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WATER FOR MUSHROOMING POPULATIONS*
By CLYDE O. MARTZ**

PART I.
BASE WATER RIGHTS DOCTRINES — AN EVALUATION

Post war industrial expansion, mushrooming urbanization and technological progress in irrigation engineering during the present decade has changed water from an object of private advantage to a resource affected with a public interest, on which regional economics are increasingly dependent. Industry demands substantial quantities of water for cooling machinery, for cleansing, for chemical separations and for the removal of wastes. Ten gallons of water are required to make a gallon of gas, 65,000 gallons to produce a ton of steel and 600,000 gallons for a ton of synthetic rubber.¹ Power requirements of the country, now doubling every ten years,² call for an estimated fifty per cent increase in water supply during the next twenty-five years for the operation of steam generating plants.³ Population concentrations in metropolitan areas are creating complex distribution problems and necessitate imaginative planning and large capital investments to locate, develop and transmit potable water to urban residents at reasonable consumer costs. With the advent of corrosion resistant irrigation pipe and the introduction of cheap power into rural areas under REA, economically attractive

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** Professor of Law, University of Colorado, presently judicial administrator, Judicial Department, State of Colorado.
³ See Council of State Governments, op. cit. supra, note 1.
supplemental irrigation of high yield crops by use of wells and sprinkler systems is creating entirely new demands on water supplies in humid areas of the country that have not resorted to irrigation in the past. The complex of these trends is generating a nationwide water consciousness, which in turn is asserting unparalleled pressures upon state legislatures for more adequate water laws and policies.

In the seventeen arid western states that developed detailed water codes a century ago to allocate critical supplies to agricultural and mining settlers upon the public lands, efforts are being made to correlate uses in various parts of the water cycle, to eliminate uneconomic and wasteful private diversions, to conserve water for maximum beneficial uses and to make private interests in water subervient to the general welfare. At the same time states in the humid East that have had no past occasion to fabricate water policies, legislatively or judicially, are inventorying their water assets and appraising established policies and practices in other jurisdictions to the end of removing legal obstacles to a full utilization of their water supplies at reasonable consumer costs. Also indicative of this water consciousness and the nationwide concern for water resources conservation is the publication of water policy studies by five recent Presidential Commissions: The President's Water Resources Policy Commission; the President's Materials Policy Commission; the President's Missouri Basin Survey Commission; the Commission on the Organization of the Executive Branch of the Government and the President's Advisory Committee on Water Resources Policy. More than half of the states are presently engaged in some form of investigative work and at least thirteen\(^4\) have

enacted statutes since 1950 modifying basic water allocation doctrines. Illustrative of these changes, Mississippi and Iowa have scrapped their riparian water systems completely, have dedicated most of their waters to public use and have provided for their appropriation for purposes that are compatible with declared public interests.\(^7\) Ohio has provided for the establishment of conservancy districts with powers to allocate waters by permit for reasonable periods not in excess of fourteen years.\(^6\) North Carolina,\(^7\) Minnesota,\(^8\) and Wisconsin,\(^9\) while retaining the framework of existing

declared waters of natural streams to be public resource subject to regulation for the public welfare, limited riparians to reasonable uses of waters, and authorized impoundments of surplus water for irrigation and municipal service; Miss. Code Ann., §§ 5956-01 to -30 (1956 Supp.) (1956 act opened all waters in excess of average minimum flows to appropriation under a permit system); N. J. Stat. Ann., §§ 59:22-1 to -29-19 (1958 Supp.) (1958 State Water Supply Act authorized construction of storage reservoirs in Delaware and Raritan River Basins at state expense, gave the Department of Conservation and Economic Development jurisdiction over the disposition and use of collected waters, but confirmed common law rights of riparian proprietors presumably to a reasonable use of water only); N.C. Gen. Stat., §§ 115-8.1, 143-317 to -328 (1958 Repl.) (1951 act required permits for all diversions that reduce substantially the volume or flow of any stream or lake, and a 1955 act created a Board of Water Commissioners to insure that the resources of the state would be beneficially used to the fullest possible extent and also to allocate water in times of declared emergencies); Ohio Rev. Code, § 6106.24 (Page 1954) (conservancy districts empowered to allocate waters acquired or conserved by operations of the district and subject to riparian rights); Tenn. Code Ann., §§ 70-1801 to -1849 (1955 Supp.) (Watershed District Act of 1955 empowered districts to acquire water rights and to distribute or sell water for irrigation or other purposes within or without the district); Va. Code, §§ 62-9.1 to -9.4, and 62-93.4 to -94.12 (1956 Supp.) (1954 act declared all waters, surface and underground, to be public resources and required them to be put to reasonable beneficial uses; a 1956 act authorized impoundment of flood waters by riparians on approval of the State Water Control Board); Wis. Stat. § 31.14 (1957) (Act provides for permits to divert surplus waters with the consent of riparians, if any, that might be injured by such diversions).


\(^7\) See Ohio Rev. Code, § 6106.24 (Page 1954); see also Ohio Legislative Service Comm’n Research Report No. 1, supra note 4.


common law riparian systems, have established permit procedures for diversions of water in such quantities as to reduce the volume of stream flows in any substantial way. Arkansas\textsuperscript{10} grants permits for impounding and storing waters for beneficial uses, subject to an obligation of apportionment in times of scarcity.

None of these investigations and revisions have stemmed from predictions of national water shortages in the foreseeable future. Eleven hundred sixty billion gallons of water run off the surfaces of our country every day. Three hundred fourteen billion of these gallons can be captured for beneficial uses at the present time and, as a consequence of reasonable engineering improvements in storage and distribution facilities, at least 515 billion gallons may be obtained by 1980.\textsuperscript{11} Diversions, including reuses of water amounting to \( \frac{3}{4} \) times dependable flow on the Ohio and ten times virgin flow on the Platte, now total only 245 billion gallons daily and will only increase to an estimated 500 billion gallons by 1980.\textsuperscript{12} Notwithstanding the fact that water use in the United States has been doubling every twenty-five years since 1900,\textsuperscript{13} great quantities are still flowing to the sea in all parts of the country without beneficial use and will continue to provide an abundant national supply for many years to come.\textsuperscript{14}

Rather than a concern over shortage, current doctrinal evaluation and change stems from a concern over obstacles to free distribution. First of all many existing water allocation laws make it difficult to supply the mushrooming demands of the metropolis and industry with sources of sufficient purity for industrial and domestic use at reasonable cost to the consumer. We are confronted with the plight of the Ancient Mariner with water, water everywhere and not a drop to drink. Secondly, many water rights, particularly those incident to riparian lands, are not sufficiently stable, marketable, and dependable in enjoyment to encourage investment in distribution systems necessary to bring supplies to the areas of population and

\textsuperscript{12} Ibid.
\textsuperscript{13} See Council of State Governments, State Administration of Water Resources 4 (1956).
\textsuperscript{14} Id. at 8. Water is even plentiful in arid regions of the country provided it can be stored and distributed to points of need. The Colorado River basin, for instance, discharges 15 billion gallons a day, 12 billion of which can presently be put to beneficial uses. Consumptive uses however claim only 10 billion gallons a day. See Woodward, op. cit. supra note 11 at 6, 20, 31, 39.
industrial concentrations. Thirdly, increased knowledge of hydrology coming from state and United States Geological Survey water studies have established a close interrelationship of uses in various parts of the water cycle and have consequently shown us the absurdity of employing varying acquisition and use doctrines for natural streams, underground sources of supply and diffused surface waters. Finally, and most significant, has been a nationwide awakening to the importance of water to our economy and a recognition of a need for holding available supplies in a sort of public trust for maximum beneficial use. We are learning that notwithstanding the abundance of water, it is the most important resource controlled by man. It is essential to life, for without it man could not live more than a few days. It is essential to power for regional industry and urbanization, not only as a force in hydroelectric operations, but also as an energy transmitter in the boilers of steam power plants. It is becoming increasingly important in the operation of standard households by reason of the development of water-dependent air conditioning equipment, automatic washers, dishwashers and disposals. Its relationship to our technological advancement is demonstrated by the increase in the percapita consumption of water in the United States from 526 gallons daily in 1900 to 1455 gallons daily in 1955\(^1\) and by continuing increases at the rate of three per cent annually.\(^2\)

A review of the reports of legislative commissions in the eastern states shows an initial inclination to analogize the present situation in the East with that a century ago in the West when common law riparian rights were repudiated or severely limited and water was allocated on the basis of use priorities. There are, however, two striking differences in these situations. First of all, the East has reached a substantial degree of water development on the assumption that common law riparian rights exist and are vested in the owners of riparian lands. In light of constitutional protections afforded vested property rights, it is obviously not so easy to replace a riparian system with one resting on use priorities in these eastern states as it was in an unsettled country where doctrines could be formulated free of precedent to best serve the needs of the region. In the second place, the water needs of the East are now, and probably always will be, different than the water needs of the West. At about the 100th meridian the country breaks into naturally abundant water

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\(^1\) See Council of State Governments, op. cit. supra note 13 at 4.

\(^2\) See Timmons, Problems in Water Use and Control, 41 Iowa L. Rev. 160, 161 (1956).
areas to the East and naturally critical water areas to the West. East of this line rainfall exceeds twenty inches a year, an amount sufficient for agricultural development without irrigation and to maintain a network of perennial streams for the operation of industrial equipment and the support of urban populations that live on the economy of the region. In these areas, flowing streams are principally valuable by nature as a source of power in industrial operations, as a medium for carrying away wastes, as arteries of commerce and as natural features of the landscape. It is not therefore surprising that eighty-four per cent of the water diversions in the thirty-one states east of this line are for industry and eleven per cent are for municipal water supply. These are largely nonconsumptive uses, the cities returning about ninety per cent of their diversions as waste and industries even more. The objective of a water doctrine in such regions should be to protect water purity for maximum reutilization and continuity of flow for power and industrial applications.

Not inconsistent with this objective, however, measures can be enacted to prevent the waste of water, to facilitate changes in use from time to time as regional demands evolve, to give such security in water rights as will justify investments in extensive distribution systems and to permit diversions of surplus waters for supplemental irrigation. Although irrigation applications in this area account for only three per cent of total water diversions and have largely been confined to Arkansas, Florida and Louisiana, supplemental irrigation increased 300 per cent between 1950 and 1955 and is likely to increase much more if legal obstacles to irrigation applications generally, and to diversions for nonriparian lands in particular, are removed. At the same time, it is fair to say that irrigation in the East will always be secondary in importance to nonconsumptive industrial and municipal uses and should not be made the tail to wag the dog.

West of the 100th meridian, rainfall drops below twenty inches a year except for an island of heavy precipitation in the Pacific Northwest. By nature the region is water critical; irrigation is necessary for economic land development and control of a dependable water source is prerequisite to any substantial urbanization. Water is white gold, an asset of commerce that is more valuable than the land where it is applied or the resources which need it for develop-

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18 See Woodward op. cit. supra note 11 at 88.
19 See Council of State Governments, op. cit. supra note 13 at 10.
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ment. In these regions, the aims of a water policy must be to put water to maximum beneficial uses wherever needed, to permit the total consumption of sources of supply in irrigation development, to separate water from land and make it an object of commerce, and to give maximum protection to all who have invested in water dependent activities. With ninety-four per cent of the irrigated land of the country west of this line and irrigation accounting for eighty-two per cent of the total diversions in the region, water laws are tailored to the needs of the irrigator, rather than to the needs of the manufacturer and power consumer.

Any evaluation of water rights doctrines must take into consideration the needs of each region and must recognize that the service of water in one area may continue to be quite different from that in another. To the end then of appraising each of the existing water allocation theories as solutions to the distribution problems of the humid East, the opening part of this paper will be devoted to sketches of the natural flow riparian doctrine that exists in West Virginia and several other eastern states, the reasonable use riparian doctrine that is becoming a popular substitute for it, the appropriation doctrine that is common in the West and the mixed riparian-appropriation system that is found in states committed to the common law but having needs that can only be met by priority rules. These doctrines relate to water uses on natural streams, conceived everywhere as belonging to the negative community and beyond the scope of individual proprietary rights. Other sources of supply, consisting mainly of percolating ground waters and diffused surface waters have traditionally rested in the proprietary control of the owner of the land whereon they were captured. Although these sources account for only about nine per cent of the total water diversions of the country, they have been particularly important in municipal supply and need to be allocated by a policy that eliminates waste on the one hand and tends to conform with the policies for allocating waters in other parts of the hydrologic cycle on the other.

The natural flow riparian doctrine originated in the civil law of France and was adopted into the Anglo-American common law in

20 Id. at 10.
21 See Timmons, supra note 16 at 163. Ground waters account for 55% of municipal water supplies in Texas, 75% in Florida, 30% in Georgia, 45% in Tennessee and 35% in New Jersey. In Texas they also account for 60% of the irrigation supplies; in Arkansas for 60% and in Mississippi for 55%. U.S. GEOLOGICAL SURVEY CIRCULAR 898, ESTIMATED USE OF WATER IN THE UNITED STATES, 4, 9 (1955).
the middle Nineteenth Century largely through the writings of the eminent American jurists, Story and Kent.22 Designed to protect the natural flow of streams in water-abundant regions for milling, navigation and recreation, the doctrine accorded to the owner of lands servient to the stream the right to have the flow continue by or through his lands undiminished in quantity and unpolluted in quality except for such diversions as other riparians might make to provide for the natural wants of man and maintain life upon their riparian lands. These natural uses were severely limited in quantity to such water as might be necessary for drinking, bathing, watering farm animals, and the irrigation of garden crops designed for consumption upon the land. Industrial uses were permitted only to the extent that the water could be returned to the stream without substantial diminution in quantity of impairment in quality at the point it left the user’s property. Consumptive uses of water in irrigation or in diversions to nonriparian lands were prohibited. The temporary storage of water to raise a head for operation of milling machinery was consistent with the preservation of natural flow and was recognized as a riparian use so long as it did not impair the correlative and equal rights of other riparians. Except for mill dam priorities predicated on time of dam construction by the Mill Acts of several states,23 riparian rights were equal regardless of varying dates of land acquisition and development. They were acquired as inseparable parts of any lands by or through which a natural stream flowed, were transferred by a conveyance of such lands, and could not be lost by nonuse or abandonment.24

Diversions upon riparian lands impairing the natural volume and purity of flow, and all diversions to nonriparian lands were actionable by downstream riparians without proof of actual injury.25 While this pure natural flow theory tended to preserve flowing streams substantially in their natural state, and was acclaimed by

23 These acts authorized the construction of mill dams across flowing streams so long as they did not impair the flow rights of existing mills, and gave preferential rights to mill operators in the water actually appropriated for milling purposes. E.g. MASS. ANN. LAWS, c. 253 §§ 1-2 (1933); ME. REV. STAT. c. 180 (1954); cf. N.H. REV. STAT., §§ 482:19-32 (1955).
24 Roberts v. Martin, 12 W. Va. 92, 77 S.E. 535 (1913).
25 Ibid.; see Anaheim Union Water Co., v. Fuller, 150 Cal. 327, 88 Pac. 978 (1907); Smith v. Town of Morgantown, 187 N.C. 801, 123 S.E. 88 (1924).
text writers in language that became classical statements of riparian right law in many formative decisions in the East, it proved impracticable and wasteful in operation and has resulted in the recognition of extraordinary uses of water in some riparian jurisdictions and the substitution of a reasonable interference concept in the others.

The recognition of extraordinary uses of water resulted from an application of nuisance principles to the riparian’s property interest in natural flow. It was apparent that any consumptive diversion would cause some impairment to the correlative and equal rights of riparians on the stream below. These interferences, however, were not deemed to be actionable as nuisances where the social utility of the depletory use far outweighed the injury it caused to the interest of other riparians in the natural flow. This modification to the natural flow doctrine has been adopted by the Pennsylvania and West Virginia courts and permits artificial uses of water for industry and limited irrigation if the flow of the stream is large and the consumption and pollution incident to such uses causes no substantial change in the natural condition of flow. As a consequence of the distinction now drawn between natural and artificial or extraordinary uses, water is allocated in modified natural flow jurisdictions on the following four principles: (1) The upper riparian can exhaust the stream if necessary to supply his natural wants. (2) The natural wants of all riparians must be satisfied before any water can be diverted to extraordinary uses. (3) All riparians have equal and correlative rights to water for extraordinary purposes, and each must adjust his diversions from time to time to make water available for new uses by those who have taken their fair share of reasonable depletory diversions in the past. (4) Nonriparians have no rights in the stream at all, except where they have acquired interests by condemnation or prescription, and can be restrained from all use

26 See Angell, Watercourses (4th ed. 1850); Gould, Waters, Riparian Rights and Public and Private Rights in Tidal and Inland Waters (2d ed. 1891); Pomeroy, Riparian Rights (1883).
28 Taylor v. Chesapeake & Ohio Ry., 84 W. Va. 442, 100 S.E. 218 (1919); Roberts v. Martin, 72 W. Va. 92, 77 S.E. 535 (1913).
29 See notes 27 and 28 supra.
31 Ibid.
of, whether or not their need interferes with any actual riparian diversion.\textsuperscript{33}

This theory may have been appropriate for a region of water abundance at a time when the economy of the area was not dependent upon water use. In a water dependant though not necessarily water critical region, it has three deleterious effects: (1) It is exceedingly wasteful of the water resource since it causes the streams to flow to the sea without the minimal diminution and pollution required for economic development of the water as a regional resource. (2) It limits natural stream benefits to a narrow strip of riparian lands and requires other water dependent lands, industries and urban areas to pay a premium for water use if they can obtain such benefits at all by condemnation or purchase. (3) When a city condemns water for public use, it must pay not only for the value of the water taken, but for the loss of natural flow rights of all riparians below the point of diversion and onward to the sea. Even then the right acquired may have to be apportioned with riparians above the point of diversion as they need the water from time to time for their beneficial uses. For these reasons, the natural flow theory, even in its modified form, no longer serves the needs of either East or West and should be eliminated as the first step in any program for water law modernization.

Doctrinal changes have been more radical in jurisdictions that have substituted a reasonable use theory for the natural flow doctrine of riparian rights. By this approach the riparian is shorn of all property rights in natural flow and is confined to such reasonable uses as he can make from time to time consistent with the equal rights of others on the stream.\textsuperscript{34} He cannot restrain riparian uses that are reasonable in character, though consumptive in quantity, unless he is deprived of a fair share of the available supply for his present beneficial uses. The correlative rights that the riparians as a class enjoy in the source of supply, however, still permit them to enjoin upstream diversions to nonriparian lands where the nonriparian has no interest of any kind in the stream under local law.\textsuperscript{35}

\textsuperscript{33} Smith v. Town of Morgantown, 187 N.C. 801, 123 S.E. 88 (1924); see Hargrave v. Cook, 108 Cal. 72, 41 Pac. 18 (1895).

\textsuperscript{34} Peabody v. City of Vallejo, 2 Cal.2d 351, 40 P.2d 486 (1935); Texas Co. v. Burkett, 117 Tex. 16, 296 S.W. 273 (1927); Brown v. Chase, 125 Wash. 542, 217 Pac. 23 (1923); see \textsc{Restatement, Torts} (1939) c. 41, topic 3 scope note, for idealistic statement of reasonable use doctrine.

\textsuperscript{35} Motl v. Boyd, 116 Tex. 82, 296 S.W. 458 (1926); Purcellville v. Potts, 179 Va. 514, 19 S.E.2d 700 (1942). Diversions to nonriparian lands under lawful appropriations, however, cannot be restrained by riparians in jurisdictions adhering to reasonable use rules. Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist., 3 Cal.2d 489, 45 P.2d 972 (1935).
It follows, moreover, that unprivileged nonriparian diversions are injurious to downstream riparian rights as a matter of law and will prescribe against such rights if continued for the statutory period.

In the absence of supplemental legislation giving some form of rights to nonriparian interests, the reasonable use doctrine will have the shortcomings that are inseparable from any water allocation formula that rests upon bank ownership. It prevents diversions to areas of principal regional need. Where water is taken by eminent domain for municipal and utility uses, compensation must still be paid for the impairment of nebulous flow rights of downstream riparians. No right can be fixed in quantity, moreover, and given a sufficient priority to justify engineering improvements in storage and distribution systems, since water is apportionable among all riparian users in times of shortage and will be reallocated from time to time as riparian requirements change.

In a humid area, however, where industrial and municipal demands for water outweigh the consumptive requirements of irrigation, this doctrine has three attractive features. In the first place, it eliminates the major shortcoming of a natural flow system—that of requiring excessive quantities of water to flow to the sea without beneficial economic use. Secondly, it balances conflicting interests of all users and affords considerable development flexibility in regions that have a continuing concern for preserving stream flows for power and industrial uses. If a region has larger demands for irrigation than for industrial and power supplies, early power rights would have to cut back their requirements to permit consumptive uses of substantial portions of the natural flow. On the other hand, if the region has a primary stake in industrial activities, consumptive irrigation diversions have to be limited to maintain the volume of stream flows required to protect the correlative rights of the greater number dependent thereon. In striking a balance between conflicting interests on a case by case basis, the concept of reasonableness will rest on such questions as the size of the stream, the nature of predominant uses, the requirements of water for the public interest and the dates on which various kinds of water use developed. Finally, the philosophy behind reasonable use limitations, that the interest of the riparian is confined to such water only as he needs for beneficial use, opens the door to legislative establishment of various nonriparian rights in the unused surplus. While the addition of new
rights on the stream may amount to a technical interference with the abstract rights that riparians have in common to the entire stream, they are compatible with the interest the public enjoys in flowing waters generally and have been privileged at least so long as they do not impair the actual beneficial uses of riparians in substantial ways. In particular, measures can authorize the seasonal storage of surplus waters, the separation of riparian rights from the land and the assignment of them to nonriparians, the appropriation of surplus waters by municipalities and other nonriparian consumers, and might even fix the quantity of individual riparian rights from time to time to assure a continuing supply of surplus waters for such period as might be necessary to amortize investments made in improved distribution facilities. In any event it would appear that a city could condemn the development right of any particular riparian and obtain his fair share of the water of the stream without the necessity for compensating other parties on the stream below. This formula characterizes the legislative revisions in Arkansas, Ohio, North Carolina, Minnesota and Wisconsin, reflects the heretofore unsupported position of the Restatement of Torts and removes most of the obstacles to full water utilization within the traditional riparian framework of the eastern common law.

A third system of water allocation rests upon the doctrine of prior appropriation that developed in the water critical West. Natural necessity for taking waters to arid lands beyond watersheds of origin and to mineral resources that were remote from stream systems caused early settlers upon the public lands of the western United States to adopt local ordinances providing that priority of right to water resources should depend upon priority of use. In 1866 Congress gave legal status to these customary rights by confirmation of appropriations that rested upon local customs and state laws. Many of the western states then entered the Union with constitutional provisions dedicating the waters of flowing streams to

42 Restatement, Torts (1938), c. 41, topic 3 scope note, §§ 855, 857.
public uses and making them subject thereafter to appropriation.\textsuperscript{45} Eight of these states repudiated the riparian doctrine completely by judicial decision on the grounds that it was not suited to the needs of the arid region and consequently had never been a part of their common law.\textsuperscript{46} In the other nine states west of the 100th meridian, the riparian right had vested under Spanish and Mexican land grants or by early patents from the United States. Their courts consequently recognized proprietary rights incident to the ownership of land bordering on flowing streams and supplemental rights, acquirable by use, that stemmed from the Act of 1866.\textsuperscript{47}

Under the appropriation doctrine the user acquires a right to a fixed quantity of water determined by the amount he diverts for beneficial use within a reasonable time after initiating his appropriation. That acquired for irrigation becomes appurtenant to the land on which the water is applied and will pass with a conveyance of it. In most jurisdictions, however, the water right can be separated therefrom and held in gross or be applied to industrial and municipal purposes without reference to any particular land.\textsuperscript{48} In times of water scarcity, senior appropriators take such water as they need up to the quantity limits of their priorities and juniors are cut out completely. At the same time a senior cannot assert any right to water not needed by him for beneficial uses at the time it reaches his headgate. Preferences are given by statutes and constitutional mandates, according first rights to domestic use, second rights generally to irrigation and the remainder to manufacturing and mining. In operation, however, the existence of a preference only permits one to take water from a prior appropriator for a preferred use by payment of just compensation. Waste incident to the transportation of water is severely limited and uneconomic and wasteful uses of it prohibited. No right exists in the level of the stream for the operation of milling machinery or pumping equipment, nor in the velocity and

\textsuperscript{45} E.g. COLO. CONSTR., art. XVI, § 5, providing: "The water of every natural stream not hitherto appropriated within the State of Colorado is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the State, subject to appropriation. . ."; Wyo. CONSTR., art. VIII, § 1.

\textsuperscript{46} These states are Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming. See Martz, Cases and Materials on Natural Resources 69 (1951).

\textsuperscript{47} Ibid. See also American Law of Property § 28.58 (1954); text at note 7, supra.

\textsuperscript{48} Strickler v. Colorado Springs, 16 Colo. 61, 26 Pac. 313 (1891); see American Law of Property § 28.58 (1951).
head of flow. The emphasis throughout is on a quantity division of water without regard for the preservation of the source stream.

Complex machinery is necessary to administer a priority system. The majority of states require the appropriator to obtain a permit for water use from a state agency and vest discretion in the agency to withhold its approval of a use where sufficient unappropriated water is not found to be available, where the applicant does not have the resources to effect the appropriation, where the water is presently needed for preferred uses or where the particular use sought is incompatible with a presumed public interest. At a later time an agency may hold hearings to determine the quantities of water diverted under permits on particular streams and establish priorities based upon the dates when applications were made for permits and the quantity of water granted and used. State officers with constabulary powers then ride the streams and open and close headgates in accordance with the priorities established. When stream measurements show a diminution in supply, headgates are closed progressively until balance is obtained between the demands of priorities senior to the cutoff date and the available water supply. Conversely as measurements show increases in stream flow, headgates will be progressively opened.

Although ideally suited to a water consumptive economy where water rights are an important object of commerce, the appropriation system has some features that are attractive to a region where principal water demands are for industrial and municipal uses. First of all, the water right is fixed in amount and not subject to diminution by later water developments on the source stream or by the need for apportionment in time of scarcity. Secondly, one can obtain complete dependability of supply by purchasing a right with a high enough priority to get water even in times of extreme drought. Third the separation of the water right from the land makes it a marketable commodity subject to changes in place and character of use as regional needs evolve. Any industry or city can get an adequate water supply if the value of water to it is greater than the value of water in its existing application on the land. As a gallon water adds about one-half cent to industrial products and only 1/100th of a cent to agricultural commodities, this mobility will tend to serve the needs of industry. Fourth the right of the ap-

49 See CALIF. WATER CODE §§ 1252-1458 (Deering 1949); WYO. STAT. §§ 71-283 to -244 (1945). See also Young & Norton v. Hinderlider, 15 N. Mex. 666, 110 Pac. 1045 (1910).

50 See Farm Investment Co. v. Carpenter, 9 Wyo. 110, 61 Pac. 258 (1900).
propriator to take water for municipal uses remote from streams gives cities a free source of supply where water can be found in sufficient quantities and of such purity to satisfy the requirements of their consumers. Mississippi and Iowa have thus far seen in these advantages a sound reason for replacing their riparian law systems with new ones based on the principle of prior appropriation. Similar proposals are being made elsewhere.

While the advantages inherent in the appropriation formula are appealing, however, there are some difficulties in tailoring it to the peculiar needs of a water abundant area. First of all, the administration of priorities is complex and expensive. The administrative machinery necessary for this purpose is justified even in the West only if the apportionment of water on a priority basis is necessary to the regional economy. Secondly, an appropriation system is much more regulatory than a riparian one and is often deemed to be oppressive to people who have not been schooled to think of water as the property of the state. The West itself has encountered strong opposition to an extension of the appropriation doctrine to ground waters which have traditionally resided in the private domain of the landowner. So long as the occupants of lands along the streams are not affected by the peculiar water needs of industry and the metropolis, they may be expected to resist the regulation that is inseparable from an appropriation system. Finally, the appropriation doctrine, being depletory in emphasis, will encourage diversions from stream systems without striking any balance between the needs of the irrigator on the one hand and those of water power, industry and recreation on the other. Conflicts in interest are resolved by priority dates rather than by any rule of reasonableness.

A final approach to water allocation has been to mix the riparian and appropriation systems as was done in the nine western states that had recognized riparian rights before their appropriation

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51 See note 4 supra.
52 E.g. A bill was introduced into the South Carolina legislature in 1954 to limit riparians to existing beneficial uses and to open other waters to appropriation on the Kansas pattern. A similar measure was introduced in North Carolina and Arkansas in 1955. An interim legislative committee in Michigan proposed a dual riparian-appropriation system on the California pattern for that state in 1954. For a discussion of these proposals, see Ellis, Some Current and Proposed Water Rights Legislation in the Eastern States, 41 IOWA L. REV. 237 (1956).
theories were established.\textsuperscript{54} Although possessing similarities to the modified reasonable use system of water allocation previously outlined, the dual riparian system theoretically gives a more important status to the nonriparian priority right. While rights between riparians, resting upon their respective land ownerships are correlative, rights by appropriation are fixed in amount and absolute so far as water is available to satisfy their respective priorities. The theories underlying the two philosophies of allocation are so incompatible that the rights of one group necessarily give way to the rights of the other. As between appropriators the first in time of use is first in right. As between an appropriator and a riparian, priority is determined by comparing the date of diversion of the appropriator with the date of patent to the riparian land.\textsuperscript{55} In the West where patents have been relatively recent in date, some riparian priorities will be senior and some junior to individual appropriations. Yet as between themselves all riparians have equal rights.

While much of this circuity would be avoided in the East due to the general seniority that exists in the riparian, the incompatibility of philosophy would remain. Where a tenancy in common exists among riparians in a variable quantity of water, it is impossible to recognize a tenancy in severalty in appropriators to a fixed quantity.\textsuperscript{56} In the West the basic incompatibility between the two systems has been resolved by limiting rights of riparians to water actually used by them prior to a stated date,\textsuperscript{57} to the needs of the smallest tract in the chain of title to their riparian lands\textsuperscript{58} and to consumptive rather than flow uses of water. In the East where correlative rights are well established, the incompatibility would undoubtedly be resolved in favor of the riparian right, appropriation diversions being subject to the varying needs of the riparian proprietors and balanced in utility against their effects upon stream flow. In that status they would be identical to the qualified uses that can be permitted within the framework of the reasonable use system. What would start as a supplemental appropriation system would undoubtedly evolve into the qualified system by which

\textsuperscript{54} See \textit{American Law of Property} § 28.58 (1954); \textit{Martz, Cases and Materials on the Law of Natural Resources} 75-90 (1951).


\textsuperscript{57} See \textit{Knapp v. Cater}, 149 Wash. 285, 270 Pac. 804 (1928).
basically riparian rights are allocated by statute to nonriparian lands and interests. The alternatives then available to eastern states, such as West Virginia, that need to avoid the extreme wastes incident to the common law natural flow rule of water allocation are a substitution of a rule of reasonable use applicable to riparians and non-riparians alike or the complete abrogation of the riparian right concept in favor of the philosophy of prior appropriation. For the reasons previously indicated, the former would appear to serve best the needs of a naturally water abundant area.

Either alternative however requires substantial changes in water doctrine and raises constitutional questions as to the propriety of limiting private rights, that may have vested under the laws and decisions of the several states, in the pursuit of a public objective—the conservation and reallocation of regionally significant water resources. In the modernization of water doctrines throughout the country the constitutional objections have been met in several ways. In the first place it may often be shown that a jurisdiction has never committed itself by statute or decision to a particular rule of law and that popular beliefs have not caused the vesting of any particular form of water right. In the eight western states that eliminated riparian rights completely at an early date, the courts uniformly found that riparian doctrine had never been a part of the common law of the forum. Although several centuries of water use has established a rather fixed popular belief in riparian rights, few jurisdictions have given any precise definition to them. Prior to recent water enactments, only Georgia, Louisiana, Indiana and Kentucky had given legislative recognition to a riparian right. Such a right, moreover, could not have come into the laws of the several states by statutes that adopted the common law of England as the rule of decision in their courts since it was unknown to the English common law before the middle Nineteenth Century and unknown in this country at the dates when incorporation statutes were enacted. Finally, traditional water abundance throughout the East in the past has resulted in an almost total absence of decided cases resting upon rules peculiar to riparian rights law. In the entire legal history of West Virginia, for instance, there have only been seven

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59 Coffin v. Left Hand Ditch Co., 6 Colo. 443 (1882); Drake v. Earhart, 2 Idaho 750, 23 Pac. 541 (1890).
riparian related water cases and only one that dealt with and gave any definition to a usufructuary right. That case Roberts v. Martin\textsuperscript{64} permitted a riparian mill owner to restrain a nonriparian diversion above his land without proof of actual damage to his mill operation. Although the remedy was consistent with either a natural flow or reasonable use doctrine and might even have been reached under the appropriation theory on the basis that the prior mill owner below had acquired a vested right by use of the full stream flow, the court made copious references to classical statements of the strict natural flow rule contained in Justice Story's opinion in Webb v. Portland Mfg. Co.\textsuperscript{65} and Angell's treatise on watercourses.\textsuperscript{66} Three later cases\textsuperscript{67} have cited the Roberts v. Martin decision as declaratory of the common law of West Virginia though the cases involved changes in stream channels and the flooding of bottom lands only matters which are not resolved by considerations of usufructuary rights law.

A second way to meet constitutional objections to changes in water allocation laws is to define the declared common law right, so far as opportunities for definition have not been closed by existing statutes or judicial decisions, in a way that permits optimum development of water resources to meet regional needs. This technique was employed in at least five of the western states where riparian rights that were recognized as vesting with patents to public lands prior to the establishment of local water codes were later defined with special regard for the doctrinal needs of each state.\textsuperscript{68} On this basis the Kansas court, for instance, sustained legislation precluding the riparian from claiming rights in waters not put to beneficial use by him before 1945.\textsuperscript{69} There is nothing in the holding of Roberts v. Martin or any other case to prevent the West Virginia legislature or court from similarly recognizing nonriparian uses of water on the one hand and a riparian right resting only on beneficial use on the other. Where the economic needs of a region are chang-

\textsuperscript{64} 72 W. Va. 92, 77 S.E. 535 (1918).
\textsuperscript{65} 24 Fed. Cas. 506 (No. 17,322) (C.C. Me. 1838).
\textsuperscript{66} ANCELL, WATER COURSES (4th ed. 1850).
ing in the development of a public resource, the admonition of the Supreme Court in *Hurtado v. California*\(^7\) is good advice: . . . “as it was the characteristic principle of the common law to draw its inspiration from every foundation of justice we are not to assume that the sources of its supply have been exhausted. On the contrary, we should expect that the new and various experiences of our own situation and system will mold and shape it into new and not less useful forms.”

Finally, even if we assume that narrow riparian rights have vested as property interests in a given jurisdiction, such rights remain subject to various kinds of regulation. In the first place no man is permitted to use his own property without regard for the equal and correlative rights of others. This maxim of the law of nuisances may be employed to prevent one riparian from using his property so wastefully or for such uneconomic purposes as to impair the usufructuary rights of others. In balancing the public utility of the various uses, this kind of reasoning leads to the elevation of beneficial uses over rights in natural flow. Secondly, as the public interest in conservation and full utilization of water grows, private rights may be subjected to reasonable and nondiscriminatory limitations under the police powers of the state.\(^7\) Although there is a trend in the resources decisions to uphold all manner of conservation regulation under the police power and ride roughshod over private interests in project development, the power should be confined to cases where all users having basically the same rights can be subjected to like limitations. Thus it is undoubtedly sound to limit all riparians to actual beneficial uses of water to conserve the great quantities that are wasted in situations where they may lay claim to the unused surplus. So to, it may be sound to subject all riparians to nonriparian rights that may be granted in such unused surplus. On the other hand abusive uses of the police power result when a jurisdiction that has unqualifiedly recognized riparian rights, and has allowed private interests to become dependant thereon, confirms rights in those riparians that have already developed the water privileges incident to their lands and denies rights to those who have not.\(^7\) Where it becomes necessary in the public interest so to limit part of the riparian class, it is submitted that compensation should be paid to those who bear the special losses.

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\(^7\) 110 U.S. 516, 531 (1884).

\(^7\) Peabody v. City of Vallejo, 2 Cal.2d 351, 40 P.2d 486 (1935).

\(^7\) See Southwestern Eng'r. Co. v. Ernst, 79 Ariz. 403, 291 P.2d 764 (1955) for example of this abuse.
Finally, vested rights in water may undoubtedly be taken by public authority for greater beneficial uses by other private consumers on the theory that water is affected with a public interest and its use by private citizens may serve a public purpose. In the recent case of Berman v. Parker, the United States Supreme Court upheld the condemnation of nonslum housing in redevelopment areas for clearance and redevelopment by private persons, saying that any activity or interest that is a proper subject of regulation under the police power may be a proper subject of condemnation for public purposes. It pointed out that slum clearance was a suitable area for police power regulation and that it could be effected through redevelopment only if nonslum properties in slum areas were brought under the renewal authority. By analogy in the water resources area, reallocation of use from one class of persons and uses to another is subject to police power regulation as an aspect of resource conservation. The public interest in water use has been recognized by the Supreme Court in decisions holding that private persons can exercise eminent domain powers granted them by state statutes and constitutions to take private rights of way necessary for bringing water to their lands for irrigation development. In the cases where the public interest requires that limited water resources be shifted from old direct flow milling rights to consumptive irrigation uses, authority might be given to a water commission or conservancy district to condemn and pay reasonable compensation for the former and make the water available on sale or rental to the latter.

There seems little doubt therefore that substantial changes in water allocation can be made everywhere to effect economies, and permit flexibility, in stream utilization. The sooner these powers are exercised the greater will be the freedom of a jurisdiction's choice since it will not be limited by court decisions that are certain to come out of mounting water controversies. Notwithstanding the bold ventures of Mississippi and Iowa with a pure appropriation system, moreover, I would predict that most of the humid eastern states will be happiest with a reasonable use riparian formula subject to statutory allocations of unused surplus to nonriparian lands and interests, to authorizations for cyclical storage and to the grant of relatively fixed rights for periods necessary to amortize necessary investments in capture and distribution facilities.

74 Id. at 33.
Other forms of water supply—percolating ground waters not flowing in underground streams, diffused surface waters without beds, banks and continuity of flow and the waters of private lakes not affected with a public interest by the Great Pond Ordinances of New England jurisdictions\(^76\)—have been relatively free from use regulation for a variety of reasons. In water abundant areas, prior to the development of cheap power for well operation, they had little utility outside of the domestic requirements of the lands where they were found or captured. Likewise hydrological information about their movement, interrelationships and dependability of supply has been so inadequate until very recent times that their control and apportionment has not been administratively feasible. Interest in them has generally related to their disposition rather than to their use. Consequently their benefits and responsibilities went to the landowner at common law on the basis of the *ad coelum-ad inferos* maxim that gave him possession and use of the land and its resources upward to the heavens and downward into the earth at least to the extent that he could put the land and its resources to effective use.\(^77\) To the extent that these waters seeped across boundary lines, they were likened to wild animals, and inured absolutely to the owner of the land whereon they were captured. Thus the landowner could capture and use them for any purposes, whether beneficial or wasteful, and whether on his land or elsewhere.\(^78\) He was subject only to the limitation that he could not maliciously divert water for the purpose of injuring his neighbor.\(^79\)

With the advent of cheap REA power in the West, opening the way for the utilization of ground water supplies in irrigation, two problems have arisen with respect to the continued recognition of absolute propriety rights in these nonstream sources. In the first place, the concept of absolute ownership is completely incompatible with all of the doctrines of stream use that have evolved. It neither gives the user standing to protect his supply against later diminution through the operations of others, nor imposes upon him an obligation to use his water with regard for the interests others have in a common source of supply. As regional economies become more and more water dependant the pressures for elimination of waste on

\(^79\) Stillwater Water Co. v. Farmer, 89 Minn. 58, 93 N.W. 907 (1903); see *Restatement, Torts* § 884 (1939).
natural streams and for the allocation of water resources to optimum beneficial use requires more adequate controls of ground and diffused water diversions. As a matter of fact, so far as the varying characteristics of the several sources of supply permit, the same philosophy of water allocation should apply to all. The second problem stems from recent hydrological discoveries that show the great bulk of these extraneous waters to be sources of supply of stream systems and inseparable parts of the water cycle. If the underflow of a stream is depleted by a well near the stream bank, gravity will recharge the ground water source out of surface stream flow. Any consumptive use from the sources of supply of a stream will ultimately affect the stream flow, the extent varying with the distance of the diversion therefrom and the porosity of the intervening water-saturated strata. It consequently becomes ridiculous to deny a riparian the right to deplete a stream excessively for the irrigation of his land, and let him achieve the same end by installing wells along its course and pumping unlimited quantities of water to his land.

Consistent with any revision that is made in stream doctrine to conserve public water resources, attention should be given to the employment of like principles to the allocation and use of tributary waters. In the western states, absolute ownership has been curtailed and considerable compatibility achieved in two ways: First of all, a presumption is raised that all waters are sources of supply of natural streams unless their nontributary character be established by clear and convincing evidence.80 As sources of supply of stream systems, they are dedicated to public use and subjected to the same form of water allocation philosophy that obtains for natural streams. Due to differences however in the characteristics of the sources, variations in administration techniques have been required.81 In the second place, steps have been taken to modify ground water doctrines to make them serve the same ends as those employed on the streams, reasoning that the absolute ownership theory could never be suited to the common law needs of a water critical region.82 In most cases, however, the ground water rule of reasonable use adopted has differed from the riparian reasonable use rule on natural streams in that it does not require apportionment among users from

80 Safranek v. Limon, 123 Colo. 330, 228 P.2d 975 (1951).
the same subsurface reservoir. Each party may take all he needs for beneficial uses upon his overlying land, and need not maintain the natural level of the supply, but is prevented from wasting water in transportation and use and from using it on non-overlying lands from which it cannot seep back to its source for the benefit of others.

These jurisdictions have eliminated some of the wasteful features of the absolute ownership rule but have not achieved real compatibility with either a riparian or appropriation doctrine. California alone has evolved a genuine correlative rights theory for ground waters similar to the reasonable use riparian rights theory it applied to surface streams.\(^\text{83}\) All parties are limited to reasonable uses and none can divert water in quantities sufficient to reduce the water table or exceed the annual rate of recharge to the underground source. In times of scarcity, evidenced by a drop in well water levels, each user must cut back his diversion to insure a fair apportionment of the annual supply with all. This doctrine is ideally suited to the needs of a humid region that adheres to a reasonable use theory of riparian rights. The considerable amount of litigation that surrounds its administration in California results from the coexistence of an appropriation theory for all kinds of water in that state.\(^\text{84}\) Since it does not permit depletion of the underground pool for beneficial consumptive uses and requires apportionment among overlying owners in times of scarcity, it meets with the same inconsistencies that make the dual riparian-appropriation system a source of endless controversy wherever employed.

In a jurisdiction that applies a priority formula to water allocations from natural streams, surface and ground waters rights should be the subject of appropriation as well. Although the administration of ground water diversions on a strict priority basis is fraught with difficulty, the recognition of priorities may serve a useful purpose without day to day administration. It gives protection on a case by case basis to those who have developed limited ground water resources against diminution in supplies by later developments. It tends also to establish rights that are fixed in amount and gives a considerable assurance of continuity to cities that need dependable sources of municipal supply.

Lakes and ponds are principally valuable to the owners of littoral properties for recreation and navigation. If they are fed by,

\(^{83}\) See City of Pasadena v. City of Alhambra, 33 Cal.2d. 908, 207 P.2d 17 (1949).  
\(^{84}\) Ibid.
or discharge into, natural streams, they are universally considered to be parts of the stream system and subject to the same allocation rules.\footnote{See Hutchins, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 22 (1942).} If, however, they are independent of any visible connection thereto, private interests in the preservation of their level and quality for recreation purposes generally overrides any public interest in their consumptive use. This was apparent in People v. System Properties, Inc.\footnote{2 N.Y.2d 930, 141 N.E.2d 429 (1957).} where the State of New York enjoined the Dartmouth Trustees, owners of the dam that had brought Lake George to its present level from removing a part of their dam and impairing the interests of abutting property owners that had become dependent on its artificial level.

The objective of this opening part has been to evaluate water allocation theories, to consider obstacles to full utilization of limited resources that arise out of the theories themselves and to suggest some opportunities in the East to revise these concepts to meet the growing public dependency upon water supply. Part II explores some of the technological devices that may be used for conserving water and consider in particular some of the legal problems that must be resolved to make this technology serve our ends.

PART II

CONSERVATION OF LIMITED WATER RESOURCES

Current water doctrines were evaluated in the preceding portion and consideration was given to opportunities for various conceptual changes and developments that would remove legal obstacles to the full utilization of regional resources. Certain though it would be that the removal of these obstacles would permit more economic water allocations and open the door to more efficient conservation practices, there can be no certainty that improvements in these directions would actually occur. Doctrinal reforms are passive; conservation programs need to be active and require positive legislation, imaginative administration and intelligent enforcement procedures. In particular, aggressive state and federal action is now required to restore water supplies to suitable conditions of purity for domestic, industrial and other sensitive uses, to carry it in storage from seasons of heavy precipitation to years of drought, to allocate it for regional needs without regard to jurisdictional boundaries and to provide
organizational patterns that encourage extensive engineering improvements prerequisite to any significant advance in water allocation and use technology.

Notwithstanding general water pollution control measures in thirty-three states, special purpose legislation in many others, and substantial assistance to pollution treatment programs from the Federal Water Pollution Control Acts of 1948 and 1956, our principal surface water resources are being condemned by excessive loads of deleterious wastes. During more than two centuries of water abundance in the East, when populations were low and distributed along the streams, when industry consumed water in power rather than in chemical processes and cleansing, and natural flows were conserved for nonconsumptive uses, it was customary for the streams to be used for waste disposal. So long as flows were substantial in comparison with the effluent carried, and chemical pollution was insignificant, the water would rapidly purify itself of bacterial and organic matter and be available for reasonable riparian uses below. Steady increases in population concentrations, however, the addition of many new chemical wastes from industry and the use of detergents in private homes, have recently overtaxed the purification process and have created conditions of contamination that render these streams unfit for domestic and many industrial uses, injurious to the lands that line their banks and inimical to the public health and welfare.

The President's Water Policy Commission reported in 1950 that cities and industrial plants were then discharged into natural streams polluting materials equivalent to the raw sewage of 150 million people. Fecal pollution at Kansas City increased twelve times from 1954 to 1957. Water at the Topeka, Kansas waterworks intake was twenty times the accepted maximum safe limit for raw water that is to undergo treatment with the best modern equipment.

87 See SHEH, AMERICAN RESOURCES ADMINISTRATION 698 (1956) for compilation of state statutes.
88 Some of these statutes protect special uses of water, principally domestic, and others control special sources of pollution such as oil and gas and mining wastes. For compilation of acts, see SHEH, op. cit. supra note 87 at 692-98.
91 See PRESIDENT'S WATER POLICY COMM'N, A WATER POLICY FOR THE AMERICAN PEOPLE 185 (1950).
92 See Metzler, Pollution Problems in Kansas, 5 KAN. L. REV. 611, 617 (1957).
93 Id. at 612.
Out of 10,401 industries in the country using streams for waste disposal in 1951, the Federal Security Agency found 3,659 were not treating their discharges at all and an undetermined additional number were not taking all steps that were reasonably required to remove their deleterious effects. Chemical poisons and high concentrations of oxygen absorbent organic materials have killed great quantities of aquatic plant and animal life and condemned bathing beaches and parks on river inlets and bays.

The problem of pollution will be increased in magnitude and changed in character by the revisions that are currently being made in water allocation laws. Measures that limit riparians to actual beneficial uses, and permit diversions to nonriparian lands for consumptive purposes will cause substantial depletions in virgin stream flows and proportionate increases of effluent concentrations in the diminished supply. As a consequence, beneficial uses will either be further limited, purification costs will be taxed to the later user, contributors of wastes will be required to improve treatment facilities or the state will have to pay the price of pollution abatement as an incidence of its program to conserve water resources for the public welfare.

Except to the extent that the quality of water may be impaired in an insignificant way by reasonable beneficial uses of the water itself, all pollution is an impairment of both riparian and appropriation rights in water purity. Natural flow riparians are entitled to the stream undiminished in quantity and unpolluted in quality except as it may be affected by reasonable uses of other riparians. The appropriator is universally entitled to the virgin condition of flow except as they may be changed by the reasonable uses of prior parties. Where the riparian right is confined to reasonable use, it may not entitle the owner to absolute purity as a matter of law, but permits him to insist on the degree of quality required by the character of his particular use. Pollution consequently encroaches upon private property rights whenever it accumulates in such quan-

67 Montgomery Limestone Co. v. Bearden, 256 Ala. 249, 54 So.2d 571 (1951); see Comment, 24 Geo. Wash. L. Rev. 302, 305 (1956).
ties as to make the water unfit for domestic, \(^98\) manufacturing, \(^99\) agricultural, \(^100\) stockwatering, \(^101\) swimming, bathing or recreational purposes. \(^102\)

Oddly enough, however, the water user who has been zealously protected against nonriparian and unreasonable riparian uses of water that diminish stream flows in quantity, has had very inadequate protection of his equally important right in quality. Such of the pollution as related to a reasonable riparian or appropriation use of water is privileged to the extent that it cannot be reduced in quantity without inordinate expense, \(^103\) unless its effect upon other riparian interests is such as to make the use itself unreasonable. This kind of pollution, however, is insignificant in quantity, purifiable in quality and controllable by equitable allocation processes. The bigger share comes from industrial and municipal uses of natural streams for the disposition of wastes that are not related in quantity or quality to any reasonable use of the water itself. On principles of riparian and appropriation water law, these wastes are injurious at law to downstream water rights, \(^104\) and may also constitute common law nuisances to the occupants of polluted banks.

Private injunctive relief against the main sources of this extraneous pollution have not been successful for a variety of reasons. First of all where the discharge is caused by a sovereign body, as in the case of the municipal sewage disposal system, attempts at restraint are converted into inverse condemnation proceedings and damages only are allowed. \(^105\) Secondly, where waste disposal is important to a regionally significant industry and the cost of other techniques is found to put it at a competitive disadvantage, the courts have weighed the social advantages of the industrial activity against the limited interest of the water user who seeks protection and exercises its discretion rather consistently against injunctive

\(^98\) Storley v. Armour, 107 F.2d 499 (8th Cir. 1939); Wright v. Best, 19 Cal.2d 898, 121 P.2d 703 (1942); Inland Steel Co. v. Isaacs, 283 Ky. 770, 143 S.W.2d 503 (1940).
\(^100\) Roddenbery Co. v. Carter, 192 F.2d 448 (5th Cir. 1951); Storley v. Armour, 107 F.2d 499 (8th Cir. 1939).
\(^103\) See Taylor, Control of Stream Pollution, 33 Texas L. Rev. 370 (1955).
\(^104\) See American Law of Property § 28.57 (1952); Comment, 24 Geo. Wash. L. Rev. 802 (1956).
\(^105\) Lakeland v. Harris, 143 Fla. 761, 197 So. 470 (1940).
relief.\textsuperscript{106} In Pennsylvania Coal Co. v. Sanderson,\textsuperscript{107} for instance, the Pennsylvania court declined to limit serious mining pollutions of public streams on the grounds that such action might close down the mining industry and cause economic loss to the entire region. Finally, injunctive relief has been denied where a substantial amount of pollution is made up of numerous individual contributions, and the impairment of purity by any particular source is not significant.\textsuperscript{108} The courts decline to act when the injury suffered is not substantial and may be compensated adequately by damages at law.\textsuperscript{109}

Relief in the form of damages however has not been adequate in fact, and does not give the user sufficient artillery to fight the pollution menace. Damages are temporary rather than permanent and must be recovered in successive actions. Where the amounts are not large the user soon becomes discouraged with his litigious position and allows uncontested pollution rights to arise by prescription. Injuries are often spread so thin among many riparians, moreover, that none have financial motivation to bring suit. Although the polluter can not escape responsibility by proof that others have contributed impurities to the stream, the fact that the water might not be potable apart from the contribution of a particular defendant will bear on the measure of relief granted.\textsuperscript{110}

Motivation to attack sources of pollution will be decidedly weakened, moreover, when some of the sources become firmly established by prescription. Statutory periods may pass before the insidious effects of chemical pollution are discovered or before the total effluent in the stream has reached such a concentration that appreciable injury to riparian uses is observed. On the rationale that all extraneous pollution is injurious to water rights at law, discharges may prescribe before actual harm is suffered or even foreseen.\textsuperscript{111}

\textsuperscript{106} Montgomery Limestone Co. v. Bearden, 256 Ala. 269, 54 So.2d 571 (1951); Smith v. Magnet Cove Barium Corp., 212 Ark. 491, 206 S.W.2d 442 (1947); see Maloney, The Balance of Convenience Doctrine in the Southeastern States, Particularly as Applied to Water, 5 S.C.L.Q. 159 (1953).

\textsuperscript{107} 113 Pa. 126, 8 Atl. 458 (1886); see Young v. International Paper Co., 179 La. 803, 155 So. 231 (1934).

\textsuperscript{108} Damages may be apportioned among polluters, however. Farley v. Crystal Coal & Coke Co., 85 W. Va. 595, 102 S.E. 265 (1920).

\textsuperscript{109} Smith v. Magnet Cove Barium Corp., 212 Ark. 491, 206 S.W.2d 442 (1947).

\textsuperscript{110} Ibid.

\textsuperscript{111} See Southland Co. v. Aaron, 221 Miss. 59, 72 So.2d 161 (1954). Where reasonable uses of stream are permitted, pollution does not become proscriptive until harm is suffered, but the harm need not be known to lower proprietors. Conestee Mills v. Greenville, 160 S.C. 10, 159 S.E. 118, 75 A.L.R. 519 (1931).
Consequently, notwithstanding numerous judicial pronouncements that the user is entitled to quality water, little opportunity exists in fact for either riparian or appropriator to abate extraneous pollution by private action.

Realistically, therefore, the responsibility for preserving pure sources of supply must fall to the public officer, acting under common law authority to abate public nuisances or under the mandate of general or special pollution abatement statutes. County and district attorneys have unquestionable power, either on private complaint or on their own initiative, to abate any condition of stream pollution that is injurious to public health or inimical to community welfare. They can protect the purity of water supplies required for domestic use; and can eliminate chemical contamination that is destructive to fish and aquatic life. Since prescription rights will not arise against the sovereign for the continuation of public nuisances, action can always be taken appropriate to existing needs though sources of pollution have been condoned for years and communities and industries have grown dependent upon them. For various reasons, however, local law enforcement officers have not been able to keep pace with the mushrooming pollution menace. The economic importance and political stature of the pollution-discharging city, and the locally dominant industry, generally outweigh the influence of the aggrieved water user. Proposals to require the city to levy taxes for improvements in treatment facilities, or the local industry to surrender competitive advantages, are politically unpopular. District attorneys lack the training, moreover, to determine the deleterious effects of various pollution sources and the staffs and money necessary for pollution abatement drives. The regional character of the problem militates against a local solution. Pollution that is harmful to a given district will be caused by discharges in other districts upstream. Local officers do not have jurisdiction to secure abatement at the pollution source and lack interest in limiting local waste contributions for the protection of strangers on the stream below.

113 People v. Truckee Lumber Co., 116 Cal. 397, 48 Pac. 374 (1897); see People ex rel. Ricks Water Co. v. Elk River Mill & Lumber Co., 107 Cal. 214, 40 Pac. 486 (1895); AMERICAN LAW OF PROPERTY § 28.23 (1952).
State health departments have jurisdiction over water contamination as a menace to health and have generally inspected and licensed both waterworks and sewage treatment plants. They have not been as concerned with industrial wastes as they have been with sewage effluents that are more closely associated with the preservation of healthy environments. Their interest in sewage pollution, moreover, has been to reduce contamination to safe tolerances rather than to eliminate it altogether and to help local agencies improve treatment facilities rather than to compel adherence to any fixed purification standards. Their achievements have varied considerably with differences in qualifications of personnel, budgets and enabling legislation. Some statutes are directed solely to the preservation of the purity of streams, lakes, wells or other bodies of water used as municipal sources of supply. Colorado, Oklahoma, Utah, Florida, Tennessee and Kentucky further prescribe any pollution that endangers fish life. Other statutes have controlled special waste sources, outlawing, for instance, the discharge of oil, salt water or mine drainage into natural streams. Following studies and recommendations of the Federal Security Agency and the President's Water Policy Commission in 1951, legislative reforms broadened the coverage of pollution control measures and created special pollution control commissions outside health departments. These were charged with the affirmative responsibility of restoring stream purity and conserving a critical public resource.

Through state stream commissions, considerable progress has been made in the purification of the Ohio, Delaware, Schunkill, Shenandoah and Hudson Rivers. At the same time the quantum of pollution on most streams continues to grow, and will become critical with the introduction of any program for consumptive water use. State commissions have been no match for the problem, for

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117 See SHIH, op. cit. supra note 116 at 693 for summary of state laws.
118 Id. at 694.
119 Id. at 695-98.
121 The Public Health Service drafted The Suggested State Water Pollution Control Act in 1950 (PUBLIC HEALTH SERVICE PUB. No. 49) and more than half of the states have made use of it. In 1958 the Commissioners on Uniform State Laws approved a Model Water Use Act containing provisions for strong commission control of stream pollution. See Handbook of the National Conference of Commissioners on Uniform State Laws 178, 214 (1958).
three very significant reasons: First of all, most major streams are interstate in character and subject to differing pollution abatement laws and practices. While state lines have not been significant in dividing water rights on interstate streams,122 and downstream users can abate nuisances in upper basin states as effectively as they can in their own,123 the jurisdiction of state commissions is not so extensive and is confined by law to the control of local pollution sources.124 To be sure, the state can always sue in the Supreme Court of the United States125 to restrain upper basin states from condoning public nuisances that impair the rights of downstream states to an equitable share of the natural flow. But without continuing supervision of such a decree, the upper basin state would have little inducement to impose financial burdens on local industries and cities to free water from contamination for the benefit of users below; and so long as impure water is discharged into the lower basin state, the latter will be reluctant to restrain supplemental pollution by contributors therein. Secondly, strong economic pressures militate against the imposition of such burdens on local industry as to place it at a competitive disadvantage to industry in states that do not enforce pollution abatement measures. The consequence seems to be that no state will assume a position of leadership on interstate streams. Finally, the states have not been able to provide the financial assistance necessary for cities and industries to pay the heavy cost now required to provide treatment facilities for a century's accumulation of contamination.

Contemporaneously, therefore, with any state program for streamlining water allocation laws and permitting consumptive uses of limited water resources, support must be given to a five pronged conservation platform to curtail the continuing destruction of our water resources by uncontrolled pollution practices. First: interstate water sanitation compacts must be negotiated on the twenty-two interstate streams in the southeastern United States,126 and the

123 See cases cited in note 122 supra. Also see Albion-Idaho Land Co. v. Naf Irrigation Co., 97 F.2d 439 (10th Cir. 1938).
124 See Smith, op. cit. supra note 116 at 692-98; Model State Water Act § 601 (1952) (limiting commission jurisdiction to water resources of state); National Resources Comm., Water Pollution in the United States p. 68 (1939).
125 Missouri v. Illinois, 180 U.S. 208 (1901) (state sued to enjoin menace to health and well being of its citizens).
secondary streams in New England and on the Atlantic Seaboard that do not have joint administration at the present time. Using the pattern of the Ohio River Valley Water Sanitation Compact that was ratified in 1939 by Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Tennessee and West Virginia, agreement must be reached to limit all forms of pollution and to establish interstate commissions for investigation and enforcement. The Federal Water Pollution Control Act of 1948 gave congressional consent generally to such compacts and to the establishment of interstate agencies to administer them, and directs the surgeon general of the United States to give staff and financial assistance to the implementation of interstate cooperation programs. Secondly, the present federal program consisting of assistance grants to states and municipalities, and of intervention and abatement actions where state regulation of interstate waters may fail, must be continued notwithstanding organized attack upon it as an infringement of state's rights. After fifty years of study by the United States Public Health Service, and little progress by state agencies and local governments, Congress entered the pollution arena in a limited way in 1948 by authorizing loans up to 22,500,000 dollars to states and municipalities for installation of treatment facilities and to maintain legal proceedings against sources of pollution with the consent of the state in which the contamination occurs.

By amendment in 1956, the pollution act was strengthened first by appropriation of 50 million dollars a year for a ten year period as outright grants to cover up to thirty per cent of the cost of sewage treatment installations made in accordance with state program requirements by cities that are found to have financial need, and secondly, by removal of the provision requiring consent of the contaminating state before federal abatement action could be initiated. Through 1958 76 million dollars was expended in grants for the construction of 930 projects and to supplement local investments of 274 million dollars. An additional 3 million dollars a year has been appropriated through 1961 to assist state and interstate agencies in establishing sound regulatory administra-

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127 See W. VA. CODE §§ 2777 (15) to (20) (Michie 1955).
Notwithstanding the significant achievements of the program, however, it is recently reported that the Bureau of the Budget has disapproved further allocations thereto and the administration is submitting to industry pressure to return full responsibility for pollution abatement to the states in 1960. Although this decision has precipitated a considerable amount of debate in the present Congress and the introduction of bills by Representative Blatnik and Senator Humphreys to expand the federal subsidy to 100 million dollars a year, it appears that the federal program is in a precarious position because of a complete absence of any organized group that is favorable to the establishment of stringent requirements of water purity, or to the expenditure of federal tax revenues for capital improvements of local municipalities. If the Federal Water Pollution Control program is scrapped, we will have lost the only significant gain that has been made in this area in recent years.

A third point in a conservation program is to provide adequate facilities for water storage and to regulate stream flows. The consumptive use of water under more liberal allocation laws will have a tendency to place the biggest demands upon the streams during the seasons of minimum flows, and consequently will aggravate conditions of contamination at those times. The construction of multipurpose projects to utilize the power and irrigation potentials of the streams, and to provide protection against seasonal floods, will permit regulation of reservoir releases throughout the year and the maintenance of such minimum flows as may be required to keep contamination within minimum acceptable tolerances. Thus the existence of the pollution problem gives impetus to independent multipurpose programs of water storage and utilization.

Fourth, state agencies should endeavor to classify the resources of the state by quality requirements and direct industrial and waterworks developments to preserve water of suitable purity for all requirements. Water needed for, and available to, domestic use should be promptly freed from all source of contamination and the growth of industries having waste disposal problems should be discouraged in its environs. Other sources of supply not required

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138 President's Water Policy Comm'n, A WATER POLICY FOR THE AMERICAN PEOPLE 190 (1950).
for highly sensitive uses need not be maintained in the same condition of purity, and considerable latitude could be allowed for industry to use their flows for certain kinds of waste disposal. This approach has been used with considerable success in Alabama, South Carolina and Tennessee.

Finally, incentives should be developed to make it economically advantageous for industries and municipalities to treat their wastes. The National Technical Task Committee on Industrial Wastes has been investigating pollution content to determine if valuable by-products can be recaptured by industry at a profit. A chemical company was found to be discharging wastes with high vitamin residues that it could extract as a major line. A Texas chemical company was able to recapture 100,000 tons of aluminum chloride annually for sale to paper mills as a substitute for alum.  The distillery industry can extract dried grain and protein concentrates for sale as a cattle food. Sewage sludge is a valuable fertilizer containing forty per cent humus and up to six per cent nitrogen. More than 18 million tons of it are destroyed annually at a cost of $6 million dollars to the nation's cities. The President's Water Policy Commission concluded that if this were packaged and sold, it would gross nearly $400 million dollars a year, permit sewage treatment to be accomplished at a profit and return a valuable fertilizer to the soil. Development of by-product uses for industrial wastes may be a valuable part of the incentive program of the state pollution control agency. Another form of incentive is suggested by a bill introduced into Congress on February 9, 1959, to allow industries to amortize the cost of waste treatment facilities over a short sixty month period and thus get tax encouragement for the new programs they develop.

To complement these positive programs for pollution control, engineering developments are sorely needed throughout the East to provide sufficient reservoir capacity to hold spring run-offs and flood flows for maximum power production, navigation benefits and

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142 President's Water Policy Comm'n, op. cit. supra 138 at 193.  
143 Ibid.  
144 Ibid.  
145 Ibid.  
146 Ibid.  
147 Id. at 194.  
optimum year round consumptive use. Storage technology has reached a high level of advancement in the western states due to common necessities for using critical supplies of water to nature crops during the dry summer months.¹⁴⁹ Through small private reservoirs or large federal multi-purpose projects, substantially all of the annual discharge of the rivers on the eastern slopes of the Rocky Mountains is captured and cycled for maximum beneficial use. Traditional attitudes of water abundance in the East, however, have deterred development in this direction until recent attention has been given to the use of streams for supplemental irrigation.

Current changes in water allocation policies consequently require aggressive regional planning and the installation of water storage facilities at appropriate places. First of all, the retention of stream flows in high water periods permits controlled releases from storage throughout the year and consequently increases the continuous rate of flow for beneficial use. Secondly, the construction of these storage projects checks flood and pollution damage along the rivers that is costing our society upwards of a hundred million dollars yearly.¹⁵⁰ Third, river flow regulation will maintain navigable capacities of discharge streams and minimum flows for waste disposal, notwithstanding substantial stream depletions by new consumptive uses. Fourth, storage projects can be positioned along main channels and their tributaries to permit the utilization of the entire fall of each stream from its headwaters to the sea in the generation of hydroelectric energy. With peak demands for power in the United States expected to triple by 1975,¹⁵¹ the Federal Power Commission estimates that the conservation of flood flows for power development would permit an increase in hydroelectric energy production from 87 billion kilowatt-hours to 391 billion kilowatt-hours yearly¹⁵² and tend to keep power costs low. Fifth, storage projects in tributary basins will conserve water of high purity levels for distribution to metropolitan water districts for service to community groups. Finally, the construction of storage reservoirs will recharge ground water supplies, stop encroachments of sea water in critical areas along the Atlantic Seaboard and provide pure sources

¹⁵¹ Id. at 91.
¹⁵² President’s Water Policy Comm’n, A Water Policy for the American People 141 (1950).
of supply for communities dependent upon ground water diversions for domestic and industrial use.\textsuperscript{153}

Since storage is not needed in the East to conserve private supplies for use during seasons when direct flow is not available, there is no incentive for, and little utility in, the private reservoir. It is uneconomic to construct, moreover, since the generation of power, flood control and navigation benefits, and the sale of surplus water cannot be assigned substantial parts of construction and operating costs.\textsuperscript{154} Although the states are responsible for water resource conservation and clearly possess the power to finance, build and manage storage projects, they have shown little inclination anywhere to engage in dam building programs. They generally do not have tax revenues or credit arrangements sufficient to finance reclamation and power projects that cost upward of 100 million dollars.\textsuperscript{155} Where stream basins are interstate moreover, they cannot secure optimum benefits from storage programs without interstate administration and an unequal balance of contributions and benefits between the states. Finally, water storage on streams that are navigable in fact, streams like the New River that may be made navigable by reasonable improvements, and on tributaries of both, has been preempted by the Army Corps of Engineers and freed from state supervision and policy determination.\textsuperscript{156} Consequently the resources, expertise and conservation impetus of the federal government is needed once again to provide the basin wide storage facilities needed for a full utilization of the water resources of the several states.

Congress commenced river development programming by the establishment of a Mississippi River Commission in 1879,\textsuperscript{157} gave jurisdiction over river improvements of the Army Corps of Engineers in 1890\textsuperscript{158} and began financing levee construction on a non-

\footnotesize{\textsuperscript{153} See TOWNER, The Role of the State, 45 CALIF. L. REV. 725, 735 (1957); U.S. DEPT. OF AGRICULTURE, SPREADING WATER FOR STORAGE UNDERGROUND 52-53 (1937).}

\footnotesize{\textsuperscript{154} These account for substantial parts of the construction cost of federal multipurpose projects. See PRESIDENT'S WATER POLICY COMM'N, WATER RESOURCES LAW 588-600 (1950).}

\footnotesize{\textsuperscript{155} California is an important exception to this statement having recently undertaken a quarter billion dollar project on the Feather River without federal financial assistance. CAL. WATER CODE § 11260 (1955 Supp.) See TOWNER, supra note 153 at 728.}

\footnotesize{\textsuperscript{156} See MORREELL, OUR NATION'S WATER RESOURCES 101-12, 130-35 (1956); PRESIDENT'S WATER POLICY COMMISSION, WATER RESOURCES LAW 12-29 (1950).}

\footnotesize{\textsuperscript{157} 21 Stat. 37 (1879), 33 U.S.C. § 647 (1957).}

\footnotesize{\textsuperscript{158} River and Harbor Act of 1890, 26 Stat. 426 (1890).}
reimbursable basis in 1917.\textsuperscript{159} Not until the Flood Control Act of 1936, however, did federal interests extend beyond the Mississippi Basin and envisage the construction of storage networks for comprehensive river flow regulation.\textsuperscript{160} After successful ventures into joint flood control, power development, reclamation storage, and river regulation projects under the Boulder Canyon Project Act of 1928\textsuperscript{161} and the Tennessee Valley Authority Act of 1933,\textsuperscript{162} Congress has directed that all projects built after 1944 contain multi-purpose features and be integrated into a comprehensive and coordinated plan for river development.\textsuperscript{163} That part of the cost allocatable to flood control and flow regulation is nonreimbursable; that allocable to power generation is fully reimbursable out of power revenues with interest at six per cent; and that allocable to irrigation is reimbursable by water use changes over a forty year period without interest.\textsuperscript{164} The allocation formula permits maximum utilization of the various stream benefits with minimum facility cost attributable to each. So long therefore as the interests of water users throughout a basin are compatible and equally served by a uniform storage and flow regulation program, comprehensive project development by federal funds and agency administration will usually be acceptable to the interested states and achieve common conservation objectives. Where, however, the interest of one state in waste disposal conflicts with another's encouragement of supplemental irrigation and another's interest in the navigation potential of the stream system, joint development programs must adjust to the needs of each, provide a medium for the full expression of all points of view, recognize the sovereign status of basin states and allow a considerable measure of local representation and control. To this end Congress has required approval of project plans by appropriate state agencies before construction\textsuperscript{165} and, at least in some cases,

\textsuperscript{159} 39 Stat. 948 (1917) appropriating $50,000,000 for control of floods on the Mississippi and Sacramento Rivers; see President's Material Policy Comm'n, op. cit. supra note 156 at 129.
\textsuperscript{164} See President's Water Policy Comm'n, Water Resources Law 588-600 (1950).
continuing operational guidance by basin states committees thereafter.166

Nevertheless project administrators are not bound by the decisions of any state agency and in the absence of specific water allocation decrees or interstate compacts, can undoubtedly apportion the benefits of basin development among assumed federal and regional interests without regard for jurisdictional boundaries and the special requirements of local areas.167 They can do this on the pretext that stream regulation rests on the paramount power of the United States over interstate commerce,168 its prerogative to impose conditions on the use of government property and resources,169 its power to preserve the national defense170 or on its power to spend money for the advancement of the general welfare.171

Although the United States is not bound as a party to an interstate water adjudication decree that apports the benefits of a river on an equitable basis among the states through which it flows, and is not a party to compacts between the states under Article III of the Federal Constitution,172 it would be politically inexpedient for Congress or a federal water agency to ignore their terms. In any event a party to a water decree or a signatory state could compel adherence to a decree or a compact by restricting other states and their citizens from demanding or accepting stream benefits inconsistent therewith.173 Consequently as a third aspect of an aggressive conservation program, the several states in the East that are modernizing their water allocation laws and developing needs for basin water storage projects, should secure an equitable apportionment of stream benefits, either by an interstate water suit before the Supreme Court of the United States or by negotiation of a water compact.

166 See art. VIII, Upper Colorado River Compact, 63 Stat. 35 (1949), creating Commission with representatives from each basin state and from the United States.


169 Ivanhoe Irrigation Dist. v. McCracken, supra note 167.


172 In recent compacts, however, provision has been made that terms do not become operative until Congress adopts legislation directing federal officers to observe them. See Public Law 60, 78th Cong. 1st Sess. (1943) ratifying the Republican River Compact. See also Ireland, Recent Developments in the Use of Interstate Compacts, 21 DICTA 77 (1944).

Such an apportionment would also assure to their citizens the right to divert water across state lines, permit exchanges of water between states from rivers and lakes that are wholly within some but not all the states desiring its use, advance the pollution regulation programs of the basin states as already indicated and provide for apportionment of evaporation and seepage losses from various storage reservoirs among the states that are benefitted by them.

The waters of interstate streams have long been apportioned on equitable principles. The upper basin state gains no advantage in use by the fact that interstate waters have accumulated within its boundaries. Nor is the lower basin state entitled to the condition of a stream as it was wont to flow by nature by reason of the fact that the state has always enjoyed its use in that condition. The Supreme Court has declined to apply private water allocation principles to the solution of controversies between states, holding in Connecticut v. Massachusetts, for instance, that a lower basin state could not restrain a transbasin diversion in the upstream state though it was contrary to the natural flow riparian laws of both states. No attempt is made to divide water but only to place equitable limits on conflicting sovereignties and secure a fair adjustment between their otherwise complete and independent rights. Due consideration is given to the economy of the entire region, to physical and climatic conditions in the various sections of the river that require consumptive uses, the availability of storage, the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former, and to the priority of water use in the several regions.

Interstate adjudications throughout the country have defined the rights of contending states, but have proved too inflexible and unmanageable to meet changing needs. In dealing with rights incident to state sovereignty, the Supreme Court has been slow to interfere with potential invasions of rights to apportion water among contemplated future uses and to make a final allocation of

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175 282 U.S. 660 (1931).
176 See National Reclamation Ass'n, Preservation of Integrity of State Water Laws 119-123 (1943).
177 Ibid.
179 National Reclamation Ass'n, op. cit. supra, note 176 at 123.
benefits among the states. To avoid continued litigation, to establish stream commissions for adjustment between conflicting interests in the future and to make water available to states into which subject streams have not flowed by nature, the several states have preferred to obtain apportionments by compact ratified by the legislatures of the compacting states and by an act of Congress that approves its terms and gives assurance that the United States will honor the allocations that are made. By these compacts equitable divisions of benefits may conform to or be quite different from those that would be made in an adjudication and secure to each state, by exchange or economic concessions, dependability of regional water resources for private or public project development.

Just as the multipurpose concept has evolved in project coordination, the time has come for the development of multipurpose compacts and integrated stream administrations. In traditionally water critical areas of the West, fifteen compacts have been ratified for the apportionment of water between the states, ten of which have established permanent interstate river control commissions. In the humid East, four have been ratified for pollution control on the Ohio River, the Potomac, the New York Harbor Area and among the New England States and two for flood control on the Connecticut and the Merrimack rivers, with five establishing stream commissions. The apportionment compacts have not co-

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184 Commissions have been established on the Rio Grande, Republican River, Costilla Creek, Arkansas River, Pecos River, Upper Colorado River, Yellowstone River, Canadian River, Sabine River, and Bear River. See Council of State Governments, op. cit. supra note 183.
185 The Ohio River Valley Water Sanitation Compact was ratified in 1939 between Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia.
186 The Potomac Valley Pollution and Conservation Compact was ratified in 1939 between the District of Columbia, Maryland, Pennsylvania, Virginia and West Virginia.
187 The Tri-State Compact was ratified in 1932 between Connecticut, New Jersey and New York.
188 The New England Interstate Water Pollution Contract Compact became effective in 1947 between Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island and Vermont.
189 The Connecticut River Flood Control Compact was ratified in 1949 between Connecticut, Massachusetts, New Hampshire and Vermont. It has not yet been approved by Congress.
190 The Merrimack River Flood Control Compact was ratified in 1956 between Massachusetts and New Hampshire.
191 Commissions are employed under all the compacts described in notes 185-190 supra, except for the Connecticut River Flood Control Compact which calls for administration by officials from the compacting states.
ordinate pollution control, flood control and power development and the pollution and flood control compacts have not coordinated water supply and storage. The mass of interstate streams on the Atlantic Seaboard, moreover, have no interstate administration and others have cooperative arrangements created by parallel legislation. Only the projected Delaware Valley Water Commission Compact between New York, New Jersey, Delaware and Pennsylvania contemplates comprehensive stream regulation, and even it has left pollution control to an existing cooperative authority known as INCODEL.\textsuperscript{192}

Important objectives of conservation today must be to develop the total potential of stream resources, to balance conflicting regional interests, to achieve integrated use and area administration, and consequently attain through state action with federal financial and staff assistance the economic ends of federal basin authorities. Compact-created stream commissions can be delegated planning, investigative and administrative authority, and can initiate proceedings in the courts of the several states to enforce the laws of the states,\textsuperscript{193} the provisions of the compact, and regulations promulgated thereunder.\textsuperscript{194} Inseparable from the evolution of water allocation doctrines towards greater consumptive use of limited supplies and a greater public responsibility in resources management is a need for fuller utilization of the compact device by enlargement of the powers and responsibilities of existing interstate commissions, and establishment of new multifunction commissions on the unregulated streams that remain.

One further area for state action will be considered—the innovation of suitable organizational patterns for planning, management and reimbursement of needed river regulation and water supply projects. Capital costs estimated at 54 billion dollars will be required for optimum utilization of the eighty-three per cent of our national water supply that is now running to waste or is lost by uneconomic methods of capture and use.\textsuperscript{195} States have regulated dam and reservoir construction to protect the public against hazards,
to preserve spawning grounds for anadromous fish and to maintain carrying capacities of navigable waterways, but have rarely seen fit to dedicate state tax revenues to water storage and distribution programs. Through bond issues, municipalities can finance aqueduct and waterworks projects to provide adequate domestic water service for their own needs, but often lack machinery to participate in joint operations with other municipalities, irrigation interests and power generation groups.

Federal capital may be available for Bureau of Reclamation, Corps of Engineers and public power projects, if, but only if, local organizations with assessment and general taxing powers can be established to contract for reimbursement of that part of project costs allocated to irrigation and water supply. Private capital, largely controlled by utility, industrial and carrier ditch companies, will usually be funneled into single purpose enterprises of modest scale for limited requirements of a self-serving nature. It cannot be attracted to conservation features of large scale projects which are of less tangible benefit to specific persons and groups, such as those for recharge of underground reservoirs by water spreading methods or for water storage to preserve minimum stream flows for waste disposal and public health. Consequently a program for comprehensive resources development calls for legislation to permit the establishment of new forms of quazigovernmental districts representing the diverse water interests of a basin, and possessing powers to levy special benefit assessments and ad valorem and acreage taxes, to issue improvement bonds and to pledge their assessment and tax revenues to the retirement of bond issues and the payment of reimbursable portions of federal project costs.

Provisions have long been made for some form of special improvement district in substantially all of the states. They have been authorized to perform public services that traditional forms of local government are incompetent to handle because of physical, financial,

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196 For a summary of statutes regulating dam and reservoir construction in the interest of public safety, see Shih, AMERICAN WATER RESOURCES ADMINISTRATION 682-92 (1959).
197 Two principal exceptions are the water storage project on the Feather River, currently being constructed by California, and the North Jersey storage project financed by the State of New Jersey. See COUNCIL OF STATE GOVERNMENTS, STATE ADMINISTRATION OF WATER RESOURCES 71 (1956).
technical or geographical limitations. They have generally been limited to single purposes and in the East at least to rather small geographical areas. West Virginia, for instance, permits the establishment of levee districts to construct and cooperate with the federal government in constructing limited flood abatement facilities; drainage districts for the reclamation of flood plains and submerged lands; and sanitation districts for sewage treatment and stream disposal. Other states in the East provide for navigation improvement districts, although navigation has long been regulated by federal administration, port authorities for water terminal facilities, water supply and metropolitan water districts for aqueduct construction and operation, and electric power districts. These forms met the needs of a water abundant economy and have permitted experimentation with various procedures for organization, for making capital improvements and for assessing the costs of such improvements upon the lands and interests benefitted. They are not broad enough in scope, however, powerful enough in authority and secure enough financially to enter into basin wide programs and secure optimum multipurpose development of water supplies.

In western areas where water shortages have encouraged extensive engineering improvements in storage and distribution facilities, have stimulated the construction of partially reimbursable federal projects and have required the kind of planning for multiple use that will now become significant in the East with changes in water allocation doctrine and water use technology, patterns have evolved for various kinds of regional diversified use districts. Though the purposes of some of these districts have been limited, they have generally been regional in scope. Flood control districts have been organized to cooperate with the federal government in construction of basin wide flood detention reservoirs, to provide lands and rights of way for these projects, to zone flood plains for uses compatible with public flowage rights and to administer projects constructed by the Army Corps of Engineers. These districts have usually been

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203 See Sull, op. cit. supra note 198 at 935 for state summaries.
204 Id. at 987-40.
205 Id. at 971.
206 Id. at 976.
207 Id. at 945.
regulated by state rather than local authorities and have general taxing and regulatory powers as well as rights to levy special benefit assessments. Irrigation districts have been authorized to build irrigation systems for large areas and to operate and maintain works constructed by the federal government.\textsuperscript{208} These have often been instrumentalities of the federal government created to contract for project reimbursement. Ground water conservancy districts cover entire water supply areas and build spreading works to charge underground basins with surplus surface waters and maintain tables throughout large areas for commercial well diversions. The Santa Clara Valley Conservancy District in California has increased ground water supplies in 133,000 acres of land by more than eighty per cent.\textsuperscript{209}

Other districts, organized more recently under the multiple use and basin development philosophy that stems from the expanding federal water resource development program, have encompassed entire stream basins, have aimed at navigation improvement, flood control, irrigation allocations, municipal supply and hydroelectric power development, and have utilized many existing and functional special purpose districts within their boundaries. They are managed by directors elected at general elections and their boundaries are set by court decree after public hearing. They control water allocations and uses within their boundaries subject to vested rights and have broad powers of property taxation and special benefit assessment within limits established by the statutes under which they are created. In California,\textsuperscript{210} Colorado,\textsuperscript{211} New Mexico,\textsuperscript{212} Nebraska,\textsuperscript{213} and Texas\textsuperscript{214} they have developed extensively and successfully and offer a planning stimulus for basin development comparable to that provided by federal basin authority on the Tennessee, but with complete autonomy and local control.

Ohio legislation authorized multiple purpose districts as early as 1914, though the ones organized thereunder were principally concerned with flood control.\textsuperscript{215} The Muskingum Valley District, for

\textsuperscript{208} Id. at 949-54.
\textsuperscript{209} See THOMAS, THE CONSERVATION OF GROUND WATER 67 (1951).
\textsuperscript{210} CAL. WATER CODE §§ 34000 to 38500 (West 1956).
\textsuperscript{211} COLO. REV. STAT. §§ 149-6-1 to 6-43 (1953).
\textsuperscript{212} NEW MEX. STAT. §§ 75-25-1 to -25-48 (1953).
\textsuperscript{213} NEB. REV. STAT. §§ 70-601 to -679 (1943).
\textsuperscript{214} TEX. CIV. STAT. art. 7622 to 7807 (Vernon 1954).
\textsuperscript{215} See SHIÎ, op. cit. supra note 198, at 991-92.
instance, constructed fourteen single purpose flood control reservoirs with an aggregate capacity of 1,539,200 acre feet, but having only 25,000 acre feet of dead storage that could be used for water supply activities of the district. Nevertheless the pattern exists for expanded use of this organizational form to meet Ohio's growing water allocation demands. In 1953 North Carolina established the Neuse River Watershed Authority\textsuperscript{216} for flood control, irrigation, drainage, water supply, sewage and soil erosion control. Unfortunately for its success, however, the authority was given no independent financial resources, but was made to depend upon contributions from local governments for its operating budget. It is thus apparent that more adequate legislation is needed throughout the East to facilitate the organization of multipurpose water districts, and that encouragement for, and leadership in, basin-wide development must come from state governments and private groups with interests, direct or consequential, in the conservation and full utilization of the generous water resources bounty that nature has conferred upon the eastern United States.

It is clear that conservation cannot be separated from water utilization. As soon as allocation laws are revised to permit consumptive uses of water upon nonriparian lands, programs become necessary to balance conflicting interests in water use and pave the way for technological improvements required to develop and distribute water for new beneficial uses throughout the region.

The need is consequently great for policies to restore water supplies to suitable conditions of purity, for programs to carry it in storage from seasons of heavy precipitation to years of drought, for interstate compacts that permit water allocations for regional needs without regard to jurisdictional boundaries and for organizational patterns that can encourage extensive engineering improvements in water distribution. The final portion here, in turn, considers the important role of the federal government in basin development and gives attention to the protection of private rights and legitimate state interests that are threatened by the public welfare emphasis inherent in any significant water conservation and utilization program.

\textsuperscript{216} N.C. Gen. Stats. §§ 77-1 to -13 (1953).
PART III

ROLES OF THE FEDERAL GOVERNMENT, STATE GOVERNMENT AND PRIVATE ENTERPRISE

From the previous examination of water doctrines and conservation processes, it should be apparent that the federal government, the state government and private enterprise play separate roles and serve somewhat different interests. If each would play its role and keep its place, cooperative action would contribute to our water economy the special artistry of each. If, however, either encroaches upon the domain of the others, conflict impairs the special interests of some, weakens the developmental motivation of the ones impaired, and prevents effective cooperative action of all. Due to the ethereal nature of intergovernmental relations in a common law federal system of government, roles are in a constant state of flux and are not clearly defined in any constitutional document. Consequently in working toward a common conservation and water use objective, each has tended to aggrandize its own position and consider its particular interests of overriding importance. Mounting tension has resulted between federal agency action on the one hand and state and private interests on the other.

The function of private enterprise is to transform water into economic values. Being responsive to market forces, it determines the relative worth of particular water uses, and develops utilization facilities competitively. Water to it is a species of property, a capital resource to be used in the production of wealth. Its contribution to the conservation process lies in its initiative, motivation and resourcefulness in water utilization. Its principal need is sufficient property security to justify and encourage economic development. Since the water resource moves from tract to tract, and has public as well as private attributes, a certain measure of regulation becomes necessary in the public interest. First of all, competitive private uses create conflicts of interest in the common resource. Secondly, self serving enterprise, not being conducive to cooperation, leads to single purpose water development projects that are small in scale and inefficient for full utilization of limited regional supplies. Finally, the individual user who is able to get enough water for his own needs will lack incentive to conserve the supply and return unused waters to the stream in a sufficient state of purity for beneficial use by others.
The role of the state, as repository of sovereign powers not delegated expressly or impliedly to the federal government by the United States Constitution, has been to define the character of property rights in general, and rights in water resources in particular, to administer allocations of public water supplies among private parties with rights therein, and in a trustee capacity to conserve the waters of the state for maximum economic benefit to all the citizens thereof. Being responsive to the people through election processes, it is well equipped to formulate water policy for private enterprise within the state, to balance conflicting interests in water use, and to reflect the attitudes of the local citizenry on utilization of resources with which the state and region has been endowed by nature.

In their trustee capacity, the states might have initiated multi-purpose conservation projects and might have assumed financial and technological responsibility for conservation and development. Through the years, however, they have failed woefully in this regard for several reasons: First of all, most sources of supply are regional in scope and cannot be developed effectively by individual states. Although interstate compacts offer a means for cooperative action, they have been used only in limited ways for the resolution of conflicts and the protection of physical interests. Present rivalries on the Delaware, resulting in a failure of the Delaware Valley states to reach agreement on a compact for basin-wide development,\(^{217}\) indicates that provincialism may be a strong deterrent of cooperative development, particularly where costs, reservoir burdens and benefits cannot be apportioned equally among the basin states. Secondly, river projects of a state will often conflict with legitimate interests of the federal government in the navigable capacities of interstate streams and lakes, in the generation of power for distribution in interstate commerce and in the control of floods. Finally, the states have lacked the financial resources and engineering expertise to engage in project work of any magnitude. Due to the willingness of Congress, moreover, to consider public works within a state or region beneficial to the nation as a whole and a legitimate object for expenditure of general tax revenues, the states have been reluctant to

\(^{217}\) The Delaware River Basin Water Commission Compact, providing for comprehensive multi-functional development in the Delaware Valley has been ratified by New Jersey and New York, authorized by Delaware but not approved by Pennsylvania. See Del. Code Ann. tit. 28, § 091 (1953). In the meantime the Delaware Basin states are operating under a cooperative program, established by reciprocal legislation and administered by Incodel, a voluntary interstate commission for the Delaware. Del. Code Ann. § 501, Subchapter I Historical Note.
finance projects that might be constructed by federal agencies with the tax contributions of other states and regions.218

Consequently in part therefore upon the default of the states, in part upon the interest of the United States in navigation and flood control, and in part upon a change in resource conservation during the past decade from a local to a national problem of the first magnitude, the federal government has become well entrenched in the role of engineer and has virtually preempted the technological functions of basin development, flood control and water conservation. Although I will be critical of the threatened impairment of private rights and state prerogatives from a mushrooming and oftimes directionless federal bureaucracy, it cannot be disputed that project construction vel non is a proper function of the federal government. First: As trustee of our national welfare, it has a responsibility for leadership in the development of limited resources that bear heavily upon the security and economic wellbeing of the entire country. Secondly: The national government is ideally situated for the performance of these functions. Streams are regional in scope and river basins do not respect state or local government boundaries. Sectional rivalries have retarded development of important water storage and diversion projects in the Upper Colorado River Basin and Central Arizona Valley. Sound planning can best be accomplished on a regional or national level. Third: The federal government has provided and can continue to provide investment capital that is not available on the local level. The Central Valley project in California, for example, was first conceived as a state project, but years of investigation failed to disclose a financing medium other than through the resources of the Bureau of Reclamation. Finally: The engineering problems of river development are common to all projects. A central surveying and planning agency can acquire experience and technical skill in basin development that will tend to insure project feasibility and economic and engineering stability.

The federal government can and should perform its role without creating uncertainties in water rights that impede private enterprise, without infringing upon the prerogatives of the state to determine matters of water use policy and without generating interagency competition, jurisdictional conflicts and bureaucratic inefficiency. As the present federal program is operating, three major shortcom-

ings demand corrective action. In the first place the absence of any unified plan and centralized programming authority has produced a complex of conflicting policies, duplication and wastes. Irrigation, flood control, hydroelectric power and navigation policies have been separately conceived and separately administered. Statutes and regulations have appeared in a piecemeal fashion to meet specific and changing problems, with the result that many agencies have overlapping functions and project requirements vary considerably with the type of project and the agency responsible. The Hoover Commission report in 1955 lists twelve agencies responsible for flood control, nine for irrigation, seven for improvements to navigation, nine for pollution control, ten for watershed development, fifteen for power generation and thirteen for water supply.²¹⁹

The Army Corps of Engineers, under the secretary of defense, is principally concerned with navigation and flood control improvements, but has been authorized since 1944 to add power, irrigation, water supply and recreation features to its projects. The Bureau of Reclamation in the Department of Interior has principal responsibility for irrigation programs, but since 1944 has been directed to add power, navigation, flood control and municipal water supply features to its projects. Today both agencies construct similar multipurpose dams but with quite different emphasis, policies and procedures. The Bureau of Reclamation, for instance, must determine economic feasibility for its projects by obtaining reimbursement contracts for irrigation water supply and show a probable return of the capital allocated to power development and municipal supply. The Corps of Engineers, on the other hand, need not demonstrate economic feasibility, but can go forward with its multipurpose projects on allegations that ethereal benefits, tangible and intangible, to all interests are in excess of costs. The Bureau of Reclamation does not need individualized congressional authorizations, but can proceed with construction on filing a report of economic feasibility with the President and with Congress. The Corps of Engineers on the other hand needs specific authorization for each project. A multipurpose reclamation project will be administered to assure maximum water storage; a multipurpose power project to maintain a steady and dependable stream flow throughout the year; a multipurpose flood control project to reduce water in storage prior to maximum runoff periods.

The need for government reorganization has been urged by the Hoover Commissions of 1949\textsuperscript{220} and 1955\textsuperscript{221} and by the President's Water Policy Commission of 1950.\textsuperscript{222} Although some cooperation has been achieved between government agencies in this area under the Water Conservation and Utilization Act of 1939\textsuperscript{223} and by the establishment of the Interagency Committee on Water Resources in 1954,\textsuperscript{224} the Presidential Advisory Committee on Natural Resources reported to Congress on January 17, 1956\textsuperscript{225} that the greatest single weakness of the government's activities in the field of water resources development has been the lack of cooperation and coordination of the federal agencies with each other and with the state and local interests.

The second serious shortcoming of present federal policy is the tendency of these agencies to aggrandize their positions. They occasionally become so absorbed in what they are doing that they want to build and manage for the sake of the project rather than for the interest of those to be served thereby. The competition of agencies for the development of the same basins has resulted in duplicity of investigation and in project authorizations without adequate studies as to their need and feasibility. In 1943, for instance, the Corps of Engineers drew up a master plan for the development of the Missouri basin, called the Pick plan, that would require an estimated expenditure of 658 million dollars.\textsuperscript{226} At the same time the Bureau of Reclamation, making an independent study of the basin, proposed the Sloan plan, calling for an expenditure of 1,258,000,000 dollars and the construction of reservoirs at different sites to serve the same purposes as the Pick plan\textsuperscript{227} When Congress became deadlocked over these conflicting programs, the Bureau and the Corps of Engineers consolidated their demands in the Pick-Sloan plan and, in the Flood Control Act of 1944,\textsuperscript{228} obtained congressional authorization for the construction of virtually

\textsuperscript{220} See Comm'n on Organization of the Executive Branch of Government, Department of Interior (1949).
\textsuperscript{221} See note 219 supra.
\textsuperscript{222} See President's Water Policy Comm'n, A Water Policy for the American People 10-18 (1950).
\textsuperscript{227} S. Doc. No. 191, 78th Cong. 2d Sess. (1944).
\textsuperscript{228} 58 Stat. 887, 891 (1944).
all the projects proposed by the independent plans. As a result of further studies many of the projects so authorized have been abandoned as unfeasible or unnecessary.

Another alarming consequence of the dam building fobia has been the repeated disregard of the government and project administrators for the rights of existing and new contract users in project areas. Where administrators of the Rio Grande Project took water from a Warren Act contractee for delivery to another non-project irrigation district in violation of the Warren Act and the contract with the first user, the government and project administrators shielded themselves with sovereign immunity and refused to give redress for positive infringements of vested legal rights. In Hudspeth County Water Conservancy Dist. v. Robbins, the Fifth Circuit Court upheld the government's position and denied the injured claimant any right to declaratory or injunctive relief against the officials. It said that an action for declaratory judgment or by injunction against project administrators was a suit against the United States, and without congressional consent, must fail.

In the administration of the Central Valley Project in California, government officers cut off deliveries of water through Friant Dam for the use of Fresno and other existing riparians and appropriators on the San Joaquin River below. To meet objections of these parties, the secretary of the interior and attorney general at first authorized the Federal District Court to appoint a referee to make deliveries from the dam pending an adjudication of the water rights of all parties. Notwithstanding this authorization, however, the attorney general later obtained a writ of prohibition from the Ninth Circuit Court against the judicial administration of the project on the ground that the suit to determine the rights of the parties was a suit against the United States and must fail without congressional consent. Thereafter the United States was joined in the adjudication suit, known as Rank v. Krug, by authority of the McCarran Act of 1952, which consented to actions against the United States for the adjudication and administration of water rights under state law. The solicitor general promptly moved to dismiss the action in January 1954, arguing that the gov-

229 213 F.2d 425 (5th Cir. 1954).
230 United States v. United States District Court, 206 F.2d 303 (9th Cir. 1953).
government was not subject to the jurisdiction of the court in spite of the clear language of the McCarran Act. Although his motion was denied, the United States withdrew anyway and refused to answer pleadings or inquiries of the court as to its position and failed to introduce evidence in support of the water rights asserted by the project administrators during the remaining two years of the litigation.

Although Judge Hall, in June of 1956, entered a default judgment against the United States, supported by a 200 page explanation that immunity had been waived in the McCarran act for any suit arising out of the administration of a federal water project, a Fifth Circuit Court in a similar controversy limited the waiver provisions of the Act to proceedings for the adjudication of rights on a river system in which all parties having water claims were before the court. Ignoring the specific reference in the Act to suits arising out of the administration of water rights, it denied redress through the courts to parties aggrieved by arbitrary, capricious and unconscionable acts of project officials. These cases are illustrative of many where (1) project officials have been charged with conduct impairing private vested water rights, (2) the United States has claimed immunity from declaratory relief, injunctive relief or from an accounting for damages done, and (3) the Department of Justice has worked aggressively to limit federal responsibility under the broad consent-to-suit provisions of the McCarran Act. Notwithstanding the conflicts among decided cases as to the scope of this Act, moreover, federal agencies have resisted enactment of clarifying legislation.

A final shortcoming of present federal policy appears to be that public officers and the courts, in the dedicated pursuit of the vital public interest in conservation and optimum water development, tend to overlook the fact that water rights have already

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233 See note 231 supra.
234 Miller v. Jennings, 248 F.2d 157 (5th Cir. 1957), cert. den. 355 U.S. 827.
235 A Water Rights Settlement Bill, to clarify the right of the states and private users in the development of the water resources of the West, was introduced into Congress in 1955 but failed to be enacted. See S. 863, 84th Cong. 1st Sess. (1955). It was introduced in a different form in 1957, but failed again. See S. 863, 85th Cong. 1st Sess. (1957). In 1959 the Department of Interior introduced a compromise bill which Under Secretary Elmer Bennett declared to be an "earnest effort to find language agreeable to the executive adequate to protect Federal interests, yet grant the 17 reclamation states more adequate statutory assurances of the integrity of their water rights." See Western Water News, Jan. 1959, p. 1.
vested in private persons for the irrigation of 18 million acres of land, and private property values dependent upon these vested rights are estimated at between 15 and 20 billions of dollars.\textsuperscript{236} The consequence has been a malignant expansion of federal power at the expense of state prerogatives and private riparian and appropriation rights, creating an unhealthy imbalance in the roles of federal government, state government and private enterprise in our water programs.

Prior to 1866 federal control was unchallenged to non-navigable waters west of the original thirteen colonies. The government had acquired title to public domain water supplies by cession of western lands from the original colonies, France, Spain and Mexico, and retained title to all nonnavigable waters as an incidence of its public lands proprietorship after states were carved from the territories and admitted to the Union.\textsuperscript{237} Although its rights to these nonnavigable waters were potentially unlimited, it elected to recognize the evolving riparian doctrine of water use, to recognize riparian rights in patentees of riparian lands and to limit its own stream depletions to water needed for reasonable uses upon the public lands themselves.\textsuperscript{238}

Its control was equally paramount over navigable streams to the extent necessary to preserve them for commerce. At this time, however, federal regulation was limited to streams that were navigable in fact and to the elimination of obstructions and other material obstacles to transportation on the navigable portions only.\textsuperscript{239} In Martin v. Waddell,\textsuperscript{240} the Supreme Court had held in 1842 that the original colonies owned the waters of navigable streams and the beds beneath and that each state admitted to the Union acquired rights comparable to those of the original colonies. As a consequence, the United States has never asserted proprietary rights to navigable water sources, but has been content to regulate their use under the commerce clause.

\textsuperscript{236} See 1 COMM'N ON ORGANIZATION OF THE EXECUTIVE BRANCH OF THE GOVERNMENT, WATER RESOURCES AND POWER 15 (1955).
\textsuperscript{237} The historical analysis that follows is drawn from a paper presented by the author at a water conference in Manhattan, Kansas on May 20-21, 1957. See Martz, The Role of the Federal Government in State Water Law, 5 KAN. L. REV. 626 (1957).
\textsuperscript{238} See Winters v. United States, 207 U.S. 564 (1903); Gutierrez v. Albuquerque Land & Irrigation Co., 188 U.S. 545 (1903).
\textsuperscript{239} The Daniel Ball, 10 Wall. (U.S.) 557 (1870) (held waters to be navigable in law that were navigable in fact); See Gibbons v. Ogden, 6 Wheat. (U.S.) 448 (1821) (commerce clause comprehends navigation).
\textsuperscript{240} 41 U.S. (16 Pet.) 367 (1842).
From 1866 to 1920 the United States surrendered most of its power and discretion over nonnavigable waters to the states. Having no federal water allocation law, and desirous of encouraging private enterprise in the settlement of the West, Congress provided in the public domain mining law of 1866 that whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing or other purposes have vested and accrued, and the same are recognized by the local customs, laws and decisions of the courts, the possessors and owners of such vested rights shall be maintained and protected in the same.241 Thereafter in section 8 of the Reclamation Act of 1902,242 section 27 of the Federal Power Act of 1920,243 section 18 of the Boulder Canyon Project Act244 and the Rights of Way Act of 1891,245 state water laws were recognized and confirmed by declarations that nothing in federal policy or legislation should interfere with the laws of any state or territory relating to the control, appropriation, use or distribution of water, and that the administration of new programs should proceed in conformity with state laws.

During this period it was customary for the United States to acquire water rights under state law for most of its project needs. While claiming a riparian status for water it used on the public domain,246 and conferring rights upon Indian tribes to use waters flowing by or through their reservations,247 its water requirements were not large and not inconsistent with the allocation policies of the several states. It was inconsequential therefore whether federal water legislation amounted to a conveyance of the water title of the United States or was merely a manifestation of acquiescence for the time being in local customs and procedures.

Navigation control was modestly extended as commerce and trade on the navigable rivers expanded. In 1890 the United States took responsibility from the states for maintaining navigable stream capacities by the Rivers and Harbors Act of that year.248 In United States v. Rio Grande Dam & Irrigation Co.,249 the Supreme

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246 United States v. Morrison, 203 Fed. 364 (10th Cir. 1901); see Winters v. United States, 207 U.S. 564 (1907).
247 Winters v. United States, 207 U.S. 564 (1907); United States v. Walker Irrigation Dist., 104 F.2d 934 (9th Cir. 1939); see United States v. Powers, 305 U.S. 527 (1939).
248 26 Stat. 454 (1890).
249 174 U.S. 690 (1898).
Court authorized the federal government to remove obstructions from nonnavigable tributaries of navigable streams as a means of maintaining the navigable capacity of the principal arteries of water commerce. But in the exercise of these powers, it avoided interference with the usufructuary rights of riparians and appropria-
tors along navigable streams or their non-navigable tributaries. The paramount rights of the states and private persons to the beneficial use of navigable and nonnavigable waters alike were assumed by all.

Since 1920, and particularly since 1935, in vigorous support of its reclamation, navigation improvement, power and flood control programs, it has asserted increasingly greater powers over all kinds of water resources and has whittled away at state and private rights to a point where the nonproject appropriator has little security in the continued operation of his diversion facilities and little opportunity for independent development of new sources of supply.

In the implementation of recent navigation and flood control programs, it has been established that the navigation servitude inferred from the commerce clause is paramount to any private rights upon navigable streams or the tributaries thereof. In *United States v. Willow River Power Co.*, the Supreme Court declared that there is no redress for parties whose water rights are impaired by navigation improvements. Riparian or appropriation rights may be destroyed where the level and current of a stream is changed, through the construction of reservoirs, and its value for private hydro-electric power generation reduced as was the situation in the *Willow River Power* case; or where headgates on navigable streams or their tributaries are shut down to increase the flow of water down an enlarged navigation channel.

The threat to private interests has been magnified since 1944 when the Army Corps of Engineers moved up the tributaries of navigable streams and began building multi-purpose projects with substantial reclamation and hydroelectric power features under the guise of navigation control. There is some authority and con-
siderable fear that injuries to water rights from the related fea-
tures of multi-purpose projects will come under the *damnum absque injuria* principle of the navigation servitude cases. In *Oklahoma v. Atkinson*, for instance, the Supreme Court, in upholding the

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250 384 U.S. 499 (1945).
251 313 U.S. 508 (1941).
power features of a flood control project on the nonnavigable Red River of Oklahoma, said that flood protection, watershed development, and the recovery of the cost of improvements through the generation and utilization of electric power were all parts of commerce control. Boulder Dam on the turbulent Colorado River, constructed in main for reclamation, municipal water supply and power generation purposes, was upheld in the first Arizona v. California252 case as a navigation and flow control project. Thus, to the extent that related features of a project are incident to the paramount navigation servitude of the United States, it would appear that private water users would have no claim to compensation for the consequential injury to their interests.

Of all the features of a multipurpose project, reclamation alone would seem to bear no sensible relationship to navigation control. As a matter of principle, moreover, it would seem highly improper for the United States to take water away from existing irrigators without compensation, store it in a multipurpose project constructed by the Army Corps of Engineers, and thereafter distribute it under reimbursement contracts to a new class of irrigators settling upon project lands. Yet the cases indicate that to some extent this may be done without infringing any constitutional right of the preexisting irrigator. In the construction of the Central Valley Project in California, authorized as a reclamation project, the United States resisted payment of compensation to riparians on the San Jaoquin River for the destruction of their seepage water rights. In United States v. Gerlach Live Stock Co.,253 the majority of the Court refused to consider whether the government would have to pay compensation to these injured riparians as a matter of constitutional right, preferring to decide the case on the express authorization in the Reclamation Act of 1902 for compensation to be paid. Mr. Justice Douglas, however, concurring in part and dissenting in part, laid bare the constitutional issue in saying:

"I think it is clear under our decisions that respondents are not entitled to compensation as a matter of constitutional right. For we have repeatedly held that there are not private property rights in the waters of a navigable river. [citing cases.] That is true whether the right of riparian owners or the rights of appropriators are involved. . . . [T]he existence of property rights in the waters of a navigable stream are not dependent upon whether the United States is changing the flow of the river in aid of navigation or for some other purpose."254

252 283 U.S. 423 (1930).
253 839 U.S. 725 (1950).
254 Id. at 756.
Although Justice Douglas here employs the theory of the Willow River Power Co. case that private rights do not exist against the government on navigable streams, we must not overlook the fact that he is alluding specifically to the San Joaquin River in the Central Valley of California at a point where it has never been navigable or susceptible to navigation by reasonable improvements and where it was to be dried up completely by the operation of the Central Valley project. To be sure the Gerlach case is authority that projects constructed under the Reclamation Act are subject to the compensation provisions of that Act. But projects with reclamation features built by the Army Corps of Engineers are basically navigation projects and are not subject to the compensation provisions of the Reclamation Act or any other act unless made so by the statute authorizing their construction. It is encouraging that Attorney General William P. Rogers concluded in an opinion released in January of 1959 that “the Flood Control Act of 1944 requires that the reclamation laws apply to any contract for the disposition of irrigation benefits made available from several projects in question,” and “that under the reclamation laws rights to the use or distribution of water vested under state laws are not affected.” Nevertheless it is still possible for private riparian and appropriation rights on navigable streams or their nonnavigable tributaries to be destroyed without compensation by the enlargement of a navigation channel that would require the full flow of the tributaries for its efficient operation or by the construction of a multipurpose project by the Army Engineers for river flow, power generation and reclamation purposes, requiring substantially all of the tributary flow for its economic feasibility.

The federal hydroelectric power program is similar in pattern. The Federal Power Commission, since its establishment in 1920, has licensed private facilities or approved public projects for the construction of 106 million KW of generating capacity. Its effective licensing program has assured the engineering and economic success of almost every project investigated, licensed or approved by it. In the accomplishment of its important mission, however, the Commission has ridden rough shod over state laws and policies on water resource development and has not only taken private rights

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for public projects without compensation, but may even have authorized private licensees to take the velocity and flow of streams and the economic values of dam sites for private power use without compensation. It has extended its jurisdiction to streams that are not navigable in fact and to projects that have no measurable effect upon navigation. It has obtained jurisdiction over the selection and approval of dam sites and construction specifications; over rates and sale contracts for generated power; and may recapture projects for government operation at the end of a fifty year license period at the lower of original cost or present fair value, reduced by an amortization reserve equal to about fifty per cent of the licensee's excess earnings during the last thirty years of his operations. The scope and purpose of licensing control generally bears no direct relationship to the preservation of navigable capacity of streams used in commerce or to the public development or sale of public lands.

In recent years the Commission has wholly preempted the power licensing field, and in the exercise of its authority has disregarded section 27 of the Federal Power Act, requiring licensees to comply with state laws and to recognize and protect private water rights. In *First Iowa Hydro-Electric Cooperative v. Federal Power Commission*,258 the United States Supreme Court approved the exclusive jurisdiction of the federal government over navigable streams and deprived the states of any licensing authority that might operate to veto projects examined and approved by the Commission. So far as this decision can be limited to conflicts between state and federal licensing procedures, it is sound. The Commission, however, has used the anti-veto principle to override state water laws, to avoid the states rights mandate of section 27 of the Federal Power Act and to condone licensee violations of state laws and regulations for the protection of local industries. In *Federal Power Commission v. Washington Fish & Game Dep't*,259 a project was licensed on the navigable Cowlitz River in Washington although the licensee had failed to obtain an appropriation permit from the state supervisor of hydraulics, had failed to submit its plans for examination and approval by the state director of fisheries, and had violated state laws designed to safeguard and promote the locally important salmon industry. When it was shown to the Ninth Circuit Court that ladders 325 feet in height would be required to pass migratory fish upstream around the dams and that sixty-seven feet was the highest ladder

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258 328 U.S. 152 (1946).
259 207 F.2d 391 (9th Cir. 1953).
that had thus far proved to be successful, the Court felt obliged to say: "If the dams will destroy the fish industry of the river, we are powerless to prevent it." The Supreme Court denied certiorari.260

In 1956 *Federal Power Commission v. Oregon*261 was carried to the Supreme Court to determine the power of the Commission to disregard local water and anadromous fish laws on the nonnavigable Deschutes River of Oregon where it was licensing a private project on reserved public lands. The Court upheld the license, in part on the precedents of the navigable stream *First Iowa* and *Washington Fish & Game* cases, but in larger part on the theory that the federal government owns all the water of nonnavigable streams flowing through reserved public lands and can control their development in any way it pleases without regard to adverse effects upon local laws and interests.

Private riparian and appropriation rights have also been limited or taken for power development on navigable streams generally and upon nonnavigable streams that flow through reserved public lands. On the theory of the *Willow River Power* case, that private rights good against the government do not exist upon navigable streams, it is clear by decided cases that such rights may be taken for federal power projects without compensation,262 and that in the condemnation of land for power sites, the government need not pay compensation for any special value such land has for hydroelectric development.263

Since a private power licensee may have to sell its facilities and rights to the government at the end of its license period for cost or value, and since the government does not have to pay the value of hydroelectric water rights upon its acquisition thereof, the licensee can make a strong case for his acquisition and enjoyment under license of the government's paramount navigation servitude or proprietary water right. It would be a new and strange concept in American jurisprudence for a private person, shielded by a government license, to take the property of another private person for a private use without the payment of compensation. Yet

in the recognition of the paramount federal right to navigable streams on the one hand, and the recapture rights of the federal government on the other, the courts are now faced with a difficult election between shifting the shield of the government downward to protect the financial investment of the licensee, or compelling the licensee to pay for rights that the government does not recognize in navigable streams as a condition precedent to the grant of a power license to him. In Niagara Mohawk Power Co. v. Federal Power Commission,264 the Supreme Court, in a four-three decision, allowed a licensee to add to the capital cost of its project the amounts it had already expended in the acquisition of private water rights. Although I commend the Court for its awareness of the private interests involved, I believe the decision to be inconsistent in forcing the United States to pay indirectly for water rights acquired upon recapture of licensed projects where the United States could acquire such rights directly from the former claimants without compensation. The case, however, only involved the accounting question as to how the licensee should set up its amortization reserve, where it had already paid for private rights, and does not decide the more fundamental question as to whether the licensee needed to acquire the power rights of non-licensed riparians in the first instance. In the later Federal Power Commission v. Oregon265 case, where the grant of a power license was substantiated in part by reason of the government's paramount proprietary interest in the nonnavigable waters of the Deschutes River flowing through reserved public lands, the licensee appeared to stand in the shoes of the government, and to acquire substantial rights against other interests below on the basis of this government title.

Although power projects are nonconsumptive of water and do not have serious effects upon irrigation use, it is alarming to me that a state such as West Virginia may be powerless to protect local industries and recreational areas against destruction by private power projects under federal license, and that private persons may have to forfeit, either to the government or to its private licensees, the intrinsic values of lands that are particularly desirable for power sites, and possibly their vested water rights themselves.

The final area of federal water resources development, reclamation, started life as a passive assistance program to encourage and support state and local projects for the reclamation of arid


lands, but has matured into an active and independent planning, construction and use control program of unparalleled dimensions. The 1902 Reclamation Act,\textsuperscript{266} committed the nominal proceeds from the sale of public lands in the sixteen western states to the construction of irrigation works where needed and requested by irrigation organizations, and directed that the reimbursable cost of each project be assessed against the land irrigated. By 1910 the reclamation fund was exhausted and many projects undertaken were not complete. Congressional policy, as a consequence, changed from a passive indifferent support of local programs to one of active fiscal control, and measures were enacted to assure the economic feasibility and financial success of irrigation ventures. An act in 1910 prohibited the commencement of new projects without a recommendation of the secretary of the interior as to their economic feasibility and their approval by the President.\textsuperscript{267} In 1914 it was further provided that all expenditures from the Reclamation Fund be by specific appropriation.\textsuperscript{268} The Reclamation Act required from the start that title to all project facilities remain in the United States for security reasons, but authorized surrender of management control to water users associations whenever two-thirds of the lands serviced by a project should be settled and reimbursement contracts signed.\textsuperscript{269} This support program with strong fiscal controls worked well and produced such major projects as Boulder Dam and the Colorado-Big Thompson transwatershed diversion project in Colorado.

During the depression years of the thirties, as a tonic to our economic life, the government entered into the dam building business on a gigantic scale and made substantial direct appropriations for reclamation projects. These years saw a change in bureau policy from the recommendation and support of projects that were planned and championed by local water groups to the active planning of projects on the national level. With this policy change has come a bureau pursuit of federal power, that is evidenced by its continual effort to extend its control over water user and project development in two significant ways:

In the first place, the bureau has attempted to make the contract user under reclamation projects subservient to its control. In \textit{Ickes v. Fox},\textsuperscript{270} the Supreme Court, holding in 1937 that the bureau could

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  \item \textsuperscript{266} 38 Stat. 388 (1902), 43 U.S.C. § 391 (1928).
  \item \textsuperscript{267} 36 Stat. 835 (1910), 43 U.S.C. § 397 (1928).
  \item \textsuperscript{268} 38 Stat. 690 (1914), 43 U.S.C. § 414 (1928).
  \item \textsuperscript{269} 43 Stat. 702 (1924), 43 U.S.C. § 500 (1928).
  \item \textsuperscript{270} 300 U.S. 82 (1937).
\end{itemize}
not increase its charges to reclamation project users or limit their water supply, declared the government to be a carrier of water, not the owner thereof. The Court said: " Appropriation was not made for the use of the government but under the Reclamation Act, for the use of the landowners; and by the terms of the law and of the contract referred to, the water rights became the property of the landowners wholly distinct from the property rights of the government in the irrigation works." Thereafter the government has written into water users contracts provisions for continuing federal administrative control. In the Central Valley contracts in California, for instance, the bureau inserted 9 (e) rental provisions, authorized by the Reclamation Project Act of 1939, rather than the customary 9 (d) requirements, the effect of the substitution being that after a forty year payout period should pass, the United States would still have title to the water and could make new contracts and exact new charges of the user. Consequent upon strong objections to these provisions by Central Valley Irrigation Districts and the commencement of a suit, styled Ivanhoe Irrigation Dist. v. McCracken, to contest the validity of these contracts under California law, Congress enacted legislation in 1956 to permit renewal of rental contracts at the request of the water users, the conversion of 9 (e) rental contracts into 9 (d) repayment contracts, and the crediting of all payments in excess of operating and maintenance costs toward the discharge of construction cost obligations. As the objections of the districts to this feature of the contracts had now become moot, the United States Supreme Court approved the inclusion of the rental provisions therein.

Also contained in these contracts, however, were limitations required by the Omnibus Adjustment Act of 1926 that no project user, whether his lands were acquired before or after project authorization, could hold more than 160 acres of land served by project water. In the Ivanhoe case, the California Supreme Court held this provision to be inapplicable to the Central Valley situation where acreages in excess of 160 had vested in persons with rights to appropriate San Joaquin water in advance of project construction, and also incompatible with the public trust features of California water law. The United States Supreme Court, reversing the California decision, held the specific acreage limitations of the reclamation.

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tion acts to override the provisions of section 8 requiring conformity with state law in project administration.\textsuperscript{275} It limited conformity to instances where the federal government acquires water rights in the course of reclamation development and declared that the United States could impose any reasonable conditions on the use of federal funds, federal property and federal privileges, and that the states could not compel the use of federal resources on any other terms. Notwithstanding the position of \textit{Ickes v. Fox},\textsuperscript{276} therefore, that the water user and not the government is repository for the water right, the use of federal funds in project construction may give continuing control of water utilization to the project administrators. The government, moreover, can coerce private users to contract away rights in water as a condition to getting federal aid. Had McCracken, a large landowner in the Central Valley, for instance, not resisted confirmation of bureau contracts, they undoubtedly would have been ratified by the state court. Once ratified, they would be binding on the irrigation districts notwithstanding digressions from state water law and the surrender of important usufructuary rights to the federal government.

The second device employed by the bureau to limit private rights has been its claim of a paramount proprietary interest in all the waters of nonnavigable streams. This claim has resulted from its inability on several occasions to get enough unappropriated water to support the projects it has built. Its concern in this instance is not for water users as a class but for the success of particular projects. In \textit{Nebraska v. Wyoming},\textsuperscript{277} decided in 1945, the United States, appearing as an intervenor, contended that prior to 1866 it had title to all the waters of nonnavigable streams by cession from colonies and foreign powers; that the Act of 1866 and those following did not surrender the proprietary rights of the United States to the states or to the people but merely recognized state laws as the law of the United States so long as it should desire to continue in force the policy of incorporation; and that reservations of land for reclamation sites or other purposes withdrew from the operation of state law such water as might be necessary for projects later to be conceived and constructed on the withdrawn lands. Although these land withdrawals and possible land acquisitions were not claimed to affect appropriation rights that had vested before their effective date, it was argued that they could preempt water from

\textsuperscript{276}300 U.S. 82 (1937).
\textsuperscript{277}325 U.S. 589 (1945).
further appropriation by private users. In the *Nebraska v. Wyoming*\(^{278}\) case, the Supreme Court avoided a decision on this question, saying that the United States, having made an appropriation for the Kendrick Project of Wyoming, must stand or fall on the basis of its appropriation and could not raise in that case other claims it might have. It asserted its proprietary rights a second time in *United States v. Fallbrook Public Power Dist.*,\(^{270}\) a suit for the determination of the interest of the United States in the waters of the Santa Margarita River that flowed through Camp Pendleton, California, acquired by purchase for military purposes. The public alarm over its claim of ownership in this case resulted in the McCarran Amendment to the Department of Justice Appropriation Act of 1952,\(^{280}\) prohibiting the expenditure of federal funds in the prosecution of this suit and declaring that the government could not make claims other than as appropriator or riparian in water adjudication proceedings. The case proceeded under a stipulation by the United States that it would assert rights as a riparian only.

Since the date of the McCarran Act, however, and notwithstanding its positive language, the United States has continued to press for the establishment of proprietary rights. One of the first acts of Attorney General Brownell was to direct all United States attorneys to withdraw from suits involving appropriation water rights of the United States on the basis that such adjudications could not affect its paramount proprietary rights. Accordingly, the United States withdrew from *Denver v. Northern Colorado Water Conservancy Dist.*,\(^{281}\) adjudicating the transwatershed diversion rights of Denver and the Bureau of Reclamation, and from *Rank v. Krug*,\(^{282}\) adjudicating the rights of the United States and San Jacoquin water users to Central Valley Project water. Concurrently with these actions, the Naval Ammunition Depot at Hawthorne, Nevada, withdrew six applications for permit to appropriate ground water under Nevada law, maintaining that its use of ground waters was not subject to the requirements of state law.\(^{283}\)

In *Federal Power Commission v. Oregon*,\(^{284}\) the United States Supreme Court held, over a strong dissent, that power site with-

\(^{278}\) Ibid.


\(^{281}\) 130 Colo. 518, 276 P.2d 992 (1954).

\(^{282}\) 142 F. Supp. 1 (N. D. Cal. 1956).


\(^{284}\) 349 U.S. 435 (1956).
drawals of 1910 reserved both land and water from private entry and appropriation and that the United States could authorize the construction of power projects on the withdrawn lands in 1955 without infringing the rights of appropriators since 1910. Although a power project decision, its holding that a land withdrawal removes the waters of nonnavigable streams flowing through reserved lands from the operation of state water laws bears directly on the reclamation claims of the United States, and may be the basis for the recent insistence of federal officers that the United States has a proprietary right that is not subject to court adjudication under the McCarren Act or state law. Although these cases have involved withdrawals and reservations of public land, it is by no means clear that the principle asserted therein is not equally applicable to lands acquired on nonnavigable streams throughout the country for public conservation purposes. The Rank v. Krug case arose out of the refusal of the United States to deliver water through Friant Dam for preexisting users on the San Jaoquin. The United States had asserted proprietary rights in the waters as justification for not compensating existing users for their loss and for carrying the water to the southern end of the valley for distribution under new project contracts to a new class of water user. I cannot imagine a public interest so great as to explain and justify the efforts of United States attorneys over the past eight years to take water away from one group of users for the benefit of a new group under a new project.

With the extensions of federal navigation, water power, flood control and reclamation jurisdiction and control that I have described, areas of uncontested state jurisdiction and vested private rights in water resource development are few indeed. Although the federal government has done an excellent job in developing and conserving critical water resources of the country, it is now curtailling private initiative and preempting policy areas that belong to the state. To restore it to its proper role of stimulation, cooperation and assistance, four things must be done:

First: Legislation is necessary to confirm once again states rights in the establishment of procedures for the acquisition of private titles and put to rest the fanciful claims of the Bureau of Reclamation and the attorney general's office that the United States has proprietary rights to the waters of nonnavigable streams. In 1955 Senator Barrett of Wyoming introduced into Congress a bill for a Water Rights Settlement Act to permit the seventeen western states to regulate the use and distribution of all waters within their
Meeting with heated opposition based upon conceptual conflicts over the relationship between the states and the federal government, the measure was revised and reintroduced in 1957. It failed again to muster sufficient support. Under Secretary of Interior Elmer Bennett favors legislation governing control, appropriation, use and distribution of water in the western states but wants a more modest bill as a starter. The Interior Department has recently introduced such a bill as a compromise measure. Secretary Bennett says the new proposal represents an earnest effort to find language, agreeable to the various executive departments, which will afford adequate protection to federal interests, yet grant the seventeen reclamation states more adequate statutory assurance as to the integrity of their water rights. Similar measures will be needed for the eastern states if their evolving conservation program succeeds in developing multipurpose projects, under the jurisdiction of the Corps of Engineers, but subject to the reimbursement and compensation provisions of the Reclamation Act. Interestingly enough in hearings to consider the extension of the Barrett Bill to other federal agencies, the Justice Department has taken the position that the navigation, flood control and power regulation functions of the federal government are immune from state water laws and an act of Congress directing compliance therewith would be constitutionally invalid. Yet, only if the prerogatives of the states and the vested rights of water users can be protected will cooperative state-federal action achieve a sound conservation goal.

Second: A positive construction is needed for the McCarran Act that would join the United States in all litigation involving the water rights and claims of the United States and the administration of all federal projects. The Department of Justice should be compelled to present the claims of the United States in open court. The attitude of United States attorneys in *Rank v. Krug* was wanton and inexcusable in refusing to abide by the decision of the judiciary as to the nature and extent of federal rights. The bureau should

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287 For discussion of Interior draft, see Western Water News, March 1959, p. 1. Senator O'Mahoney of Wyoming has also introduced a bill “to provide that withdrawals or reservations of public land shall not affect certain water rights.” This measure, styled S. 851, has been referred to the Interior and Insular Affairs Committee.
determine the availability of unappropriated water before commencing reclamation developments and, returning to its program of a few years back, approve projects only after its investigations have established that unclaimed and unused water is available under state law for the beneficial use of project irrigators contracting to receive it.

Third: General legislation should be enacted, requiring the government in all river basin improvements, whether they be of a reclamation, navigation, water power or flood control nature to compensate private persons for any impairment of their water rights on navigable and nonnavigable streams alike. This proposal obviously would not apply to a case where the government cuts off private consumptive uses of water to preserve a natural navigation channel. It would, however, require compensation for the enlargement of a waterway or for other basin improvements. It is wrong in principle for private users, through the surrender of their rights, to bear the cost of basin wide public improvements.

Finally, an overhaul of federal agency organization and procedure is long overdue. The specific recommendations of the Hoover Commission, the President's Water Resources Policy Commission, and the Presidential Advisory Committee on Natural Resources are generally uniform and basically sound. Although some of the proposals for interagency cooperation have been implemented, and greater use is being made of basin states committee, sweeping changes are still required to establish a central programming authority and eliminate duplication, interagency controversy and waste.

These changes would not affect adversely the economic feasibility of any of the important reclamation, power and navigation developments of the future, but would restore the confidence of the water user in due process and equal protection of the laws. What is even more important, they would permit the federal government, the state government and private enterprise to play the roles in the resources development drama for which each is best suited, would encourage cooperation rather than conflict, and achieve common conservation objectives with a minimum of injustice and waste.