MANAGEMENT OF WATER IN OKLAHOMA

Ralph E. Olson

Department of Geography, University of Oklahoma, Norman, Oklahoma

The water supply of Oklahoma, represented in its streams, reservoirs, and ground water reserves, was once thought ample for all conceivable requirements, but it is increasingly recognized as finite and in need of intelligent, skillful management. This is a brief introduction to some of the management problems involved and the agencies which deal with them.

The ownership situation and economic valuation of water is intermediate between that of air and soil. It is neither as free and public as air nor as private and personal as is the land. Many users of water are able to secure adequate amounts for sustenance and sanitation at little or no cost. Others must go to great personal expense to pump, dam, transfer, purify, or store it. Still others buy it in bottles, or by thousands of gallons from a municipal water authority, or by acre-feet from a public or private purveyor for irrigation or industrial use.

As populations become increasingly urbanized and as agriculture and industry are intensified, water is more and more thought of as an economic commodity to be owned, transferred between owners, and taxed by public authorities. Its management has become a matter of increasing concern. Most people in the United States would now surely agree with the observation of a professor of law at Temple University that:

> "Public policy must settle upon the objectives to be sought and the constraints to be imposed. The imposition and constraints — standards, charges, and prohibitions — enables society to reach objectives that cannot be obtained through subsidization or through the chance of allowing the renewable resources to be exploited as free goods." (1)

The Constitution of the United States, which became effective in 1789, has curiously little to say about water or other natural resources. The founding fathers obviously believed that such matters were best left to individual states. Article I, Section 8, did authorize the federal Congress to "regulate commerce . . . among the several states." Section 9 of the same article provided that "No preference shall be given to . . . the ports of one state over those of another," and it assured that no "vessels bound to or from one state (should) be obliged to enter, clear, or pay duties in another."

The power delegated to the Federal Government to regulate commerce between the states and with the Indian tribes was promptly interpreted by the Supreme Court as giving Congress authority over all navigable rivers including non-navigable tributaries, diversion of water from which would affect downstream navigation. In effect, any stream capable of floating a log or a canoe even part of the year could be, and sometimes was, interpreted as a navigable stream. The states were enjoined from charging tolls on navigable rivers, building bridges so low that they would interfere with navigation, or granting to individuals the exclusive right to use ports or to operate steamboat lines (2, pp. 8-19). At the same time, various decisions of federal courts made it clear that, subject to the navigation rights conferred on the Federal Government, states had proprietary control over navigable waters and their beds and could either retain those rights or confer them upon the owners of riparian lands. It is not surprising that water rights have been and are a frequent subject of litigation between individual landowners, between individuals and states, and between states and the Federal Government.

In elaboration of the commerce jurisdiction reserved by the Congress, the Federal Government has assumed the right to improve the navigability of rivers by straightening and deepening channels, reinforcing levees, and constructing flood control reservoirs. Following several earlier decisions reserving the right of the Federal Government to generate power on navigable streams, the Denison Dam case in 1941 expressly recognized the legitimacy of generating and selling power as a device for recovering part of the cost of constructing a flood control reservoir whose

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primary purpose was to improve navigation (2, p. 21).

The federal Reclamation Act of 1902, under which many irrigation and land improvement projects have been carried out in the western states, was justified under the Property Clause of the Constitution (Article IV, Section 3). This clause gives Congress the proprietary power to "dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States," — in other words, to use the federal lands as it wishes for such purposes as irrigation reservoirs, parks, national forests, and wildlife refuges.

Supreme Court decisions, *e.g.,* the United States *vs.* Butler 1936 and the United States *vs.* Gerlach Livestock Company 1950, clearly indicated that the Federal Government had the right to tax and appropriate money under the General Welfare Clause of the Preamble without reference to subsequent articles of the Constitution. These interpretations have facilitated legislation supporting land improvements, such as soil conservation measures, recreational aspects of federal reservoirs, and assistance in the provisioning of municipal water supplies (2, pp. 57-58).

Information concerning the amount of precipitation falling on the state, the extent of runoff in the various state streams, the amount of ground water in the subsurface reservoirs, and the quality of both surface water and ground water has been assembled largely by federal agencies, sometimes with federal agencies sharing costs and working in cooperation with Oklahoma state agencies. The network of weather stations, including cooperative observer stations, has been the responsibility of the United States Weather Bureau, which is now incorporated in the National Oceanographic and Atmospheric Administration. Limited efforts at weather modification were made during the dry years of the mid-1950's by a private firm under contract with the municipality of Oklahoma City. In 1958, the Weather Bureau supported a program of research on the effectiveness of hexadecanol on the reduction of evaporation from reservoir surfaces, with Lake Hefner as the experimental site. The United States Geological Survey, through its Surface Water Branch, Ground Water Branch, and Water Quality Branch, operates 142 stream-gaging stations, 22 reservoir-gaging stations, and a substantial network of ground water test wells and water quality sampling stations (3, pp. 15-26).

Examples of the more important recent federal legislation related to the management and development of Oklahoma's water resources are the Flood Control Act of 1944, which established the Washita River basin as one of eleven sites selected for experimental basin-wide flood control, and the Watershed Protection and Flood Prevention Act of 1954, which, with Soil Conservation Service assistance, built hundreds of water-retarding structures. About 30% of all planned upstream detention reservoirs in the country are located in Oklahoma. As of November 1, 1969, 1,379 such projects had been completed on 2,361 planned sites (3, p. 30).

Since the late 1930's, periodic appropriations by Congress to the federal Bureau of Reclamation and the U. S. Army Corps of Engineers have made possible the construction of more than 20 large reservoirs in the state with a combined surface area of about 690 square miles, or approximately 1% of the total state area. Justification for the projects, and the associated allocation of costs, has been attributed to flood control, water conservation and supply, irrigation, recreation, navigation, or, more often, some combination of these factors. Lake Eufaula, Lake Texoma, and the Lake O' the Cherokees are the largest of these multipurpose reservoirs. Construction has begun, by the Corps of Engineers, on the Kaw, Optima, and Hugo reservoirs, and work on the Arkansas River Navigation Project to Catoosa, near Tulsa, will be completed sometime in 1971.

Minimum water quality standards for all of the states were prescribed under the federal Water Quality Act of 1965. Oklahoma's compliance with federal standards is assured by the state Department of Pollution Control, created in 1968, and is administered by a Pollution Control Coordinating Board. The Board is composed of the heads of five state agencies, *viz.,* the Oklahoma Water Resources Board, the Corporation Commission, the Department of Health, the Department of Agriculture, and the Department of Wildlife Conservation. Each of these agencies has statutory

authority in the prevention, control, and abatement of water pollution.

In 1943, in recognition of a need for more basin-wide planning, as proposed by the National Resources Planning Board in the 1930's, a Federal Inter-Agency River Basin Committee was created. Following similar agencies for the Missouri, Columbia, and Pacific Southwest basins, the Arkansas-White-Red Regional Inter-Agency Basin Committee was established in 1950, and during subsequent years published massive water survey and planning reports.

Federal approval is required under the Constitution for all interstate agreements and compacts. Congress gave blanket approval, in 1911, for interstate cooperation in water supply conservation, and, in 1948, for cooperative work in pollution control and abatement, but water allocation from interstate streams has to be handled case by case (3, pp. 64-70). A new compact concerning allocation of Canadian River water was negotiated between the states of Oklahoma, Texas, and New Mexico in 1950-52, following an earlier compact between those three states and Arkansas in 1926-27 (4). An Arkansas River Compact was ratified by Oklahoma and Kansas in 1965, but some implementing discussions, especially concerning pollution, are still in progress. In 1955, Congress passed Public Law 346, which authorized interstate allocation of Red River water between Oklahoma and Texas; however, related negotiations between the two states still continue.

As a state which is climatically and, hence, hydrographically transitional between arid West and humid East, Oklahoma has been somewhat ambivalent in its legal approach to water rights. The riparian doctrine, derived from English common law, which concedes to a landowner with a stream on or adjacent to his property the right to unrestricted beneficial use of the water in that stream, has generally been held applicable in Oklahoma since the Revised Laws of 1910. This revision omitted an earlier territorial statute declaring water in the state rivers to be public property subject to appropriation (5). Legal practice in the state, however, has moved steadily in the direction of the doctrine of appropriation, under which use priorities are established and prior rights are recognized. Water for domestic use, including that needed for watering livestock, is unrestricted, but permits are now used in relation to water for irrigation and municipal and industrial supply. Responsibility for administration has passed from the territorial engineer to the state engineer to the Oklahoma Planning and Resources Board, Division of Water Resources, and, in 1957, to the present Oklahoma Water Resources Board.

Since 1963, the Oklahoma Water Resources Board has been granting and registering surface water rights on the basis of prior application. The recipient of a given right must put it to beneficial use within five years or lose it for reassignment. Since February 10, 1970, ground water rights have required the same procedure as surface water rights. The Oklahoma Ground Water Law of 1949 is a well designed one, but the Water Resources Board has commonly found itself issuing permits with inadequate information concerning the amount of ground water available and rate of recharge. Both surface water and ground water users holding permits are requested to report the amount of water actually used to the Water Resources Board. The reported water use in 1968 was 655,162 acre-feet (over 80% of which was ground water) for irrigation and approximately the same amount, 655,693 acre-feet (over 80% of it surface water), for use by municipalities and industries (6).

Research on Oklahoma's ground water reserves, stream flow, storage potential, pollution problems, purification procedures, municipal supply, and agricultural utilization is being conducted by a number of federal, state, and local agencies, as well as by several private individuals and organizations. The resource involved is a highly valuable one, and the management problems concerning it are complex and sometimes confounding. Like Texas and a number of other states, Oklahoma is working on a long-range water plan, but it is unfinished. Planning for wise water use is a continuing task.

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