



OKLAHOMA

water news

MONTHLY NEWSLETTER OF THE OKLAHOMA
WATER RESOURCES BOARD

Gerald E. Borelli, Chairman

Earl Walker • L.L. Males • John B. Jarboe • James H. Norick • R.C. Johnson • Ralph G. McPherson • Boyd Steveson • Ernest R. Tucker

New Economic Impact Studies Raise Benefits of Transfer Plan

An evaluation of secondary and tertiary — or indirect — benefits of the statewide water conveyance system proposed in the Oklahoma Comprehensive Water Plan shows a cost-benefit ratio dramatically improved over that of federal planners who measured feasibility solely on direct benefits.

Estimates of total benefits and economic impacts gleaned from two and one-half years of study were presented to the Board by Dr. James E. Hibdon of OU's Department of Economics and Dr. Kent Olson of OSU's Department of Economics and Finance.

New evaluations of total benefits of the statewide system show improved cost-benefit ratios, up from the previous figure of .23, range from .458 to .679, dependent upon the assumption made regarding the state's unemployment rate. However, cost-benefit ratios vary widely between the entire project and each of its components — the northern, southern and central systems. The most promising figures issuing from the studies are those which project a cost-benefit ratio ranging from \$1.17 to \$2.16 for each dollar invested in the central Oklahoma component. That strategy, developed by the Corps of Engineers as a severable portion of the southern system, would deliver 487,000 acre-feet of water a year for municipal and industrial use in central Oklahoma.

The Oklahoma Comprehensive Water Plan, adopted this session by the Oklahoma Legislature as the state's official guide to long-range water development, proposes a Southern Water Conveyance System for the transfer of 1.3 million acre-feet of water each year from southeast to central and southwest Oklahoma, and a Northern system for the transfer of 1.2 million acre-feet of water each year from east central regions northward.

The report sounds a clear call to state decisionmakers to take action in warding off water shortages expected to reach critical proportions by the year 2040, thereby setting off repercussions that will shake the economy statewide. Hibdon warned that if the projected water

shortages are permitted to develop without water transfer or some alternative, the state can expect annual losses in production amounting to \$239 million by 1990 and a crippling \$2.5 billion by the year 2040. Agricultural areas in the northwest and southwest will be the first impacted, but by 2040 74 percent of the impact would be borne by domestic water users in central Oklahoma.

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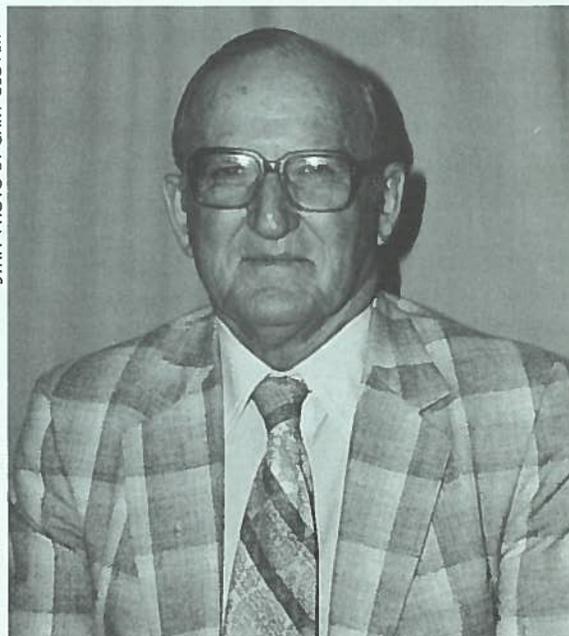
Fifth in a Series of Nine

Water Plan Gives Oklahomans an Edge in Future Planning

There's not a man on the Board with a better "handle" on the plight of the farmer than R.G. Johnson, a farmer and rancher in western Oklahoma all his life. Eighteen years with the U.S. Department of Agriculture allowed him to gain the greatest seniority among field supervisors for the Statistical Reporting Service and gain a special insight in the problems of the Oklahomans who depend on the land for a livelihood. It is significant that

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STAFF PHOTO BY GARY GLOVER



R.G. Johnson, Board Member

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Hibdon projected that in 1990 losses in agricultural production will account for 84 percent of the total decline for the state, while the decline in municipal and industrial uses will account for 13 percent and three percent, respectively. Fifty years later, however, statewide trends will have reversed, with losses to municipal users burgeoning to 81 percent of the total decline in production, and agriculture and industrial production bearing 16 percent and three percent, respectively.

Expanding on his forecasts of hard times ahead for a dry state, Hibdon said that a severe shortage could not only brake the growth of a region, but actually cause people to move away. As water bills rose as a result of shortages, families would have less income available to spend on other goods. Those effects would ripple into other areas as well, as the earlier affected areas reduced their imports of goods from other areas. The spreading ripple could also be expected to close down marginal businesses and those whose operations depend on large amounts of water.

Olson mentioned possible increases in sales tax, along with revenues from income and gross production taxes on oil and gas and federal contributions as being potential sources of funding for financing projects of this magnitude. Olson emphasized that a more reliable choice might be employing a water development entity such as the Oklahoma Water Resourced Board with the authority to finance annual deficits in construction and OMR&E costs through loans and the earmarking of appropriate tax revenues.

He emphasized that if the transfer plan which is estimated to cost \$3.6 billion in present value terms were implemented, it would be the largest capital project in the state's history.

MAY CROP AND WEATHER SUMMARY

Widespread thunderstorms were generally beneficial for wheat and other crops, but high winds and hail damaged crops severely in Panhandle and north central areas.

Barley and oats were rated in good to fair condition, with 40 percent of both crops in the soft dough stage, well ahead of average. Cool temperatures and high winds caused some damage to young cotton plants in west central and southeast areas. Seventy-five percent of the first cutting of alfalfa was complete. Pastures and ranges are making substantial growth, and livestock remain in good condition.

Mid-month temperatures ranged from three degrees above normal in the southwest to six degrees above normal in the northwest. All areas received rain, with the heaviest occurring in east central Oklahoma. Maximum soil temperatures averaged from the upper 60's to mid-70's; minimums from the mid-50's to low 60's.

Oklahoma Crop and Livestock Reporting Service

Water Plan, continued from page 1

Johnson was Gov. Nigh's first appointment to the Board and that the vacancy was that of an "at-large" member which means that Johnson was chosen from many potential candidates throughout the state.

Johnson welcomed the Oklahoma Legislature's recent adoption of the Oklahoma Comprehensive Water Plan as the state's guide in long-range development as a giant step in providing for the future. "The president's budget for water development is extremely tight now, but I believe in a couple of years we'll see federal money again available for sharing the costs of projects that are necessary," he said. "Even if we don't see significant contributions from the federal government, we'll have to move ahead with implementation of a water transfer plan. Oklahoma's economy depends on water."

A frequent visitor to the nation's capitol, most recently in his capacity as a board member of the National Water Resources Association, Johnson believes that if federal feasibility guidelines were relaxed, and if federal dollars again become available, the Plan would give Oklahoma a significant edge in vying for support.

"The state's water must be used for the good of all — not just for the benefit of those cities and towns that can afford the costs of development," said Johnson. "Our water resources must be fairly shared," he continued. "The natural distribution of water in Oklahoma is inequitable, and it's a situation that's made for great division in a state that needs unity in protecting its strong agricultural economy."

Johnson acknowledged that water development is expensive but critical to a state so often lashed by drought. He believes the most viable means of financing the water development necessary to buffer Oklahoma against the costly consequences of drought is the governor's recommendation to utilize a portion of the growth revenues from the gross production tax for water development.

"We just cannot continue being as vulnerable to drought as we found ourselves last summer," he warned. "We need an adequate fund for the development of our water supplies, so that no community, no rural area, no family in Oklahoma will find itself deprived of dependable supplies of good quality water."

Johnson also believes the state should support weather modification more strongly as a means of augmenting water supplies. "It's a technology that will work for us," he contends. "There have been so many advances in cloud seeding technology, and in a state with a history of drought like Oklahoma, we just can't afford to overlook any means of increasing rainfall. Drought is a frequent visitor to us in western Oklahoma," he reminded. "Can you imagine the value of a 10 percent increase in precipitation to the state's farmers and ranchers! With state funds for implementation of a sound weather modification program, we could further buffer ourselves against the devastating losses inflicted by prolonged drought."

Water Management Complexities Demonstrated by OSU Computer

Dozens of "what-if" water management situations were posed before staff of the water board May 22 when Dr. Ted Mills of OSU brought the Water Resources Management Simulator to visit.

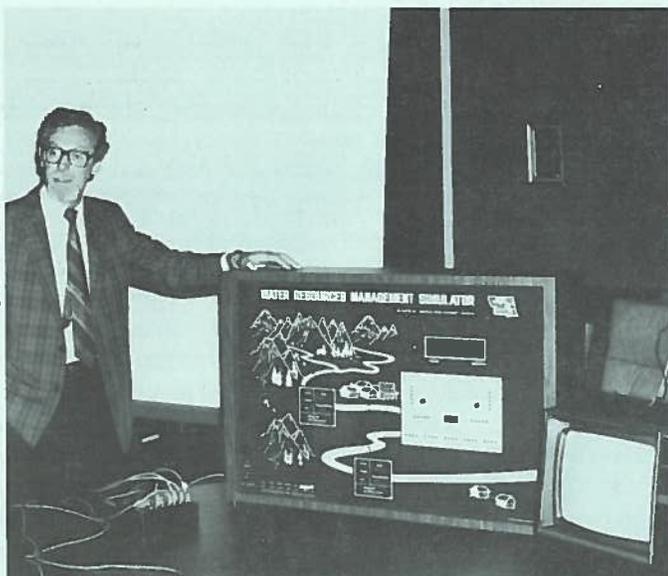
Anyone who thought it was simple to balance supply versus demand and solve water quality problems at the same time was in for a surprise, their wrong choices flashing a reprimand from a red light on the main simulator panel.

The Water Resources Management Simulator, developed by Dr. John Armend of Montana State University, is one of two housed at OSU's Natural Resource and Environmental Education Center. WRMS is an interactive computer which models the region's water supply and demand, using several small sub-basin control consoles. Choices about storage of surface and ground water, rate of water use, sources of water, technology of water use and disposition of used water are registered by pressing buttons on these consoles.

Water may be drawn from ground or surface sources for irrigation, livestock, municipal and industrial, energy and inter-basin transfer. Any set of ground water and surface water conditions can be programmed by changing the data statements in the computer memory.

Streamflow (from USGS historical data) above and below the water use area is displayed on the main simulator panel and a large red light glows if the level falls below that reserved for downstream users, wildlife and navigation. Water quality (silt and total dissolved solid) is indicated by green, amber and red lights on the panel. Other indicators display reserves and ratios of ground to surface water used and water consumed or returned to the stream.

STAFF PHOTO BY GARY GLOVER



Dr. Ted Mills of OSU's Natural Resource and Environmental Education Center demonstrates a computer programmed to provide "hands-on" opportunities to develop and evaluate water management strategies.

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF MAY 12, 1981

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST		
Atoka	71,900	58.2
Broken Bow	918,100	100.0
Pine Creek	77,700	100.0
Hugo	157,600	100.0
CENTRAL		
Thunderbird	82,144	77.5
Hefner	70,500	93.6
Overholser	14,900	96.3
Draper	74,600	74.6
SOUTH CENTRAL		
Arbuckle	55,750	89.1
Texoma	2,636,800	99.9
Waurika	116,619	57.4 ¹
SOUTHWEST		
Altus	31,058	23.4
Fort Cobb	63,169	80.5
Foss	137,267	56.3 ²
Tom Steed	68,696	77.2
EAST CENTRAL		
Eufaula	1,949,332	83.7
Tenkiller	602,369	94.4
Wister	27,100	100.0
NORTHEAST		
Eucha	31,827	40.0
Grand	1,183,776	79.4
Oologah	455,614	83.7
Hulah	11,420	37.3
Fort Gibson	337,324	92.4
Heyburn	4,150	62.9
Birch	16,314	85.0
Hudson	200,300	100.0
Spavinaw	26,400	88.0
NORTH CENTRAL		
Kaw	419,192	97.8
Keystone	574,775	93.3
NORTHWEST		
Canton	51,449	44.4
Optima	3,890	— ¹
Fort Supply	13,900	100.0
Great Salt Plains	31,400	100.0
STATE TOTALS	10,513,445	87.7³

1. In initial filling stage.
2. Temporarily lowered for maintenance.
3. Lake Optima storage excluded from state total.

Data courtesy U.S. Army Corps of Engineers, Water and Power Resources Service, Oklahoma City Water Resources Dept., City of Tulsa Water Superintendent's Office.

As the WRMS operates, important parameters are stored in memory as they are computed, then the data can be automatically presented in a graphics display.

Mills said the real value of the simulator lies in its ability to put people in decisionmaking situations and to project for them the probable consequences of their water management strategies.

Community and school groups can participate in workshops with the WRMS by enrolling with Dr. Mills at the Natural Resource and Environmental Education Center at OSU in Stillwater, (405) 624-7129.

Hearing Slated for North Fork of the Red River in 4 Counties

Staff members of OWRB's Ground Water Division will conduct a public hearing on July 15 concerning the tentative maximum annual yield of fresh ground water from the alluvial and terrace deposits of the North Fork of the Red River in Beckham, Greer, Kiowa and Jackson Counties. The hearing is scheduled for 9 a.m. in the Kiowa-Cheyenne Room of Quartz Mountain Lodge, Lone Wolf, Oklahoma.

Results of an hydrologic survey and investigation published by OSU in cooperation with OWRB indicate a maximum annual yield of 168,000 acre-feet and an equal proportionate share of one acre-foot per acre of land overlying the basin.

J.A. Wood, OWRB Ground Water Division chief, said copies of the report, "Evaluation of Aquifer Performance and Water Supply Capabilities of Alluvial and Terrace Deposits of the North Fork of the Red River in Beckham, Greer, Kiowa and Jackson Counties, Oklahoma," are available for examination at the public libraries of Sayre, Mangum, Hobart and Altus.

Oklahoma Ground Water Law requires that the Board determine the maximum annual yield through the establishment of prior rights and completion of an hydrologic survey and investigation of each fresh ground water basin or subbasin in the state. Determination of the maximum annual yield is based on the total land overlying the basin, amount of fresh ground water available for use, rates of recharge and discharge and the possibility of natural pollution. It is based on a minimum basin life of 20 years from July 1, 1973, the effective date of the Ground Water Act.

Wood encouraged citizens with questions concerning the report or the hearing to call the Oklahoma Water Resources Board at (405) 271-2555, write for more information, review the data at the libraries, or attend the public hearing on July 15.

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Oklahoma Water Resources Board
1000 N.E. 10th P.O. Box 53585
Oklahoma City, Okla. 73152



Thank You, Secretary of Interior Watt!

In 1979 the Bureau of Reclamation announced it had a new name. From that day forward, the western water agency declared it would be called "the Water and Power Resources Service (WPRS)," reflecting its expanded activities.

Everyone in the business of water development doggedly tried to comply and assigned it the acronym, "Woppers." Still, try as we would, we found ourselves slipping into the old familiar pattern and calling WPRS, "the Bureau." Now Secretary Watt has announced "the Bureau" is back and here to stay. The federal agency is again officially the Bureau of Reclamation. Goodbye, "Woppers."

Conservation Tips Available from OWRB

A new brochure completed by OWRB late in May encourages water conservation by listing tips that Oklahoma families can implement indoors and out. Small quantities of the brochure are available to clubs and organizations by writing the Oklahoma Water Resources Board, P.O. Box 53585, Oklahoma City, Okla. 73152 or calling.

A limited number of free water conservation kits are also still available that can help families save 22,800 gallons of water and approximately 47 kwh of energy a year. Quantities limit the offer to one per family, please.

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