The Program of the Water Resources Research Center, University of Arizona

January 1972

Through the Water Resources Research Act of 1964, the United States Congress authorized the formation of a center or institute for water resources research at a university in each of the fifty states and Puerto Rico. Pursuant to that Act, the Water Resources Research Center was formed in 1965 at the University of Arizona.

The Center has three principal functions -- administration, service and research. In its administrative role, the Center has fiscal and reporting responsibility for funds granted by the Office of Water Resources Research, amounting to about $250,000 annually. These funds are awarded to investigators on approved projects, involving at any given time approximately 100 persons in about 20 academic departments or disciplines in the State university system.

In its service role, the Center operates and maintains facilities for use by various faculty members, graduate students, and others. These facilities are the Water Resources Field Laboratory and four experimental watersheds -- three in the Tucson urbanized area and one in the adjacent desert area -- which are equipped with rain gages and with measuring and sampling devices for the investigation of quantity and quality of storm runoff. As an additional service, the Center responds to a large number of requests each year for information regarding water resources in Arizona.

In its research role, the Center conducts a modest program of applied research oriented toward water resources conservation and management in

arid regions, with emphasis in five subject areas -- water harvesting systems, evaporation and seepage control, artificial recharge of ground water, urban hydrology, and reuse of wastewaters. Studies in water harvesting involve evaluation of various catchment surface materials, such as paving or gravel-covered plastic, for capturing rainfall for domestic use in regions of scarce ground-water supply, and design of lined tanks for storage of the harvested rainfall. The use of various materials to control evaporation loss from free water surfaces and to reduce seepage loss from reservoirs is receiving continual attention.

Studies in artificial recharge are designed to determine both the hydraulic distribution and the changes in quality of water introduced to the aquifers through recharge wells and pits. The general hypothesis is that effluents or other waters of inferior quality may be conserved and rendered available for reuse by utilizing the natural filtering characteristics of the aquifer for water quality improvement through recharge, mixing or dilution with native ground water, and subsequent pumpback for use.

In the urban hydrology studies, determinations are being made of the increases in rate and volume of storm runoff and the changes in its quality, as areas undergo urbanization. Pilot studies are being made to evaluate operational aspects of diverting peak flows to decrease flood hazards in the urban area, and concurrently treating the diverted water by on-site grass or soil filtration, to be followed by temporary surface storage and use of the water in park areas for recreational lakes or turf irrigation, or by subsurface storage for later recovery and use.

Reuse of treated municipal wastewaters is vitally important in the water economy of the Lower Colorado River region. Current studies are directed

toward the technical, economic, and legal aspects of alternative allocation or exchange systems whereby the treated effluent would be substituted into the ground-water supply function for use in crop irrigation, copper mining and milling operations, or water-based recreational facilities.