issues

A. All things considered, despite criticism, DEQ has done a remarkable job.

1. Turnover in leadership -- three Directors, three Governors.
2. Turnover in personnel -- two RCRA inspectors.
3. New Assistant Attorney Generals, new personnel, new organization.

B. Lack of innovation -- tend to just copy statute.

1. Should encourage voluntary settlement, cleanup.
 - a. Clear procedures.
 - b. Incentives for settlement.
 - (1) Protection from liability.
 - (2) Assurance of reimbursement.
2. Adoption of toxic standards.
 - a. Has everything been done to gather all data?
3. Definition of BADCT.
 - a. Does it encourage acceptance of innovative technologies?
4. Financial assurance for UST operators.

C. Lack of clear direction.

1. Evaluating State Superfund sites.

2. Clarificatin of responsible party status.
 - a. Offsite impact as basis for RP status.
 - b. What is "associated itself" with release.
 - c. De minimis contribution.
3. Defining how clean is clean.
 - a. Language of statue, rules versus staff interpretation -- clean up all aquifers to drinking water quality regardless of conditions.

D. "Bunker mentality"

1. Opening up rules development process.
2. Concern about "losing control."
 - a. "Workshops" do not allow for discussion, negotiation of specific language.
 - b. Reg neg with aquifer permit rules after development.
3. Unwillingness to experiment with structured reg neg process.
4. All interests mistrusted.

REMEDIAL ACTIONS AND RESPONSIBILITY
FOR
CLEANUP OF CONTAMINATED WATER SUPPLIES

James G. Derouin
Meyer, Hendricks, Victor, Osborn & Maledon
Phoenix, Arizona

I. OVERVIEW

In 1976, Congress passed legislation regulating hazardous wastes from "cradle to grave" [Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901, et seq.]. In 1980, Congress enacted the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) [42 U.S.C. § 9601, et seq.] -- more commonly referred to as "Superfund" -- to provide for the cleanup and long term care of sites containing hazardous substances. In 1986, Congress reauthorized CERCLA by passing the Superfund Amendments and Reauthorization Act (SARA).

CERCLA/SARA is a very broad law which, to a large extent, contravenes many aspects of common law relating to negligence, trespass and nuisance. Much litigation, some of it dealing with the constitutionality of the law itself, has occurred. Since 1980, approximately 40 states have enacted so-called "mini-Superfund" laws of their own which authorize those states to administer similar programs with respect to sites which may not qualify for cleanup under CERCLA. Article 5 (A.R.S. §§ 49-281 to 287) of the Arizona Environmental Quality Act (EQA) incorporated a number of features of CERCLA and constitutes Arizona's "mini-Superfund" law.



Although CERCLA/SARA does not specifically mention the concepts of retroactive (i.e., imposing current liability for actions which were legal at the time they were done) or strict (i.e., without negligence), joint and several liability, federal courts have interpreted CERCLA/SARA as imposing such liability for the "release" (or "threatened release") of "hazardous substances" into the "environment." [Under EQA, A.R.S. § 49-285(A) does specifically provide that it is retroactive and that it does, in fact, intend to impose strict, joint and several liability.]

Those who are particularly affected by CERCLA/SARA [42 U.S.C. § 9607] and/or Arizona mini-Superfund provisions (A.R.S. § 49-283) include the following "potentially responsible parties" (PRPs):

- those who have owned, or currently own, sites on which hazardous substances are located;
- those who have operated, or currently operate, such sites;
- those who have transported hazardous substances to such sites; and

- those who have generated hazardous substances which are at such sites.

In addition, the following persons are affected by such liability because of the two laws' joint and several liability features:

- liability insurers of the above;
- those who acquire the above by purchase or merger;
- those who lend to and/or foreclose on the above; and
- those who are dominating officer/shareholders of the above.

Finally, lawyers who represent all of the foregoing need to be concerned, among other reasons, for malpractice purposes.

The basic premise of liability under both federal and state laws arises from the mere "release" or "threatened release" of a "hazardous substance" into the "environment" (usually groundwater which is a drinking water source) without regard to whether the former or current owner put them there and, if so, whether it was negligent in doing so; and without

regard to the diligence or caution of the transporter or generator.

Liability is imposed because there has been a "release" of a "hazardous substance" to the environment" from a site, not because a particular hazardous substance of a particular generator has been released -- i.e., a generator can be liable for cleanup costs even though his hazardous substances have not necessarily been released into the environment; and a transporter can be liable even if it has safely transported the materials to the site. Closer to home, a current owner of property (i.e., a bank, business or developer) can be liable for site cleanup even though it had no responsibility for placing hazardous substances on the site. [The so-called "innocent purchaser" provisions of both CERCLA/SARA and EQA provide a defense of last resort. The mere fact that a purchaser has to think of using them means that it is threatened with liability. Better that a purchaser never had to worry about the problem in the first place.] As a result, it is enormously important, when buying, selling or developing real estate, to be aware of the liability provisions of both CERCLA/SARA and EQA because of the potential significant liability that may attach to real estate which has been used for the disposal of hazardous substances.

II. KEY TERMS

As indicated previously, liability under CERCLA/SARA attaches for the "release" or "threatened release" of "hazardous substances" into the "environment." The following definitions are from CERCLA/SARA and, although similar to those found in EQA, they are not identical. [See the Attachment to this paper for a table of cross-references to key provisions of both Acts including the following definitions.]

Release [42 U.S.C. § 9601(22)] means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment, but excludes:

- any release which results in exposure to persons solely within a workplace;

- emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine;

- release of source, byproduct or specified nuclear material; and

- the normal application of fertilizer.

Hazardous substance [42 U.S.C. § 9601(14)] means:

- any substance designated pursuant to sections 311(b)(2)(A) and 307(a) of the Clean Water Act [33 U.S.C. §§ 1321(b)(2)(A) and 1317(a)];
- any element, compound, mixture, solution or substance designated pursuant to section 102 of CERCLA [42 U.S.C. § 9602];
- any hazardous waste having the characteristics identified under section 3001 of RCRA [42 U.S.C. § 6901];
- any hazardous air pollutant listed under section 112 of the federal Clean Air Act [42 U.S.C. § 7412]; and
- any imminently hazardous chemical substance or mixture with respect to which the EPA has taken action pursuant to section 7 of the federal Toxic Substances Control Act [15 U.S.C. § 2606].

[CERCLA/SARA specifically excludes petroleum and natural gas from the definition of "hazardous substances." EQA provides, however, that the Arizona Department of Environmental Quality may, by rule, designate other substances as hazardous on the basis of a determination that such substances represent an

imminent and substantial endangerment to public health.] For a complete list of hazardous substances, see 40 CFR Part 302.

Environment [42 U.S.C. § 9601(8)] means navigable waters, any other surface waters, groundwater, drinking water supply, land surface or subsurface strata or ambient air.

III. HOW CERCLA/SARA WORKS

Under CERCLA, the EPA has issued, pursuant to 42 U.S.C. § 9605, an extensive National Contingency Plan (NCP) which can be found at 40 CFR Part 300 and which governs its conduct with respect to remedial actions.

SARA sets forth a complex settlement system at 42 U.S.C. § 9622. First there must be some identification pursuant to the NCP of the site from which a "release" or a "threatened release" exists. This can be done either by a federal, state or local agency. After identification, the site must be "scored" according to a nationally uniform method of evaluation -- the Hazardous Ranking System (HRS) set forth in 40 CFR Part 300, Appendix A. Practically speaking, if there has been a "release" of a "hazardous substance" into groundwater that is used by a community of any significant size for drinking purposes, the site will automatically, under the EPA HRS formula, receive a score of something between 40 and 50 points

-- with a score somewhere in the neighborhood of 28 being necessary to qualify for inclusion on the Superfund National Priorities List (NPL) set forth at 40 CFR Part 300, Appendix B.

Listing on the NPL is not absolutely necessary to the expenditure of cleanup funds by the EPA nor is the EPA restricted to expending Superfund monies according to the numerical score of the sites on the NPL. However, if a site is placed on the NPL, it means that it does qualify for cleanup and that, eventually, EPA will undertake either an enforcement action against responsible parties or will expend its own monies for a cleanup -- after either the EPA or a responsible party has prepared a RI/FS [a site report (i.e., a "Remedial Investigation") and a study of cleanup alternatives (i.e., a "Feasibility Study")] and the EPA has approved a remedial action plan (RAP). [Knowledgeable sources have estimated that an average RI/FS, post SARA, will cost in excess of \$1,000,000; and that an average remedial action, post SARA, will cost in excess of \$30,000,000.]

IV. REMEDIAL ACTIONS

"Remedial actions" are more easily defined than done. They are the "cleanup" actions ordered by the EPA in the event of a release (or threat of a release) of a hazardous substance into the environment.

Remedial actions are defined [42 U.S.C. § 9601(24)] as actions to monitor, assess and evaluate a release or threat of a release and to dispose of or remove material or take such other actions consistent with a permanent remedy as may be necessary to prevent or minimize the release so as to avoid substantial danger to present or future public health or welfare.

Since the passage of CERCLA, the issue of "how clean is clean" has persisted.

- Should wastes be entombed on site or removed to be buried offsite?
- Should hazardous substances merely be encapsulated or removed or should there also be cleanup of the groundwater below the site?
- What residual levels of hazardous substances in soils and/or in the groundwater below the site are acceptable -- realizing that neither the site nor the groundwater can be returned to pristine conditions?

SARA specifically deals with these issues at 42 U.S.C. § 9621.

[Note: In addition to all other costs imposed, SARA also

imposes costs associated with damage to natural resources -- see 42 U.S.C. § 9607(d); 111(c) and (e); and 113 (b).]

V. OVERVIEW OF LEGAL ANALYSIS

In general, the legal analysis of liability issues is as follows:

- Has there been a release of a hazardous substance into the environment?
- Are you a PRP within the meaning of 42 U.S.C. § 9607(a) and/or A.R.S. § 49-283(A)?
- Do you have any defense under 42 U.S.C. § 9607(b) and/or A.R.S. § 49-283(D)?

*
Under CERCLA [42 U.S.C. § 9607(b)], there were, essentially, only three defenses to what is otherwise absolute retroactive, strict and joint and several liability -- namely, an act of God; an act of war; or an act or omission of a third party (other than an employee or agent of the otherwise "responsible party") if the potentially responsible party establishes by a preponderance of the evidence that it exercised due care and took precautions against foreseeable acts -- i.e., situations of "bona fide

vandalism" where due care was exercised and precautions were taken. SARA further defined the "third party" defense in 42 U.S.C. § 9601(35) by establishing the innocent purchaser exception.

- Do you have a private right of action against another party under 42 U.S.C. § 9607(a)(4)(B) and/or A.R.S. § 49-285(A)?

Additionally, in this day and age, numerous situations arise when an attorney has to ask yet further questions.

- Does the doctrine of limited corporate liability apply?
- Is the land you are going to purchase contaminated and what constitutes "due diligence" under 42 U.S.C. § 9601(35) and A.R.S. § 49-293(B) that will allow it to take advantage of the "innocent purchaser" provisions of CERCLA/SARA and EQA?
- Does the doctrine of caveat emptor apply to the sale of commercial land?

- Do "as is" provisions in the buy-sell agreement avoid warranty liability that would otherwise apply?
Maybe Yes
- Do they void the statutory private right of action under both CERCLA/SARA and EQA?
No
- Do equitable considerations apply at all?
- Does bankruptcy offer any protection?

In conclusion to this subject, just remember: "An ounce worth of prevention is worth a pound's worth of cure -- particularly if its your malpractice policy."

STATE - FEDERAL LAW CROSS-REFERENCE

<u>Item</u>	<u>State Law*</u>	<u>Federal Law**</u>
"Release"	49-281(3)	42 USC 9601(22)
"Hazardous Substance"	49-201(16)	42 USC 9601(14)
"Environment"	49-201(13)	42 USC 9601(8)
"Facility"	49-201(15)	42 USC 9601(9)
"Owner/Operator"	49-283(A)(1)	42 USC 9601(20)
Responsible Parties	49-283	42 USC 9607(a)
Liability	49-285(A)	42 USC 9607(a)
Private right of action	49-285(A)	42 USC 9607(a) 42 USC 9613(f)(1) 42 USC 9613(f)(3)
Innocent purchaser	49-283(B)	42 USC 9601(35) 42 USC 9607(b)(3)
Defenses	49-283(D)	42 USC 9607(b)
Unilateral govern- ment action	49-287(D)(1)	42 USC 9604
Contingency planning	49-282(D)	42 USC 9605
Administrative cleanup orders	49-287(D)(3)	42 USC 9606(a)
Fines	49-287(H)	42 USC 9606(b)
Pre-enforcement review of cleanup orders	49-287(D)(3)	None
Punitive (treble) damages	49-287(I)	42 USC 9607(c)(3)
Permitted releases	49-283(D)(4)-(7)	42 USC 9607(j)
Cost effective remedial action	49-282(C)	42 USC 9605(7)
Notification of releases	49-284 36-3304(A)***	42 USC 9603(a)-(c)

Remedial action/ removal	49-281(4) 49-282(D)	42 USC 9601(23)
Superfund	49-282	42 USC 9631
Equitable apportionment	49-285(E)	42 USC 9622(g)
Natural resources damages	None	42 USC 9607(a)(4)(c) 42 USC 9607(f)(1) 42 USC 9622(j) 42 USC 9613(g)
Contribution	None	42 USC 9613(f)(2)

* Arizona Environmental Quality Act (Chapter 368, Laws of 1986).

** Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §§ 9601-9657).

*** Pursuant to Chapter 230, Laws of 1986, leaks from underground storage tanks must be reported within 24 hours of detection.

CONTENTS

1.0 INTRODUCTION 1

2.0 ROLE(S) OF THE CONSULTANT 2

 2.1 INVESTIGATIONS 3

 2.2 REGULATORY 3

 2.3 EXPERT ADVISOR 4

 2.4 OVERSIGHT/REVIEW 4

3.0 TECHNICAL APPROACHES 5

 3.1 ACCEPTED APPROACHES 5

 3.2 COMPLEXITIES 6

4.0 CONSULTANT SELECTION PROCESS 6

 4.1 EXPERTISE 7

 4.2 EXPERIENCE 7

 4.3 RAPPORT/RESPECT 7

5.0 THE TIPS 8

 5.1 WHAT TO LOOK FOR 8

 5.2 WHAT TO AVOID 9

 5.3 DO'S AND DON'TS 10

6.0 CONCLUSION 11

PICKING A GROUND-WATER CONSULTANT FOR WATER QUALITY ISSUES

by

Philip C. Briggs¹

1.0 INTRODUCTION

Ground-water hydrology is a relatively new science, and has been offered as an independent consulting specialty for less than 40 years. Until the last ten years, ground-water hydrology was an arcane art, with few practitioners. In fact, to the general public, the ground-water hydrologist and the water witch were equal in capabilities.

These views changed rapidly in the late 1970's. During this period, the public's growing concern over environmental contamination led federal, state, and local governments to enact programs to control and restrict activities that had the potential to contaminate ground water and to clean up already contaminated aquifers.

Ground-water hydrology had some of the answers to solve these problems, and driven by the forced draft of the regulatory programs, the science has expanded rapidly to cope with these issues. The field is now replete with new and sophisticated assessment and analysis techniques and brimming with hundreds of new ground-water hydrologists. Concurrently, the same regulatory programs have expanded and evolved to also dictate the scope of the investigation and control the technical approach.

Given this increasing level of technical sophistication and regulatory complexity, ground-water quality investigations and water-quality issues have become a demanding, and expensive endeavor. The stakes are often very high in the ground-water hydrology field, which is a complex science. You'll find that some consultants are good at it, others are better, a few are terrible. The selection of a consultant has become an important, but not a simple task.

¹ Geraghty & Miller, Inc., Phoenix, Arizona

Which brings us to the purpose of this paper - how to pick the right consultant for the task at hand. The approach I've selected is to begin with some discussion of the role(s) of a consultant in ground-water quality issues, followed with some examples of the technical approach a consultant should use under selected regulatory programs. These discussions provide a frame of reference for use in the selection process, which is described next. I'll close with some tips on what to look for, what to avoid, and some do's and don'ts.

Armed with this information, you should be able to define your consulting needs, determine what the consultant can (and can't) do for you, and make an informed evaluation and selection.

I would note that the following is drawn from my experience, which includes 25 years in the public sector (19 with a regulatory agency) but only a little over a year as a consultant to the private sector. I've employed consultants, worked with them, reviewed their work, and now I am one. Most of the following is straight-forward and will be useful to you. I'll try to note my biases so that you can make your own decisions.

2.0 ROLE(S) OF THE CONSULTANT

The first consideration in selecting a consultant is to define the consultant's role in the water-quality issue at hand. For purposes of this discussion, I have delineated four broad roles: investigations; regulatory assistance; expert advisor; oversight/review. Within each role there are general tasks which I have grouped as: problem definition; development of the approach/strategy; execution/implementation of the work; analysis of the data; and resolution/conclusion. The consultant can be involved in any or all of the roles, and within each role, with any or all tasks.

For client satisfaction, and for smooth and efficient working relationships, it is imperative that the consultant role be defined, and understood by both parties. And the client must also remember that whatever the consultants role, the bottom line decision will be the client.

With this framework in mind, let's review each role.

2.1 INVESTIGATIONS

The conduct of technical investigations is probably the role in which a consultant is most often viewed. In days past, this role was simple and fairly straight-forward: find a water supply; develop wells; project how long the supply would last; ground-water occurrence, nature and extent; aquifer recharge, discharge; and well yields.

Now, the role is more complex. All of the above water quantity evaluations must still be made, but water-quality investigations now include: source characterizations; evaluations of potential contamination; determinations of the nature and extent of observed contamination; projections of potential contamination movement; estimates of contaminant transport and fate; and projections of future conditions/response.

Overlaying the additional scope of the water-quality investigation are the requirements for quality control and quality assurance imposed by regulatory agencies and/or required to develop scientifically valid, legally defensible data in this contentious area.

Water-quality investigations may be conducted to meet facility siting/permitting requirements, for environmental assessments, and for definition/evaluation of contamination under state or federal remedial programs or as part of an order.

2.2 REGULATORY

The lawyer tends to hold onto the regulatory role in water-quality issues, but in fact, the roles of the consultant and lawyer can and should overlap (my bias).

Water-quality investigations are, in the main, driven and controlled by regulatory programs. While few of these programs were developed with the input of ground-water hydrologists, their implementation always includes hydrologists. To avoid either needlessly elaborate or inadequate investigations and to tailor investigations to regulatory requirements, the hydrologist should be involved in problem definition (physical and regulatory) and in the design/selection of the appropriate technical approach.

While the legal and institutional requirements are within the counsel's domain, data collection and interpretation to meet those requirements is well within the consultants role.

Another area within this role where a consultant can be of assistance is the interface with the regulatory agencies, or with another party's technical consultants. It is my preference that relationships with the agencies would be open, cooperative and interactive. Further, the technical staffs should be able to work on technical issues without counsel participation. The consultant must be aware of what matters are open for discussion, and must respect client confidentiality, but within technical areas, should have free reign to negotiate approaches and methods, and should know when to confer with counsel. Keeping the relationships non-confrontational and on a technical level will expedite the process and rapidly define areas of conflict for counsel or client attention.

2.3 EXPERT ADVISOR

The use of consultants as experts in preparing legal strategies for the court room or regulatory proceedings is a common role. For best effect though, the consultant should not be used as a hired hand, with a limited role. The consultant should be a participant in the development of a strategy or an approach, and in the evaluation of the other parties' potential and actual approaches. The consultants' insight into what can and can't be technically demonstrated (by either side) can be very important in preparing and executing a strategy.

Expert testimony is often a difficult task, and involving the consultant early on will allow them their best chance to develop convincing testimony and perhaps to integrate any planned investigation with the necessary testimony.

2.4 OVERSIGHT/REVIEW

It is very common in major water-quality remedial efforts for responsible parties to collectively retain a consultant. While that consultant may be entirely capable of completing a satisfactory investigation, it is often useful for an individual responsible party to retain a consultant to provide oversight to insure that the client's own position is well considered, especially it comes time to allocate costs of clean up.

In other situations, it can be very cost effective to retain a consultant to review the prime consultant's work product as the outside view point often provides a clearer evaluation of the correctness of a selected remedy, allowing some shaping before the report is submitted to a regulatory agency.

3.0 TECHNICAL APPROACHES

A major consideration in selecting a consultant is the adequacy or appropriateness of their proposed investigation. There are a multitude of new technical methods and analyses available, yet the simple approaches are often still valid. Time and money can be needlessly expended if the proposal is either too elaborate or insufficient. The common dangers are: great study - wrong answer; wrong approach - no answer; scientifically superb - more answers than needed. Overlay these problems with the understanding that there are often several ways to approach a problem, and you can see the difficulty in evaluating a proposal. However, I can provide some information that will help you screen out those that obviously miss the mark.

3.1 ACCEPTED APPROACHES

The key screening technique is to compare the proposed investigation with the appropriate regulatory requirement. The Environmental Protection Agency (EPA) has adopted guidance documents for use by their staff and consultants, and by potentially responsible parties. These documents lay out study approaches, investigatory methods, data collection techniques, field and laboratory quality control/assurance methods, health and safety requirements, and data evaluation methods. I've listed a few in the enclosed bibliography. While the consultant may have proposed an investigation that would adequately provide the data necessary to meet EPA's needs, if it isn't done to meet the appropriate guidances - it could be money wasted. Table 1 is a brief outline of a ground-water investigation for a Superfund remedial investigation (RI) taken from the most recent EPA guidance.

If you've asked for a proposal for an environmental assessment (EA), the consultant should first ask if your lender has established guidelines/requirements for same. (Everybody has a different concept of what's involved.) If they don't, you can judge their proposal against those of a local lender, or check with your environmental attorney. It is important that the proposal be tailored to the site in question and that the client understands the limitations and deliverables. Table 2 is a brief outline of first phase of an EA as commonly accepted in the Phoenix area.

3.2 COMPLEXITIES

I wouldn't want to leave you with the idea that ground-water hydrology is such a straight-forward endeavor that anyone with a guidance document can participate. It is a science, which utilizes systematic approaches and the scientific method, but it is also a complex art.

Consider the common RCRA monitoring well placement requirement for one up-gradient, three down-gradient. While that might be a reasonable concept in Kansas or some other part of the humid zone, out in the arid-zone, the well location question needs to be prefaced with: "when do you determine the gradient?" Influences include: the Salt River in flood conditions, wet winters, high crop subsidies are up, or summer conditions.

Why you ask "when" deals with the way gradients can change. Recharge from River flows will alter the direction and gradient, as will wet winters which mean free surface water and less local pumpage by the farmers; higher or lower crop subsidies would reduce or raise agricultural pumpage, respectively; and summer's peak water demand means more pumpage by everybody. Or, the gradient could be straight down as it is possible for downward flow to exist (between or within an aquifer) which may move contaminants vertically, and perhaps move chemicals below the monitor wells.

These considerations, which are subtle but important, are not taught in school, or listed in guidance documents. Yet, without them, some pieces of the puzzle will be missing.

4.0 CONSULTANT SELECTION PROCESS

The process for selection of a ground-water consultant for water-quality issues uses the basic requirements of any professional selection: expertise and experience. If the issue involves extensive regulatory requirements and where an agency holds ultimate approval authority of a study, the consultant selection requirements should also include evaluation of the agency's respect of and rapport with the consultant. In evaluating the consultant against these criteria, you'll need to first have determined the consultant's role, and developed some familiarity with the required work effort, as discussed previously.

4.1 EXPERTISE

The rapid growth of the ground-water consulting business and the increasing technical complexity of water-quality issues make it desirable that you select a consultant with the technical expertise that matches the issue at hand. Over the last ten years, many firms have developed extensive expertise in the water-quality issues usually encountered. Still, you should frame your requirements in a request for proposal and request that the consultant provide a proposal describing a proposed technical approach and their relevant expertise.

Not so obvious is a similar requirement for legal and institutional expertise to match the rapidly-developing regulatory requirements. This specialized aspect of the consulting business is being recognized by many firms, and they are bolstering their staffs with regulatory specialists who are often ex-agency staff with extensive experience in the program of concern.

There's an old adage - "Give a kid a hammer, and everything becomes a nail." Some consultants have special skills/equipment/interests. If what you need is some ground-water modeling or an extensive geologic investigation - look for a modeler, or a geologist. If that's not what you need, review such a consultant's proposal carefully to be sure you're not getting "hammered".

4.2 EXPERIENCE

The growth of interest in water-quality issues has created a corresponding growth in the consulting business. Again, there is a large pool of consultants that have extensive experience in the types of issues usually encountered. Still, as there are new firms entering the field and your local area every year, you should ask for relevant technical and regulatory experience for the issue and in the area.

As you can expect glowing descriptions of expertise and experience, plan on spending some time reading between the lines, and checking their references with your associates.

4.3 RAPPORT/RESPECT

Given that an agency has the final say as to the technical adequacy and appropriateness of a ground-water investigation, or a permitting study, it is mandatory (my bias) that the agency in question respects the consulting firm, or at least a member of the staff. (They don't have to like them - just respect their technical capabilities).

Similarly, the consultant must have developed good rapport with the agency staff and be able to effectively communicate with the staff.

This requirement is harder to evaluate, but a few questions of the consultants references, or to your network, should give you some insight.

5.0 THE TIPS

Selecting a ground-water consultant for water-quality issues isn't as difficult as the tasks the consultant faces, but like the work itself, there are some tricks of the trade. The following are some things to look for, some things to avoid, and some do's and don'ts.

5.1 WHAT TO LOOK FOR

- o Local Expertise/Experience - Issues, geology and legal and institutional frameworks vary by area. It's hard to beat a good hometown firm, or a national firm with local, experienced staff.
- o Right Stuff - Issues/roles/tasks vary widely - from simple to complex. It's best to match the consultant to the job. For some jobs, there may only be a few "gray-hairs" that can deal with it adequately. For others, any technician will do.
- o Interactive Approach - Look for a consultant that takes you into the investigation, and provides you with ample opportunity to provide input, review progress, and comment. This approach will provide products that fit the need, are cost effective, and provide you the understanding necessary to carry on the process after the consultant has finished their work.
- o Team Formation - As complex as some issues/investigations are, it is imperative that the consultant can provide an integrated, multidisciplinary team that has the experience/expertise to deal with all aspects.
- o Full Service - Can the consultant provide the variety of skills necessary to carry a site from investigation to remedial design to cleanup? If they can't, have they teamed with another firm to provide this breadth of service?

- o Lights On? - When you interview the staff or read the proposal do they seem to be thinking about your issue? Do they know their business? Are they alert, intelligent, articulate? (Would you hire them for your staff?)
- o Insight - Did they put some time into evaluating your issue; do they know something about the local geology, hydrology, key regulatory agency?
- o Appropriate Technology - Look for a simple approach if it's enough for the job. The science of systems analysis is built on maintaining equal effort in all areas. Look for investigations that gather the data needed for the analysis proposed and the problem at hand. Don't be afraid to save time and money.
- o Honesty - It's still the best policy. If a consultant tells you you can't do that, or needn't - don't discount them. In today's regulatory wonderland, they just may be right.
- o Simple/Direct Work Product - Reports should be simple to read, use the data well to describe the issue, build in a clear progression from data to analysis to conclusion; and you should be able to understand it.
- o Data Management Systems - A bit arcane, but for large investigations, which generate tens to hundreds of thousands of dollars worth of water-quality and related data, the only way for the consultant to adequately evaluate the data is to have it on some type of computerized data base. Few personal computer (PC) systems are adequate to the task, but without being PC-based, they won't be able to leave the database with you when they finish (which they should, as the client may well be monitoring those wells for another 30 years).

5.2 WHAT TO AVOID

- o Bait and Switch - A lot like the car business, these firms send out the guru to sell the job, and use their green recruits to do it. With this approach, your review of resumes was perverted. Ask that the team for the job be described in the proposal and be available for the job.
- o Low Ball - More used car talk, and it's common; beware of the incredibly low cost estimate, as you'll no doubt be hit with extra costs as the study progresses.

- o Low Costs - If it was a used car, you wouldn't by the cheapest one, even if it looked good. There's bound to be a reason, and it may be the consultant is so far off the target that you'll never get a satisfactory job.
- o Magic Solutions - Excessive reliance on modeling falls in this category, as does any black box/technology that no one else has. There may be a reason. Remember, there is no free lunch, or cheap way through an RI.
- o Over-Kill - Otherwise known as the gold-plated job or open-wallet surgery. These firms are usually honest and technically capable, its just that they're hung up on science and liable to drill more wells, run more analysis, and do more modeling than is needed to respond to the agency's requirements.
- o Hammer/Nail - Mentioned before, and repeated for effect. Look out for physicists modeling your site with a model they wrote themselves - often so elegant and complex that the necessary data cannot be collected in the field. The mathematics exist, but the science has yet to find a way to measure the necessary ten or twelve parameters in real situations.
- o Word Processors - Useful devices, but they've led to canned reports that are spit out using the seek/replace function to change the client's name. Cost savers, but if used to an excess, they obliterate the site's unique aspects.
- o More Data - The agencies' are great for this: find the edge of the plume; explain this zig in the trend. Some consultants will do this as well. But, there never is, nor will there ever be enough data for complete confidence in an answer. A consultant has to draw the line and provide and an answer. Expect it to be qualified as to its reliability, and expect to make the decision to proceed or go back for more data yourself.

5.3 DO'S AND DON'TS

- o Do include the consultant on your legal team.
- o Do pay attention to the consultant
- o Don't kill the messenger - they didn't cause the contamination

- o Don't get too involved with the consultants work product, especially to the extent of dictating findings and conclusions. That's not what a consultant is for, they must retain their integrity and objectivity for their report to be accepted.

6.0 CONCLUSION

- o Role - The role of the consultant must be defined early in any issue. Some consultants can serve in roles or tasks that are beyond the usual expectation for the ground water consultant. Look for these capabilities, as they will help the team effort.
- o Abilities - Ground-water consulting is an increasingly complex and demanding field. The science has advanced rapidly, and often outstrips our ability to collect valid data, or our need for answers. Today's consultant needs state-of-the-art scientists, and managers that know when to use them.
- o Selection - Look for relevant experience and expertise. To do that, you'll need to determine the consultants role in the issue, and their ability to perform it. Water-quality issues are a mixture of technical and regulatory problems, and a consultant must be able to address both. Ask for proposals, interview the consultants, and check around your industry and legal contacts for evaluations.
- o Tips - A lot of consultants are good, some are better, a few are awful. Don't select one on costs, or be seduced by overly elaborate technology. Do look for bright eyes, the occasional gray hair, and a fair price. Expect a proposal that is personalized, and expect an honest evaluation of your issue. Plan on being involved in the investigation, and demand a cognizant approach that, while it may not provide you what you want, will give you what you need.

TABLE 1
SUGGESTED REPORT FORMAT

-
- Executive Summary
- 1.0 Introduction
 - 1.1 Purpose of Report
 - 1.2 Site Background
 - 1.2.1 Site Description
 - 1.2.2 Site History
 - 1.2.3 Previous Investigations
 - 1.3 Report Organization
 - 2.0 Study Area Investigation
 - 2.1 Includes field activities with site characterization. These may include physical and chemical monitoring of some, but not necessarily all, of the following:
 - 2.1.1 Surface Features (topographic mapping, etc.) (natural and manmade features)
 - 2.1.2 Contaminant Source Investigations
 - 2.1.3 Meteorological Investigations
 - 2.1.4 Surface-Water and Sediment Investigations
 - 2.1.5 Geological Investigations
 - 2.1.6 Soil and Vados Zone Investigations
 - 2.1.7 Ground-Water Investigations
 - 2.1.8 Human Population Surveys
 - 2.1.9 Ecological Investigations
 - 2.2 If technical memoranda documenting field activities were prepared, they may be included in an appendix and summarized in this report chapter.
 - 3.0 Physical Characteristics of the Study Area
 - 3.1 Includes results of field activities to determine physical characteristics. These may include some, but not necessarily all, of the following:
 - 3.1.1 Surface Features
 - 3.1.2 Meteorology
 - 3.1.3 Surface-Water Hydrology
 - 3.1.4 Geology
 - 3.1.5 Soils
 - 3.1.6 Hydrogeology
 - 3.1.7 Demography and Land Use
 - 3.1.8 Ecology
-

TABLE 1 (CONT'D)
SUGGESTED REPORT FORMAT

- 4.0 Nature and Extent of Contamination
 - 4.1 Presents the results of site characterization, both natural chemical components and contaminants in some, but not necessarily all, of the following media:
 - 4.1.1 Sources (lagoons, sludges, tanks, etc.)
 - 4.1.2 Soils and Vadose Zone
 - 4.1.3 Ground Water
 - 4.1.4 Surface Water and Sediments
 - 4.1.5 Air

 - 5.0 Contaminant Fate and Transport
 - 5.1 Potential Routes of Migration (i.e., air, ground water, etc.)
 - 5.2 Contaminant Persistence
 - 5.2.1 If they are applicable (i.e., for organic contaminants; describe estimated persistence in the study area environment and physical, chemical, and/or biological factors of importance for the media of interest.
 - 5.3 Contaminant Migration
 - 5.3.1 Discuss factors affecting contaminant migration for the media of importance (e.g., sorption onto soils, solubility in water, movement of ground water, ect.)
 - 5.3.2 Discuss modeling methods and results, if applicable.

 - 6.0 Baseline Risk Assessment
 - 6.1 Public Health Evaluation
 - 6.1.1 Exposure Assessment
 - 6.1.2 Toxicity Assessment
 - 6.1.3 Risk Characterization
 - 6.2 Environmental Assessment
-

TABLE 1 (CONT'D)
SUGGESTED REPORT FORMAT

- 7.0 Summary and Conclusions
 - 7.1 Summary
 - 7.1.1 Nature and Extent of Contamination
 - 7.1.2 Fate and Transport
 - 7.1.3 Risk Assessment
 - 7.2 Conclusions
 - 7.2.1 Data Limitations and Recommendations for Future Work
 - 7.2.2 Recommended Remedial Action Objectives

Appendixes

- A. Technical Memoranda on Field Activities (if available)
 - B. Analytical Data and QA/QC Evaluation Results
 - C. Risk Assessment Methods
-

TABLE 2
PHASE I EA REPORT FORMAT

-
- 1.0 Introduction
 - 2.0 Environmental Setting
 - 2.1 Location
 - 2.2 Climate
 - 2.3 Topography
 - 3.0 Description of Water Resources
 - 3.1 Ground-water Resources
 - 3.1.1 Hydrogeology
 - 3.1.2 Occurrence
 - 3.1.3 Movement
 - 3.1.4 Quality
 - 3.2 Surface Water Resources
 - 3.2.1 Occurance
 - 3.2.2 Flood Plains/Flows
 - 3.2.3 Quality
 - 4.0 Description of Site and Surrounding Area
 - 4.1 Nature of Survey
 - 4.1.1 Description of interviews conducted; records reviewed
 - 4.2 Current Land Use
 - 4.2.1 Description of on-site features focusing on those with contamination potential
 - 4.3 Adjacent Land Use
 - 4.3.1 Description of land use in the vicinity of the site, focusing on features that could impact the site
 - 5.0 Site and Area History
 - 5.1 Profile of historical land use based upon records reviewed, interviews conducted
 - 5.2 Description of past operations that could impact the site
 - 6.0 Potential Contamination
 - 6.1 Discussion of potential for past and/or current land use activities to impact:
 - 6.1.1 Soils
 - 6.1.2 Ground Water
 - 6.1.3 Surface Water
-

TABLE 2 (CONT'D)
PHASE I EA REPORT FORMAT

- 7.0 Observed Contamination
 - 7.1 If present, discussion of observed contamination in environmental media
 - 7.2 Comparison of observed contamination to environmental standards
 - 8.0 Regulatory Review
 - 8.1 Past and current regulatory actions
 - 8.2 Potential for future regulatory actions
 - 9.0 Analysis of Developmental Considerations
 - 9.1 Potential impacts of potential or observed contamination on purchase or transfer
 - 10.0 Conclusions
 - 11.0 Recommendations
-

V. THE SECOND MANAGEMENT PLANS

BETSY RIEKE
HERB DISHLIP

**THE SECOND MANAGEMENT PLANS
(Groundwater Management Plans for the Period
1990-2000)**

**Betsy Rieke
Jennings, Strauss & Salmon**

October 15, 1988

THE SECOND MANAGEMENT PLANS

I. THE STATUTORY FRAMEWORK (A.R.S. §§ 45-561 thru -575)*

A. Series of Five Management Plans

1. The Groundwater Code requires the Director of the Department of Water Resources ("DWR") to develop and adopt a series of five management plans for each active management area ("AMA"). (A.R.S. § 45-563). Figure 1 shows the boundaries of the AMAs.
2. Each management plan covers a management period. The five management periods are:

1980 - 1990

1990 - 2000

2000 - 2010

2010 - 2020

2020 - 2025

(A.R.S. §§ 45-564.A, -565.A, -566.A, -567.A, -568.A).

B. Management Goals

1. Phoenix, Prescott and Tucson AMAs

The goal for the three urban AMAs, Phoenix, Prescott and Tucson, is safe-yield no later than 2025. (A.R.S. § 45-562.A). Safe-yield

* All statutory references are to the Groundwater Code, as amended, including amendments enacted in the 1988 regular session.

means "a groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial groundwater recharge in the active management area." (A.R.S. § 45-561.7).

2. Pinal AMA (*Planned depletion goal*)

In the Pinal AMA, the goal is to allow development of non-irrigation uses pursuant to the Groundwater Code and to preserve the existing agricultural economy as long as feasible, consistent with the need to preserve water supplies for future non-irrigation use. (A.R.S. § 45-562.B).

3. The statutory goals are to be achieved by a combination of mandatory conservation programs, augmentation and, if necessary, purchase and retirement of grandfathered rights.

C. Statutory Elements

1. Conservation programs

Prior to each management period, DWR must develop a management plan for each AMA, including conservation requirements for agricultural, municipal and industrial water users and distributors.

2. Augmentation

Beginning with the second management plan,

*Each Area has:
AMA Director
Groundwater Users
Advisory Council*

*Adoption is next week
Oct 19-21, 1988*

*Water Supply
Model 28%*

DWR must develop a program to augment each AMA's water supply through importation of water, storage of water, artificial groundwater recharge or other means. (A.R.S. §§ 45-561.1, -565.A.4). (DWR has discretionary authority to adopt an augmentation program in the first management plan for the Tucson AMA. (A.R.S. § 45-564.E)).

3. Water quality assessment and program for water quality

Beginning with the second management plan, DWR must include in each management plan an assessment of the groundwater quality in the AMA and "any proposed program for groundwater quality protection." The assessment and any proposed program must be developed in cooperation with DEQ. (A.R.S. § 45-565.A.6).

4. Retirement program for grandfathered rights

Beginning with the third management plan, DWR may include a program to purchase and retire grandfathered rights. Actual purchase and retirement by DWR may begin on January 1, 2006. (A.R.S. § 45-566.A.7).

D. Adoption and Notice Procedures

1. Promulgation of proposed plan. (A.R.S. §§ 45-564.A, -565.A, -566.A, -567.A, -568.A).
2. Public hearing on each proposed plan in each active management area. (A.R.S. § 45-570).
3. Filing of summary and findings with respect

FDS
Sulfates
Nitrates
Metals
Volatile organics
Pesticides

Mostly water is of good quality

Need to put water which is "cleaned up" to good use.

to matters considered at hearing. (A.R.S. § 45-571.A).

4. Adoption by order; notice of adoption by publication. (A.R.S. § 45-571.B,.C).

*5. Individual notice of conservation requirements. (A.R.S. §§ 45-564.B, -565.B, -566.B, -567.B, -568.B).

E. Administrative and Judicial Appeals Procedures

1. Rehearing and review. (A.R.S. § 45-405.A; A.A.C. R12-15-201.C). *15 days after adoption*

2. Variance and administrative review. (A.R.S. §§ 45-574, -575; H.B. 2293, ch. 104, § 14, 38th Legis., 2d Reg. Sess. (1988)).

3. Appeal to Superior Court. (A.R.S. § 45-405.B).

II. THE SECOND MANAGEMENT PLANS

A. Procedural Status

1. The plans were promulgated, i.e., proposed, in April and May of this year. The public hearings have been held. It is anticipated that the plans will be adopted in mid-October 1988 and requests for rehearing and/or review will be due in early November.

2. Individual notices will be mailed in late December, 1988.

B. Statutory Elements

1. Irrigation water duties. (A.R.S. § 45-565.A.1).

$$\text{Water duty} = \frac{\text{Av Wtr Req}}{\text{Assigned Eff}}$$

Based on crops grown
1975-1980

2nd Plan focus is on

* Assigned Efficiency
85% in most areas

(average for low level fields)

Citrus Orchards - 65%

Limiting Soils areas - 70%

20% reduction in water

Phoenix AMA (1st plan

60% eff) @ 4 acre ft/acre

DWR must establish "a new irrigation water duty for each farm unit to be reached by the end of the second management period and may establish one or more intermediate water duties to be reached at specified intervals during the second management period."

The new irrigation water duty and any intermediate water duties "shall be calculated as the quantity of water reasonably required to irrigate the crops historically grown in the farm unit and shall assume the maximum conservation consistent with prudent long-term farm management practices within areas of similar farming conditions, considering the time required to amortize conservation investments and financing costs." (Emphasis added).

2. Conservation requirements for non-irrigation uses. (A.R.S. § 45-565.A.2,A.3).

For non-irrigation uses, DWR must establish "additional" conservation requirements "to be achieved by the end of the second management period and may establish intermediate conservation requirements to be achieved at specified intervals during the second management period."

For municipal uses, other than small municipal water providers, DWR must "require additional reasonable reductions in per capita use to those required in the first management period and use of such other conservation measures as may be appropriate for individual users." Municipal uses are "all non-irrigation uses of water supplied by a city, town, private water company or irrigation district." (A.R.S. § 45-561.6).

Focus on large providers -
Total per capita use

Alternative Program
Resid per capita use
Indiv user reqmts
Spec reqmts
Wtr mgmt plan

For small municipal providers, DWR shall establish "reasonable conservation requirements." Small municipal provider means "a city, town, private water company or irrigation district that supplies water for non-irrigation use, serves less than five hundred people and supplies less than one hundred acre feet of water for non-irrigation use during a calendar year." (A.R.S. § 45-561.8).

Institutional Users
Untreated Water

Industries

- Turf facilities (min 10 ac)
- Dairies
- Feed lots
- Sand & Gravel
- Electric Power
- Metal Mining

For industrial uses, "including industrial uses within the exterior boundaries of the service area of a city, town, private water company or irrigation district, the program shall require the use of or establish conservation requirements based on the use of the latest commercially available conservation technology consistent with reasonable economic return." Industrial use means "a non-irrigation use of water not supplied by a city, town or private water company, including ~~annual~~ ^{animal} industry use and expanded animal industry use." (A.R.S. § 45-561.2).

- 3. Irrigation Districts to line all canals and op eff. - or achieve op accounting loss < 10%
- Metering reqmt. for Municipal users.

Conservation requirements for distribution systems. (A.R.S. § 45-565.A.4).

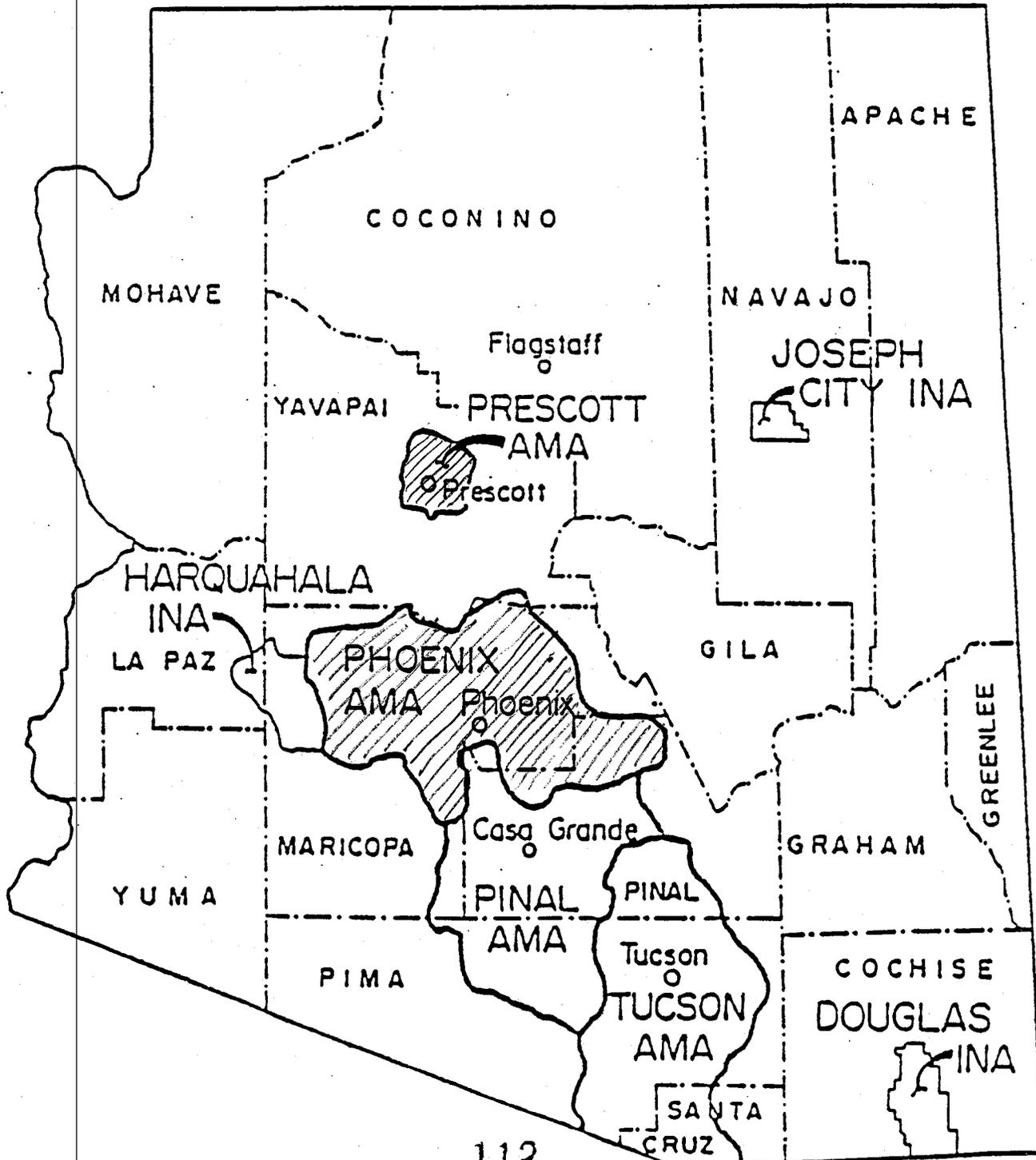
DWR must "establish additional economically reasonable conservation requirements for the distribution of groundwater by cities, towns, private water companies and irrigation districts within their service areas."

- 4. Underground Storage and Recovery Fee
- 5. Techn Analysis Projects

Augmentation program. (A.R.S. § 45-565.A.5).
Effluent use; CAP-Plan 6; Stormwater Runoff; Water transfers
Watershed Mgmt; Weather Modification.

Assessment of groundwater quality and proposed program for groundwater quality protection. (A.R.S. § 45-565.A.6).

ACTIVE MANAGEMENT AREAS AND IRRIGATION NON-EXPANSION AREAS IN ARIZONA



such as G. D. Searle & Company, Dow Chemical, DuPont, the Salt River Project, and the City of Phoenix. He was a key negotiator of the Arizona Environmental Quality Act (1986) and is currently steering committee chairman for an Arizona Superfund site involving more than 100 generators and transporters.

M. Byron Lewis is Chairman of the Natural Resources and Environmental Department of Jennings, Strouss & Salmon. Mr. Lewis helped draft legislation authorizing the Central Arizona Water Conservation District. He assisted in the development of the Water Rights Registration Act of 1974 and the Stock Pond Registration Act of 1977. Mr. Lewis received his B.S. from the University of Arizona, in 1964, and his J.D., from the University of Arizona College of Law, in 1967.

Betsy Rieke joined Jennings, Strouss & Salmon in 1987 as a member of the Natural Resources Department. She was formerly Chief Counsel for the Arizona Department of Water Resources. In that capacity she served as legislative liaison and participated with the Director of Water Resources and Deputy Directors in developing the Department's legal positions. She was instrumental in drafting the first groundwater management plans for the active Management Areas. Betsy currently represents the Salt River Project in the Arizona Legislature on water and environmental matters.

John D. Leshy is a Professor of Law at A.S.U. Since 1980, Professor Leshy has taught courses in Water Law and Natural Resources Law. He previously served as Associate Solicitor for the Department of the Interior (1977-80), Regional Counsel for the Natural Resources Defense Council in California (1972-77), and as a Trial Attorney in the Department of Justice (1969-72). He received his A.B. and J.D. from Harvard University.

David Baron received his bachelors degree from Johns Hopkins University in 1974 and a J.D. degree, cum laude, from Cornell Law School in 1977. He clerked for a federal appeals judge in Ohio before moving to Arizona in 1978, where he was an assistant attorney general specializing in public health law. In 1981 Mr. Baron joined the Tucson office of the Arizona Center for Law in

the Public Interest where he participates in litigation and advocacy on behalf of environmental and consumer interests. He is the Assistant Director of the Center.

Jennele M. Morris is the Assistant City Attorney for water matters for the City of Glendale. She was previously an associate with the law firm of Bill Stephens & Associates P.C. She received her B.A., with highest distinction, and her J.D., with highest distinction, from the University of Arizona. She has clerked for the Honorable Monroe G. McKay of the Tenth Circuit Court of Appeals and practiced environmental law in the United States Justice Department's Division of Land and Natural Resources. She was one of the founding members of the Environmental and Natural Resources Law Section of the State Bar.

Philip C. Briggs is a Senior Consulting Hydrologist in the Phoenix, Arizona office of Geraghty & Miller, Inc. Prior to joining Geraghty & Miller he was Deputy Director of Engineering and Chief Hydrologist for the Arizona Department of Water Resources for 19 years. He also was a Hydraulic Engineer with the United States Geological Survey for six years. Mr. Briggs holds bachelors and masters degrees in Civil Engineering from Arizona State University, and is a registered civil engineer in Arizona.

Roger K. Ferland is a partner with the law firm Streich, Lang, Weeks & Cardon. He graduated from Lewis and Clark College, magna cum laude (1968), and Duke University School of Law, cum laude (1974). From 1975 through 1981, Mr. Ferland was employed as Administrative Counsel to the State Department of Health Services and as an Assistant Attorney General and senior counsel in the Environmental Protection Section of the Attorney General's Office. Mr. Ferland is the primary author of the so-called Hawke Bill that was the basis for the State's Environmental Quality Act.

William H. Swan is an attorney-advisor in the Office of the Solicitor, U.S. Department of the Interior. He specializes in the areas of water rights, Indian law, reclamation law, and environmental law. Mr. Swan represents all Interior Department agencies within Arizona regarding water rights, and he is actively

• Look for the DWI III Seminar on September 24, 1988 •

WATER LAW SEMINAR REGISTRATION FORM

Name _____ Title _____

Organization _____ Phone _____

Address _____

City _____ State _____ Zip _____

PLEASE REGISTER ME FOR THE WATER LAW SEMINAR. ENCLOSED IS MY CHECK MADE PAYABLE TO:
ASU COLLEGE OF LAW ALUMNI ASSOCIATION

PLEASE CIRCLE AMOUNT ENCLOSED:

Registration
On or Before
October 7, 1988

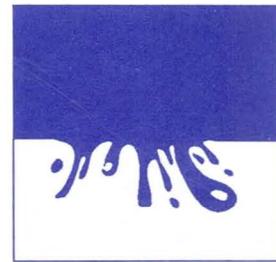
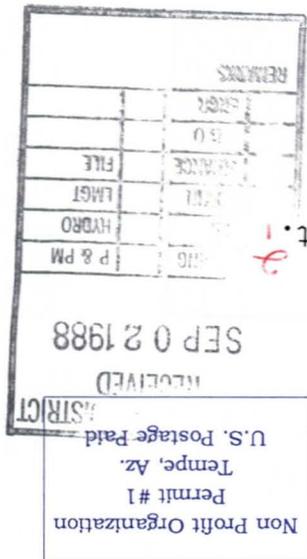
\$100.00

Late/Door
Registration

\$125.00

Please Mail to:

KAY CARLSON, DEVELOPMENT OFFICE
COLLEGE OF LAW
ARIZONA STATE UNIVERSITY
TEMPE, ARIZONA 85287



EW 11002
 College of Law
 Arizona State University
 Tempe, Az 85287-0604

involved in representing the interests of the United States in both the Gila River and Little Colorado River Adjudications.

C. Laurence (Larry) Linser worked for the California Department of Water Resources from 1959 to 1973 in a variety of engineering and planning functions. Since 1973 he has been employed by the Arizona Department of Water Resources and its predecessor, the Arizona Water Commission. He has served in a variety of positions including Chief of Water Rights Administration and Planning, and Deputy Director of Planning & Adjudication. On April 8, 1988 he was appointed Acting Director of the Department.

Roger S. Manning is the Executive Director of the Arizona Municipal Water User's Association, a voluntary association of larger cities in the Phoenix metro area. The Association's purpose is to present the perspective of its members regarding Arizona water issues. Mr. Manning, who has been involved with Arizona water issues for 12 years, has held positions with the League of Arizona Cities and Towns, the Maricopa Association of Governments, and the Southeastern Arizona Government's Organization. Mr. Manning holds a B.A. and M.A. in Geography from the University of California at Davis.

GENERAL INFORMATION

Materials: Each registrant will receive one book of all written materials used for the seminar. These materials will be distributed to registrants at the registration desk and will not be available beforehand. Materials are available at cost upon request.

Fee Schedule

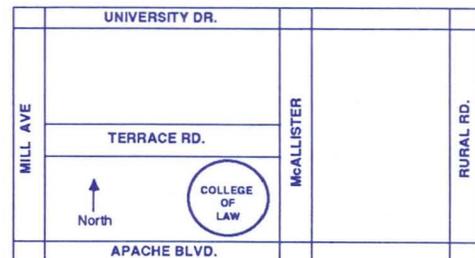
Registration On or Before October 7, 1988	Late/Door Registration
\$100.00	\$125.00

Registration covers the entire program and includes: admission, refreshments, written materials prepared by the speakers and parking. There will be no reduction in the registration fee for anyone unable to attend the entire day. The registration fee, less \$20.00, will be refunded if written cancellation is received by October 7, 1988.

Parking: Parking is available in Lot 41, directly south of the College of Law. The College of Law will not be responsible for any parking tickets you receive if you park in No Parking zones or handicapped parking.

Location: The seminar will be held at the Great Hall of the College of Law located at Arizona State University in Tempe, Arizona. Continuing Legal Education Credits are being applied for with the State Bar of Arizona. Anyone interested in obtaining credit will be notified when approval has been granted. This program has been approved for 6 COJET hours for mandatory judicial education by the Supreme Court of Arizona

Information: For further information pertaining to this program, please contact Kay Carlson, ASU College of Law, 965-3096.



Arizona State University
College of Law
ALUMNI ASSOCIATION

ARIZONA WATER LAW SEMINAR

MODERATOR:

Kathleen Ferris

Bryan, Cave, McPheeters & McRoberts
Former Director Arizona Department of Water Resources

**ARIZONA STATE UNIVERSITY
COLLEGE OF LAW
GREAT HALL**

**Saturday, October 15, 1988
8:30 a.m. — 4:30 p.m.**

ARIZONA WATER LAW SEMINAR PROGRAM OUTLINE

- 8:00 - 8:30 a.m.** **Registration and material distribution**
- 8:30 a.m.** **Welcome and introduction of moderator**
- 8:45 a.m.** **I. Arizona Department of Water Resources: An Agenda for the Future**
C. Laurence Linser, Acting Director, Arizona Department of Water Resources
- 9:15 a.m.** **II. Water Transfers: Perspectives on Balancing the Needs of Urban and Rural Arizona**
Panel: Donald D. Denton, La Paz County Supervisor; Roger S. Manning, Arizona Municipal Water Users Assoc.; Kathleen Ferris, Bryan, Cave, McPheeters & McRoberts
The members of the panel have been involved in lengthy negotiations to develop legislation to protect the right to transport groundwater and address the concerns of rural areas. The panel will discuss the merits of various proposals now under consideration.
- 10:05 a.m.** **Break**
- 10:20 a.m.** **III General Adjudication of Rights to Use Waters of the Gila River: The Groundwater/Surface Water Dilemma**
- A.** The Hydrology - An Overview
Jeff Trembly, Arizona Department of Water Resources
- B.** The Law - An Overview and Critique
John D. Leshy, Professor of Law, Arizona State University College of Law
- C.** Positions of the Parties
Panel: Jennele M. Morris, City of Glendale; M. Byron Lewis, Jennings, Strouss & Salmon; Bill Swan, Office of the Solicitor, Department of the Interior
-

On May 20, 1988, Maricopa County Superior Court Judge Stanley Goodfarb heard oral arguments on the issue of whether and to what extent rights to use groundwater will be determined in the Gila River general adjudication. The decision on this issue could have far-reaching impacts on groundwater users.

12:05 p.m.

Lunch break

1:30 p.m.

IV. Water Quality/Environmental Issues

A. Department of Environmental Quality: Practical Effects of Current Policy Directions in Rulemaking

Roger K. Ferland, Streich, Lang, Weeks & Cardon

Directions of the Department of Environmental Quality in developing rules on groundwater protection permits, water quality standards and other issues and how you may be affected.

B. Remedial Actions and Responsibility for Clean-Up of Contaminated Water Supplies

James G. Derouin, Meyer, Hendricks, Victor, Osborn & Maledon

CERCLA/SARA and the Arizona superfund and how liability is assessed.

C. Picking a Groundwater Consultant for Water Quality Issues

Philip C. Briggs, Geraghty & Miller

Tips on selecting a consultant and what a consultant can (and cannot) do for you.

D. An Environmental agenda: Upcoming issues

David S. Baron, Arizona Center for Law in the Public Interest

Observations on the issues environmentalists are raising and will raise in the next few years.

3:15 p.m.

Break

3:30 p.m.

V. The Second Management Plans

Panel: Herb Dishlip, Deputy Director, Arizona Department of Water Resources; Betsy Rieke, Jennings, Strouss & Salmon

In May, 1988, the Department of Water Resources proposed management plans for the second management period (1990 - 2000) for all Active Management Areas. These plans include new mandatory conservation requirements for water users, a water quality assessment and management program and an augmentation and reuse program. The panel will present the major concepts of the plans and discuss the implications for water users.

SPEAKERS

Kathleen Ferris is an attorney with the law firm of Bryan, Cave, McPheeters & McRoberts in Phoenix, Arizona. Ms. Ferris' practice emphasizes water matters. From 1985 to 1987 she was the Director of the Arizona Department of Water Resources where she had previously served as the Department's first Chief Counsel. Before joining the Department, Ms. Ferris was the Executive Director of the Arizona Groundwater Management Study Commission which was established in 1977 to rewrite Arizona's groundwater laws.

Herb Dishlip is Deputy Director for Water Management for the Arizona Department of Water Resources. He previously served as Assistant Deputy Director and as Pinal Active Management Area Director. He has worked for the Bureau of Reclamation in Arizona and Colorado. Mr. Dishlip is a graduate civil engineer and a registered professional engineer.

Jeff Trembly received his B.A. in Geology from Colgate Univer-

sity in 1978 and his M.S. in Geosciences from the University of Arizona in 1982. He is employed by the Adjudications Division, Arizona Department of Water Resources.

Donald D. Denton has been a member of the Board of Supervisors for La Paz County, Arizona since 1982. He previously served as a member of the Yuma County Planning & Zoning Commission and is currently a member of the Colorado River Floodway Task Force. Mr. Denton holds a B.S. degree in Business Administration from California State University of Long Beach and is a real estate broker and developer.

James G. Derouin joined Meyer, Hendricks, Victor, Osborn & Maledon as a partner and head of its Environmental Department after nearly 20 years of intensive environmental law practice in Wisconsin and Arizona. He has worked on a broad range of sophisticated environmental issues and has represented clients