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ADMINISTERING STATE WATER RESOURCES: THE NEED FOR LONG-RANGE PLANNING*

FRANK E. MALONEY** and RICHARD C. AUSSNESS***

I. THE NEED FOR WATER RESOURCES PLANNING

A. INTRODUCTION

Drastically increased demands upon the nation's water resources are predicted in the coming years as a result of population growth, increased per capita use of water, and the progressive concentration of the population in urban areas.

The population of the United States has grown from 76 million in 1900 to 204 million in 1970 and projections indicate that this trend is likely to continue. The significant increase in average life expectancy during the twentieth century will in all probability offset the impact of a reduced birth rate, and insure a continued net increase in population in the foreseeable future. A population of 295 million has been forecast by the year 2000.

Per capita use of water is also increasing substantially. In 1900, total water use in America amounted to only 40 billion gal-

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lons per day, but by 1960, the figure for daily use of water had risen to 360 billion gallons. On a per capita basis this is an increase from 526 gallons per person in 1900 to 1,893 gallons per person in 1960. At present growth rates this per capita figure will triple by the year 2000. This may be attributed in large part to the significant industrial growth of the United States during the twentieth century. In the period 1900-1950, industrial production increased about 700 percent, a figure far in excess of the population growth rate. Industrial growth has continued to rise dramatically; by 1980 production will more than double the 1950 figure. This increased industrial production will necessarily involve greater water demands by industry, and since industrial water use is presently concentrated in the East, water shortages may be expected to occur in that region.

Another object of concern is the trend toward urban concentration. By 1980 it is estimated that more than ninety percent of the population will live in cities and towns, and more than half will live in urban areas of more than 50,000 persons. Urbanization will put a severe strain on the nation's water resources since the water-holding capacity of an area is reduced when rural land is converted into high density living areas. Paved surfaces retain heat, increase evaporation, and reduce recharge areas for replenishment of ground water resources.

One solution to the water shortage problem is to obtain water from new sources. The boldest and most ambitious proposal is the North American Water and Power Alliance. This project would result in the damming of various rivers in Alaska and the Canadian Yukon, and transporting the waters of these rivers into a largely man-made five hundred mile long reservoir along the Rocky Mountain Trench. This would involve construction of a series of connecting tunnels, canals, lakes, dams, and lifts. An estimated 70 million to 150 million kilowatts of electric power would also be

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7 Id.
8 Id.
9 Stein, supra note 5, at 394.
10 Id.
11 Id. at 389.
12 Id. at 393.
13 Id.
14 F. Moss, The Water Crisis 4-5 (1967).
generated. NAWAPA would provide water to seven provinces of Canada, thirty-three of the United States and to three northern states of Mexico. In all, 110 million acre-feet of water would flow through the system each year with the maximum potential estimated at 250 million acre-feet or about 36 trillion gallons per year.

Even if the NAWAPA project is successfully completed, however, additional measures toward more efficient management of water resources must be implemented at all levels of government. This will require a determination of needs and capabilities, and the formulation of long-range plans for the development of all water resources and related land resources within a hydrologic unit. Regulating streams flow, improving water quality, increasing the efficiency of water use, expanding the use of underground storage, and increasing the available water supply by such measures as desalinization, weather modification, and reduction of evaporation losses must be considered in such planning.

B. State Water Use Planning

The Federal government has already increased its planning for multi-purpose water use. The Water Resources Planning Act provides for coordination of federal water projects through a Water Resources Council consisting of the Secretary of the Army, the Secretary of Agriculture, the Secretary of the Interior, the Secretary of Health, Education and Welfare, and the Chairman of the Federal Power Commission. The Council prepares a biennial report on the adequacy of the nation’s water supplies and a review of all river-basin development plans. The act also has authorized planning for individual river basins and provides federal assistance to states for water planning.

However, federal efforts alone are not sufficient. National water development goals do not always coincide with those of the states. Federal water projects deal primarily with the control, storage, and release of surface water for flood control, power generation, navigation, and quality control. Although these programs

16 J. Wright, supra note 6, at 221.
17 Id.
may meet the needs of some states, they may not be entirely responsive to those of others.\footnote{21} The states, as the intermediate level of government with sovereign powers and with primary responsibility for intrastate water regulation, have an important role in the planning process.\footnote{22} Since water management often must be directed toward the hydrologic, economic, and social needs of comparatively small areas, it is more likely to be responsive to state policies.

Some federal projects, such as those dealing with small watersheds, operate on a basis of close cooperation with state and local interests. The Watershed Protection and Flood Prevention Act of 1954, for example, places the full responsibility for initiating watershed projects at the local level.\footnote{23} The local organization shares in the cost and owns, operates and maintains the projects when completed. Local interests are also responsible for developing the watershed plan, although projects must be approved by the state government as well.

Regulation of water use\footnote{24} remains a primary state function. This requires state planning for many purposes including enforcement of existing laws, the enactment of new legislation, the coordination of local regulatory efforts, and administration of consistent state regulatory policies.\footnote{25}

Unfortunately, state planning and resource management agencies are frequently understaffed and lacking in sufficient expertise to accomplish any meaningful planning. As a result, state agencies often conduct little more than token reviews of plans prepared by local, private, or federal agencies.\footnote{26} It is essential that state agencies be staffed to discharge their water resources planning responsibilities competently. Failure of the states to respond to this challenge can only result in inadequate and uncoordinated water management.

\footnote{24} Smith, supra note 22, at 1336.
\footnote{25} Id. at 1337.
\footnote{26} Marts, Conflicts in Water Use and Regional Planning Implications, in Regional Development and the Wabash Basin 145, 155-56 (R. Boyce ed. 1964).
II. REQUIREMENTS OF A PROPER STATE WATER RESOURCES PLANNING PROGRAM

A. CENTRALIZED PLANNING RESPONSIBILITY

Planning requires financial investment, a legal framework, and a program of public education. The state administrative structure must be constituted so that planning responsibility is concentrated within one agency. Lack of coordinated planning has often resulted in state programs which concentrated on one type of water problem to the exclusion of other phases of the hydrologic cycle. At the Federal level, Senator Frank Moss has proposed the creation of a Department of Natural Resources, placing all federal water management agencies under one head in order to formulate a sound national water resources program. As will be discussed later a planned water resources program can be most effectively implemented if the planning agency has authority over pollution control as well as regulation of consumptive uses of water. This extremely important factor is frequently being overlooked today in the establishment of new pollution control agencies.

B. PLANNING ON A SCIENTIFIC BASIS

The interrelationship of the various forms of water requires planning on the basis of hydrologically interrelated units. Planning must take cognizance of the effect on the hydrologic cycle of water pollution, use of land resources, drainage of ground water recharge areas, and urban development. The geographical boundaries of the water resource agency, therefore, should be coterminous with a hydrologic unit, since political boundaries frequently do not reflect hydrologic realities.

Water management demands a continuing search for new technology in order to cope with changing water problems. For example, technology may soon allow urban runoff, now viewed as deleterious, to be used as a productive source of water for recreational development or even urban water supply. Science and technology must also fill the gaps in existing knowledge. For

27 Metzler, supra note 21, at 800.
29 F. Moss, supra note 14, at 259.
30 F. Maloney, et al., supra note 28, at § 131.2.
32 Smith, supra note 22, at 1339.
example, proper water management requires a greater awareness of the interactions within associated ecologic and social structures. Basic economic and population research is also necessary to predict the socio-economic effect of various water use patterns and regulation in order that proper physical development and management alternatives may be chosen.\textsuperscript{33}

C. COORDINATION OF WATER QUALITY AND CONSUMPTIVE USE PLANNING

Water resources planners must recognize the relationship between water pollution and water use and should consider disposal of municipal and industrial waste as a major consumptive use of water. Traditional consumptive uses of water in municipalities involve far less water use than the disposal of waste through sewage systems;\textsuperscript{34} industry likewise consumes relatively little water, but uses large quantities for waste disposal.\textsuperscript{35} Since disposal of wastes by municipalities and industry often makes the water unusable for other purposes, whether consumptive or recreational, the pollution must be accounted as one of the most highly consumptive uses of the resource.

Water pollution is not limited to streams. Potentially serious pollution problems are beginning to develop in connection with ground water supplies in some areas.\textsuperscript{36} Drainage operations for agricultural or mining activities have contributed to this condition and overdrainage has already resulted in salt-water intrusion in coastal areas.\textsuperscript{37} The states must therefore include maintenance and improvement of water quality in all forms as a prominent element in their planning program.

D. REGULATION OF CONSUMPTIVE USES AS A PLANNING TOOL

Both federal and state planning efforts have emphasized the development of new sources of supply. Perhaps the most ambitious state water development project is the California Water Plan which involves the biggest transfer of water yet attempted on this continent.\textsuperscript{38} The plan consists of five projects on the Upper Feather River. These projects will supply 1.3 billion gallons daily,
half of which will be used in the Metropolitan Water District of Southern California while the remainder will go to central California. \[39\] The plan extends to water projects constructed by state, local and federal agencies and private interests. It also provides flood control, water shortage, and local hydroelectric power for northern California. \[40\]

Water resources management, however, also includes regulation of consumptive uses and reallocation of water to more productive uses. The actions of private parties affecting water resources must be regulated to avoid inconsistency with the policies of the planning agency. \[41\] A system of consumptive water use permits, coordinated with a program of comprehensive planning is the most effective means of implementing planning objectives and directing development alone planned lines. This would enable state officials to prevent overdevelopment and competition for water, requiring low value users to seek new supplies. \[42\] Underdevelopment as well as overdevelopment can be avoided by a choice of the better use when pending applications for water use relate to the same supply and the available water is not sufficient for both. \[43\] Also, when a large development project is foreseeable, smaller less efficient projects can be vetoed in favor of the greater benefits promised by the later larger one. \[44\] In some areas continuation of present water use patterns will eventually exhaust available supplies despite full regulation of consumptive uses. \[45\] Reallocation of water from agricultural to industrial, municipal, and recreational uses can also increase development potential of some areas and should be considered as a possible alternative where additional water supplies are not readily available. Reallocation of this sort, however, requires efficient mechanisms for the transfer of water from lower to higher value uses. This means that water must be transferred to industrial and urban uses and water devoted to agricultural uses must be applied to the most productive lands and crops. \[46\] Long-

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\[39\] F. Moss, *supra* note 14, at 159-60.

\[40\] Id. at 160.


\[43\] Trelease, *supra* note 41, at 44.

\[44\] Id.


range plans must not only anticipate such changes in water use patterns, but must actually induce transfers to higher value uses.

III. COMMON-LAW RIPARIANISM AND PRIOR APPROPRIATIONS—THEIR RELATIONSHIP TO LONG PLANNING IN THE EASTERN UNITED STATES

Does the Western prior appropriation system of water rights, under which, simply stated, the first user of water has a right, as against later users, to continue to use the same amount of water in perpetuity,47 or to transfer his right in the market place if he sees fit to do so,48 form a better basis for sound long range Eastern water law development than the reasonable use doctrine currently adhered to by the courts of many of the eastern states?49 There are those that think that it does, and they have urged its adoption in a number of eastern states since World War II. At least nine eastern states, including Arkansas,50 Georgia,51 Florida,52 Michigan,53 Mississippi,54 North Carolina,55 South Carolina,56 Wisconsin,57 and most recently West Virginia,58 have considered the desirability of switching to an appropriative type system creating vested water rights, but only Mississippi has adopted such an approach,59 while the other eight have all rejected it.60 The authors

47 J. LAX, WATER LAW, PLANNING & POLICY, 2-3 (1968).
49 For statements of the reasonable use doctrine, see LAX, supra note 47; F. Maloney, et. al., supra note 28 at 204-5; RESTATEMENT (FIRST) OF TORTS §§ 851-854 (1939). The framers of the reasonable use doctrine of the First Restatement supported that doctrine with authorities from twenty five states. See RESTATEMENT (FIRST) OF TORTS, Appendix at 120-123 (Tent. Draft No. 14).
53 Study recommendation not adopted. THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES, 49-70, and 441-490 (D. Haber & S. Bergen eds. 1950) sets forth and discusses the proposed statute.
58 Vetoed by governor.
59 See supra note 54. Unsatisfactory results are set forth in W. Champion, ALTERING A SYSTEM OF WATER RIGHTS - LOOK BEFORE YOU LEAP, LECTURES ON LAW IN RELATION TO WATER RESOURCES USE AND DEVELOPMENT 26 (1967).
60 See notes 50-53, 55-58 supra.
of this article agree that a switch from riparianism to prior appropriation is not a desirable step for eastern states to take at this time. They believe it is undesirable suddenly to afford to prior users in the East, simply on the basis of their existing uses, the rights and benefits that would result from legislation adoption of the prior appropriations doctrine. We recognize the argument that application of the rule of reasonable use could result in uncompensated transfers of the means of production of wealth. That argument is based on the fundamental assumption that in every case one who innovates a new use of water should be required to pay a previous user if the latter is deprived of any portion of his prior use by the former. This is the basic economic argument in support of the doctrine of prior appropriation. It has great surface appeal. Others argue that the increased certainty concerning water rights under the appropriation system encourages investment and maximizes the beneficial use of water, whereas the uncertainties inherent in the rule of reasonable use tend to discourage such investment.61

However, other factors should be considered in comparing these two systems. The protection afforded the first user may well result in the perpetuation of what has become an economically unsound use. In connection with irrigation, for example, western experience indicates that in many cases the effect of prior appropriation is to waste water that otherwise could be put to beneficial use. The earliest settlement of western valleys frequently occurred in downstream areas, with the result that senior appropriators are located there. The streams supplying these areas often pass through arid regions where high temperatures and parched soil exact a heavy toll in evaporation and seepage losses. In the Frenchman's Creek area of Colorado, for example, it is necessary to reduce upstream pumping by 100,000 acre-feet of water per year to protect downstreams uses of 15,000 acre-feet, and at Beaver Creek a decrease of pumping upstream by 20,000 acre-feet would be necessary to protect a downstream flow of 1,000 acre-feet.62

In addition, once an appropriator has begun using a specific amount of water, he will frequently continue to draw that amount even thought it may be considerably more than he really needs, since failure to do so may result in loss of his appropriative right

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to the excess. In such cases the system encourages waste and discourages use of new irrigation techniques requiring less water.

Moreover, in the West the appropriation doctrine has tended to “freeze” the water to specific tracts of land. In theory the right to use the water is freely transferable, but the unwillingness of landowners to sell their water rights and thus make their land worthless has led to great resistance to such transfers. Some western areas where for decades water has been primarily used for irrigation have now come to possess a definite potential for industrial development if substantial amounts of water already appropriated for irrigation can be made available to industry, but the irrigators have been extremely reluctant to make such transfers. The President's Materials Policy Commission warned the West in its 1952 report that “it must soon decide whether its future must be sacrificed by its antiquated priorities systems in water use.”

Protection of earlier and more inefficient industrial uses by affording almost absolute protection of prior users through the adoption of prior appropriation principles could well have the same results in the East. The obstacles it would present to the reallocation of water to more important uses could be most serious.

This is not to say that the rule of reasonable use presents an ideal solution to the problems of water allocation either. The major criticism of the reasonable use approach relates to the element of uncertainty associated with the reasonable use of water for non-domestic purposes. Because the reasonableness of each use is determined by the needs of other riparians, unforeseen conditions arise when others commence or enlarge uses despite long nonuse of their rights. This uncertainty is increased in most eastern jurisdictions by lack of provision for administrative controls and decision-making authority, with the result that the extent of a riparian's right of reasonable use can be determined only by litigation. Recognizing their lack of expertise and the inefficiency of a case-by-case approach, the courts have been reluctant to become involved. In addition, the numerous courts are structurally not as capable of uniformity in the application of the law as a single centralized agency.

As population growth and modern technological developments in both agriculture and industry have been making increasingly

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greater demands on eastern water supplies, the problem of maintaining streamflow and ground water levels has assumed increasingly greater importance. Concern over the adequacy of existing laws to cope with emerging water resource problems is leading many executive and legislative study committees to purpose new methods to deal with the problem. The legislatures in a number of eastern states are considering the establishment of administrative authorities with varying powers to grant permits authorizing the withdrawal of water from streams in order to provide a means of regulation of existing and future water uses.

Such permit systems possess at least three advantages over the common law method of rights determination: (1) the agency makes its decisions before a dispute has erupted into litigation, whereas a court generally can act only after such a dispute arises; (2) the agency makes its decision in light of all water uses and users, and is able to consider the public interest, whereas a court is often limited to the litigators before it; and (3) members of the decision-making board, unlike judge or jurors, are experts on water, and their decisions can be made with long range plans for the wise use and conservation of water resources in mind.

It may be argued that most western states have long used administratively operated permit systems, and the fact that eastern jurisdictions are increasingly turning to such systems to replace the common-law reasonable use approach is an argument that the western approach is demonstrably superior.

But the need for administrative controls in the East as the demand for water approaches the limits of available supply does not necessarily mean that it is desirable also to adopt the western approach of protecting the earliest user. The ideal permit system can strike a measure of balance between prior appropriation and the doctrine of reasonable use. It can allow the permit holders some certainty by reason of their permits, and assure the public a degree of flexibility by making the permits subject to periodic expiration and review. This compromise, which has been statutorily adopted in Iowa, appears workable and more beneficial to the welfare of the community.

This is the approach advocated by the Commissioners on Uniform State Laws in the Model Water Use Act. As stated in the Commentary to Section 406 of that Act, "This limitation [on the length of permits] insures reevaluation at periodic intervals of

64 Iowa Code § 455A.20 (1965).
the beneficial characteristic of the permitted use." A similar limitation is found in the Model Water Code which will be discussed in the next section of this article.

It would be most unfortunate for some eastern legislatures to adopt a rule which would tend to freeze water rights through the creation of vested rights in the first user at the very time when other eastern jurisdictions are beginning to re-evaluate their systems of water allocation in the light of modern technological demands and population growth. The recognition of such vested rights in the first user has been said to "seriously impede a high level of beneficial use of a state's water resources," and to be a "serious legal barrier to wise water development."

While the concept of protecting the first users in perpetuity was developing out of the customs of the miners during the California gold rush on the frontier principle of "first come, first served" no such development occurred during the parallel gold rush in Australia. In that country the colonial government of Victoria allowed no period of legislative inaction in which the customs of the miners could develop into a recognizable body of legal principles. Government licenses to supply water for gold mining purposes were issued, and supplied the same mining needs as the California doctrine of prior appropriation, but the licenses were for a period of fifteen years, rather than in perpetuity. The Victoria government was therefore in a position to plan and co-ordinate the water development of the country in a way not possible in the American West.

In these days of emphasis on conservation of natural resources, another criticism of the appropriation approach is worth noting. Adoption of the appropriate principle does not lead to conservation of water resources. It supports the rugged individualist theory that ignores the needs of all of society, and not the interest-of-the-public principle which should be applied to this great

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65 Model Water Use Act § 406 (1958), and Commentary following.
66 Model Water Code, § 206 and Commentary, now in University of Florida Press.
natural resource. If one user can put an entire stream to his beneficial use, he can acquire the exclusive right to the use of the water of that stream, a vested right continuing so long as he puts the water to such use. Utilization, rather than conservation, is the guiding principle, and the devil take the hindmost. Big industry in the East would be the big winner from the adoption of such a principle, to the exclusion of other very valid interests.

A further telling criticism of the priority approach is that due to its oversimplification, it does not provide an adequate tool for establishing an entire complex of state water law and policy. "It contributes nothing toward answering the question 'What is the best use?'" A working team of hydrologists, biologists, engineers, economists, political scientists, and lawyers could best answer that question. The reasonable use doctrine provides the flexibility within which such a team can work. The priorities approach does not.

Retention for the present of the reasonable use approach of balancing the utility of the defendant's use against the gravity of the harm to existing uses will provide the flexibility necessary to allow the eastern states to adopt sound plans for the overall development, administration, and conservation of their water resources without being shackled with the problems created by the adoption at this late date of rules protecting existing uses in perpetuity, no matter how antiquated those uses may become.

IV. THE MODEL WATER CODE

The Model Water Code has been drafted at the University of Florida in an attempt to provide a vehicle for comprehensive state regulation of water resources. It is soon to be published in book form by the University of Florida Press. The Code consists of six chapters: the first creates a two-tiered administrative structure comprised of the State Water Resources Board and a number of regional water management districts administered by their respective governing boards. This chapter also provides for the comprehensive state water plan discussed in this article, while chapter two establishes a permit system for the regulation of consumptive uses of water. Chapter three provides for well construction standards and the licensing of the well drilling industry. Chapter four

70 See Ellis, Beuscher, Howard and DeBraal, WATER-USE LAW AND ADMINISTRATION IN WISCONSIN, § 20.01b. (1970).
governs the construction of dams, impoundments, and appurtenant works, while chapter five is concerned with water quality and includes a water quality plan, construction and discharge permits, and a variety of enforcement devices. Chapter six is an optional chapter on weather modification.

The Model Water Code’s declaration of policy contains an expression of the need for adequate water resources planning and adopts the State Water Plan as the response to this need. The State Water Plan is composed of the State Water Use Plan and the State Water Quality Plan. The State Water Quality Plan contains water quality standards, objectives, and guidelines and requires a specific program of implementation for those water uses which do not presently meet established water quality standards. The State Water Quality Plan has been discussed elsewhere and this article will concentrate on the State Water Use Plan, considering each section of the Plan separately.

\[72\text{ Model Water Code § 1.02 (1). “There is urgent need for an accelerated program of comprehensive water resources planning to meet the rising water requirements of a growing population and expanding economy. The people of the state have a primary interest in the orderly and coordinated control, protection, conservation, development, and utilization of the waters of the state; the state water plan, with such future amendments, supplements and additions as may be necessary, is accepted as the guide for developing and implementing this policy.”}

\[74\text{ Model Water Code §§ 5.04 5.05.}

\[5.04\text{ Water Quality Plan provides that:}

(1) The state water quality plan shall consist of the following:

(a) Water quality standards for all waters and of the state. Such standards will consist of receiving water standards and where applicable effluent standards.

(b) Water quality objectives for planning and operation of water resource development projects for water quality control activities, and for the improvement of existing water quality.

(c) Other principles and guidelines deemed essential by the state board for water quality control.

(d) A program of implementation for those waters which do not presently meet established water quality standards.

(2) The state water quality plan shall be periodically reviewed and may be revised.

(3) During the process of formulating or revising the state water quality plan the state board shall consult with and carefully evaluate the recommendations of concerned federal, state, and local agencies, particularly the governing boards of the various water management districts.

(4) The state board shall not adopt or modify the state water quality plan or any portion thereof until a public hearing is held. At least 90 days in advance of such hearing the state board shall notify any affected governing boards, and shall give notice of such hearing by publication within the affected region pursuant to section 1.09 of this code.

\[5.05\text{ Water Quality Standards provides that:}
(1) It is recognized that due to variable factors no single standard of quality and purity of the waters is applicable to all waters of the state or to different segments of the same waters.

(2) The state board shall group all waters of the state into classes and adopt water quality standards for each class. Such classification shall be made in accordance with considerations of best usage in the interests of the public.

(3) In preparing the classification of waters and the standards of purity and quality above mentioned, the state board shall give consideration to:

(a) The size, depth, surface area covered, volume, direction, and rate of flow, stream gradient and temperature of the water;

(b) the character of the land bordering, overlying or underlying the waters of the state and its peculiar suitability for particular uses, and with a view to conserving the value of said land encouraging the most appropriate use of the same for economic, residential, agricultural, industrial or recreational purposes.

(c) The past, present, and potential uses of the waters for transportation, domestic and industrial consumption, bathing, fishing and fish culture, fire prevention, the disposal of sewage, industrial and other wastes, and other possible uses, and

(d) the extent of present defilement or fouling of the waters which has already occurred or resulted from past discharge therein.

(4) The water quality plan adopted by the state board shall contain standards of quality and purity for each of the various classes, in accordance with the best interests of the public.

(5) In preparing such standards, the state board shall give consideration to:

(a) The extent, if any, to which floating solids may be permitted in the waters;

(b) the extent, if any, to which suspended solids, settleable solids, colloids or a combination of solids with other substances suspended in water may be permitted;

(c) the extent, if any, to which organisms or virus may be permitted in the waters;

(d) the extent of the oxygen demand which may be permitted in the receiving waters;

(e) the extent, if any, to which the temperature of the waters may be altered;

(f) the minimum dissolved oxygen content of the waters that shall be maintained;

(g) the limits of other physical, chemical, biological, or radiological properties that may be necessary for preserving the quality and purity of the waters of the state;

(h) the extent to which any substance must be excluded from the water for the protection and preservation of public health, and

(i) the value of stability and the public's right to rely upon standards as adopted for a reasonable period of time to permit institutions, municipalities, commerce, industries and others to plan, schedule, finance, and operate improvements in an orderly and practical manner.

(6) The state board may impose such effluent standards as it deems necessary to maintain or improve water quality.

(7) The state board by regulation may modify classifications and upgrade the standards of quality.

Sections 1.07 (1) to 1.07 (10) deal with the content of the Plan, while the remaining sections relate to the procedures under which the Plan is formulated. Many state water resources agencies possess a general data collection and planning authority. Section 1.07 (1) of the Model Water Code differs from most state statutes in that it directs the state board to prepare a specific document (known as the State Water Use Plan) containing a detailed and comprehensive blueprint for water resources management within the state. Comprehensive long-range planning of this sort is authorized in California, Texas, Connecticut, Delaware, Kansas, and Oregon, while Nebraska has a comprehensive state plan which involves all areas of development, including water resources.

Section 1.07 (2) which is modeled after a provision of the Oregon Water Plan, delineates five objectives that the State Water Use Plan must seek to achieve. The first of these is the attainment of a pattern of maximum reasonable-beneficial uses of water for such purposes as protection of the environment, procreation of fish and wildlife, recreational use, improvement of water quality, irrigation, mining, power development, and domestic, municipal, and industrial uses. A reasonable beneficial use is defined as "the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose and in a manner which is both

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77 MODEL WATER CODE §1.07 (1). "The state board shall proceed as rapidly as possible to study existing water resources of the state; means and methods of conserving and augmenting such water resources; existing and contemplated needs and uses of water for protection and procreation of fish and wildlife, improvement of water quality, irrigation, mining, power development and domestic, municipal and industrial uses, and all other related subjects including drainage, reclamation, flood-plain zoning, and selection of reservoir sites.

The state board shall progressively formulate an integrated, coordinated program for the use and development of the waters of the state based on the above studies. This program, with such amendments, supplements and additions as may be necessary later shall be known as the State Water Use Plan."
78 CAL. WATER CODE §10000 (1956).
82 KAN. STAT. ANN. §§ 82a-903 to 82a-926 (Supp. 1970).
84 NEB. REV. STAT. §§ 84-131 to 84-150 (Supp. 1969).
reasonable and consistent with the public interest. The immediate tool by which this is achieved is the consumptive use permit system. A second objective is the economic development of water resources of the state, and a third is the control of the waters of the state for such purposes as navigation, drainage, sanitation and flood control. A fourth objective is implementation of the provisions of the State Water Quality Plan and other portions of chapter five of the Code dealing with water quality. The importance of coordinating planning concerning consumptive uses and water quality has already been emphasized. Coordination of this sort is simplified by the requirement that complementary segments of the Water Quality and Water Use plans be developed together. A final objective is recognition of the state water resources policy expressed in the Code’s declaration of policy.

Section 1.07 (3) specifically requires the state board to ascertain the quantity of water available for application to reasonable-beneficial uses as well as the extent of presently exercised domestic uses and permit rights. This information must then be considered in the formulation of any plan for future development of the resource. Detailed planning must be based on a thorough study of the state’s water resources, including existing water use patterns and problems. A number of states provide for water in-

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86 Model Water Code §1.03 (4).
87 Model Water Code §1.02 (1), supra note 72.
88 Model Water Code §1.07 (3).
(2) In the formulation of the state water use plan, the state board shall give due consideration to:
(a) The attainment of maximum reasonable-beneficial use of water for such purposes as those referred to in subsection (1) above.
(b) The maximum economic development of the water resources.
(c) The control of such waters for such purposes as drainage, sanitation and flood control.
(d) The quantity of water available for application to a reasonable-beneficial use.
(e) The prevention of wasteful, uneconomical, impracticable or unreasonable uses of water resources.
(f) Presently exercised domestic uses and permit rights.
(g) The objectives of chapter five of this code and the provisions of the state water quality plan.
(h) The state water resources policy as expressed in section 1.02 of this code.
89 Domestic uses are exempt from regulation under the permit system. See Model Water Code § 2.01 (1). “No person shall make any withdrawal, diversion, impoundment, or consumptive use of water without obtaining a permit from the governing board. However, no permit shall be required for domestic consumption of water by individual users.”
ventories and statewide studies of water use patterns. California has perhaps the most comprehensive inventory.

Section 1.07 (4) provides for the establishment of a minimum flow for surface watercourses, as well as minimum lake and ground water levels. It is essential that any system of water allocation include a minimum flow for public purposes. Commercial navigation, recreational boating, fishing, hunting, and swimming, and protection of the ecology are some of the public purposes that should be protected under the minimum flow concept.

Section 1.07 (5) indicates that minimum flow and levels do not necessarily have to reflect precisely historical average minimum flows and levels. Rather, minimum flows and levels act as guidelines in the granting of permit rights and the protection of non-consumptive uses. In addition, under the Model Water Code, these figures are used in connection with the implementation of water shortage provisions. It should be noted that the state board

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92 Model Water Code §1.07 (4). Within each section the state board shall establish the following:

(a) Minimum flow for all surface watercourses in the area. The minimum flow for a given watercourse shall be the limit at which further withdrawals would be harmful to the water resources and ecology of the area.

(b) Minimum lake level for all fresh-water lakes and ponds in the area greater than 25 acres. The minimum level of a given lake or pond shall be the level at which further withdrawals would be harmful to the water resources and ecology of the area.

(c) Minimum ground water level. The minimum ground water level shall be the level of ground water in an aquifer at which further withdrawals would be harmful to the water resources of the area.

(d) The minimum flow, minimum lake level and minimum ground water level shall be calculated by the state board using the best information available. Where appropriate, minimum flows and levels may be calculated to reflect seasonal variations. The state board shall also consider and at its discretion may provide for the protection of nonconsumptive uses in the establishment of minimum flows and levels.

(e) The governing boards shall condition permits under chapter two of this code in such a manner as to preserve minimum flows and levels established under this section.

93 Model Water Code §2.09 (2). "The governing board by regulation may declare that a water shortage exists within all or part of the district when insufficient water is available to meet the requirements of the permit system or the Florida Water Plan, or when conditions are such as to require tem-
may establish monthly figures in order to take account of seasonal variations.

Section 1.07 (6) prohibits the granting of any consumptive use permit that would adversely affect the maintenance of minimum flows and levels. Under section 1.07 (7) the State Water Use Plan may call for the reservation of unused waters for the purpose of public recreation, protection of the environment, and procreation of fish and wildlife. Existing water users, however, will not be affected by this provision unless compensation is paid. Several western states allow reservation of water from appropriation by permit applicants. In this fashion the most effective protection can be given to such public purposes as recreation, the preservation of fish and wildlife habitats and dilution of wastes where complete purification is impossible. Another application of the reservation power is to allow for future water development projects. A potential project may be conceived of long before actual need arises, and a large and comprehensive project may be contemplated years before final developments are completed. Such projects may be jeopardized if less desirable users are permitted to utilize the same water source.

The Model Water Code permits a form of “environmental zoning.” Under the provisions of section 1.07 (8) certain uses may be declared undesirable because of the likelihood that they will adversely affect the environment in the surrounding area. In such cases the governing board of a water management district is authorized, but not compelled, to deny a consumptive use permit. It is intended that this device will prevent some uses altogether in areas where they are likely to be quite harmful. However, the temporary reduction in total water use within the area to protect water resources from serious harm.”

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94 MODEL WATER CODE § 1.07 (7). “The state board shall give careful consideration to the requirements of public recreation and the protection and procreation of fish and wildlife. The state board may prohibit or restrict other future uses on certain designated streams which may be inconsistent with these objectives.”


96 Trelease, supra note 48, at 45.


98 In order to protect potential developments, the Utah Statutes permit the reservation of waters from appropriation. UTAH CODE ANN. §§ 73-6-1, 73-6-2 (1953).

99 MODEL WATER CODE § 1.07 (8). “The state board may also designate certain uses in connection with a particular source of supply which, because of the nature of the activity or the amount of water required, would constitute an undesirable use for which the governing board may deny a permit.”
governing board may instead demand certain guarantees from the user as a condition to granting a consumptive use permit in order to remove the risk of environmental damage.

Section 1.07 (9) allows the state board to designate in the Plan certain uses which are to be given a preference in the granting of consumptive use permits. Such uses might include recreation, preservation of the environment, protection of recharge areas, and others. Once such a designation is made, the governing board of the water management district must recognize the preference. Some western states employ preferences in the prior appropriation laws to promote particular water policies, but in general, preferences are seldom used to further environmental objectives. The Oregon statutes permit the state water resources agency to classify some uses most beneficial on designated streams.

Section 1.07 (10) is a catch-all provision which allows the state board to add any additional information or instructions to the plan which it deems appropriate. This provision is significant since only a bare outline of the State Water Use Plan's content can be included in the Model Water Code itself.

One of the greatest impediments to proper planning has been the lack of communication between the various federal, state, and local governmental agencies involved in water resources development and regulation. Section 1.07 (11) requires the State Board to consult with all interested governmental water resources agencies and carefully consider their findings and recommendations.

This procedure is designed to reduce duplication of effort and encourage the free exchange of data among such agencies. However, it should be emphasized that the ultimate responsibility for drafting the plan rests with the State Board.

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100 Model Water Code § 1.07 (a). "The state board may also designate certain uses in connection with a particular source supply which, because of the nature of the activity or the amount of water required would result in an enhancement or improvement of the water resources of the area. Such uses shall be preferred over other uses in any action pursuant to section 2.05 of this code."

101 See generally, Trelease supra note 100.


103 Model Water Code §1.07 (10). "The state board may add to the state water use plan any other information, directions, or objectives it feels necessary or desirable for the guidance of the governing boards in the administration and enforcement of this act."

104 F. Maloney, et al., supra note 28, at §191.

105 Model Water Code §1.07 (11). "During the process of formulating or revising the state water use plan, the state board shall consult with and carefully evaluate the recommendations of concerned federal, state and local agencies, particularly the governing boards of the various water management districts."
Since the State Water Use Plan will be formulated on an area-by-area basis, the water management districts must play a prominent role in the creation of the plan. Section 1.07 (12) directs the governing boards to cooperate with the State Board in this respect and to furnish necessary technical information and services. It is essential that the governing boards participate actively in the formulation of the State Water Use Plan since they will play a major part in the implementation of its objectives through their administration of the various permit systems.

Section 1.07 (13) states that no portion of the State Water Use Plan shall be adapted or modified without a public hearing first being held. Hearing procedures are set out elsewhere in the Code.

Since the plan will be adapted in many stages a great num-

\[\text{\textsuperscript{106} Model Water Code \textsection 1.07(12). "Each governing board is directed to cooperate with the state board in conducting surveys and investigations of water resources, to furnish to the state board all available data of a technical nature that might be useful to it in the formulation of the state plan, and to advise and assist the state board in the formulation and drafting of those portions of the state plan which are applicable to its district."}
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\[\text{\textsuperscript{107} Model Water Code \textsection 1.07(13). "The state board shall not adopt or modify the state water use plan or any portion thereof without first holding a public hearing on the matter. At least ninety days in advance of such hearing the state board shall notify any affected governing boards, and shall give notice to such hearing by publication within the affected region pursuant to section 1.09 of this code."}
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\[\text{\textsuperscript{108} Model Water Code \textsection 1.09. (1) The state board shall adopt, promulgate, and enforce such regulations as may be necessary or convenient to administer the provisions of this code. (2) Regulations affecting the public interest other than regulations relating to the internal organization and operation of the state board shall be adopted as follows: (a) The proposed regulations shall be contained in a resolution adopted by the state board at a regular or called meeting and included in the minutes of its proceedings. (b) Within ten days of the adoption of such resolution, notice of the regulation in the form of a summary thereof (or in full, at the discretion of the state board) shall be published once in four newspapers of general circulation in the state. This notice shall fix the time and place for a public hearing before the state board to be held not less than ten nor more than twenty days from the date of publication. (c) Opportunity shall be afforded interested persons to present their views at such public hearing either orally or in writing or both, at the discretion of the state board. Objections may be raised to both the nature and form of such regulation. Following such hearing the state board may amend, revise or rescind the resolution, which action shall be set forth in minutes of its proceedings, and by resolution adopt the regulation as proposed or as amended, or revised, or may determine that no regulation is necessary. (d) Upon the adoption of any regulation as provided, a copy thereof certified by the chairman shall, within five days of the adoption thereof, be filed in the office of the Secretary of State and}
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ber of such hearings will be held. While this will add greatly to the plan's expense, it is felt that such hearings will be beneficial. They will enable conservationists and water users to present views and information before the state board and the plan should receive greater public acceptance through this process.

**CONCLUSION**

The water crisis which the nation is facing cannot be solved without massive effort at every level of government. Regardless of the growth of federal water development programs, the states will probably retain much ultimate responsibility for regulation of consumptive uses as well as a large measure of water pollution control authority. It is imperative, therefore, that the states place major emphasis on coordinated planning in their water management programs. This will require centralized planning responsibility within a single agency, recognition of hydrologic relationships, regulation of consumptive uses, and protection of water quality.

The time for comprehensive planning is fast running out. If properly done, it will be both time-consuming and expensive. But the failure to make such plans and use them will ultimately be far more expensive, both in dollar costs and loss of opportunities to maximize the sound development of one of the state's most important resources. It is hoped that the Model Water Code may help to provide the impetus for such planning before it is too late.

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shall become effective fifteen days after such filing except as hereafter provided.

(c) Regulations relating to the internal organization or management of the state board not affecting the public interest, shall be adoption thereof, be filed in the office of the Secretary of State and shall become effective immediately upon the filing of a copy thereof, certified by the chairman, in the office of secretary of state.