

RIZONA WATER RESOURCES NEWS BULLETIN

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GROUNDWATER LAW REFORM APPEARS NEAR

A special study group of the Groundwater Management Study Commission has presented *concepts for agreement* for groundwater law reform in Arizona. The study group consisted of Governor Babbitt and Senator Stan Turley and representatives from Arizona's mining, agricultural and municipal interests. On March 6, 1980, the entire Groundwater Management Study Commission voted to have the *concepts for agreement* drafted into legislation.

The proposal includes the changes listed below:

- A new state agency, to be known as the Department of Water Resources, would be created. A water resources director would be appointed by the Governor—with confirmation by the Senate—to head the new agency and to regulate water use in the State (the Arizona Water Commission, an appointed body that now handles most water regulation, would continue as an advisory board to the water resources director and would retain Central Arizona Project responsibilities).
- Areas where groundwater levels are critical, to be called "Active Management Areas" (AMA), would be created by legislation. The four areas identified are Phoenix, Tucson, Prescott and Pinal County. Additional AMA's could be created by the director if certain criteria are met. The proposed groundwater uses and rights structure and the proposed management program would only be implemented in the AMA's.
- The water resources director would appoint a deputy director for each AMA.
- Existing critical groundwater areas that are not in one of the four initial AMA's would be designated as "irrigation non-expansion areas." Additional irrigation non-expansion areas could be created by the director where needed. Restrictions on uses in non-expansion areas are similar to those in AMA's.
- Grandfathered rights to pump groundwater would be created for existing users. For agricultural users, being granted the grandfathered right would mean paying the

"groundwater duty"—as established by the water resources director—multiplied by the highest number of acres irrigated in any one of the past five years. All grandfathered rights would legally follow from and accompany land rights.

- All cities, towns, private water companies, irrigation districts and agricultural improvement districts withdrawing groundwater as of January 1, 1977, would have the right to pump from within their service area as much groundwater as needed, subject to water conservation requirements.
- Mineral extraction permits would be granted to mining interests for use in mineral extraction and metallurgical processing. These permits would be granted for up to a 50-year period. Those receiving permits would be required to use other sources if they become available at comparable cost.
- Industrial use permits may be granted for up to 50 years by the director. Those receiving permits would be required to use other water sources if they become available at comparable cost. If the industrial use is located within three miles of a service area, it must be refused service by that entity. Also, unless there is an assured water supply, an industrial use permit cannot be granted.
- Electrical energy generation permits would be granted based on the same criteria as industrial use permits.
- Brackish groundwater withdrawal permits for up to 35 years could be granted by the director if consistent with the management plan and if the groundwater would have no other beneficial use.
- An assured water supply is defined as sufficient water to satisfy the proposed use for 100 years.
- The irrigation water duty established by the director would be based on reasonable use of water per acre; reasonable use of water would be based on conservation practices. The duty amount would be established by the

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director for each of the five 8-year management periods between 1985 and 2025.

- Conservation programs would be developed for all non-agricultural users.
- All groundwater users would have to pay a groundwater withdrawal fee, not to exceed five dollars, for every acre-foot of groundwater that is pumped. This tax would be phased in. A 50 cents to one dollar tax—to be matched by the State—would go into effect as soon as practical to cover administrative costs. Another increment of up to two dollars could be added in 1988 to pay for augmenting water supplies. And a final two dollars could be added in 2006 to pay for purchasing and retiring farmland.
- Groundwater management plans would be developed for each AMA. In Pinal County the plan would be designed to preserve “existing economies. . . for as long as feasible.” Plans for the other three AMA’s would have to have a goal of safe-yield pumping by year 2025.
- In general, the plans call for conservation practices to be implemented until the year 2005 and safe-yield pumping to be achieved by 2025.
- The “Rights and Uses,” “Management,” and “Transferable” concepts are summarized below.

CONCEPTS FOR AGREEMENT

Rights and Uses

1. Groundwater rights are quantified in AMA’s.
2. Grandfathered rights:
 - irrigation: groundwater duty
 - non-irrigation:
 - Type I, equal to 3 acre-feet per acre.*
 - Type II, equal to greater of amount of historic use less any Type I; or, amount authorized on application for certificate of exemption less any Type I.
3. Cities, towns, private water companies, irrigation districts and agricultural improvement districts may withdraw groundwater for use within their service areas, subject to conservation requirements.
4. Domestic wells having a maximum pumping capacity of 35 g/m are exempt.
5. Permits for withdrawals in excess of any rights are issued by the state.
6. Conveyances:
 - Generally, within a service area, rights are conveyable only for the same class of use.
 - Generally, outside a service area, an irrigation right is conveyable for a different class of use and a non-irrigation right is conveyable only for the same class of use.
 - The lesser of three acre-feet per acre or the groundwater duty per acre is conveyable for an irrigation right.
 - The full amount of a non-irrigation right is conveyable.

Management

1. Establishes active management areas (AMA’s) and irrigation non-expansion areas (INA’s).
2. The boundaries of AMA’s and INA’s are based on hydrological criteria.
3. AMA’s are established to preserve the water supply and manage problems of overdraft, subsidence and/or water quality. INA’s are established to protect the water supply of existing irrigated agriculture.
4. In AMA’s, groundwater withdrawals in excess of any rights may be established only in accordance with a permit. In INA’s, irrigated acreage may not be expanded.
5. In AMA’s, mandatory conservation requirements shall be placed on the use or amount of groundwater withdrawn and groundwater rights may be retired by the State to reduce withdrawals.
6. In AMA’s and INA’s, the use of an approved water measuring device shall be required.
7. In AMA’s, a groundwater withdrawal fee shall be required.

Transportation

1. Groundwater may be transported within a sub-basin of an AMA without payment of damages if:
 - withdrawn in accordance with a grandfathered right or permit.
 - withdrawn and transported within the service area of a city, town, private water company, irrigation district or agricultural improvement district.
2. Groundwater may be transported between sub-basins or away from an AMA, subject to payment of damages:
 - for amounts of groundwater transported in excess of three acre-feet per acre if right is associated with irrigated land or retired irrigated land.
 - if right is *not* associated with retired irrigated land or if groundwater is withdrawn in accordance with a permit.
 - if withdrawn and transported within the service area of a city, town, private water company, irrigation district or agricultural improvement district.
3. Injury is not presumed from the fact of transportation.

*For initial AMA’s

UPPER COLORADO RIVER SYNTHETIC FUEL INDUSTRY

A synthetic fuel industry could be supported in the Upper Colorado River Basin without adversely affecting the region’s water supply, according to a draft report by the Colorado Department of Natural Resources. The state agency, reporting to the U.S. Water Resources Council, says synfuel plants and their associated municipal and industrial growth “could be satisfied from surface supplies without having to significantly

reduce other consumptive uses." The study assessed the impact of 26 shale oil plants producing a total of 1.3 million barrels of synfuel a day and eight coal gasification plants producing two million cubic feet a day of synthetic gas by the year 2000. The cost to industry to develop the region's water supply was estimated at \$1 billion—less than two percent of the capitalized costs of building and operating the facilities.

"Very little use is presently made of the Upper Basin's groundwater resources," the study indicates and, depending on "hydrogeologic and economic factors," a potentially significant supply of groundwater exists for new energy technologies. Non-energy users of water are not expected to draw upon groundwater supplies for another 20 years.

Major areas of potentially significant water sources examined were the Colorado Piceance Basin region, an oil-shale rich area; Utah's Uinta Basin, where planned oil-shale and coal gasification projects will be sited; and New Mexico's San Juan River Basin, site of planned coal gasification facilities.

History and Current Status of Arizona Snow Surveys

Congress delegated the responsibility of supervising and coordinating snow survey activities to the U.S. Department of Agriculture's Bureau of Agricultural Engineering, Division of Irrigation, in 1935. Four years later, this division was transferred to the Soil Conservation Service (SCS).

Snow survey activities in Arizona started in 1937: six snow courses were established along the Coronado Trail near Alpine. Still used, they aid in forecasting snow melt contribution to the water supply of the Salt and San Francisco Rivers. Since 1937, snow courses have been added to improve forecasting. And snow survey activities begun in Arizona have extended into New Mexico. Today 65 snow courses are active. Fifty-seven are on major Arizona watersheds. Eight are on the Gila River headwaters in New Mexico.

Snow courses are snow measuring sites. Generally they are read six times each winter. These manual surveys are made by 12 employees from the SCS, 17 from the Forest Service, two from the BIA and three from the National Park Service.

Five years ago the SCS began installing an automated remote telemetry system called "Snotel." Of the 20 proposed facilities, 18 are now operating. Twice daily, they report snow-water equivalent, precipitation and temperature.

Snotel supplements manual information gathering in several ways. First, it updates data so that water supply forecasts can be more accurate. Second, it reduces the need for manual surveys. And, third, it supplies data from areas previously inaccessible.

Both telemetry systems and snow courses measure the water content of mountain snowpack and predict early season stream flow. They are the basis of Arizona's Snow Survey and Water Supply Forecasting Program.

The basic data provided by these means, along with National Weather Service precipitation data and U.S. Geological Survey and Salt River Project streamflow data, is used to calculate the seasonal volume streamflow for 16 Arizona streams.

The Water Supply Outlook Report is prepared on the 1st and 15th, January through April 1. Each issue is mailed to 490 recipients. A total of 3,300 such reports are printed each year.

Arizona's snow survey program cooperates with many federal, state and private organizations which contribute services, finances or basic data necessary for water supply forecasting. Nevertheless, the SCS still provides 75 percent of the funding. Other federal agencies contribute 10 percent in the form of services. And local governments supply the remaining 15 percent in cash and services.

The SCS is now studying various alternatives for transferring the snow survey to a non-federal agency. Alternatives will be published in the federal register about May 1, 1980. Snow survey alternatives are listed below.

1. No snow survey program at all.
2. Maintain SCS active involvements.
 - a. No change in current program.
 - b. With modifications.
 - i. Reduce SCS contribution—increase outside financial and technical assistance.
 - ii. Retain Snotel, discontinue manual data collection.
 - iii. Expand entire program.
 - iv. Expand Snotel, discontinue manual data collection.
 - v. Continue SCS manual data collection; transfer Snotel to a non-federal agency.
3. Transfer of Program.
 - a. SCS retains coordinating role only.
 - b. SCS provides pass-through funds only.
 - c. SCS has no involvement.

HOOVER POWER PLANT MODIFICATION

The Water and Power Resources Service (former Bureau of Reclamation) held environmental impact statement (EIS) scoping meetings for the Hoover Power Plant Modification Study on October 29, 1979, in Boulder City, Nevada, and October 30, 1979, in Bullhead City, Arizona. A proposed EIS outline was presented, and project alternatives and the expected environmental effects resulting from the alternatives were discussed.

The draft EIS will be filed in August 1980. The final EIS will be filed six months to a year later. For more information contact Robert A. McCullough, Regional Planning Officer, P.O. Box 427, Boulder City, Nevada 89005.

RECENT PUBLICATIONS

Literature Review on Methods of Environmental Impact Assessments

Author Larry W. Canter reviews 254 references, evaluating methodology and technology designed to assess environmental impact. He examines the references for interdisciplinary team, assessment variables, baseline studies, impact identification,

critical impacts, importance weighting, scaling or ranking, impact summarization, documentation, public participation and conflict management and resolution. The 529-page volume is available for \$29.50 from Ann Arbor Science Publishers, Inc., P.O. Box 1425, Ann Arbor, Michigan 48106.

Water — 1978

G.F. Bennett, editor, presents papers, by 86 authors, in more than a dozen water-related areas. Subjects include the legal and administrative aspects of water-pollution control, energy consumption and management, coagulation, sedimentation, filtration, physical-chemical treatment processes, biological wastewater treatment, oxygen transfer, automatic process control, water recovery and reuse, electroplating wastewater treatment, metal ion removal and land application of oil wastes. Copies of the 381-page Symposium Series paperback volume can be obtained for \$10 by members and for \$25 by others. Write to the American Institute of Chemical Engineers, 345 East 47th St., New York, New York 10017.

Establishment of Water Quality Monitoring Programs

Editors Lorne G. Everett, Kenneth D. Schmidt and William R. Boggess have recorded the proceedings of a symposium held in San Francisco, June 12-14, 1978. At the the symposium, information was presented on water quality monitoring programs that are being developed. The volume should interest engineers, geologists, hydrologists, soil scientists, biologists, limnologists, and environmental chemists as well as persons in mining, petroleum production and processing, forestry, public

health and law. Copies of the 370-page proceedings can be obtained for \$35 from the American Water Resources Association, St. Anthony Falls Hydraulic Laboratory, Mississippi River at 3rd Ave., S.E., Minneapolis, Minnesota 55414.

Biological Monitoring for Environmental Effects

Editor Douglas L. Worf's publication addresses the subject of biological monitoring, a growing interest in water quality assessment. The editor compiled papers submitted by participants of a conference-workshop sponsored by the University of North Carolina Water Resources Research Institute. The book provides researchers and decisionmakers in government and industry with a description of the techniques used in monitoring ecological pollutants. Copies of the book (LC 79-2077, ISBN 0-669-03306-5) are available by writing Lexington Books, D.C. Heath and Company, 125 Spring Street, Lexington, Massachusetts 02173.

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