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## Adapting Appropriation Water Law to Accommodate Equitable Consideration of Instream Flow Uses

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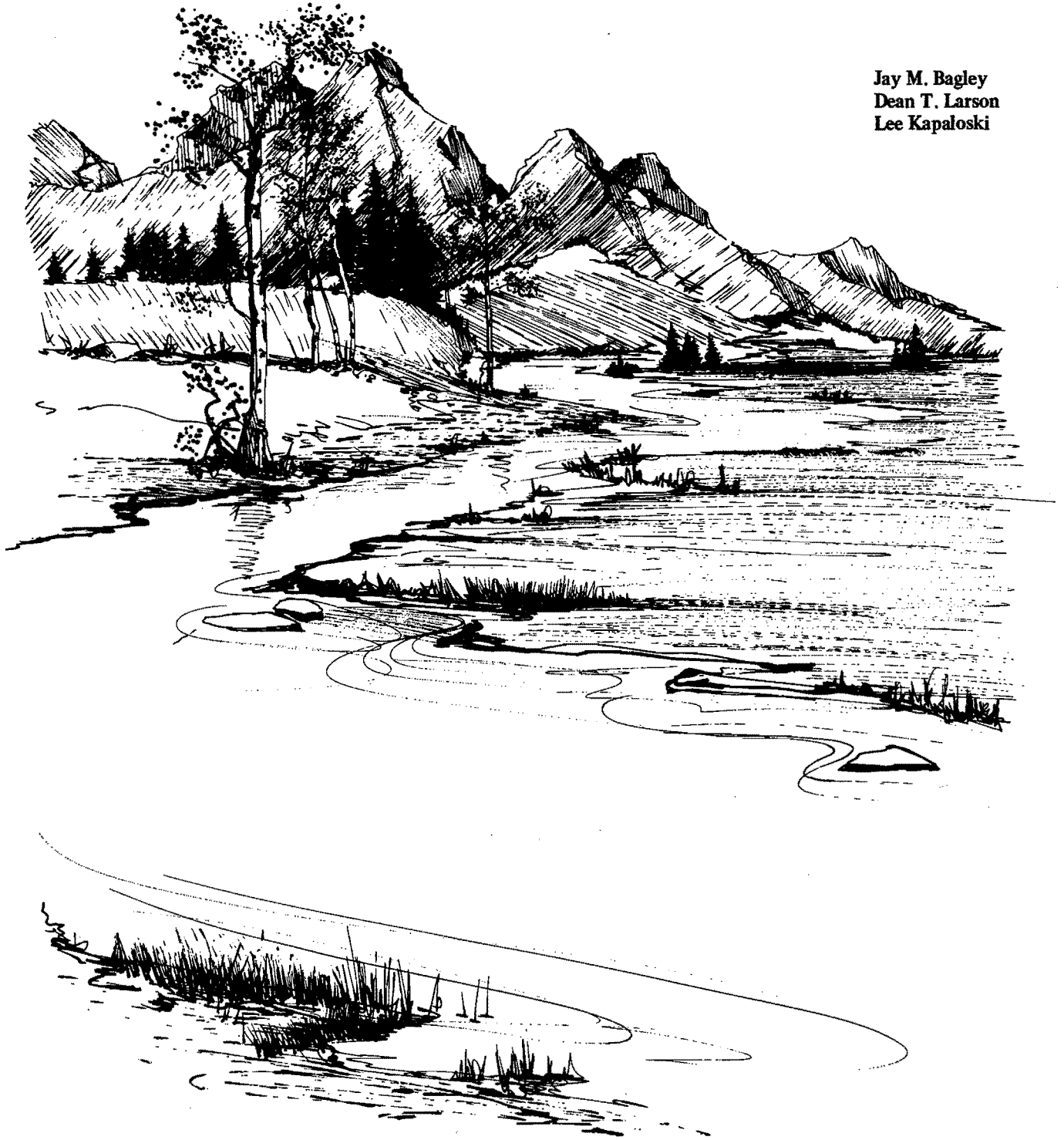
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# Adapting Appropriation Water Law to Accommodate Equitable Consideration of Instream Flow Uses

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Logan, Utah 84322

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ADAPTING APPROPRIATION WATER LAW TO ACCOMMODATE EQUITABLE  
CONSIDERATION OF INSTREAM FLOW USES

Jay M. Bagley  
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## ABSTRACT

The increasing public interest in naturally flowing streams has fostered efforts to obtain their protection under existing state water laws. In this study, the water laws of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming were examined and compared 1) with each other, and 2) against a set of salient criteria, to assess shortcomings in accommodating instream flow protections. It was determined that the appropriation system has the essential features of and embodies legal principles that should allow the accommodation of instream flow values but, at this time, purchase of existing rights or the exercise of governmental reservation/withdrawal/appropriation authorities seem to be the primary options. Legislative, judicial, and administrative strategies for protecting instream flows apart from the normal appropriation process were reviewed. Certain legislative and administrative strategies hold promise as supplementary to the standard appropriation procedure. Likewise, private sector strategies utilizing contracts, easements, purchase of development rights, etc., need to be more thoroughly considered.

Where instream flow protections do not justify preemptive rights and strategies, and if hydrologic imperatives are properly observed, the state administered appropriation systems can accommodate the instream flow needs. However, the need for better technical information for establishing beneficial need for the many instream values, and for use in projecting the biologic-hydrologic consequences of particular instream flow regimes remains a stumbling block to the accommodation process.

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## CHAPTER I

### INTRODUCTION

#### Problem Statement

Growing interest in the protection and enhancement of values associated with naturally flowing streams has fostered effort to obtain proper recognition within the framework of water law. However, difficulties have been encountered in the establishment of "water rights" for such purposes. Many individuals having special concern for protection of instream flow values have come to feel that appropriation law, with its protections for prior appropriators and its traditional emphasis on offstream uses, is incapable of accommodating instream flow appropriations on an equal footing with traditional uses. Although most states have given statutory recognition to the "beneficial" nature of instream uses, their protection has been provided in special ways. Some states are establishing protection of instream values on a case by case basis resorting to the discretionary powers of water administrators to override the normal appropriation procedures. Other states have provided exclusive authority to an agency or agencies of state government to make reservations or appropriations for instream flow purposes. Still others are attempting to preserve instream flow values through planning, management, or project operating strategies which maintain adequate minimum flows.

An entirely different legal theory pertaining to public rights to water for environmental purposes has also been advanced in recent years to obtain the protections desired for instream flows. Since the appropriation system is in place and has provided a durable and workable basis for administering water for a wide variety of purposes under highly variable circumstances, that system deserves further evaluation of its capability to accommodate instream flow uses into its structure of state water rights administration. Rejection of appropriation principles in favor of other legal theories, or the employment of expedient solutions that may ignore tradeoffs or offsets in the single purpose objective of gaining special recognition of instream flow uses may prove counterproductive. In the long run, the interrelatedness of water uses will require an accommodation of the laws governing those uses, and the adoption of competing legal theories will make this process more difficult. Thus changes and additions to existing law designed to protect instream values should not be recommended just on the basis of their effectiveness in protecting those values. New approaches should also be carefully evaluated to determine whether they represent equitable recognition of emerging values in concert with all other legitimate uses.

Western appropriative water law was established to provide legal protection to the investments required to develop water for mining and agriculture when the region was initially settled. Over the years, vast investments in water resources development and the sectors of the economy that they serve have been built and are protected by the legal

system of water rights. Modifications to this time honored legal system must be carefully designed to avoid disrupting this infrastructure.

Appropriative water law was formed at a time when hydrologic processes governing interactions among upstream and downstream flows and between surface and groundwaters were poorly understood. Over the years, gains in hydrologic knowledge were incorporated into the law resulting in improvements and refinements in the allocation and monitoring of water rights. The introduction of instream flow values as an explicit consideration in water rights management brings new functions relating values to flows and emphasizes hydrologic interactions which were less prominent in the evolution of the present water rights system.

During the formulative years of western water law, instream uses were much lower in the social ordering of values than were uses by productive enterprise. Furthermore, the preferred locations for instream flow uses tended to be in headwater areas above the points of diversion and hence little affected by the competition for water at valley locations. Significant conflicts emerged later as the construction of reservoirs modified streamflow regimes, but project construction was generally a socially accepted tradeoff for the economic benefits stimulated by storage, flow regulation, and offstream diversion. Conservation pools in storage reservoirs and regulated releases from storage were considered by many to improve natural streamflow regimen and enhance aquatic habitat.

The last 20 years have seen a widespread increase in public interest in environmental values but also greater diversity in the ways that people with different interests regard instream flow values. Some people experience economic gain more directly from water development while others emphasize the quality of life value pertaining to the aquatic resources. Some are willing to sacrifice more economic gain than are others to improve the environment. Many conflicts exist in defining improvement with respect to the environment. These value issues are fundamental to objective instream flow protection and yet unresolved.

#### Study Objectives

The overall objective of this study is to evaluate western water laws as they pertain to instream flow uses. While the central focus is with identifying problems to the equitable accommodation of instream flow uses and discovering ways to resolve them, the study is anchored in the recognition that both instream and out of stream uses have high social utility and that all water uses should be governed by a set of principles that endure even though social priorities for water use change over time. Specific study objectives are:

1. Develop a set of criteria whose embodiment in water law and administration would assure equitable treatment of all water uses under an appropriative system.

2. Make a comparative analysis of present water codes of selected western states with respect to the criteria developed in objective 1.

3. Examine the strategies that have been used or proposed for protecting instream flows in states with appropriate water law.

4. Examine the hydrologic imperatives associated with various in-stream and off-the-stream uses, that need to be properly considered in establishing a sound basis for instream flow accommodation.

5. Evaluate the implications and problems in achieving better protection of instream flow values stemming from preservation strategies, legal theories, and hydrologic imperatives.

#### Research Scope and Procedure

Only those western states operating exclusively under the appropriation doctrine of water rights have been included in the study. States having vestiges of riparian doctrine were excluded in order that comparisons and conclusions could be more reliably drawn. States whose water codes were compared included Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

To provide insights into both general weaknesses and specific deficiencies with respect to instream flow recognition, 13 criteria were identified as desirable features of state water law. The water codes of each state were examined with information extracted and organized according to the set of desirable criteria for purposes of comparison. Differences and/or similarities which are most relevant to the equitable consideration of instream flows and which constitute important legal principles and issues were studied.

Against the backdrop of water law comparisons described above, various strategies for reserving instream flows for fish, wildlife, and other recreational values were examined. The principal strategies evaluated have been identified by the U.S. Fish and Wildlife Service as being potentially employable within the present legal framework of the various states (Dewsnup and Jensen 1977a, 1977b, Dewsnup et al. 1977). Those strategies identified as possibilities for use in obtaining instream flow reservations are examined more fully in terms of their practicality for actual use when incorporated into overall water management objectives. The principal focus, however, is on examining legal principles embodied in present appropriation water law, and comparing them with the legal principles needed for protecting instream flow values, and searching for promising reconciliations.

## CHAPTER II

### COMPARATIVE ANALYSIS OF STATE WATER CODES

#### Basic Elements of Comparison

Appropriative law is presently the exclusive basis of water rights administration in the Rocky Mountain states. The law of appropriation is over a century old in these states and there are many similarities in the codifications of each state. The day to day handling of problems in real time and with real users can only be accomplished under a set of rules and procedures designed to foster order, equity, stability, and efficiency in water utilization. Only state governments have institutionalized this process. There is no federal counterpart to the statutory nor the administrative structure of the states to referee matters of water resource allocation and use. What level of government is best suited to institutionalize this need is not the question here. The point is, that good institutionalization is essential for the effective management of the water resource for the benefit of individuals or the public in general and since only the states have this institutional and statutory structure, it is reasonable to presume that state administrative structures would continue to be the norm.

The search for a standard by which current state statutes might be compared derives from a question of what important principles should a "model" state water law embody. What basic concerns should the law address if it is to be durable yet adaptive to changing social demands? Thirteen basic principles to undergird a system of water law for equitable apportioning of water among all users and providing a stable framework for its efficient utilization over time have been articulated. The identification of these principles, or norms, are made under the presumption that state administrative structures are to be retained and that principles of microeconomics in a free market setting would continue to operate. Whether the 13 principles proposed comprise the best possible set is, of course, judgmental. Briefly noted they are:

1. Recognition of Both Public and Private Aspects
2. Flexibility for Transfer and Exchange of Water Rights
3. Periodic Reevaluation of Water Rights and Uses
4. Legal Harmony with Physical Principles
5. Provisions for Equitable Apportionment of Shortages
6. Legal Security of Water Use
7. Specified Period of Use
8. Fostering Social Efficiency and Productivity in Water Use
9. Due Diligence in Implementing Entitlements
10. No Injury or Harm to Others
11. Quantity-Quality Compatibility
12. Adequate Public Notice and Hearing
13. Equitable Burden of Proof

Digest of Statutory Provisions with  
Respect to Comparative Elements

What the different state statutes portray with respect to each of the comparative norms are summarized in the Appendix. A digest is provided in this section.

State water codes are not organized in terms of the norms or criteria generated in this study and outlined in the previous section. Therefore, there is some subjectivity in selecting from the codes that commentary that pertains to any given norm. In general, the process involved an initial reading of the codes, in which the more obviously relevant provisions were identified, then a period of refinement of tests of relevance, and finally a rereading of the codes to identify any additional relevant material. The provisions identified as relevant to one or more criteria were copied and organized by norm and state for comparison and review.

It is believed that the selected material from the code represents a complete and correct reflection of a state's requirements with respect to that norm. However, the process is somewhat judgmental. The statutes are quite clear and direct with respect to some of the norms but indirect on others. Scrutinizing the statutes with respect to certain fundamental criterion should shed additional light on the strengths and shortcomings of the appropriative system as a model for administering water resource uses, and particularly its applicability to accommodate instream flow uses.

Court decisions, based either on common law or statutory law, are important in the ultimate interpretations of the law and the precedents set. However, court cases or administrative practices of each state have not been exhaustively scrutinized for purposes of this report. Where court cases have been cited in the literature and referred to in annotated codes they have been used to clarify or supplement the statutory content.

The 13 criteria are presented below in expanded form with commentary following.

1. Recognition of Both Public and Private Aspects. *Provisions for allocating water rights should strike an appropriate balance between the recognition of water as a "common" resource (in which public harm and public benefit must be considered) and of water rights as private property (within the meaning of due process).*

The appropriation system, as administered in all states, offers widespread access to water. For example, the Utah Code (Sec. 73-3) lists the following entities as having legal standing to appropriate water: a) individual persons or associations of persons, b) nonprofit corporations, c) cities and towns, d) metropolitan water districts, e) municipal improvement districts, f) county improvement districts, g) special service districts, h) irrigation districts, i) water conservancy districts and subdistricts, j) agencies of the State of Utah, k)

agencies of the United States government, and 1) Indian tribes. The appropriation system administers water as private property rights according to the owner the right to control his entitlement (under conditions that are specified). Water rights are generally given with the expectation that they may run indefinitely and cannot be terminated arbitrarily.

Although private rights in water are the foundation of western water law, the appropriation statutes all declare that the water belongs to the public or the state and may be appropriated for beneficial uses. Applications may be rejected on the grounds that they are incompatible with the public interest. Private rights may be subordinated to the state exercise of its police powers in acquiring rights through condemnation. States may also withdraw water from appropriation and/or reserve water against appropriation as the public interest may require. States commonly have certain restrictions on transfers or exchanges of water rights in order to protect public interests.

Historically, the primary effort to protect the public interest has been to prevent adverse interactive impacts among users. Most water uses return a residual to the system. Uses that return flow with physical, chemical, biological, or temperature characteristics that seriously impair the receiving water for use by others are generally not allowed. Reductions in flows between points of diversion and return, or returns of effluents at locations, times, or qualities that harm one's neighbors, are prohibited. Hydrologic externalities translate into economic externalities that are carefully watched so that significant social costs cannot be thrust on others by a water right holder.

2. Flexibility for Transfer and Exchange of Water Rights. *The law should provide flexibility in transferring or exchanging water rights (subject to protection of third party and general public interests).*

Social objectives are dynamic and their continued satisfaction over time requires flexibility in the transfer and exchange of water rights. As water supplies approach full appropriation, the attainment of social, economic, and environmental goals depends more and more on water being converted or transferred to new uses matching contemporary priorities. Most states provide for water rights transfers and presume they will take place under market forces. However, such transfers are subject to approval by the state water rights administrator who applies third party and public interest tests to any proposed transfer. These procedures may slow a transaction through the publicizing and hearing process, but they preserve the certainty of the right and minimize subsequent controversy.

Some state statutes still make water rights appurtenant to a land holding. In every instance, however, there are prescribed ways of separating the water right from the land on a case by case basis. Locational inflexibilities limit the utility of a given water supply.

The appropriation system provides for transfers of water rights ownership as well as for changes in points of diversion, place of use,

and nature of use subject always to avoiding detrimental effect on existing water rights holders. The appropriation system also allows exchanges so long as a reasonable equivalence in quality is maintained and injury does not occur to other water rights owners.

The amount of water transferable to a new use is not simply the amount of the diversion entitlement. What is normally transferable is the consumptive part of a water right--diversion minus return flow. The full diversion entitlement can only be allowed if the return flow fraction and its availability to others remains the same.

Where it is impossible for an exchange to occur without adversely impacting other water users, various forms of compensation are possible. For example, the Utah Code (73-3-23) provides for a junior appropriator to compensate a senior appropriator, whose water supply he might detrimentally affect, by providing him replacement water such that no diminution in quantity or quality of the senior rights actually takes place. Colorado employs a "substitute supply" concept in allowing junior users to provide a substitute supply of water to senior appropriators so long as the quality and regimen of the substitute water meets the existing requirements of the senior appropriators. In other words, when substitute water is supplied to a senior ditch, the supplier may take an equivalent amount for beneficial use so long as he does so without impairing the availability of water lawfully divertible by others (1973 C.R.S. sec. 37-80-120).

Water right transfers or exchanges may be hindered where they have been encumbered as collateral on a loan or by some kind of contractual obligation. However, such restrictions are typical with any kind of property.

Some states have special restrictions on transfers which move the water out of state (i.e., coal slurry). Municipalities are sometimes restricted from transferring their water rights. Such restrictions constitute overrides of water markets in the interests of protecting a perceived greater public good.

3. Periodic Reevaluation of Water Rights and Uses. *There should be a periodic review of water rights on a river basin basis in order to update individual rights and reaffirm their standing relative to one another.*

Appropriation law in all states provides for reevaluation of claims to water rights in a given drainage basin so that individual rights and their relative standing can be clarified and updated. The process provides a means of comparing the entitlements of record against actual use, identifying uses not correctly certified, and examining entitlements with respect to current concepts of "duty" or reasonable need for the specified use. This is known as the adjudication or readjudication process.

In reality, this systematic examination of all users and uses leading to a court decreed determination of their respective rights is a

time consuming and expensive process that is not repeated frequently. However, commissioners or agents of the court or the State Engineer are assigned to monitor water deliveries on a continuing basis to see that uses conform to decreed entitlements. As transfers or changes in use receive the approval of the State Engineer, they are officially documented to keep the allotment picture current.

4. Legal Harmony with Physical Principles. *Water rights statutes, codes, rules, and regulations should harmonize with the physical laws which govern the natural occurrence, movement, and storage of water in interconnected surface and subsurface systems generally in a river basin context.*

Ideally, the ground rules under which water rights may be acquired, exchanged, or transferred should promote equity, order, and stability in the utilization of the resource over time. For these objectives to be accomplished, the legal principles must be in harmony with the physical principles that govern the hydrologic cycle. Because of the complex and transient character of hydrologic systems, legal decisions may be based on an inadequate understanding of the physical workings of the system and thus perpetuate potential for future litigation. A legal precedent based on imperfect physical understanding of a site specific problem can have lasting and troublesome consequences.

Waters of a hydrologic system constitute a unified and interrelated flow system. Visible streams and rivers are connected with waters moving underground. Because of this hydrologic unity, physical modifications in the quantity, quality, or regimen of flow induce modifications in the quantity, quality, or regimen of flow at downstream locations (either above or underground). Western state water laws recognize this physical reality in provisions for third party protection in any appropriation, transfer, or exchange.

A basic tenet of appropriation water law is that individual uses are not allowed to cause unreasonable injury or harm to other water users. The investments of all legitimate water right owners are protected from injury caused by capricious manipulation of the common supply. Thus, statutes, codes, rules, and regulations need to be harmonized with the physical laws and principles that govern the natural occurrence, movement, and storage of water in the interconnected surface and subsurface system. All states have modified their statutes and rules from time to time as added hydrologic understanding has revealed flaws in earlier legal opinions.

The use of a priority system for the classification of rights is partly in recognition of the variable availability of water in nature, and the need to reflect that variation in establishing legal equities. The prioritization is for the oldest rights to have first call on the water up to their full entitlement before the next oldest right receives any, and so on until the supply is exhausted. Further categorization of preference uses, domestic, agricultural, industrial, and mining for example, seems to be in anticipation of occasional extreme shortages.



Appropriation states have experienced their greatest difficulties in bringing their legal framework for administering groundwater rights in harmony with the dynamic workings of the hydrologic system. Of the groundwater doctrines placed in use in the various states, the appropriation law seems to be most workable. Changes in groundwater law over the years have been away from the theory that water beneath the land belongs to the land's owner (English or common law rule). Modifications of the English rule ( 1) to require a landowner to "reasonably use" his groundwater so as not to harm neighboring owners with similar rights and 2) to make groundwater rights "correlative" in any use by fixing water to specific land and sharing shortages in proportion to land ownership) have not proven as effective as the appropriation system. Under the appropriation system, the right is not predicated on a property interest in land and seniority protection in times of shortage is by a chronological heirarchy among appropriators. Administering groundwater uses under a different rule than used for surface water ignores the hydrologic unity of river basins.

Arizona, as an example, has only recently updated its laws to overcome some disjointed administration of groundwater and surface water. Case law in Utah has tended to protect groundwater pressure or static levels even though drawdowns of a water table or a piezometric pressure are a physical function of any groundwater withdrawal by pumping. To regard the lowering of static levels as an infringement on prior existing rights is a contradiction of the physical principles of water movement. The appropriation system originated in most states before the advent of significant pumping from groundwater. Consequently, all states have gone through an evolutionary process of fitting the administration of groundwaters into a legal construct compatible with its physical interrelation with surface sources. . In most instances, states have made statutory changes which make it clear that appropriative rights to groundwater relate to quantities of water for beneficial uses and not to water levels, means of use, or ease of withdrawal. Procedures for acquiring groundwater and the tests of injury that are made a part of any water appropriation, change in use, or transfer are now generally the same for both surface and groundwaters.

Some problems have occurred over the years because of a failure to properly consider the different hydrologic implications of water rights awarded for "consumptive" and "nonconsumptive" purposes. In a consumptive use, water is converted to a vapor and expelled as such into the atmosphere (i.e. irrigation). Nonconsumptive uses discharge the water diverted back into the stream in liquid form (i.e., hydropower, industrial cooling). Some recreational uses, such as swimming and boating, merely make contact with water in the use process. Because given uses are so inhomogeneous in what they do "to" and "with" water in the use process, the physical impacts of one use on another may be quite different. Any transfer involving a change in nature or place of use must consider carefully the before and after physical changes as these have implications for existing water rights. Whether the right is transferred upstream or downstream from its present location, or whether the transfer is in-basin or out-of-basin, or whether the transfer is from one use to another, the resulting impacts on other water uses are

unique. Under the appropriation system, the water rights administrator must consider the physical implications of every change in use so that the legal-physical equilibrium is not upset in the process.

Some appropriation states exempt certain uses (especially small amounts of domestic use) from the appropriation procedure. Presumably exemptions are based on the impracticality of regulating numerous small uses that collectively account for a relatively small portion of the available water. However, exemptions are almost certain to cause eventual problems because permit holders do not receive the full protection against unregulated uses that they are otherwise accorded. In principle, exemptions create different classes of ownership that suggest preferential treatment under the law. To maintain the full confidence of all water users by subjecting them all to the same tests of interference and damage in the appropriation and transfer process, there should be no exempt uses.

5. Provision for Equitable Apportionment of Shortages. *Water rights systems should embody a strategy to equitably apportion available water in times of shortage.*

The seniority system based on date of filing for a water right becomes a schedule for allocating water in time of shortage. The most recent applicants must be terminated first if supplies are insufficient to satisfy all claimants. When water supplies are insufficient to satisfy all users having the same priority, allocations are made on a pro rata basis.

While the time-of-filing priority provides the basic criterion for apportioning water in times of shortage, all states recognize that certain classes of uses have greater social and economic importance than do others and have to be sustained even if their time priorities are junior to those of less valued uses. This has been overtly recognized in some appropriation states through statutorily defining an order of preference to be followed in times of shortage. Such an ordering becomes an override of the generally followed "time-of-filing" criterion. However, states that have not established preferred uses have generally found that water markets and the right of condemnation accomplish the needed ordering. Thus, it would appear that the basic (time) seniority system and accompanying provisions for temporary/permanent transfers and changes in use, the authorities for governmental actions in the public interest, together with the ordering of use preferences in some states are providing ample means to obtain equitable apportionment of water supplies during times of shortage.

6. Legal Security of Water Rights. *The legal security of water rights should be provided through a permitting system which makes the right a matter of legal record entitled to protection under the law.*

All states using the appropriation system have statutorily prescribed procedures for acquiring water rights, whether by appropriation or transfer. When these procedures are followed, the claimants water rights are defined and made a matter of legal record. The state

certification provides a water right that is entitled to protection much as real property. The administrative official has a duty to investigate any complaint of impairment or infringement on a water right and such officials have quasi-judicial authority to restrain any acts, whether deliberate or unintentional, that cause injury to a water right owner.

Since any water right transaction or use modification must be advertised and publicized to all who might possibly be affected before it can be officially sanctioned, there is little chance for a certificated water right being diminished or impaired without the knowledge of the administrative agency. Owners of interests are protected in that those implementing changes of use must accept liability for damages.

State appropriation systems provide for an "adjudication" process which provides a formal legal definition of what a "right" actually is. Appropriation law also allows interest in the water asset to be transferred or transmitted to a successor at death. This provision for continuing ownership of a water right into perpetuity (assuming behavior consistent with accepted and established norms discussed elsewhere) is an important element of security in the appropriation system. While the right is not confined to its initial use in perpetuity, the owner does know that he is immune from an arbitrary taking of his right without due process. Water rights are very commonly used as collateral in borrowing money. Lenders would not accept water rights as collateral if they could not be subjected to property liens.

Some states exclude certain classes of water users from the permit system. Legal problems are more likely when some uses are regulated and some are not.

7. Specified Period of Use. *Water rights should embody a specified period of use within the year and should have guaranteed tenure for at least the economic life of the enterprise for which the water is obtained.*

Applications to appropriate water must specify the period during the year which the use is to be made. For example, an irrigation water right has a beginning date which corresponds to the earliest period of crop growth and an ending date representing a safe expectation of the time when crop growth stops. Domestic and livestock appropriations generally have year round use. The use period becomes very important where water transfers are sought and particularly if this should involve a change in the nature and place of use. While changes and transfers are not discouraged, they cannot result in an enlargement of the use to the detriment of other water rights holders. To convert an irrigation use to a municipal use, for example, may require the acquisition of irrigation storage rights whose withdrawal can be made at any time without affecting other owners.

The fact that water rights awarded under the appropriation system are generally considered to extend in perpetuity is often criticized for perpetuation of low-valued uses and for discrimination against late-comers with more socially beneficial needs. However, conditioning

rights in time is generally not imposed on private property per se. So long as water rights are marketable as private property, it matters little which party or to what use the right initially pertains. The interest for whom the right is more valuable will ultimately bid it away from its former owners. Although it has been alleged that the appropriation doctrine tends to "freeze" development and that use patterns depend on the happenstance of who is ready to appropriate at any given time, this has not been observed to take place. The fact that water rights have no termination dates does not lock them into the original use.

Although the appropriation system seldom specifies a termination period in defining the owner's interest, rights may be awarded with a specified termination if there is good public justification for doing so. An example of this is the water right given to the owners of the Kaiparowits coal field in southern Utah. Noting that the award might jeopardize prior filings for the "ultimate" development of the Central Utah Project, the State Engineer granted a right over the planned economic life of the coal fired power plant but left opportunity for the state to bring public interest concerns into refocus before extending the right for continued power production or allowing it to be sold by the power company upon termination of their power producing operation.

Some have alleged that the lack of termination dates on water rights limits a state's authority to reallocate resources in response to changing needs. Such arguments question the ability of the market to achieve social objectives in the reallocation process and the application of property ownership concepts in water management. The presumption is that bureaucratic wisdom about public values and preferences is superior to freely made transactions in the marketplace.

Several states provide for temporary use permits, and these fill a useful need. A contractor, for example, may acquire water temporarily under situations where a permanent use is neither needed nor desirable. A temporary use can also make arrangements to acquire water from owners willing to forego their uses for a period of time.

*8. Fostering Social Efficiency and Productivity in Water Use. The allocation of water among uses should foster efficient and productive use of the total water supply in the satisfaction of both private and public economic and amenity goals.*

All appropriation states make "beneficial use" the basis and the measure of a water right. Some states have a ranking of selected beneficial uses to be observed in times of shortage. Others have no such ordering. There is general recognition that water uses must be reasonable and that waste and misuse must be prohibited. An individual's water right, no matter how measured or described, can never exceed his needs. In this context, it would appear that "beneficial use" is to be applied as a principle rather than to suggest finite listings of beneficial and nonbeneficial uses with only those in the first category eligible to receive water. When considered as a principle, the beneficial use concept does not become dated as it certainly would if attempts

were made to maintain listings of specific uses as "beneficial" or "nonbeneficial."

In allocating a commodity so essential to almost every human enterprise, the objective is to accommodate any use that has value to segments of society but to prohibit use in profligate ways. Holding water for speculative purposes while others have need for it and not properly husbanding supplies made available are not to be tolerated. Water rights unexercised, or not placed in publically recognized and worthwhile uses, cannot be certificated.

The notion that there should be a fixed ordering of use preferences has little foundation and has not proved realistic. Individuals in society set different values on specific uses of water. Some would cite water use for maintaining certain aquatic habitats as nonbeneficial. Others find considerable value in the scenic, recreational, and aesthetic aspects of water in such uses. In commenting on an Idaho case, Justice Bakes (530 P.2d at 927) observed that a use is beneficial only so long as circumstances of water use have not changed to the extent that it is no longer reasonable to continue the use at the expense of more urgent needs. The beneficial use principle is intended to accommodate any use that has value to segments of the population. However, as values diverge, perspectives of what constitutes beneficial and nonbeneficial uses diverge also. When society places a high value on the benefits of either utilitarian or amenity uses, water employed in obtaining such benefits is obviously a beneficial use.

Some maintain that the distinction between a beneficial and non-beneficial use is in terms of whether the water is employed in ways that produce economic gain. Yet water has been appropriated for the maintenance of private and public (government) waterfowl areas, drinking and domestic uses of all kinds, for landscaping in parks, cemeteries, golf courses, and for many other uses that could hardly be justified in terms of expected economic gain.

*9. Due Diligence in Implementing Entitlement. Due diligence should be required in putting water to actual beneficial use once a permit is granted, and the preservation/reservation of an unexercised right should only be for highly justifiable reasons.*

The requirement in appropriation law that a claimant exercise due diligence in putting water to actual use is to discourage speculation in water rights or to hold water merely to deny its use to others. Due diligence provisions for water rights parallel those for mining rights from which they were borrowed. Specific time requirements and the conditions for extensions and exceptions vary from state to state, but accomplish the same objectives. Any special allowances or exceptions for not meeting the specified due diligence requirements must always be for highly justifiable reasons.

*10. No Injury or Harm to Others. Individual uses should not be allowed to cause unreasonable injury or harm to other water users. Injury may result from either quantity or quality impacts.*

The protection against unreasonable injury or harm to a water right by actions of other users is a standard feature of appropriation law in all states. Although this protection applies generally, it is operative within the context of the time priority system. For example, it would not be considered injury to a junior appropriator if all or part of his entitlement were curtailed in order to meet the entitlements of senior appropriators. However, senior appropriators are constrained from actions that would interfere with the rights of a junior appropriator when flows are sufficient to supply junior entitlements.

Any right is protected against deliberate usurpation and against harm that may derive from the actions or transactions of others. Protection of existing rights is a first and foremost concern of water administrators in reviewing any new allocation, transfer, or change in use. The certificated water right is recognized as a property right entitled to protection should the claim be threatened. Ownership of a water right connotes a set of secure expectations that others will be unable to interfere with benefits to be derived from its use.

Water rights are also protected by a liability rule. Other water right owners or nonowners who damage a water right (or other property of the water right owner) would have to accept liability for that damage. As examples, pollution which creates a nuisance or renders waters harmful to public health or safety and obstructions that limit access to, or the functioning of, canals are not allowed. Many recreational uses are made on streams and canals whose waters are destined to owners downstream. Complaints bring action by the state to discontinue any damaging practices that render the water unsuitable for the intended use of the water right owner.

11. Quantity-Quality Compatibility. *Water laws and regulations pertaining to water quantity should not be contradictory to those pertaining to water quality management.*

Historically the appropriation system has incorporated authority for the state administrator of water rights to prevent waste, pollution, or contamination of waters whether above or below ground. Although not predominant in a programmatic sense, the prevention of pollution or contamination has been recognized as necessary if water use potentials would not be severely limited. However, prevention of water quality degradation by the State Engineer has been mainly from a resource conservation or resource utility perspective rather than to protect public health, a function assigned to a separate water quality office.

Stemming from recognition that certain diseases could be transmitted through drinking water, public health agencies have steadily increased programs of monitoring and testing municipal water supplies and their wastewater discharges. This increasing awareness on the part of health departments of the importance of managing water quality not only for human health purposes but also for the protection and enhancement of aquatic life and recreational pursuits has led to greatly enlarged water quality management programs. Thus, the jurisdiction of Public Health Departments has been broadened and its regulatory

responsibility extended to include surveillance and control over water supplies and wastewaters of all users. As the water management domain of state public health agencies are superimposed on that of the traditional water administrative agencies, careful coordination is needed to achieve common state goals. Separate agencies operating under different guidelines might unwittingly counteract or contradict the actions of each other as they pronounce and enforce regulations pertinent to their respective legislative mandates. Separate water use regulations prepared from different points of view for enforcement by different agencies may turn out to be conflicting rather than complementary. The assessment of how states correlate the administration of water quantity and quality management generally requires the examination of statutes pertaining to both programs.

It must also be remembered that certain water quality programs and regulations have been the direct result of federal legislation which gave little or no thought to how water quality objectives were to be meshed with other water related social objectives. More recent legislation (i.e., the 1977 Clean Water Act) gave recognition to complaints being voiced by adding a subsection to the act which gave specific emphasis to the need for coordination of water resources and water quality planning. Under this subsection the EPA administrator is required to report to Congress with recommendations to require coordination between water supply and wastewater control plans as a condition to grant applications.

Certain features of federal water pollution control acts tend to aid and encourage the adoption of land application of wastewater effluents. The introduction of such measures with their potential for altering the existing hydrologic equilibriums on which present water supply entitlements are based represent an obvious contradiction to a basic premise of appropriation law that water rights must be protected against impairment. The reclamation of wastewaters by the land treatment process generally has a greater depletive effect on the hydrologic system and thereby diminishes flows downstream over what they had previously been.

It is clear also that the setting of water quality standards on stream systems can (in effect) abrogate water use entitlements. Where water quality objectives subject appropriations to the terms and conditions as are necessary to carry out the water quality objective, the use of that water for what would normally be considered beneficial uses may be limited. The right to use water is without value if there is no way for the user to meet some quality discharge requirement.

States are grappling with incompatibilities that arise in the management of water resources to meet quantity and quality objectives. Formal and informal coordinating mechanisms employed at the state level seem to be rather effective in achieving the needed integration of water rights and water quality activities. However, federal initiatives have tended to be oblivious to the institutional impacts implementation may incur at state and local levels, thus complicating coordination efforts

at the state level and hindering the opportunity for needed quantity-quality accommodations to take place.

12. Adequate Public Notice and Hearing. *There should be ample provision for publicizing applications to appropriate water or to change the nature or place of its use and a procedure for protest and fair hearings by those who may be affected by the proposed change.*

Provision for publicizing water rights applications or use changes and allowing protest and fair hearing from those who may be affected have always been a fundamental part of the appropriation system. Statutes generally require notice to be given in appropriate newspapers and repeated several times. In addition, special notification may be given to those whose uses are in close proximity to the one in question and who have most need to know of any proposed change. State statutes also prescribe procedures for protest and a hearing of pro and con arguments. A determination or judgment is only rendered after all the evidence has been presented.

13. Equitable Burden of Proof. *The burden of proof in establishing and protecting one kind of legitimate use (i.e. instream flow) should not be more (nor less) stringent than for other kinds of beneficial uses.*

Fairness suggests that applications for all purposes should be subject to the same notice and hearing process; the same degree of definition as to purpose, nature, and place of use; and the same level of justification and quantification of "need" for the purpose intended.

The ranking or ordering of beneficial uses would seem to place a greater burden of proof on those at the lower end in justifying their requests for use during periods of shortage.

If only the state may appropriate water for certain uses (such as instream flow) both the status of the applicant and the kind of justification required create unique burden of proof situations.

#### Implications with Respect to Instream Flow Protection

A system of water law, embodying the 13 principles outlined in this chapter, should be able to accommodate all uses equitably and provide a framework for maintaining allocations in line with contemporary social preferences. In measuring features of the appropriation system against this standard, it is evident that the appropriation system incorporates most of them in very adequate and reasonable ways. There is much to be commended in the appropriation system. Why, then, are instream flow uses not being readily integrated in a satisfactory way? The fact is, that instream flow uses are being accommodated, but in a very deliberate and cautious manner as dictated by legal principles that require protection of existing users and rather precise quantification and justification of need. Much has been accomplished in the assimilation process but there are still some obstacles to overcome.



Perhaps these can be best summarized with respect to the 13 criteria discussed in the previous section.

1. Recognition of Both Public and Private Aspects. The appropriation system draws on both federal and state constitutional guides to provide guarantees and protections for individual property rights. Property rights thus define the relationship between individuals and organizations concerning the use of water. It is the private property notion that defines the boundaries within which individuals may use or dispose of water and they set forth the permissible actions to remedy situations in which rights have been abridged.

On the other hand the appropriation law allows the state to preserve the status quo, to withdraw waters from private appropriation, or to reserve water for particular purposes in the public interest. Appropriation law does provide for balanced recognition of public and private aspects of water resource use. The problem of defining public interest or finding a balance on the scale of public values in alternate water uses is the problem. Mechanisms are needed for establishing consensus on instream values and for ameliorating the value conflicts of competing uses.

2. Flexibility for Transfer and Exchange of Water Rights. The appropriation system allows transfers and exchanges to take place readily but safeguards are prominent. Failure to appreciate the purpose for these safeguards has often led to allegations of constraint or sluggishness in the transfer process.

Concerns about the inflexibility of governmental reservations for instream flow uses that result in a "locking up" of the resource and according it "priceless" status are valid. Governmental acquisitions with general tax revenues in response to public pressures are common. However, governmental disposal of reserved properties in the public interest are rare.

There are valid apprehensions that protection of instream flow uses may set limitations to the transfer and exchange opportunities of other rights. Similarly, there are apprehensions that protection of instream flow uses may unknowingly constitute contradictions to hydrologic realities in which other rights are currently settled.

3. Periodic Reevaluation of Water Rights and Uses. The adjudication process, consisting of a total examination of every claim of right and the status of actual use with respect to that right, provides a means of periodically evaluating the efficacy and validity of uses. The process does not operate as well in practice as it does in theory. Because it is so costly and complex the interval between adjudication on any given stream system may be extremely long.

There is no provision in appropriation law that wipes the slate clean so far as entitlements are concerned and allows a fresh opportunity for reappropriation. The common way for any newcomer to obtain water in the appropriation system, where there are no more appropriable

supplies, is to enter the market. Where instream flows are considered public uses, or uses in common, the market arena is less amenable. However, assumptions that instream flow values cannot be reflected in a water market sense need to be more thoroughly examined.

4. Legal Harmony with Physical Principles. The accommodation of instream flow uses on a par with more traditional off-of-stream uses requires knowledge about bio-hydrologic linkages. The informational need to properly integrate instream flow uses with other uses is at least an order of magnitude greater than has been needed before. Harmonizing legal and physical principles is an incremental process that has taken many years and there are still imperfections. Adding the biologic dimension with all of its ramifications presents major problems until key relationships can be reliably determined.

5. Provision for Equitable Apportionment of Shortages. The appropriation system depends on its time priority system as the normal way to apportion water in times of shortage. The prior right system operates somewhat like the "last hired, first fired" priorities often followed in the business world. Where instream flow appropriations can abide this seniority system, a big hurdle to accommodation is overcome. If reservations or appropriations for instream flow uses cannot accept the greater risk of shortage inherent in a more junior priority, then rights of senior appropriators would need to be acquired. If senior rights are subjected to limitations as result of an instream flow use being recognized with a prime preference, then unless these limitations are fairly compensated, friction would ensue.

6. Legal Security of Water Rights. Although the appropriation system provides assurances that rights will be protected, legal security may be tied to physical security. The fact that the biologic impacts and consequences of streamflow variations are not adequately known, and the fact that the preclusive or limiting impacts of instream flow uses on other uses are not always clear, tempers the legal security of both instream and off-of-stream rights. As instream flow water rights can be more precisely described and needs better validated, the vulnerabilities to litigation will be lessened.

7. Specified Period of Use. Although the appropriation system employs an absence of term in defining owner interest, it does require specification of the period of use. Allowable periods of use within the year must bear a relationship to actual needs for the purpose intended. Consequently, the period of use becomes an important part of the description of a water right. Water needs and flow conditions vary with the specific instream flow purpose. Aquatic biota have their own cycles of water requirement. Recreational opportunities vary with type and with season, also. To be accommodated into the appropriation system may require better justification of the timing of need, whether cyclical or uniform.

8. Fostering Social Efficiency and Productivity in Water Use. The beneficial use principle in appropriation should accommodate any use that has value to segments of society. Although instream flow

appropriations were previously challenged as not being beneficial, recreational uses and protection of aquatic habitat are universally recognized as socially beneficial purposes today. The lingering problem in this regard is not "whether" but "how much" can be beneficially applied to the particular need.

Most states have made statutory changes to specifically acknowledge that recreational uses of water and the protection of aquatic habitat are socially beneficial purposes. The fact that some states place an ordering or ranking on certain beneficial uses has posed problems in some instances. However, it is generally acknowledged that such rankings have not proven to be essential in dealing with water shortages. Neither do they represent an exclusive listing of beneficial uses. They cannot represent anything more than a preference guide. All states recognize that new and valuable uses emerge over time and that rankings and listings have limited usefulness. Thus, the beneficial use criteria does not presently constitute a serious impediment to the accommodation of instream flow uses under the appropriation system.

A claim of primacy for instream flow uses in any ordering of beneficial purposes may encounter problems in the appropriative system. The applicable standard is that a use is beneficial so long as circumstances favor, and to the extent that it is no longer reasonable to continue the use at the expense of more desirable uses for more urgent needs. Unless instream flow needs can be incorporated under this standard, they may be opposed by those who must embrace it. On the other hand, administrative denial of an appropriation application because an instream reservation is judged to be a more beneficial use of water must be justified by an open and factually based weighing of public preferences.

9. Due Diligence in Implementing Entitlement. This concept may have limited meaning for instream flow uses which do not contemplate diversion, conveyance, or storage works in order to apply the water to the use intended. Instream flow entitlements should be immediately implementable.

The requirement of an actual diversion for a valid appropriation has some basis as an evidence of applying due diligence in perfecting claims of entitlement.

10. No Injury or Harm to Others. The prohibition against injury or harm to others as well as protections against being injured by others constitutes one of the more troublesome aspects of incorporating instream flow uses into the appropriative system. A form of impairment that makes existing owners apprehensive is the possible limitation that may be imposed on freedoms to make changes and transfers that would otherwise be permissible. The precluding of other uses and resulting opportunities foregone are also viewed as impairments, but any use has the propensity to preclude others. Because instream flow uses are so imprecisely defined and the array so inhomogeneous in terms of hydrologic perturbations, there is much apprehension about being able to anticipate all the possible detrimental impacts. Resistance stems from

the spectre of unknown but difficult to reverse impacts. Protection guarantees in the appropriation system make water administrators cautious and deliberate in acknowledging entitlements for uses whose impacts are rather unpredictable.

11. Quantity-Quality Compatibility. Instream flow rights based on environmental values, involve an inextricable association of the quality and quantity characteristics of water. This suggests oversight and regulation by multiple agencies. Institutional coordination and cooperation is essential and must be more consciously sought in the acquisition of rights and in the exercise of them over time.

12. Adequate Public Notice and Hearing. Provisions for notice of applications to appropriate water or change its place or nature of use are quite adequate for individual water rights. If instream flow protections are to be obtained by withdrawals or reservations, or, if instream flows can be appropriated only by an agency of state government, then it behooves states to consider the adequacy of their hearing processes. In other words, if instream flow needs are met in special ways, then special attention may be needed to see that notice and hearing opportunities are not constrained.

One of the original purposes for requiring an actual diversion under appropriation law was to impart notice of a claim. Since diversions are not a requirement in order to utilize water for instream flow purposes, such a requirement has no "notice" values for such uses.

California has addressed directly the issue of whether the actual diversion requirement should apply for a valid instream flow appropriation. The courts there have said that actual diversion requirement or physical control does indeed rule out instream flows from the appropriation process. However, the courts have noted that provisions of the water code along with several other specific provisions in the Fish and Game Code establish the method to be followed to protect and enhance instream flow values. Legislative attempts to modify the water codes so as to not require actual diversions for instream flow appropriation have failed. Thus, the California approach seems to prefer a case by case evaluation by the state water rights board and state agencies about how to allocate and protect instream flows. While private or public appropriations of water for instream flow are denied, reservations and protections are made within the framework of agency mandate and public interest tests.

Arizona courts have held that recognition of appropriation for recreation and wildlife purposes as a beneficial use removed the standard diversion requirement and allowed "in situ" appropriation. There is little experience to indicate how Arizona will apply the tests of quantification and protection of existing users in allowing appropriations for instream flow under standard appropriation principles.

13. Equitable Burden of Proof Requirement. Economic and environmental values have characteristic differences that complicate commensurate expressions of information needed to justify allocations. Also,

the allocation to some purposes only by exercise of special discretionary authorities may create inequitable burdens of proof.

## CHAPTER III

### REVIEW OF STRATEGIES FOR PROTECTING INSTREAM FLOW

The starting point for any examination of strategies for acquiring and protecting instream flows must be the series of studies sponsored by the U.S. Fish and Wildlife Service's Western Energy and Land Use Team. Their identification process began with a post-audit study to examine flow conditions below 142 dams and diversions in the West (Nelson et al. 1976a,b,c; Wagaman et al. 1976; Hazel et al. 1976a,b,c). A more concentrated effort to identify the range of alternatives was carried out by Dewsnap and Jensen (1977a,b; Dewsnap et al. 1977). Finally, Enviro Control performed a state by state evaluation of the opportunities for use of the most promising strategies and published their results for the eight states covered in the present study (Nelson et al. 1978a-h). Reports of the Federal Fish and Wildlife Service constitute a most useful first-cut appraisal of the legal and administrative tidiness and the political complexity of implementing a strategy. They also describe the physical conditions that favor, and the cost levels associated with the implementation of specific strategies for reserving instream flows.

While one scarcely needs look beyond these volumes in identifying the range of things that might be done to secure instream flows, some additional work in conceptualizing the strategies may be helpful. The Dewsnap and Jensen analysis adopts the view that "the appropriation doctrine is essentially a system for the acquisition and regulation of private rights for the use of water and to that extent is at odds with keeping water in the stream channel to preserve instream values" (Dewsnap and Jensen 1977b:1). With such a viewpoint, it is understandable that emphasis should be given to evaluating the prospects for successful instream protection by strategies apart from the appropriative route. The objective of this review is to identify strategies for obtaining and preserving instream flow values within an equitable framework of overall water management. Consequently, the strategies should be presented and evaluated with regard to their appropriateness for the existing institutional structure.

Institutions consist of a set of formal and informal rules designed to coordinate the activities of the participating individuals so as to further common interests and reduce conflicts. A description of an institution would identify roles or principal actors, their functions and duties, and the range of activities available to them. The alternatives chosen by a given actor to pursue the objectives characteristic of his role can be called a strategy. An instream flow strategy is, therefore, a course of action the objective of which is to obtain and protect flows for instream uses. Dewsnap and Jensen (1977b) identified 49 such strategies, which were then combined and reorganized with additional alternatives from the Enviro Control effort into 26 main alternatives (Dewsnap et al. 1977). For the most part, the strategies discussed here are from those volumes.

The evaluation of these strategies is made easier if they are identified in a framework recognizing that water institutions embrace strategies with other purposes. Interest should be focused not only on whether a strategy is available or an effective way to protect flows, but also on whether its adoption places an actor in an environment uncharacteristic of his other water management responsibilities or departs from the way interactions in water management decisions are normally made. For example, Tarlock contends that direct filings for instream rights are preferable to indirect controls because the former gives notice to all other claimants while an indirect approach "might so distort traditional water law that the costs of using this strategy would far outweigh the gains" (Tarlock 1978:226). Two characteristics of a strategy are therefore of primary interest in the evaluation exercise: 1) the consistency of the strategy with the characteristic functions and operating style of the potential initiator, and 2) the degree to which the use of the strategy preserves interactive consideration of all water uses.

### Classification of Instream Flow Strategies

The availability of a strategy generally depends on prior legislation enabling or requiring others to act. Likewise, practically every strategy will involve the water rights agency. It is, therefore, not useful to thus classify all strategies within these two categories of initiation. A more useful taxonomy is to classify strategies by the primary agent responsible for obtaining legal recognition of the flow.

Adoption of a strategy involves the initiator in directly securing the flow, or else indirectly securing it by influencing other agents to act. This influence may be regulatory, such that the initiator can require others to act, or cooperative, where the initiator attempts to make an instream flow outcome more accessible or attractive.

### Identification of Strategies

#### Legislative Strategies

Practically all strategies are legislative, in the sense that enabling legislation is required. Only where legislation is administratively or judicially interpreted beyond, or even contrary to, the original intent could one say that the strategy was not legislative. Given this general condition, the strategies listed below are limited to regulatory legislative strategies--actions that do not merely enable but require instream protection. These strategies are available to all states unless constitutionally prohibited.

1. Moratorium on New Appropriations and Depletions. A state legislature may declare a moratorium on further appropriations from given stream systems. Such a measure would probably be of a temporary nature, to provide the opportunity to determine present rights or perhaps to identify and evaluate future development alternatives.

2. Prohibitions on Changes and Transfers. Most states have found it necessary to impose special restrictions on certain changes or transfers of water rights. The most common is a restriction on water export, but restrictions on transfers from agriculture to industry are increasingly common. Because the effect of such prohibitions is to preserve a flow regime, instream flow values may benefit as well.

3. Designation of Wild and Scenic Rivers, Important Fishery Streams, etc. Legislation may enable an administrative agency to identify watercourses of special scenic, recreational, or environmental value, and to protect these values by closing certain portions to (further) appropriations, or by placing special conditions on water use.

4. Direct Legislative Reservation. Rather than leave the designation of a protected stream to administrative procedures, the legislature may simply designate the rivers and protection measures directly.

5. Requiring Instream Review on New Appropriations and Change in Use Applications. All of the states included in this study require that new appropriations or changes in use be reviewed to determine their impact on other water users and on the public interest. The legislature may elaborate on the review requirements or specify explicit procedures for instream flow value assessment.

6. Project Reauthorization. Water development projects often involve the construction of facilities with very long useful lives, operated under the constraints set by the authorized purposes. While project development incurs obligations that should not be revised casually, greater benefits may be realized by permitting reallocation of project products in response to shifting demands. For state sponsored projects, the legislature could either make specific reauthorizations or establish an administrative procedure to identify needed changes.

7. Public Trust (Public Rights of Navigability and Fishing). All states have the authority to regulate state streams for the protection of public rights of navigation and fishing. Since the states may also adopt their own definition of navigability, the public trust doctrine has some special advantages for protecting instream values. However, the public trust doctrine meets few of the 13 criteria set out in Chapter II as desirable elements of a model state water law.

Evaluation of Legislative Strategies. The characteristic role of the legislature is to articulate enduring public objectives and authorize programs to pursue them. Unlike other institutional actors, it is not generally advisable for the legislature to make specific direct instream reservations. State legislatures are not organized to routinely consider the merits of particular instream proposals, and legislative reservations will be difficult to change. Thus, a direct reservation strategy is appropriate only for special cases where public instream benefits are widely recognized and may reasonably be expected to remain so. Moratoria on new appropriations are likewise not appropriate as a



general strategy for instream protection, but are more applicable to special circumstances. It is questionable whether moratoria are properly conceived as instream strategies as opposed to some other water use.

Specific prohibitions on changes and transfers are common ways to protect public interests over the range of water uses, but should be approached with caution. The main problem is that the urgency of the need for restriction passes after a time, but the restriction remains to constrain water use in unintended ways.

Most opportunities for project reauthorization probably require Congressional action, but as states take greater project initiative the relevance of the strategy for state legislatures may increase. As an instream flow strategy, project reauthorizations are remedial measures to obtain allocations and alter operating rules in recognition of instream uses that were not authorized project purposes at the time of construction. Under current arrangements, the reauthorization process requires a feasibility study and support by the construction or operating agency prior to legislative action. The points where opposition may be expressed are such that success in obtaining instream flows will be unusual.

A reasonable legislative strategy for protection of instream values may be the authorization of programs that designate streams with special scenic, recreational, or environmental value. Properly designed, such programs are simply one way of directly asserting a public right to the necessary flows. The most visible effort in this area has come from the federal government under the Wild and Scenic Rivers Act and the Endangered Species Act, involving quite a lengthy and expensive process (Dewsnup et al. 1977:14-19). While expense is an important consideration especially for instream flow advocates, a complicated procedure is probably necessary to demonstrate an overriding national interest in preserving conditions on a particular stream reach. From the present perspective, the more telling objection is that the decision process is outside of the normal arena in which water allocation decisions are made. Parallel state programs should avoid such separation.

The concept of the public trust has attracted a good deal of interest among proponents of instream flow protection as an effective and inexpensive way to authorize state action in support of instream flow values without worrying about legal obstacles in appropriations. The evolution of the public trust doctrine is through court decisions rather than legislation. Appropriation states can assert the public trust notion for instream flow protection measures under eminent domain authorities. But the evolution of the doctrine has also been in a riparian context, and it may be imprudent to simply adopt the doctrine in states that explicitly reject the validity of the context in which it arose. In fact, the public trust concept in appropriation states seems to be established and defined by the various constitutional and statutory provisions making all water property of the state (or the people collectively), to be dedicated to beneficial uses. There are sufficient examples to demonstrate that instream flow values can be accommodated

within the concept of appropriative law without resort to what would be a partly duplicative public trust doctrine. On the other hand, there is little evidence that the public trust doctrine could be made to accommodate the full range of water uses thereby qualifying as an alternate to the appropriation system of administering the use of water.

### Judicial Strategies

The judiciary may become involved at a variety of points in instream reservation proceedings. As a strategy, one uses litigation to obtain, or more frequently, protect instream flows. The general requirement is that there be legitimate cause, or legal standing, for the litigant. In other words, the instream flow must be linked to a legal right or public interest. In general, the judicial strategy should be thought of as a last resort, employed when other means have failed.

1. Public Trust. The concept of the public trust strategy was described above in the legislative strategies but has been largely formed by judicial precedent. Because it is a generally accepted doctrine, the public trust may be judicially asserted even in the absence of a legislative definition. Among the states covered in this study, Idaho, Nevada, New Mexico, and Utah have adopted judicial definitions of navigability (FWS 1978c:34).

2. Determinations of Rights. While general adjudications can hardly be thought of as a strategy for instream flow protection, they may be helpful in several ways. Primarily, the adjudication decree clarifies and correlates the rights on a stream system, thus providing specific information on water available for instream values. In addition, recognition of instream uses may be obtained during the adjudication process by allowing arguments for protection of established uses to be considered in the determinations.

3. Injunctions to Prevent Depletions. The judicial equivalent of appropriations moratoria is the injunction to prevent further depletions. The scope of the injunction could vary substantially, but one would expect it to be more specific than a moratorium, preventing specific actions by identified actors.

Evaluation of Judicial Strategies. The judicial role is characteristically to resolve disputes by determining and applying the relevant laws based on its findings of the facts. Where laws conflict, justice requires a decision which strikes a reasonable balance among the interests involved. Interpretation of the law inevitably involves the court in making policy, but determination of values to be used in deciding disputes is primarily a legislative, not a judicial function.

Judicial enunciation of the public trust doctrine, in lieu of a legislative declaration, is therefore not a particularly desirable way of protecting instream flow values. It is even less desirable if the doctrine enunciated is interpreted as a power and duty distinct from and overriding the appropriative system.

Given that determinations of rights are an essential feature of the appropriation system, their use as an instream flow strategy cannot be objectionable. Likewise the power to enjoin actions which tend to impair existing rights or harm the public interest is a necessary feature of legal security. One would expect, however, that the water rights administrator would obviate the need for injunctive relief in most instances.

#### Administrative Strategies--Water Rights Agency

The accumulated decisions of a water rights agency on applications for appropriation or use changes amount over time to an instream flow strategy. The strategies below are listed here because their adoption is reflected in a process over which the water rights agency exercises control.

1. Imposing Conditions on Appropriation Permits. If state policy provides that instream values should be protected, or if the usual public interest clause in appropriation statutes are interpreted to imply such a policy, the water rights administrator can place restrictions or conditions on appropriation permits in order to preserve instream flow needs. Such conditions might vary from a requirement to provide information on instream flow impacts of a proposed use to operational requirements such as reservoir releases.

2. Imposing Restrictions on Transfers and Changes. In states where instream flow rights are recognized, or where public interest considerations are a condition of approval for changes or transfers of rights, the water rights administrator may take steps to insure that instream values are considered and protected in decisions on transfers and changes in rights.

3. Analysis of Water Rights Records. Programs to record unrecorded rights, obtain general rights determinations on stream systems, and improve monitoring of actual diversions may disclose water available and needs for instream flow uses.

Evaluation of Water Rights Agency Strategies. The role of the water rights administrator is to determine whether water is available for new appropriations to represent the state and third party interests in water right transactions, and to oversee the distribution of water according to existing rights. The water rights administrator's role is sometimes labeled quasi-judicial, because it often involves the resolution of competing claims. (By the same token, judicial determinations of right may be called quasi-administrative, since the decision is usually made not to resolve a question of law but follow a factual finding which the water rights administrator is specially qualified to establish.) In order to effectively carry out this function, it is essential that the administrator be a neutral participant in water rights transactions. Strategies that would tend to convert the administrator into an instream flow partisan (or a partisan for any beneficial use, to the detriment of others) should be avoided.

None of the strategies listed in this section are necessarily objectionable. Improved systems of water rights records should benefit all potential users, and conditions on appropriations and changes are a normal features of the administrator's responsibilities. The main question is the degree to which such strategies place the administrator in a position of defining the instream values in order to protect them. An integrated system would allow the administrator to make determinations with regard to instream flow uses based on hydrologic requirements and effects of the use, as he does for other uses.

#### Administrative Strategies--Mission Agencies

One would expect that the bulk of the opportunities, and the best justification for adopting an instream strategy, would lie with the mission agencies, particularly those charged with wildlife management and outdoor recreation responsibilities. Other kinds of administrative strategies are less likely to be successful without action from this sector.

1. Applying for Reservation or Appropriation of Instream Flows. Where instream values are legally recognized and instream uses are within the authorized domain of an agency, applications may be made to reserve or appropriate water for instream uses.

2. Purchase and Other Voluntary Transfers of Water Rights. Where maintenance of instream values is a legally recognized beneficial use and an agency is authorized to purchase or otherwise acquire water rights incident to its responsibilities, instream flows may be preserved by acquiring rights in this manner. Such acquisitions could include purchase or lease of reservoir storage for release during periods of low flow.

3. Condemnation and Reallocation of Existing Rights. If instream uses are legally recognized beneficial uses, and instream water rights are necessary to the performance of agency responsibilities, it may be possible to obtain instream rights through eminent domain.

4. Formal Consultation and Clearance Requirements. Under the Fish and Wildlife Coordination Act, any reservoir project constructed, modified or licensed by a federal agency must be reviewed by the U.S. Fish and Wildlife Service and appropriate state fish and wildlife agencies for recommendations concerning fish and wildlife conservation. Pursuit of this strategy would include seeking similar legislation for state sponsored projects, and strengthening implementing regulations.

5. Identify Instream Flow Requirements of Endangered Species. Habitat required to preserve endangered species may be protected under the Endangered Species Act of 1973. Several states have parallel legislation providing for designation and protection of critical habitat. Careful determination of the aquatic habitat requirements of endangered species can be used to protect streamflows from depletions below the danger level.

6. Using Water Quality Laws for Instream Flow Protection. Various planning and permit programs in the Federal Water Pollution Control Act provide opportunities for protection of instream environmental and recreational values. Since most state water pollution control laws have been modified to reflect the federal policy of nondegradation, in order to protect water quality for beneficial uses, specification of levels of quality parameters required to maintain habitat and recreation opportunities would enhance instream flow protection by bringing these criteria into required deliberations on future developments.

7. Obtaining Reservoir Storage and Other Protective Devices for Fisheries. Where reservoirs are constructed and operated without federal involvement, instream flow protection may be obtained if such measures are authorized or required under state law. If protective measures are merely allowed, the agency responsible for fish and wildlife management will have to more actively seek information and participation on project plans.

8. Presentation of Recommendations Early in Project Planning. Construction projects are obviously easier to modify early in the planning process rather than after the design has been set or construction is underway. With early input, instream flow values may be protected with minimum cost or sacrifice by other project purposes by such measures as larger capacity to allow for instream releases, or by arranging for instream conveyance.

9. Increasing Available Water. In many western streams, instream flow values are primarily threatened during a relatively short period in late summer when natural flows are at their minimum values and irrigation demand is at a peak. It may be possible to supplement flows in critical reaches through groundwater pumping or other management measures. Where the water could be diverted downstream, such supplemental water may be advantageously developed cooperatively.

10. Federal Assistance to State Fish and Wildlife and Recreation Agencies. Where protection and enhancement of instream values falls primarily to state agencies, one of the major obstacles is often a lack of resources to do the job. The federal government has a long tradition of pursuing national objectives by providing necessary resources to established state and local agencies for implementation. Since protection and enhancement of instream values is a recognized national policy, a reasonable means of implementation is to provide technical and financial assistance to state agencies with instream responsibilities.

Evaluation of Mission Agency Strategies. Where an active proponent of a particular public interest is called for, responsibility should be assigned to an agency with the requisite resources and authority to carry out the task. Such agencies are by definition not the arena to expect full consideration of all aspects of issues. Thus, such agencies should not be established without considering the effects and role of a new advocate on the range of interests affected by its activities. If, for example, an agency is established to manage state fish and wildlife resources, it is reasonable to expect that it would have a way of

protecting aquatic habitat. But the measures adopted must be fit in with the procedures others might use to pursue their objectives by another use of the same resource.

If agency activities depend on control of water, it should generally be allowed to enter the water rights arena on the same footing as any other potential water user. Thus, appropriations, purchases and donations should be available means of obtaining instream flow rights, subject to the usual requirements of beneficial use and nonimpairment of existing rights. However, the use of tax monies for agency acquisitions may not be reflective of the social value of water for instream purposes and may also result in unfair competition with other uses. If instream flow values are considered a public purpose, then flat denial of condemnation authority requires justification. Certainly, though, the exercise of eminent domain is a last resort. Participation in or initiation of projects to supplement flows should also be an alternative for agencies with instream flow objectives. The main factor warranting restrictions on participation in water development and acquisition is lack of flexibility and market sensitivity of the mission agency. Where protection and enhancement of fish and wildlife and recreation values have been assigned to a public agency, the agency is entitled to participate in public planning that affects those values. Clearly, consultation and recommendations should be initiated early in the process, when accommodations can be more easily made. The difficult issue is to determine how much of a voice environmental and recreation interests should have, and particularly the circumstances under which a veto on project features should be allowed. In general, strategies that recognize tradeoffs rather than preemption should be encouraged.

The federal government has taken the lead in protection of instream flow values, but often programs aimed at national objectives can be more effectively implemented by state agencies. Generally, complaints do not arise when federal assistance is extended to an agency to do more or a better job of satisfying its objectives. Difficulties will probably arise if an agency uses a federal authority to accomplish objectives not authorized by the state. The use of water quality regulations to protect instream flows is one such indirect strategy and therefore not recommended.

#### Administrative Strategies--Planning Agencies

Most states in the West have established an agency whose responsibility is to develop a comprehensive multipurpose plan for state water resources development. At the federal level the Water Resources Council had exercised a parallel responsibility until its dissolution. Some of the WRC functions are now exercised by the Office of Water Policy in the Department of the Interior. The federal construction agencies engage in multipurpose planning as well.

1. Participation in Statewide Water Planning. One of the objectives of the Water Resources Planning Act of 1965 was to encourage the development of statewide water planning. The planning process should solicit contributions from representatives of all water use interests,

including instream uses, as early as possible. Unequal access in the process increases the likelihood of producing plans not representative of the public interest.

2. Water Management Districts. It has been suggested (Dewsnup and Jensen 1977b:28) that ultimately local water management might be carried out by a single district with authority over development and distribution of all water supply from surface and underground sources. Such an authority would logically consider instream flow values. Whether or not their authority is this broad, local water districts can be given authority to incorporate instream flow protection in their planning and operations.

Evaluation of Planning Agency Strategies. Historically water planning has been done by agencies that advocate projects to develop water for offstream use. The construction orientation may not be as dominant as before, but it would be beneficial if authorizing legislation for state planning agencies specified that all beneficial uses be considered in the planning process.

In many cases, it is substate districts that exercise day to day water management responsibility. These districts have not generally concerned themselves with recreation or environmental matters, but they appear to be an attractive locus for integrated water management.

#### Private Sector Strategies

At present, private strategies for obtaining or protecting instream flow are indirect and relatively restricted. However, it is not difficult to imagine more liberal provisions along the lines of:

1. Private Appropriations. Up to now, appropriations for instream flows by private parties have not been considered valid. But where individuals are motivated to purchase water for instream flow through the water rights market, artificial obstacles imposed by the legal process, let alone categorical prohibitions, seem overly restrictive.

2. Petitioning a State Agency to Protect Instream Flows. Whether or not private parties are precluded from making instream flow appropriations directly, they may still be given the opportunity to express their preferences to the authorized agency on valued stream reaches for instream flow protection.

3. Contributions to Agencies. Private parties might act to preserve instream flows, even though direct appropriations would not be permissible, by donating water rights or money to a public agency authorized to acquire such assets for instream values.

4. Private Nonprofit Organizations. A compromise between private rights and public rights advocates would be to allow appropriations or acquisitions of instream water rights by nonprofit organizations. A parallel approach is already available, and used with some success, for acquisition of land for wildlife habitat. A variation on the preceding strategy would be for private individuals to express their desire for instream flows by contribution to such groups.

5. Contractual Arrangements. A broad range of opportunities seems to be available to private parties to preserve instream values through contractual arrangements with water rights owners. Such arrangements would probably take the form of a purchase option and an agreement on the part of the owner to use a particular means of water conveyance, from which the instream values derive, in return for some compensation from the instream value beneficiary.

Evaluation of Private Sector Strategies. The role of private parties in the appropriative system is similar to that of a mission agency except that rights are acquired for private rather than public benefit, and are likely to be more mobile. Most writers seem to discount or overlook private appropriations for instream use. There are certainly reasons for denying private appropriations of instream rights, but in an appropriative system it seems that the burden of proof for blanket denials should be on the restriction and not the appropriator. In any case, some provision is warranted to allow private parties to express their preference for instream flow values and influence the way the resource is allocated to instream uses. The attractiveness of the nonprofit organization is that it may overcome the public benefits objection to private appropriations, while providing an alternative and more flexible management organization. Contractual arrangements may be the best way for individuals to secure amenity related flows. One can imagine various kind of easements or transfers that could protect instream flow values without creating administrative difficulties for the state water rights administrator.

In instances where streams are fully appropriated, owners could be approached about giving instream flow easements on specified reaches. While such an easement were in effect, the water right owner would not make changes in his use right that would necessitate changing the natural flow conditions of the reach in question. In other words, the owner simply agrees to a limitation on the exercise of his change of use possibilities under the law. In instances where possibilities for storage projects are nil; where little likelihood of ever changing the point of diversion or place of use such that the easement might interfere; then the water right owners may be quite willing to give an easement. Income potential from such an easement would be minimal in most instances.

A problem with the easement approach would be the sheer number of water right owners of record who may need to be contacted.



CHAPTER IV  
SEARCH FOR ACCOMMODATION OF DIVERGENT  
PERSPECTIVES AND CONCEPTS

Hydrologic Imperatives and Instream Flow Concepts

The appropriative system of water rights stresses the need to understand what the hydrologic consequences might be for any new or changed use. Such understanding is necessary in order to protect existing rights and retain their interactive relationship in a systems sense. If instream flow rights are to be accommodated on an equal footing with other rights granted through the appropriative process, their needs and their hydrologic implications would have to be carefully considered in order that claims might be justified under the same rules of time seniority, protection from injury, and prohibitions against injuring others that apply to all other users.

The values from instream uses are much more contextually dependent, or at least contextually dependent in a different way, than are offstream uses. The aesthetic and environmental values of a given marginal addition to the streamflow depend on the level of flow and the time of year. Twice as much irrigation water can irrigate twice as much land, but twice as much instream flow may be more harmful than helpful to fish. Stalnaker (1979) has provided a general listing of instream flow values which include:

1. Maintenance of fish and wildlife populations
2. Outdoor recreation activities
3. Navigation
4. Hydropower generation
5. Waste assimilation
6. Conveyance to downstream points of diversion
7. Ecosystem maintenance (i.e. water for estuaries, for riparian vegetation, and for flood plain wetlands)

It might be observed that many instream flow values are a composite of flow conditions and landscapes. For example, instream flows for recreational and habitat uses are an intrinsic part of channel, stream-side, and landscape features. Where much of the value of certain instream flow uses is derived through "appurtenancy" to landforms or geographic location, transfer potentials and exchange values are limited. In other words, an instream flow right may lose its value unless its relation to a specific stream reach and adjacent landscape is maintained. Water rights for off-of-stream uses have considerably more flexibility in transfer to other uses. It goes without saying that a nonconsumptive instream flow right for recreation or habitat protection would have no transfer value to a consumptive off-of-stream purpose. On

the other hand, an off-of-stream consumptive right may have transfer and exchange opportunities that could be advantageously used to obtain or maintain significant instream flow benefits.

Recognition of the Instream Flow  
Component in all Water Rights

The accommodation of instream flows into the appropriation system forces a more explicit recognition of the "conveyance" property of a water right which Stalnaker has listed as a legitimate instream flow value. The satisfaction of an ecosystem use, such as an estuary or flood plain wetland, depends on the maintenance of sufficient flows in upstream tributaries to provide the needs at downstream locations. In fact, the satisfaction of any instream or off-of-stream use (i.e., a private duck club, a government waterfowl refuge, or an irrigated farm), depends on flows arriving from upstream sources to reach designated points of diversion or use. When a water right for any use is granted under the appropriative system, there is an implicit and legally protected "instream flow" component consisting of the preservation of conveyance conditions that assure flow entitlements at the point of primary use. Each water right owner has a proportionate (though unspecified) interest in the instream flow condition that must be maintained above points of diversion. Protection of such "in transit" water extends to the uppermost boundary of the watershed under the appropriative system, and any interference that adversely affects downstream entitlements would bring immediate corrective action by the State Engineer. On a fully appropriated stream system, all of the instream flow in all tributaries and stream reaches above the highest point of diversion would still be protected as "carrier" or "in-transit" water and none would be available for further diversion for off-of-stream uses.

Although the "conveyance" or "carrier" characteristic of instream flows must be recognized in the consideration of instream or off-of-stream water rights, it is obvious that many other instream flow values are obtainable without violating the "carrier" right. Conveyance to downstream points of use does not preclude simultaneous access to such flows for maintaining aquatic life and in providing recreational and aesthetic opportunities in particular reaches above the diversion points of prior right owners. As a matter of fact, the satisfaction of a senior water right with a diversion point at the lower end of a stream system will assure opportunity for many fish, wildlife, recreational, and aesthetic uses of water incidental to the utilization of the "carrier" value. Over the years "free rider" instream flow uses have been made without special permission or consent as long as conventional water right protocols were observed.

However, the "legitimization" of instream flow rights cannot disregard the important connotations with respect to "carrier" water. It has already been pointed out that the satisfaction of any water right depends on flows arriving from upstream sources to reach designated points of diversion or use. The appropriation law protects all users with vested interests in the water of any given river system.

Suppose then, on a fully appropriated system, the associated carrier or conveyance properties are fully subscribed also. Yet, suppose it is desired to legally protect certain instream flow values that are presently obtainable in an incidental way under existing flow patterns by filing for an instream flow appropriation. What are the implications with respect to "carrier" waters? What upstream protections are afforded when the carrier properties are already fully consigned in the protection of prior rights? Perhaps an example would best illustrate the problem.

Suppose a senior right for irrigation water found it advantageous to change its point of diversion upstream and convey the water to the original place of use in a pipeline in order to develop gravity pressure for sprinkler irrigation. This is a common circumstance, and often encouraged because of its water conservation attributes. Suppose further that a right had been recently granted for instream flow purposes on a stream reach located between the irrigator's present and proposed point of diversion. So long as flow patterns and water rights remain as they were at the time of the instream flow filing, no problems arise even though the instream flow right could not really be afforded upstream "conveyance" protections since such flows had already been fully "allocated" in association with prior rights. The infringement on the real but unspecified "conveyance" right comes immediately to light as water transfers and changed uses are attempted. In the example cited here, the proposed change in point of diversion and mode of conveyance of the irrigation water would adversely affect the instream flow appropriation. Yet, to deny the transfer to take place is an interference with the normal right of the prior appropriator and constitutes a protection of what amounts to an "over appropriation" of conveyance water. The apprehension that instream flow reservations might preempt other rights and/or constrain changes that would otherwise be permissible under the law, thus diminishing the value of existing rights, is the basis for much concern in the integration of instream flow rights into the appropriative system.

Securing instream flows at particular reaches for the public benefit may deny other owners of lawfully protected rights their rightful entitlements if conveyance water implications are not carefully considered. Where water has been obtained for public benefit which denies prior owners reasonable use of it, condemnation has been the standard. Less clear, but nonetheless significant, would be instream flow reservations that do not impair rights as presently constituted, but may interfere with the latent freedom to change points of diversion, place or nature of use, etc.

Courts may hold that such "potential" limitations to a water right may be acceptable and not constitute a property "taking." The conventional view is that any governmental action that makes a private property right essentially worthless is a taking of property for which compensation must be paid. Whether the loss of some of the potential flexibilities of a water right would be placed in that category is unclear. If an instream flow right were granted on the basis of availability of values under existing conditions and the present flow regime

declared the minimum instream flow quantity, thereafter no appropriative right could be granted or changed in a way that would impair the minimum flow.

There are arguments that being forced to maintain property for the benefit of the public can become an economic burden (perhaps as an opportunity foregone) on the owner and amounts to a regulatory taking. On the other hand there are numerous instances where private property has sustained diminishment in value (ordinances regarding use of flood plain lands, for example) but courts have not generally found this to represent a taking. The line between a "limitation" upon the use of property and the "taking" of it can be a difficult one to determine.

### Physical Perturbations and Instream Flows

Except for claims on instream flow "conveyance" water, instream flow uses in headwater reaches above points of diversion are not in competition with other kinds of uses. However, at points in the stream system where regulating, storage, and conveyance works are introduced, natural flow regimes are subjected to modification. In some instances appropriative rights divert the entire flow of a stream, leaving stream beds dry until return flows begin to accumulate back in the natural channel.

Modification of existing flow patterns is generally a prerequisite to providing supplies in conformance with the time, space, and quality requirements of particular socially valuable use options. But because of the hydrologic unity that exists in any river basin (all waters in streams, lakes, underground, etc., interconnected and interrelated), any alteration of flow characteristics at one location transmits the effect of that change (ranging from imperceptible to extremely large) to downstream points. Thus, regulation and diversions from a given water course to accommodate some use has an impact on other sequential users. Also, there is generally a secondary impact as the effluent from a use is returned to the system after having undergone some additional changes in quantity, quality, and regimen within the use process itself. It is easy to see, therefore, that water allocated to a specific use may preclude other uses in the same hydrologic system because of the depletive effect or the quality degrading effect projected to other points where potential uses exist. It is apparent, then, that when any given set of water-dependent social goals get translated into a set of flow characteristic requirements, the new water equilibrium may turn out to be counterproductive with respect to other social goals. The interaction among and between water uses (because of the hydrologic unity factor) results in some uses being benefited, others being disadvantaged as the hydrologic system is altered. Where the water system is not altered but preserved in its natural or existing state, the tradeoff axiom still applies because other legitimate uses must be sacrificed unless the flow can be physically manipulated to achieve them. Some examples might illustrate this tradeoff concept.

Storage reservoirs create new environmental conditions for organisms and may foster new ecosystems. The change may result in a loss of biologic diversity and stability. Or, if the system is as diverse as before, some segments may be lost and replaced by others. Another possible effect of a reservoir is a change in the location or distribution of nutrients. A reservoir may act as a nutrient trap holding nutrients which otherwise would be carried downstream; thereby increasing the nutrients behind the dam and reducing them downstream. Historic, archaeological, scenic or other values may be lost; or, on the other hand, they may be made more available to the citizens to whom they belong.

Land use may be significantly affected as the result of reservoir construction. Lands in reservoir areas may be flooded. Lands protected from flooding may be converted to a more intensive use. Lands provided with a water supply may be converted to intensive farming or to residential uses. Reservoirs may result in more intensive use of land in semi-primitive areas or open such areas to recreation use because of the improved access and other factors.

Changes may occur in the habitat for wildlife and other fauna, perhaps a critical loss for some and a gain for other species. Streams may be inundated or the flow characteristics may be changed. Water surface characteristics may be modified. The type of fish may be different from that existing previously.

Flows may be depleted by diversions or by water consumption for a wide variety of purposes. Water quality may be degraded because of the addition of waste materials or because of the concentrating of minerals as a result of some water being consumed (evaporated or transpired). Sediment in the water may be reduced because of better land use or retention within a reservoir. Similarly, sediment loads may be increased because of greater return flows or effects on the land surface.

Water development may adversely affect scenic resources by covering scenically significant valleys or canyons or by modifying streamflow characteristics. Projects also may increase scenic values by inserting water surfaces or flows into areas where they can add to existing values. Water developments, by providing access and by providing a new resource which attracts people, can adversely affect wild or wilderness areas by permitting population pressures on fragile resources. On the other hand, the development may permit the enjoyment by society of a resource previously unavailable to it.

Thus, regulation may provide mixed blessings so far as instream flow values are concerned. Most instream flow values are seriously impaired when extremely low flows occur. Thus, there is major concern for establishing "mimumum" flow levels and for limiting uses with potential to deplete streamflows thereby increasing the likelihood of extremely low flows. Yet, regulation can reduce the frequency of occurrence of potentially damaging low flows. Just as storage and regulation permit a higher base load (firm) generation of power, so also might biologic base loads (carrying capacity) be increased by

reducing the frequency and severity of low flows. In acknowledging the foregoing, it should be observed that biologists are concerned with potential for unpredictable side effects from regulated flows which could offset some of the recognized ecological advantages. The point to be made here is that modified flow regimens to place water in many socially valuable uses does not automatically and necessarily degrade instream flow habitats. Potentially detrimental impacts from off-of-stream uses may oftimes be offset by a better biologic hydrograph even though total flow volume may be diminished.

#### Improved Instream Flows Through Management Measures

Water uses which divert from a stream for an off-stream use have potential to 1) reduce the flow volumes in the stream below the point of diversion by the amount of consumption in the use process, 2) change the flow regimen below the point of diversion because of the lagged and attenuated characteristics of return flow, and 3) change the temperature and/or the chemical, physical, or biological characteristics below the point of diversion and return flow by the introduction or abstraction of various constituents in the use process.

While such off-stream uses generally affect instream flow volumes below the point of diversion in ways outlined above, the legal protection of such water rights results in a "protecting" or "fixing" of instream flow volumes above points of diversion. If diversion entitlements of a right are to be met, it goes without saying that there is an implicit "instream" requirement associated with the right which may extend from the point of diversion to the extremities of the watershed. All certificated uses have an implied "instream flow right" extending upstream from the point of diversion. Junior appropriators are simply not allowed to use water above the point of diversion of senior appropriators if that use impairs the opportunity for senior appropriators to obtain entitlements. Only where the upstream junior appropriator can make his use without damaging downstream senior appropriators will a use permit be granted. Of course, if the junior appropriator can devise a way to make hydrologic compensations to the affected parties downstream, or, if monetary or other compensation can satisfy the parties concerned, the upstream use could proceed. The point of all this is, that in a fully allocated stream system, certain instream flow conditions are implied and become a protectable component of that allocation. It would be chaotic to consider the flow in reaches above any certificated point of diversion as being separate unallocated water that could be appropriated and managed as an independent property right. At any given point in a stream, only that portion of the flow not specifically required and destined to the points of diversion of established water use rights could be appropriated for any other exclusive off-stream or instream use.

An important part of any description of a validated water right is the period of use. Most irrigation rights specify beginning and ending dates of use in any year. Accordingly, any "implicit" right to instream flows above diversion points would be limited to the allowable period of use. Where storage reservoir sites exist, this nonirrigation season

water can be appropriated and stored for release during the irrigation season. Implied in the storage right, however, would be an instream flow condition to permit intended utilization. As with a direct flow diversion, a storage right has an implied entitlement to flows remaining in the natural stream above the location of storage so that anticipated storage potentials will not be impaired. Thus, a storage reservoir reinforces the need to "fix" flow situations above the point of storage. On the other hand storage reservoirs are capable of producing very significant changes in flows downstream by regulating releases to meet specific flow requirements at downstream locations. Typically, storage reservoirs are operated in a manner that diminishes natural flow during late fall, winter, and spring months in the reaches below the structure, but increases flows (at least to the first point of diversion) during the late summer when unregulated flows would normally be very low. The configuration of points of diversion for the various storage and instream flow rights and their priorities determine how the instream flow patterns below the reservoir would differ with the advent of storage.

The "implied" instream flow right associated with any particular water right does not mean there is only one flow pattern that allows all rights to be satisfied. Changes in the nature and place of use of a water right will generally change streamflow regimen for at least some reaches. We have already noted that changing flow regimes can only be allowed when they do not interfere with the opportunity for other water right holders to exercise their right. However, it is possible and indeed common to change points of diversion and place of use in ways that do not constrain diversion entitlements even though instream flow volumes at particular points are modified. In fact, this may be a strategy that could be employed for the very purpose of modifying instream flows at particular reaches so as to increase their utility or value.

For example if a water use right is transferred upstream, the stream depletion associated with the use would result in diminished instream flow volumes in the reach between the new and old points of diversion. However, any existing uses with points of diversion located between the previous and new point of diversion of the right being changed would still have sufficient instream flows at their own points of diversion from which full entitlements could be met. The decrease in instream flow between the previous and new diversion points would be equal to the amount of stream depletion allowable with the water right being transferred. At least this amount would have been required to by-pass intervening points of diversion anyway in order for the diversion requirement to be met at the old location. (This presumption may be complicated by the influent or effluent peculiarities of specific reaches.)

To illustrate how instream flows could be affected by changing points of diversion, consider a stream with "A" and "B" water rights, under three different management options. These are represented by the diagrams of Figure 1. The flow volumes for five measuring stations along the stream channel are indicated. Case I (Figure 2) represents the unregulated situation with hydrographs of the gaging stations shown

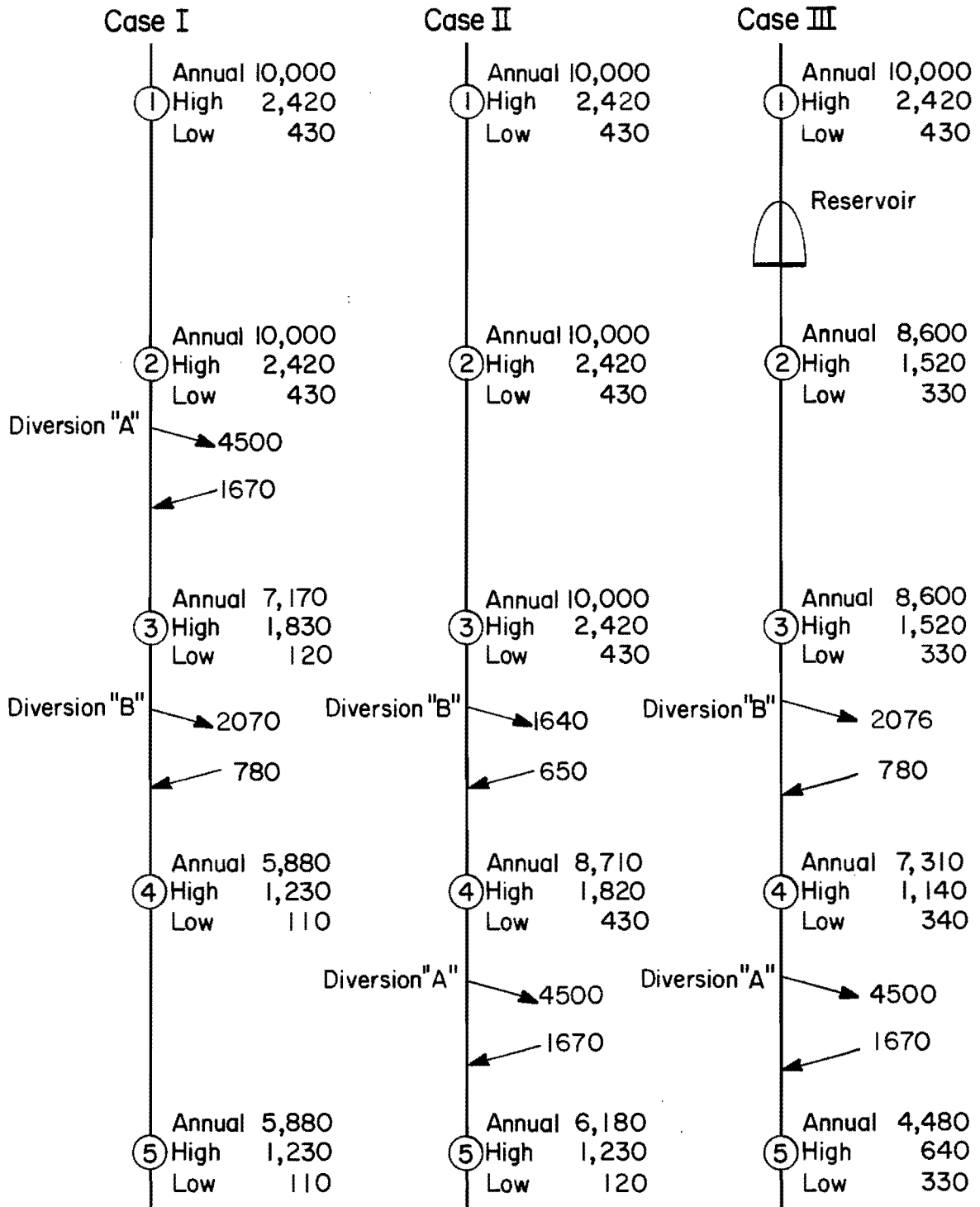


Figure 1. Diagram of stream reach showing effects of different management options.



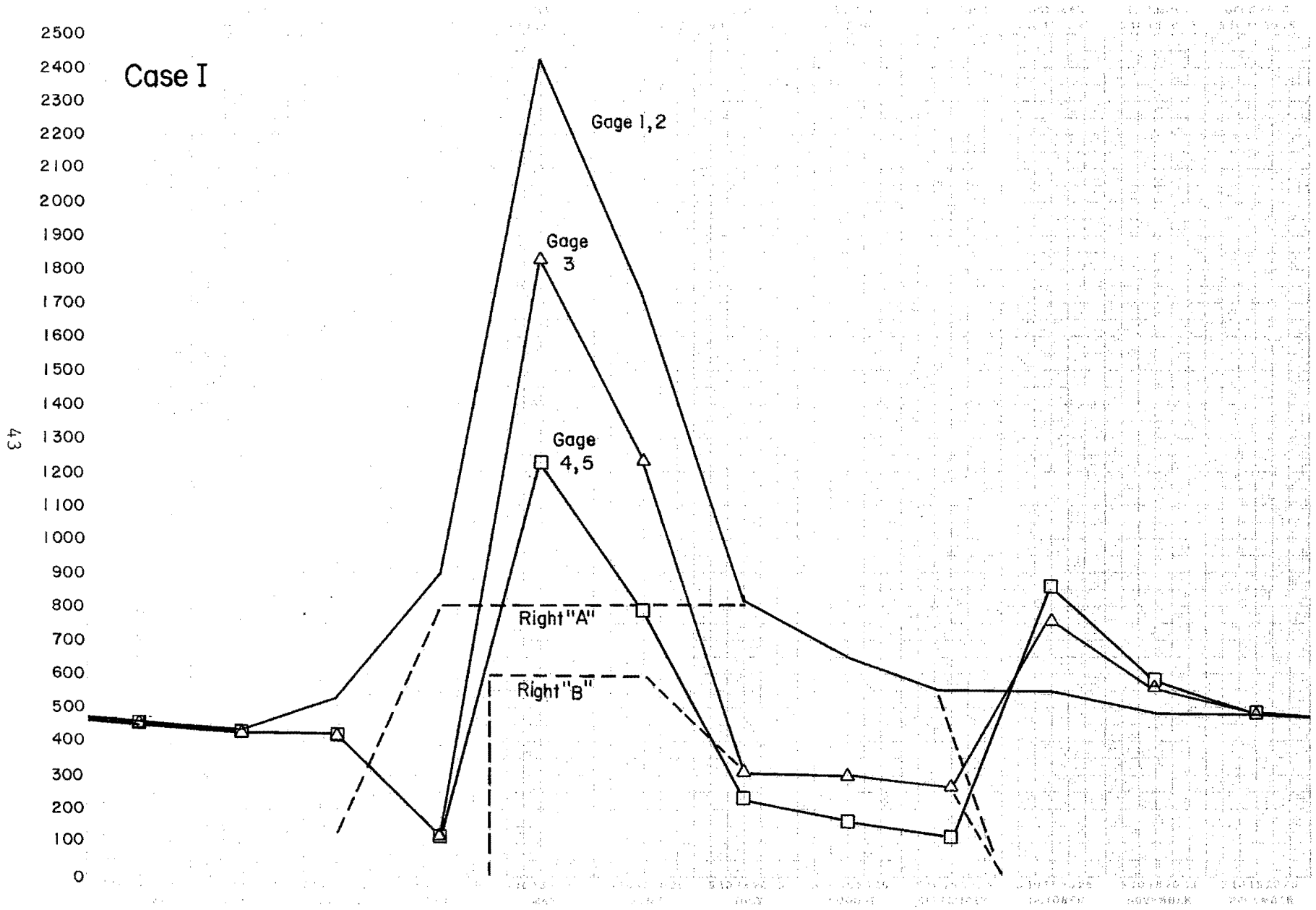


Figure 2. Effect of diversions on unregulated flow hydrographs, A diversion above B.

by the circled numbers 1 to 5 in Figure 1. Also shown on Figure 2 are "A" and "B" water right hydrographs representing diversion entitlements. The "A" point of diversion is upstream from, and senior to, the "B" point of diversion. Accordingly, A's diversion entitlement must be met first should the natural flow become insufficient to satisfy both entitlements. There is a certain amount of return flow from each use which lags the diversion in time and continues over a few months. Monthly flow values for points in the stream above and below each diversion point are given in Table 1 and show the effect of the two uses on the instream flow. For purposes of the example, natural gains or losses in the stream between upstream and downstream points are ignored (or assumed zero). Also, the effects of any time lag on monthly flow volumes at upstream and downstream points are ignored. In other words, except for the effect of diversions, streamflow volumes for any given month below the region of use would be the same as monthly streamflow volumes above the region of use. By comparing the monthly and annual flow volumes at gages above and below the two use regions, one can observe from Table 1 that the minimum monthly flow volume has changed from a value of 430 units for the natural flow condition to a value of 110 units below the points of diversion and use. In fact, 5 months exhibit lowered flow volumes as a result of the diversion and use. The peak monthly flow volume of the natural hydrograph has been cut in half as result of the A and B uses. Two months show an increase in flow volume over the natural upstream hydrograph as results of return flow residuals that feed back into the stream after diversions have ceased.

Now suppose the location of A and B are reversed (Case II of Figure 1), or that A changes his point of diversion and place of use to a location below B. Given the same natural flow hydrograph, B is now unable to divert his full entitlement during July, August, and September without diminishing the flow such that A could not divert his full entitlement (see Figure 3 and Table 2). In the previous situation, the volume and time-lag of return flow from A enhanced the opportunity for B to meet his needs. However, because diversion entitlements are considerably different for the two users, this does not turn out to be the situation in the second instance.

Comparison of the upper and lower flow records for the second case shows that while instream flows for the low 5 months are still below the lowest single month of the natural hydrograph, all except April shows a substantial increase over the first case. The downstream location of the senior appropriator (relative to junior appropriator) necessarily assures that higher instream flow volumes will be maintained throughout the stream reach. This fact might suggest that, where it can be justified, senior water rights might be acquired and transferred to downstream points to improve instream flow conditions along the entire reach. Specific site situations would dictate the possibilities in each instance. For example, in the instance cited above, if the junior appropriator's right was partly met historically from return flows of A, and if the transfer of the A right damages B's right, it would likely be contested by B and some compensatory measures would become a part of the permitted change use.

Table 1. Impact of off-stream uses on instream flow volumes - Case I senior appropriator upstream from junior appropriator.

Reach	O	N	D	J	F	M	A	M	J	J	A	S	Annual
Gage 1	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000
Reservoir													
(a) Storage													
(b) Evap.													
(c) Release													
Gage 2	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000
A. Diversion						110	800	800	800	800	650	540	4,500
Return	210	70					20	210	300	300	300	260	1,670
Gage 3	760	560	490	450	430	420	120	1830	1240	310	300	260	7,170
B. Diversion								600	600	310	300	260	2,070
Return	100	30							150	230	160	110	780
Gage 4	860	590	490	450	430	420	120	1230	790	230	160	110	5,800
Diversion													
Return													
Gage 5	860	590	490	450	430	420	120	1230	790	230	160	110	5,880

Assumptions:

1. A water right senior to B.
2. Stream neither influent nor effluent for entire length (no unmeasured losses or gains).
3. Return flows lagged over 2 month period; 1/4 of diversion first month, 1/8 of diversion second month.
4. No streamflow regulation above gage 2 .
5. All values rounded to nearest 10 units.

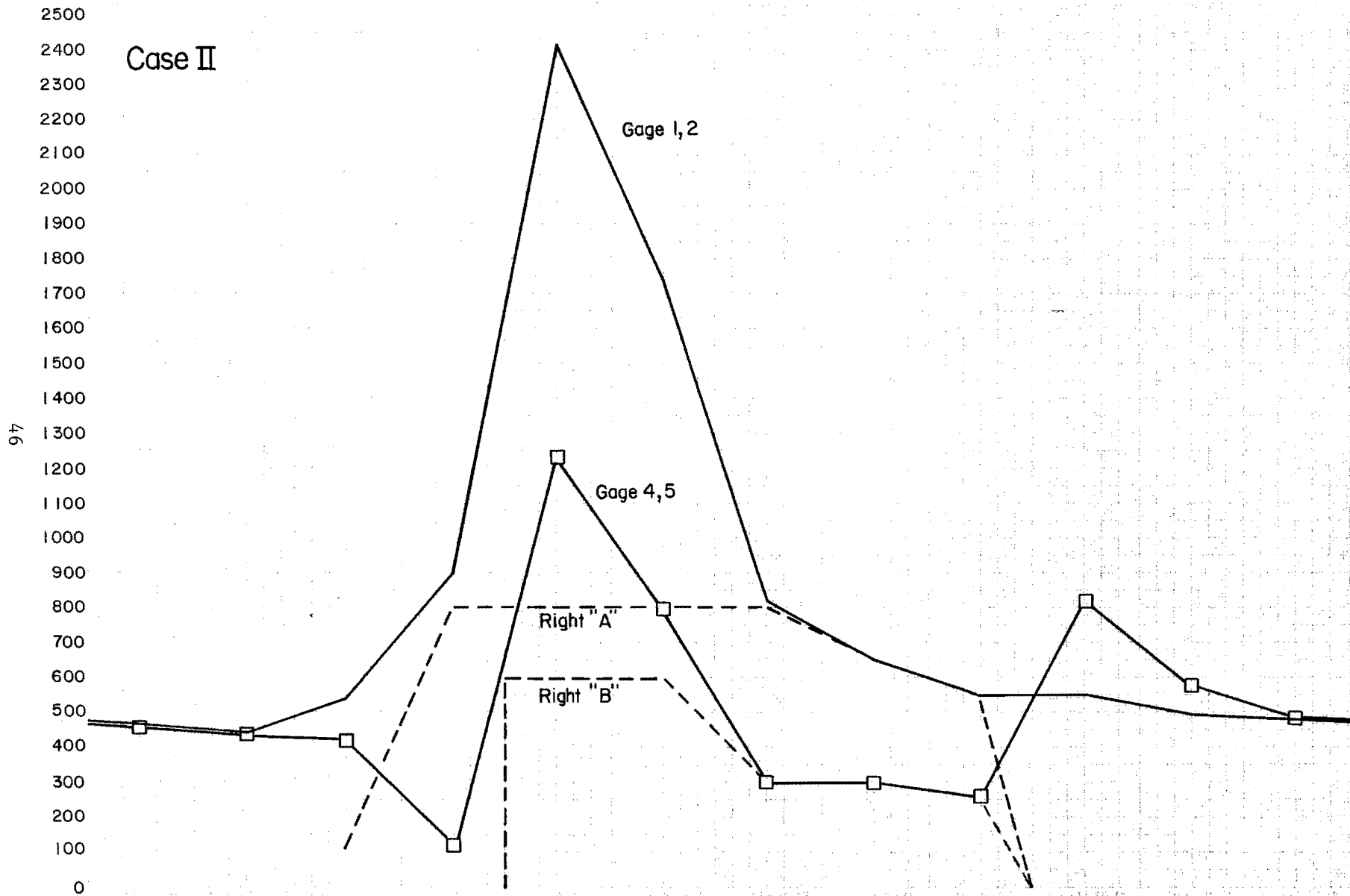


Figure 3. Effect of diversions on unregulated flow hydrographs, B diversion above A.

Table 2. Impact of off-stream uses on instream flow volumes - Case II senior appropriator changes point of diversion below junior appropriator.

Reach	O	N	D	J	F	M	A	M	J	J	A	S	Annual
Gage 1	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000
Reservoir (a) Storage (b) Evap. (c) Release													
Gage 2	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000
Diversion Return													
Gage 3	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000
B. Diversion Return	50	20						600	600	240*	130*	70*	1,640*
									150	230	130	70	650
Gage 4	600	510	490	450	430	530	900	1820	1290	800	650	540	8,710
A. Diversion Return	210	70				110	800	800	800	800	650	540	4,500
							20	210	300	300	300	260	1,670
Gage 5	810	580	490	450	430	420	120	1230	790	300	300	260	6,180

Assumptions:

1. A water right senior to B.
2. Stream neither influent nor effluent for entire length.
3. Return flows lagged over succeeding 2 months; 1/4 of diversion first month, 1/8 of diversion returns second month.
4. No streamflow regulation above gage 3 .
5. All values rounded to nearest 10 units.

\*Indicates B cannot divert entire entitlement or streamflow would be insufficient to meet A diversion entitlement (A senior to B).

The effect of reservoir storage on instream flows can be illustrated by introducing a storage reservoir into the system described previously (Figures 1 and 4 and Table 3). Since evaporation from a reservoir would result in some reduction of the total flow below its outlet, the capability to prescribe release rules must provide management possibilities and resultant benefits which more than offset the disbenefits from the decreased flow volumes. From Table 3 and Figures 1 and 4, for example, although the annual flow volumes from which diversions and instream flow needs must be met are reduced from 10,000 to 8600 units, off-stream entitlements are fully met (without any change in use operating efficiencies) and the low and high extremes of monthly flow (that may be most critical to the maintenance of aquatic habitat) are substantially attenuated over natural flow conditions. With a reservoir, the lowest monthly flow volume at any location along the stream reach from reservoir to some point below the last point of diversion is 330 units compared to 110 units in Case I and 120 units in Case II. Figure 4 is a diagram of the three cases showing the annual, high monthly, and low monthly flows at various points along the stream.

Aquatic biologists would have to evaluate whether flow regimens under Case I, Case II, or Case III would be most advantageous for the productivity and reproductivity of aquatic life. The hydrologic reality is that if streamflow conditions are largely (or totally) fixed by diversion entitlements of prior appropriators; and if that fixation precludes the obtaining of significant instream flow benefits; then judicious acquisitions of off-stream flow entitlements and a change of their point of diversion may provide a means of amicably achieving an instream flow objective without substantial impairment of existing water rights.

#### Reconciliation of "Ownership" Notions

In recent years, protection of instream flow values has been sought through claims of ownership that differ greatly in legal and philosophic basis.

The appropriation system is grounded in the notion that water rights are to be awarded and protected as private property. The intent is that water should be available to all segments of society for a broad range of uses. The law protects willing exchanges and transfers of water from one owner to another, from one place to another, and from one purpose to another, so long as no impairment to the rights of others is experienced in the process. Administrative oversight within the appropriation system inhibits actions on the part of water users that may be destructive or detrimental. This protection extends to all classes of users including governmental users. Governmental appropriators cannot preempt a private right without fair compensation. Hydrologic or monetary compensation is always necessary if a proposed transaction or change in use perceptibly harms other users. While the appropriation system does not allow one water right owner to do something that damages another, neither does the law compel one owner to do something for the benefit of some favored individual or group.

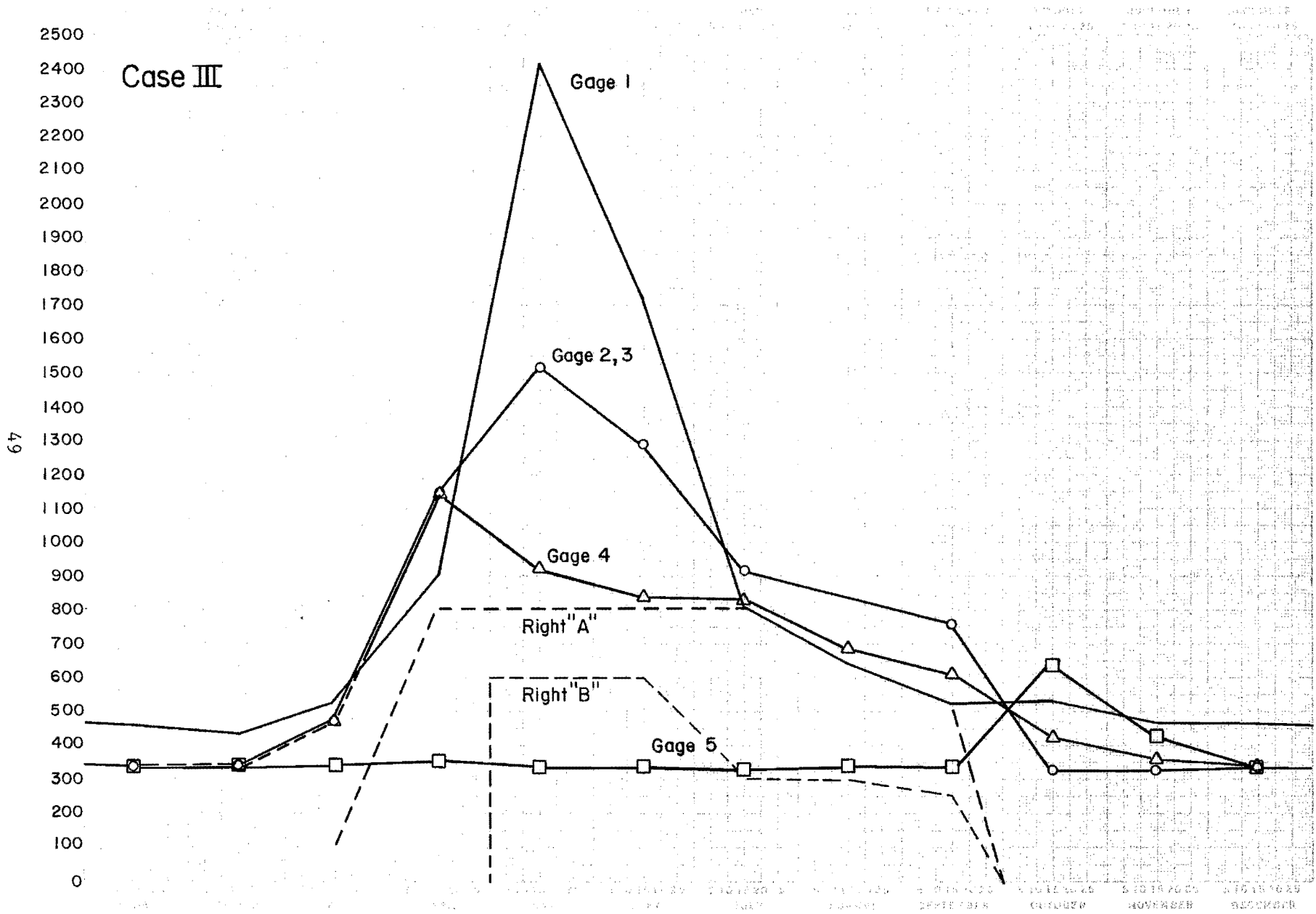


Figure 4. Effect of storage and regulated releases on minimum flows.

Table 3. Impact of off-stream uses on instream flow volumes - Case III senior appropriator below junior appropriator and reservoir regulation above both.

Reach	O	N	D	J	F	M	A	M	J	J	A	S	Annual	
Gage 1	550	490	490	450	430	530	900	2420	1740	810	650	540	10,000	
Reservoir	(beginning and ending storage 300 units)													
(a) Storage	850	970	1090	1160	1210	1360	1740	2930	2970	2220	1680	1160		
(b) Evap.	40	40	40	40	40	50	90	180	270	280	240	90	1,400	
(c) Release	330	330	340	340	340	470	1140	1520	1290	910	830	760	8,600	
Gage 2	330	330	340	340	340	470	1140	1520	1290	910	830	760	8,600	
Diversion Return														
Gage 3	330	330	340	340	340	470	1140	1520	1290	910	830	760	8,600	
B. Diversion Return	100	30						600	600	310	300	260	2,070	
									150	230	160	110	780	
Gage 4	430	360	340	340	340	470	1140	920	840	830	690	610	7,310	
A. Diversion Return	210	70					110	800	800	800	800	650	540	4,500
								20	210	300	300	300	260	1,670
Gage 5	640	430	340	340	340	360	360	330	340	330	340	330	4,480	

Assumptions:

1. A water right senior to B.
2. Stream neither influent nor effluent for entire length.
3. Return flows lagged over succeeding 2 months; approximately 1/4 diversion first month, approximately 1/8 diversion second month.
4. No streamflow regulation above gage 1.
5. All values rounded to nearest 10 units.



Although the appropriation system operates basically through property rights and a system of voluntary exchange, there are provisions for discretionary control over the allocation and transfer process where it is in the long range public interest. Thus while private rights remain the foundation of the appropriation system, they are subordinate to governmental decisions which reflect a societal consensus about the optimum use of water resources. So long as vested rights remain unimpaired, a state may exercise its police power in making reservations or withdrawals after a good faith weighing of social values. The appropriation system of water rights places heavy reliance on the market system to bring about reallocations of water over time according to changing societal preferences. However, where it becomes clear that the market system is not accurately reflecting social preferences, governmental interventions are provided for.

Ownership notions under the appropriation doctrine of water rights contrast sharply with ownership notions derived from the public trust doctrine. The rationale for claims of right coming from the public trust doctrine is that certain natural resources are so intrinsically valuable to the public that they cannot be exclusively owned by any person; that they are so particularly gifts of nature's bounty that they ought to be reserved for the whole of the populace; and that their peculiarly public nature makes their adaptation to private use inappropriate (Sax 1970). As applied to water, the origins of public trust claims go back to Roman and English concepts of public rights to the use of rivers, the sea, and the foreshore where access, passage, and fishing were common to all persons (Jawetz 1982). The public trust doctrine originated in the context of protecting public rights in navigable waterways and fishing pertinent to such waters. The concern was narrowly limited to the use of shorelands and tidelands where private uses might create impediments to navigation and commercial enterprises such as fishing.

American law embraced these notions in providing that the federal power to regulate commerce included the power to regulate interstate and international navigation. Under the public trust concept, the navigation servitude notion has been translated into a claim of public property rights which take precedence over private property rights. The originally limited jurisdiction of the federal government because of the narrow definition of navigable waters being "... regarded as public navigable rivers in law which are navigable in fact ... in the customary modes of trade and travel on water" (Daniel Ball, 10 Wall. 557(1870)) has been steadily expanded to a claim that "navigable waters of the U.S." are "all waters of the U.S." (PL 92-500). Also, the narrowly defined purposes which were claimed originally to qualify for protection in the public interest have been broadened to include recreational boating and fishing as well as aquatic habitat preservation, aesthetics, and other instream uses. Thus, under the public trust rationale, the private interest in navigable waters (which might be claimed to be all waters) is considered reviewable and subject to management under the public trust doctrine. Therefore, holders of water permits under state appropriation systems can only receive water subject to the needs of the public for public uses. Under an expanded definition of navigability,

public interest can be asserted so as to limit private appropriations of water. In other words, the public trust doctrine is viewed as a basis for denying appropriations or changes in use which may impair instream uses. It calls into question whether, and to what extent, the recipients of title to water under the appropriation system ever had the right to extinguish the historic public right to an intrinsically valuable natural gift that should remain in public ownership.

The public trust theory, as employed in litigation, seems to have been limited to obtaining mandatory recognition of instream flow values. The theory has not been utilized in issues over other water uses of high social worth such as domestic, agricultural, hydropower, and other productive uses. Derived from case law and not legislation (as with the appropriation system) the public trust doctrine is not implemented through codes, rules, and procedures which have been important hallmarks of the appropriation system.

The legal and philosophic bases of water resource ownership and allocation are so divergent in the appropriative and public trust doctrines that reconciliation may seem impossible. However, the principal thrust of the public trust idea, to gain protections of instream flow values as public rights, seems to be embodied in the appropriation system which allows for public interest overrides of the regular first come first served procedure of the appropriation process. However, such discretionary actions could not be taken in the appropriation system without observing principles of compensability. Also, in the absence of legislative mandate, the appropriation system would not give paramount or preemptive status to environmental values over nonenvironmental ones. The state implemented appropriative systems would have difficulty according "constitutional" or "natural" right status to a particular class of user so that state police powers are superseded. In outlining the philosophy of environmental resource allocations and the assertion of natural or constitutional rights, Tarlock (1978) has concluded that arguments "that 'we' have a right to these (environmental) uses which can contradict a legislative or administrative refusal to recognize them" are without merit. He suggests that laws do not and should not afford more than equal consideration of all beneficial uses "for otherwise the real opportunity cost of these uses will be ignored and the ability of western water law to incorporate these new uses in a manner which will be tolerable to existing users will be lost."

#### Problems Associated with the Allocation and Reallocation Process

##### Market v. Political Allocations

The appropriation system of water rights places heavy reliance on the medium of the market for determining the social value of water in alternate uses and for bringing about the shifts in use as society's needs change. The assumption is that the voluntary market process involving numerous private decisions and actions becomes a reflection of the composite social values for water in various uses. New uses, whether for agriculture, industry, or energy, must purchase water

rights if there are no appropriable supplies. Municipalities or government agencies with powers of eminent domain may acquire needed supplies by condemnation but only with just compensation. Under appropriate law, the state has provisions for subordinating private rights to accomplish changes deemed to be in the public interest. Such actions are not frequent and supposedly could not be done without consideration of overall resource use and allocation, and with due consideration to any social tradeoffs and opportunity costs implicit in the change. Transferability is a fundamental component of the private property right under the appropriation doctrine. Since the bid price for water is a reflection of the value some segment of society attaches to it the tendency is to move the resource into patterns which provide optimum levels of social welfare. The value of a water right is in no small measure determined by its certainty and transferability.

Since instream flow uses are commonly considered uses of a public nature, it has been taken for granted by many that the benefits should be provided by government. There have been complaints that water rights administrators have been too narrowly oriented to the allocation of water among private interests and have not adequately fulfilled their "trustee" role in protecting some very basic public values associated with instream flows (Smith 1980). The approach toward getting adequate recognition and protection of instream flows has been almost universally a political one. Unsuccessful attempts to obtain instream flow rights or protections under appropriation procedures is partly responsible for this. The appropriation system has not accepted instream flow filings by individuals or groups "in behalf of" the public. This is understandable. However, the appropriation system has also discriminated against instream flow applications because of "beneficial use" or "diversion" requirements. Until and unless such obstacles are removed, market principles cannot possibly operate and instream flow needs have only the political avenue to pursue. If instream flow users are legally precluded from obtaining private water rights in the same manner as other users, then instream flows must be classed as public goods in order to be recognized. Yet we know that privatization of such rights is possible in many instances as witnessed by fishing ranches, hunting clubs, private recreation lakes, etc.

If instream flow uses must look exclusively to an "all wise" central authority to preserve and protect interests without any guidance or assistance from the market, certain problems can be expected. Under government allocations there will always be winners and losers. Since market solutions are voluntary, parties do not generally feel they have "lost" anything.

Some instream flow proponents may prefer political rather than voluntary solutions. They may not want to actually manage the resource but only to be assured that governments (with the use of experts) will manage the allocation so as to receive a high degree of protection and enhancement of value to the public.

The appropriation system would expect that the acquisition of water rights in the public interest would entail compensation for any damage

to other water right holders. Should the public trust doctrine become the basis of the instream flow right, the rule of no compensation could be claimed based on the theory that no private rights can be superior to instream flow rights, and since the sovereign already owns the flow, private rights are subordinate and no "taking" can occur (Dewsnup and Jensen 1977a).

The use of governmental action to preserve or reserve instream flow could be expected to restrict their subsequent transfer to other kinds of uses. Such restrictions are tantamount to placing an infinite value on instream flows. This raises additional questions about how opportunity costs are distributed and whose values take priority, not only in the original reservation but under conditions of fluctuating flows from year to year and throughout the year. Obviously, wise administrators are needed in the exercise of discretionary authorities, and as Trelease (1974) has observed:

The wise administrator, as everyone knows, is the man in the government office who protects "the public interest" (read my interests) from actions which would adversely affect those interests when the public is (I am) otherwise unable to influence the course of those actions. The other fellow is easy to spot; he is the man in government who makes decisions for me that I would rather, and could better, make for myself.

Under the reservation or withdrawal process, judgments about what is desirable or undesirable is made by a central regulatory authority rather than by market forces and the voluntary choices by all kinds of water users. Withdrawals certainly need to give ample weight to the ecological and philosophical arguments of environmentalists but, especially for reservations of large geographic scale, must be careful not to overlook broader concerns. The opportunity cost of any withdrawal is always a relevant consideration.

Even where governmental withdrawals for instream flow purposes are made under eminent domain powers requiring fair compensation, the use of general tax collections to make such payments may result in inequitable burden of costs because all taxpayers may not be instream flow users. Under private market operations the beneficiaries of any allocation must bear the associated costs.

#### Protection of Existing Water Rights

The protection of a water right in the same legal sense as protection of any other private property right is a basic principle of appropriation law. Transfers and exchanges are routinely authorized so long as the exchange does not result in impairment of third party water rights. While eminent domain authorities may be exercised under the appropriation system, water right owners must be compensated for any damages accruing to them. In reality the institutionalization of the appropriation system with its mix of hydrologic and legal expertise strongly reflects the importance attached to the protection of certificated water rights.

Were instream flow withdrawals to be made under claim of public trust doctrine, this compensatory feature may not be acknowledged. There would be tremendous resistance by those states operating under the appropriation doctrine to supplanting that system with one that stripped away fifth amendment protections.

There are those who feel that the appropriation system is overly protective of private rights in that they are awarded in perpetuity, not periodically reviewable, and thus not subject to reallocation. It should be remembered, however, that water rights are transferable and each transfer must be reviewed by the water rights administrator. Reallocations are commonplace but initiated in the market and not by the wise administrator.

### Adjusting to Contemporary Societal Preferences

Fifty years ago there was little or no expressed concern about instream flow protections. Today large sectors of society are saying we are allowing instream flow values to deteriorate to the point of threatening an important need of future generations. This rising interest in environmental values is illustrative of social dynamics and the necessity to be able to modify historical uses to accommodate contemporary public needs. Corollary to the need to adjust water uses according to changing societal preferences, is the need to view needs in a total resource context.

An apprehension in the governmental reservation or withdrawal of water for instream flow purposes is that such allocations may be difficult to change. Requiring that water remain in a "natural" flow condition precludes many other public and private water use potentials. The social value and benefits derivable from off-of-stream uses are often foregone in the process of protecting instream flows. The value of these alternative water use potentials should not be ignored or denied by considering instream flow needs in isolation of other social goals. The public nature of instream flows and the connotation that this accords a special priority is to remove instream flows from economic tests of public interest.

### More Explicit Description of Instream Flow Uses

To administer the appropriation system of water rights so as to achieve its objectives of flexibility in transfer and exchange without allowing harm or injury to others requires an adequate description of each water right. The nature, place, and period of use must be specified. The location and amount of diversions and return flow are also noted. If "beneficial use" is the basis and measure of a water right, then it becomes necessary to know what amount is "needful" for each use intended and what the hydrologic implications might be as water rights are implemented. Of course priority dates serve a meaningful purpose under appropriation law and are a part of any water rights description.

The accommodation of instream flow needs within the normal appropriative framework requires quantifications that may not be obtainable under state-of-the-art methodologies. As more and better information becomes available on the causal relationship between streamflow characteristics and the productivity/reproductivity characteristics of aquatic ecosystems, important questions about impacts and quantification of needs can be answered.

The assumption behind current instream flow preservation methodologies is that fish, aquatic insects, and riparian vegetation are adequate proxies for all other uses (Tarlock 1978). Therefore, specimen preservation becomes a legitimate proxy for environmental damages generally. It is known that flow needs for fish vary with growth stage, reproductive stage and other factors. The relationship between flows and fish life maintenance and habitat productivity need to be better understood in order that appropriations can be more soundly based.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The appropriation system of water rights, as utilized in the Rocky Mountain states, has proven very durable. All states have developed good institutional structures under which the system operates on a day to day basis. Against any "model" system of allocation of water by states, the appropriation system would rank very high. The features of appropriation law or interpretations of them, that have slowed the accommodation of instream flow appropriations on an equal footing with other uses can be, and are being, gradually modified. In particular, interpretations of "beneficial use" and "actual diversion" requirements, which have been bottlenecks in the past, are not presently seen to be invincible stumbling blocks.

Because instream flow uses have generally been viewed as "public goods," their protection has normally been sought through provisions of law that allow allocations under public interest. The public trust doctrine has been viewed as especially applicable to the protection of instream flow values in that the nature of the water resource gives it high intrinsic value and a peculiarly public character. However, the appropriation system recognizes these same public trust notions and provides for their application so as to subordinate allocations as private rights in order to obtain more beneficial public purposes. A difference is that the public trust doctrine may claim immunity from compensation in the exercise of its authorities. The fact that the appropriation system provides a less controversial way of subordinating private rights to public interest, has fully institutionalized its legal foundation, stems largely from legislative law rather than judicial law, and incorporates market principles as indicators of public preferences and values as guides and supplements to the use of administrative perogatives, suggests that we be very cautious in accepting substitutes.

Prohibitions against impairment to other rights as well as provisions for protections against being injured by others becomes especially important in accommodating instream flow uses. Unless hydrologic imperatives are carefully and realistically observed, the granting of instream flow rights may result in the unsettling of secure interrelationships between rights. For example, granting instream flow rights must consider the protectable "instream flow" component of every water right in the form of "conveyance" water. This implicit part of a water entitlement extends to the extremities of the watershed, and the recognition of any new right must not constitute duplicative claims to "conveyance water" protections. The potential for limiting the potentials for water right owners to make transfers and change the nature and place of use is a factor to be considered also in the awarding of instream flow water rights.

The problem of determining "beneficial need" for the varied kinds of uses lumped into the instream flow classification will continue to retard legal recognition of instream flow uses. States have developed

reasonably good guides for allocating water to agricultural, municipal, domestic, and many industrial purposes. Water rights administrators have also become reasonably proficient in assessing and projecting the hydrologic consequences of particular use changes. Better technical criteria for relating flow conditions to aquatic habitat, biological factors, and aesthetic values are needed.

Legislative, judicial, and administrative strategies for acquiring and protecting instream flows apart from the appropriative route have been proposed. The most reasonable legislative strategy for protection of instream values may be in the articulation of enduring social objectives and in the authorization of programs that designate streams with special scenic, recreational, or environmental value. Interpretation of law in settling disputes involves the courts, but determination of values to be used in considering disputes is primarily a legislative function. There has been a proliferation of lawsuits in which citizens and special interest groups have sought judicial remedies to water resource management problems. Courts have been used to review resource agency actions and decisions. The concern here is that courts have relatively few substantive standards by which to judge agency discretion. More detailed statutory and regulatory standards and open decision making by agencies should minimize the role of courts in seeking instream flow protections. Administrative strategies for protecting instream flows may be initiated by water resources regulatory agencies or by agencies charged with resource planning and development. There are many direct and indirect opportunities for mission agencies to protect instream flow values. Perhaps the principle caution in the use of agency programs is that tradeoffs may not be adequately explored and measures used may be rather inflexible and market insensitive. Private sector strategies for protecting instream flow values are available and some have been successfully initiated. There seems to be a broad range of contractual arrangements, purchase options, easements, and agreements that could be effectively employed by private parties in preserving instream values. The accommodation of instream values through market processes needs to be more seriously examined.



## REFERENCES

- Dewsnup, R., and D. Jensen. 1977a. Strategies for reserving flows for fish and wildlife: identification, description, and preliminary evaluation. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-77/26. Ft. Collins, Colo.
- Dewsnup, R., and D. Jensen. 1977b. State laws and instream flows. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-77/27. Ft. Collins, Colo.
- Dewsnup, R., et al. 1977. Promising strategies for reserving instream flows. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-77/29. Ft. Collins, Colo.
- Hazel, Charles. 1976a. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part B: California, executive summary. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior, Ft. Collins, Colo. NTIS PB 263 352.
- Hazel, Charles. 1976b. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part B: California, final report. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior, Ft. Collins, Colo. NTIS PB 263 245.
- Hazel, Charles. 1976c. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part B: California, case studies. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior, Ft. Collins, Colo. NTIS PB 263 246.
- Jawetz, Steven M. 1982. The public trust totem in public land law: ineffective - and undesirable - judicial intervention. Ecology Law Quarterly, Vol. 10, No. 3.
- Kiechel, Walter Jr., and Martin Green. 1976. Riparian rights revisited: legal basis for federal instream flow rights. Natural Resources Journal 16:969-974.
- Lamb, Berton L. 1978. Implications for private and public purchase of water rights to guarantee instream flows. Proceedings, Conference on "Non-federal Financing of Water Resources Development," Oregon State University, Corvallis, Oregon.
- Nelson, Wayne et al. 1976a. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part A: Rocky Mountains and Pacific Northwest. Western Energy and Land Use Team, Fish and

- Wildlife Service, Department of Interior. FWS/OBS-76/28. Ft. Collins, Colo.
- Nelson, Wayne et al. 1976b. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part A: Rocky Mountains and Pacific Northwest, final report. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-76/29. Ft. Collins, Colo.
- Nelson, Wayne et al. 1976c. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part A: Rocky Mountain region case studies. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-76/30. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978a. Instream flow strategies for Arizona. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/35. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978b. Instream flow strategies for Colorado. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/37. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978c. Instream flow strategies for Idaho. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/38. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978d. Instream flow strategies for Montana. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/39. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978e. Instream flow strategies for Nevada. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/40. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978f. Instream flow strategies for New Mexico. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/41. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978g. Instream flow strategies for Utah. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/45. Ft. Collins, Colo.
- Nelson, Wayne et al. 1978h. Instream flow strategies for Wyoming. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-78/47. Ft. Collins, Colo.
- Sax, Joseph L. 1970. The public trust doctrine in natural resource law: effective judicial intervention. Michigan Law Review 68:471.
- Smith, Felix E. 1980. The public trust doctrine, instream flows and resources. U.S. Fish and Wildlife Service, California-Nevada Area Office, Sacramento, California.

- Stalnaker, C. B. 1979. Instream flow methodologies and water management uncertainty. Idaho Water, Idaho Water Resources Research Newsletter, May, 1979, Vol. 6, No. 2.
- Tarlock, A. Dan. 1978. Appropriation for instream flow maintenance: a progress report on the "new" public western water rights. Utah Law Review 1978:211-247.
- Trelease, F. J. 1974. The model water code, the wise administrator, and the goddam bureaucrat. Natural Resources Journal 14(2):207-230.
- Wagaman, D. et al. 1976. Assessment of effects of altered stream flow characteristics on fish and wildlife, Part A: Pacific Northwest Region case studies. Western Energy and Land Use Team, Fish and Wildlife Service, Department of Interior. FWS/OBS-76/31. Ft. Collins, Colo.

APPENDIX  
DIGEST OF STATUTORY PROVISIONS WITH  
RESPECT TO COMPARATIVE NORMS

Recognition of Both Public  
and Private Aspects

Arizona

Waters are declared to belong to the public and subject to appropriation (A.R.S. 45-131A), but groundwater in definite underground channels is excepted. Any person or entity wishing to acquire a right of water use must file an application with the Department of Water Resources (45-142). Applications in which the proposed use would conflict with vested rights, pose a menace to public safety, or be against the interests and welfare of the public are rejected (45-143). Transfers and changes of water rights are not allowed where existing rights would be impaired. Nor are they granted without approval of affected irrigation districts (45-172).

The appropriator's right to the water is considered an ownership right and subject to sale (City of Phoenix v. State ex. rel. Conway (1939) 53 Ariz. 96, 245 P.369). A perfected appropriation entitles an owner to divert and use the same quantity forever, subject to prior appropriators (Arizona v. California (1931) 51 S. Ct. 522, 283 U.S. 423, 75 L.Ed. 1154). However, water rights may be lost through nonuse (45-131, 45-189, 45-190), or through condemnation for a higher purpose (45-147).

Authority for water quality matters is assigned to the Water Quality Control Council and administered by the Department of Public Health (36-1851, 36-1856). The Council and Department are authorized to develop and enforce water quality standards and regulations for all waters of the state (36-1854), but without diminishing the water available for beneficial use (36-1854B).

Colorado

The Colorado Constitution declares that the unappropriated water of all natural streams (including hydrologically connected groundwater) is public property and subject to appropriation (Art. XVI, Sec. 5). The water of natural streams is administered by the State Engineer through geographic divisions, as directed by the state constitution, laws, and orders and decrees of the courts (C.R.S. 37-92-501).

Appropriation of water or for a change in use requires application to the water clerk of the respective division in which the diversion occurs (37-92-302). The application is referred to a referee who makes an initial determination or submits it to the water court for a decision. Applications are not approved if the proposal would injure existing rights (37-92-305(3)). A water right is considered real

property, possessory in nature, while water actually diverted and reduced to possession is personal property (Knapp v. Colorado River Water Conservation District (1953), 131 Colo. 42, 279 P.2d 420).

For groundwater resources designated as not being hydrologically connected to a natural stream, the appropriation doctrine applies, but conditioned "to permit the full economic development" of the resource (37-90-102). Prior appropriations are protected to the point of reasonable, not historical, pumping levels. Anyone objecting to a proposed groundwater appropriation (37-90-107), or claiming harm from actions of the state engineer or Groundwater Commission has a right to hearing (37-90-107, 37-90-114) and appeal (37-90-115).

The protection of the quality of state waters is declared to be a matter of public interest (25-8-102), and the Water Quality Control Commission and Department of Health are charged with the development of comprehensive programs of pollution prevention and control (25-8-201). However, their mandate is not to be interpreted so as to impair the constitutional right of diversion for beneficial use, nor should its implementation result in material injury to established water rights (25-8-104).

#### Idaho

The Idaho Constitution declares that the use of all appropriated water is a public use, subject to state regulation and control (Art. 15, Sec. 1), but the right to appropriate unappropriated waters cannot be denied (Art. 15, Sec. 5). All waters of the state are declared to be property of the state (I.C.A. 42-101) in its "sovereign capacity as representative of all the people for the purpose of guaranteeing that the common rights of all shall be equally protected" (Poole v. Olaveson (1960), 82 Idaho 496, 356 P.2d 61).

The right to use public waters is not to be considered a property right in itself, but a complement of the land or other thing to which the water is beneficially applied (42-101). However, the courts have found water rights to be included within the definition of real property (Ireton v. Idaho Irr. Co. (1917), 30 Idaho 310, 164 P.2d 687), and the license issued by the Department of Water Resources to use water is binding on the state (42-220). A system of preferred uses is in effect but is limited by the requirement of just compensation for taking private property (Peck v. Sharrow (1975), 96 Idaho 512, 531 P.2d 1157).

The state constitution also requires the establishment of a water resources agency, empowered to formulate and implement a state water plan for optimum development of the state's water resources in the public interest (Art. 15, Sec. 7). The Idaho Water Resources Board is the designated agency (42-1732).

Applications to appropriate water or change a water right may be denied if they would adversely affect existing rights or the local public interest (42-203, 42-222).

It is the duty of Director to control the appropriation and use of groundwater, and to protect the people of the state from depletion of groundwater resources (42-231).

The policy of the state is to protect the environment and promote personal health (39-103), and to protect the quality of water for its various beneficial uses by programs of water pollution prevention and quality control (39-3601). The Idaho legislature has declared that for the public health, safety, and welfare, streams of the state be protected against the loss of water supply needed to support wildlife, recreation, aesthetics, navigation and quality (42-1501). Flows to protect these purposes are applied for and set by the Board only and, once established, flows are to be "prior in right to any claims asserted by any other state, government agency, or person for out of state diversion."

### Montana

The Montana Constitution declares that "all surface, underground, flood, and atmospheric waters" to be state property, subject to appropriation for beneficial use (Art. IX, Sec. 3(3)). Beneficial uses of water, and rights of way and facilities necessary for the use are held to be public uses (Art. IX, Sec. 3(2)).

Permits for appropriation require demonstration that a feasible project to apply unappropriated water to beneficial use is envisioned (85-2-311). Others potentially harmed are entitled to file objections (85-2-308), and the Department may deny or modify an application based on objections filed or for its own reasons (85-2-310). Changes in right also require Department approval and must not harm existing rights (85-2-402, 85-2-403).

The State Constitution requires each person and the state to maintain and improve the environment, and directs the legislature to provide adequate protection measures for this purpose (Art. IX, Sec. 1). It is the public policy of Montana "to promote the conservation, development and beneficial use of the state's water resources to secure maximum economic and social prosperity for its citizens," (85-1-101(2)). For this purpose, a "comprehensive, coordinated multiple-use water resource plan" is to be formulated (85-1-101(10)). Among the planning goals are the protection and conservation of water resources for public recreation and wildlife conservation (85-1-101(5)).

It is also the state's policy to protect and preserve streams and lakes and adjacent lands in their natural or existing condition and to protect water for use in any beneficial purpose (75-7-102, 87-5-501). All proposed projects that would alter a streambed or banks must be submitted for approval to a Board of Supervisors (Board of a Conservation District, Grass Conservation District, or County Commissioners) (75-7-111). If the project is by a public agency, other than an irrigation district, notice must also be sent to the Department of Water Resources (85-5-502). Disputes are subject to court arbitration (85-5-505).

## Nevada

All sources of water, both surface and underground, are declared to belong to the public (N.R.S. 533.025, 534.020), and, subject to existing rights, open to appropriation for beneficial use (533.030). The beneficial use of water is deemed a public use, entitling the appropriator to condemn property required to accommodate a lawful diversion, conveyance, or storage of water (533.050).

All contemplated appropriations or changes in existing rights must be submitted to and approved by the State Engineer prior to commencing work (533.325). Approval of the application depends on 1) the availability of unappropriated water, 2) no potential impairment of existing rights, and 3) no threat to the public welfare (533.370).

The only provision for (involuntary) forfeiture of a right to use water is abandonment, or failure to apply the water to beneficial use for five successive years (533.060(2)).

It is state policy, as expressed in its water pollution law, to maintain water quality for public health, protection of wildlife, and for agricultural and industrial uses (445.132).

## New Mexico

The New Mexico Constitution declares the unappropriated water of all natural streams to belong to the public, and subject to appropriation for beneficial use (Art. XVI, Sec. 2, echoed in N.M.S.A. 72-1-1). All underground water is similarly declared to be public waters, subject to appropriation for beneficial use (72-12-1, 72-12-18). The right of eminent domain is extended to anyone making beneficial use of water to acquire land for rights-of-way as necessary to make the intended use (72-1-5).

The State Engineer may reject an appropriation application if he determines that there is no available, unappropriated water, or that approval would be contrary to the public interest (72-5-7).

The Water Quality Control Commission is directed to promulgate water quality standards and regulations, giving due consideration to the degree of injury to or interference with health, welfare, property, and the public interest, including the value of the sources of water contaminants (74-6-4). However, the Water Quality Act does not grant the power to take away or modify property rights (74-6-12).

## Utah

All waters in Utah, both above and beneath the ground, are declared to be property of the public (U.C.A. 73-1-1). The court has ruled that this statute does not vest the state with the proprietary ownership of the water, but does establish a duty to control appropriation of water for the public interest (*Tanner v. Bacon* (1943), 103 U. 494, 136 P.2d 957).

A private water right is usufruct, consisting of the right to have water flow so that a legal portion of it may be reduced to possession and be made private property (Ronzio v. Denver & Rio Grande Western R. Co. (1940), 116 F.2d 604). Moreover, a valid appropriation is such that, "the beneficial use must be one that inures to the exclusive benefit of the appropriator subject to his complete control" (Lake Shore Duck Club v. Lake View Duck Club (1917), 50 U. 76, 166 P.309). The beneficial use of water is a public use. Water which, without good reason, is not applied to a beneficial use is abandoned and reverts to the public for subsequent appropriation (73-1-4).

The Office of the State Engineer (Division of Water Rights) has the responsibility "to secure the equitable and fair apportionment and distribution of the water according to the respective rights of appropriators" (73-2-1). Anyone who wishes to acquire a right to use water must apply to the Engineer for a permit (73-3-1). Similarly, any change in the place of diversion or nature of use must be approved by the State Engineer (73-3-3). The State Engineer approves applications for appropriation only if four criteria are met: 1) unappropriated water is available, 2) the proposed use will not impair existing rights or interfere with the more beneficial use of the water, 3) the applicant can demonstrate the physical and economic feasibility of the proposed project, and 4) the appropriation is not being made for the purposes of speculation or monopoly.

The State Engineer has the power to reject applications for appropriation of water that he feels will "interfere with its more beneficial use for irrigation, domestic or culinary, stock watering, power or mining development or manufacturing, or will prove detrimental to the public welfare," (73-3-8) but he does not have the power to revoke existing appropriated rights for the same reasons. It is the state's policy to protect, maintain, and improve water quality in order to protect public health and welfare, enhance wildlife propagation, and maximize beneficial use (73-14-1). The Committee on Water Pollution and the Department of Health's Environmental Health Division develop and administer the state's water pollution control program (73-14-4,5). It is illegal to discharge any pollutant into the waters of the state which constitutes a menace to public health, is harmful to wildlife, or impairs beneficial use (73-14-5(a)). All other discharges are permissible only if a permit has been obtained from the Committee (73-14-5(b)).

### Wyoming

The Wyoming Constitution declares "the water of all natural streams, springs, lakes, or other collections of still water" to be property of the state (Art. 8, Sec. 1), and rights to its use are limited to the amount beneficially used (W.S. 41-3-101). A Board of Control, composed of the State Engineer and water division superintendents, supervises the appropriation, distribution, and diversion of state waters (Art. 8, Sec. 2). Appropriations for beneficial use may be denied only if justified to protect public interests (Art. 8, Sec. 3). The State Engineer may reject an application to appropriate surface



or groundwater, subject to review by the Board of Control, if the available water is insufficient for the purpose, the construction design is inadequate, other rights would be impaired, or the use would otherwise not be in the public interest (41-3-931, 932; 41-4-503).

Applications to change the purpose or place of use of water are granted subject to considerations of the economic loss to the community and the state resulting from discontinuing the former use, and the degree to which any loss will be offset by gains from the new use (41-3-104). While it is the policy of the state to encourage water exchanges, applications will not be approved where existing rights would be impaired, administration would be too difficult, or the public interest would be adversely affected (41-3-106(d)). Change in point of diversion is allowed subject only to detrimental effects on existing rights (41-3-114).

The legislature has determined that the state's duty as owner of the water resource is to assure "maximum permanent beneficial use of waters within the state," and therefore legislative approval is required to appropriate, divert, or store water for use outside the state, and subject to prior reciprocal legislation in the receiving state (41-3-115).

Each water division in the state has a division advisory commission on underground water to advise the State Engineer and Board of Control in matters pertaining to groundwater on interests of groundwater users and the general public (41-3-908). The Board of Control may designate any groundwater district or subdistrict as a control area where withdrawals are approaching recharge, groundwater levels are declining, conflicts or waste are occurring, or some other condition may arise requiring regulation in the public interest (41-3-912).

The Water Development Commission was established to formulate and periodically revise state plans for water resources development and management. In this process the state's water resources and uses are inventoried and future needs identified (41-2-109). The Commission encourages development for beneficial uses (41-2-112). Project feasibility studies are required to identify the relation of the project to a broad range of public goals in water resources management (41-2-114(c)).

Any discharge of waste or pollutants into waters of the state, or any alteration of the physical, chemical, or biological properties of such waters must first be authorized by a permit from the Department of Health (35-11-301). The Division of Water Quality, together with its advisory board, recommends to the Director of the Department of Health standards and regulations for water quality and effluents, and conditions for approval of discharge permits (35-11-302). Such recommendations are to take into consideration the effect of the pollution on the health and well-being of the people, environmental damage, and the social and economic value of the pollution sources.

## Flexibility for Transfer and Exchange of Water Rights

### Arizona

Transfers of water rights require application to and approval of the Director of the Department of Water Resources (A.R.S. 45-172). The Director fixes a time for hearing and publishes a notice of application and hearing. The change or transfer will not be granted if the Director finds that the transfer would harm existing rights (45-172(2)). Written consent must be obtained from an irrigation district, agricultural improvement district, or water users association if the transfer would remove water from within the district or from within the drainage basin supplying the district (45-172.4, 45-172.5). However, changes within a district do not require the Director's approval. Where the change does not involve moving the site of use, conditions for approval are apparently not as rigorous. The Attorney General has stated:

This section [45-172] does not apply where an appropriator of water wishes to change his use of water without severing it from the land to which it is appurtenant or from its site of use. (Op. Atty. Gen. No. 74-28-L)

The law apparently permits one user to change another's source of supply without his consent as long as a hydrologic compensation is made, the quality of the water is not lowered, and the other users are not put to additional expense (*Adams v. Salt River Valley Water Users Association* (1939), 53 Ariz. 374, 89 P.2d 1060).

Changes in use to recreation and wildlife may only be made by transfer to the state or its political subdivisions (45-172). The legislature must approve any change in use contemplating hydroelectric generation in excess of 25,000 horsepower (45-146 B).

### Colorado

Legal recognition of changes in water rights requires application to the water clerk of the division in which the diversion lies (C.R.S. 37-92-302). Applications will not be approved by the referee or water judges if the proposed change would injure vested rights (37-92-305(3)). In the event of objections, however, the applicant is entitled to propose mitigating measures (37-92-305(3)).

Colorado law provides that water may be transferred from one stream to another with proper adjustments for seepage and evaporation (37-83-101). The transferring party is required to install the appropriate measuring devices (37-83-102), and the division engineer of the receiving system is to keep a record of all such water diverted into his division (37-83-103). An interesting feature of this transfer provision is that in the case of interbasin transfers, the diverter can make a succession of uses "to the extent that its volume can be

distinguished from the volume of the streams into which it is introduced" (37-82-106).<sup>1</sup>

Appropriators may provide substituted water to senior appropriators, so long as the water substituted is of the same quality, quantity, and continuity as that required by the use to which the appropriation had normally been put (37-80-120). Owners of water rights in the same stream may exchange or loan for a limited time their rights, provided that written notice describing the terms of the loan or exchange, signed by all involved, is given to the division engineer (37-83-105).

Parties claiming damage from such actions have recourse to the division engineer, who must order discontinuance of any diversion causing material damage to a senior right (37-92-502(2)). The determination of the division engineer may be appealed to the water court in whose jurisdiction the diversion lies.

In order to assure severability of land and water, and ensure that land ownership patterns not hinder the beneficial use of water, the first legislative assembly granted ditch right-of-ways to right holders from their point of diversion through the lands of others to their point of use, extending the power of eminent domain for such purposes (37-86-101 et seq.).

Colorado law makes illegal the export of surface water (37-81-101) or groundwater (37-90-136) from the state, and water from interstate stream systems may not be diverted in Colorado for use in another state unless expressly credited as a delivery to that state of its entitlement to that source (37-81-103).

#### Idaho

Although water rights in Idaho attach to the land or thing to which the water is applied (I.C.A. 42-101), the rights are severable. The Idaho Code provides for substitution or exchange (42-105), change in use (42-108, 42-211), and leases to utilities (42-108A,B) upon application to the Director of the Department of Water Resources. The Director will approve such applications provided they do not constitute an enlargement of the right and do not adversely affect existing rights (42-211, 42-222, 42-237, 42-240). Leases to utilities for hydroelectric generation for periods up to one year are not considered changes in use, but the Director must publish notice of the application and hold a public hearing (42-108 B). Local public welfare is mentioned as a

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<sup>1</sup>"Because, in order to minimize amount of water removed from western Colorado, eastern slope importers should, to maximum extent feasible, reuse and make successive uses of foreign water." City and County of Denver v. Fulton Irrigating Ditch Company (1972), 179 Colo. 47,506 P. 2d 144.

condition for approval in changes in use or exchanges (42-222). Permanent changes in period or nature of use involving diversions greater than 50 cfs, or storage volumes greater than 5,000 acre feet, must be approved by the legislature (42-108). Similarly large groundwater transfers greater than 10,000 acre feet must be approved by both the Director and legislature considering environmental and local impact (42-226). Changes out of agricultural use will not be permitted if the local agricultural base would be significantly affected, nor will approval be given where a change in use was previously made, unless the proposal reverts to the original use.

The Water Resources Board has the duty to operate a water supply bank (42-1761) and is authorized to contract with lessors or lessees and act as an intermediary to facilitate water rights leasing, purchase, or rental (42-1762).

Decreed, licensed or permitted water rights may, with the approval of the Director, be leased or rented. Such leases or rentals are approved only where the amount is sufficient, existing rights will not be impaired, and the local public interest will not be harmed (42-1763).

Any party operating an irrigation water storage and delivery system who wishes to sell a water right, or right of use, must first file with the Department (42-2601). The Department will examine the works (42-2602), and fix the number of rights or shares to be sold, the number of acres that can be irrigated, and the form of contract or deed to be given to purchasers (42-2603). Unauthorized sales are a misdemeanor, punishable by fine, and the seller(s) of the water are liable for all damages sustained by purchaser(s) (42-2605).

#### Montana

A potential irrigator may divert water to his lands from a stream already appropriated if the stream is the only reasonable source of water, and if prior appropriators can receive an equivalent amount of stored water without injury (M.R.C.A. 85-2-403).

An appropriator wishing to change place of diversion, use, or purpose, must obtain permission from the Department of Water Resources (85-2-402). The Department approves the change if it determines that rights of other persons will not be adversely affected. If the rights of others may be adversely affected, the Department gives notice of the proposed change, as specified in 85-2-307. If a valid objection (85-2-308(2)) is received, the Department must hold a hearing, as provided by 85-2-309. An appropriator of more than 15 cfs may not change the purpose of use from agricultural to industrial (85-2-402(3)).

In general, a water right is considered appurtenant to the land on which it is used, and is transferred with a conveyance of the land. Rights are severable, however, "by operation of the law." Transfers of rights are made without loss of priority (85-2-403(1)). If only a change of ownership is involved, the new owner is required to file a notice of transfer. If the transfer involves a change in purpose, the

transfer must be approved by the Department following the same procedure as the change in right described above (85-2-403(3)).

#### Nevada

Water used for beneficial purposes in Nevada is appurtenant to the place of use, and severable only if beneficial use becomes impractical or uneconomical at that place, and otherwise with loss of priority (N.R.S. 533.040(1)). Transfers are accomplished by application to the State Engineer (533.325). The criteria which govern the Engineer's decision in such matters are not explicitly outlined, except that the applicant must provide "such information as may be necessary to a full understanding of the proposed change, as may be required by the state engineer" (533.345).

Canal and ditch companies are exempted from the transfer provision (533.040(2)), allowing individual stockholders to transfer water as they see fit within the geographic boundaries of the company.

Since 1951, transfers of water to places outside Nevada have been prohibited (533.530). However, the state engineer may approve or deny, at his discretion, proposed water right changes for the purpose of energy production which may be exported from Nevada (533.370(2)).

#### New Mexico

Permits to appropriate water may be assigned without loss of priority, but are not binding except upon the parties involved, unless filed for in the office of the State Engineer (N.M.S.A. 72-5-22). All, or any part, of a right may be transferred to another purpose or place of use, or the point of diversion may be changed upon application to and approval of the State Engineer, providing that changes can be made without detriment to existing rights (72-5-23,24).

Reservoir and canal owners may exchange water, provided that existing rights are not injured, and in particular, that the water provided in exchange is of equivalent quantity to what the effected users are entitled. The initiator of an exchange is responsible for constructing and maintaining suitable measuring devices as directed by the State Engineer (72-5-26).

Water appropriated for irrigation purposes is appurtenant to the land on which it is to be used, unless a storage and conveyance intermediary is involved (72-1-2), and rights to use pass with transfer of title to the land unless previously severed (72-5-22).

Any owner may lease all or part of his right to another, without prejudice to priority nor with threatened loss of right because of nonuse, so long as other water users are not injured (72-6-3).

#### Utah

Utah law permits both temporary and permanent transfers unless they would impair existing rights without just compensation (U.C.A. 73-3-3).

The transfer may include any privileges within the right that may be hydrologically feasible, so long as other right holders are not injured. Appropriation priorities are conveyed in the transfer (73-2-21).

All transfers must be approved by the State Engineer. Transfer applications must detail the source, diversion point, quantity, and purpose of the former right, and the proposed change in diversion point or purpose, "and such other information as the state engineer requires" (73-3-3).

Transfers of water shares among stockholders in mutual irrigation companies are not regarded as transfers of water rights, and do not require specific approval of the State Engineer so long as there are no detrimental impacts on users external to the company. Under Utah law, water organizations may limit the privileges the water users may exercise under the corporate water right. For example, although shareholders may transfer their shares to others within the same irrigation company, they may be limited in their capacity to transfer those same shares to individuals not members of the company and not located within the geographic boundaries of the irrigation company.

#### Wyoming

It is the policy of Wyoming to encourage water transfers and changes in use unless existing rights would be impaired, administration would be too difficult, or the public interest would be adversely affected (W.S. 41-3-106(d)). Except for reservoir water rights, rights to water use attach to the land for irrigation, or to the purpose or object for which acquired, and are only severed through procedures provided by law (41-3-101). Reservoir water rights attach to specific land only by deed, and may be used for whatever beneficial purpose and on whatever land the owner chooses (41-3-323).

A change of use or place of use is initiated by a petition to the Board of Control. The petition must contain all the pertinent information about the existing use and proposed change (41-3-104). The Board may require a public hearing at the petitioner's expense. The change may be allowed so long as the right is not enlarged, existing rights are not harmed, and there is no overwhelming economic loss to the community or state (41-3-104).

Change in point of diversion or location of a well requires application to the State Engineer for unadjudicated rights, or the Board of Control for adjudicated rights (41-3-114, 41-3-917).

Any appropriator may petition the State Engineer for exchange of water to improve dependability, conserve water, or improve conveyance economies (41-3-106(a)).

Owners of water rights attached to lands inundated by reservoirs constructed after 1952 have the right to petition for change in place of use outside the reservoir basin and without loss of priority, so long as the source of supply is the same and other appropriators would

not be injured (41-3-107). A similar provision applies where irrigated lands have been withdrawn from irrigation or adversely affected by exercise of eminent domain (41-3-108).

Appropriations may not be made, nor existing rights changed, for use of Wyoming water outside of Wyoming without legislative approval (41-3-105, 115).

### Periodic Reevaluation of Water Rights and Uses

#### Arizona

As of June 30, 1979, all users claiming rights use to Arizona water must either have filed a statement of claim, or be able to show the right was issued by permit, court decree, or validated by contract with the U.S. Government (A.R.S. 45-181). All records and evidence of water rights claims are kept in a water rights claims registry in the custody of the Director of Water Resources (45-181, 45-187). Persons who fail to file a statement of claim as required are considered to have relinquished their rights to use that water (45-184).

The rights of all claimants to water in a river system and source may be adjudicated in the superior court of the county in which the largest number of potential claimants reside, by one or more users petitioning the court for that purpose (45-252). The Department of Water Resources may not initiate such a petition, but other state agencies may. The Director assists the court in determining the scope of adjudication and drawing up a list of potential claimants. Each known claimant is sent a copy of the petition, a statement of claim form, and summons describing the nature of the adjudication and dates for filing (45-253).

The Director assembles the statements of claim and other available information, surveys the river system, and prepares a preliminary report. Claimants are notified of the report and given the opportunity to contest its findings. A revised report is submitted to the court, or a court appointed master, and claimants again may lodge objections (45-256). The master holds necessary hearings and submits his findings to the court for final determination (45-257).

The Director may initiate abandonment proceedings when it appears that beneficial use of a right has not been made for five or more years (45-190). The Director notifies the person of the proceeding and holds a hearing at which the claimant must show cause why the right should not be declared relinquished.

#### Colorado

The State Engineer's office is obliged to tabulate rights in order to carry out its administrative duties. The current tabulation, to have been completed by mid-1978, was to be integrated with the legal determination of rights--a sort of state-wide adjudication--with final being

issued beginning in July 1984 (C.R.S. 37-92-402). Division engineers were to have updated the 1974 tabulation by 1978, and allow claimants two years to object to the preliminary findings. By mid-1983, the division engineers must have completed a revised tabulation in response to objections. Claimants then have an additional year to file written objections, prior to the court hearings and decisions that commence in 1984 (37-92-402).

Anyone wishing a determination of water rights whether for completed appropriation or change of right must apply to the water clerk of the relevant water division (37-92-302(1)). The application is passed on to a referee, who may make a determination or refer the matter to a water judge for decision. A copy of the judgment and decree is mailed to the state and division engineer who must enter it in their records and regulate distribution accordingly (37-92-304(8)).

### Idaho

The Department of Water Resources is responsible for inventory of the streams and groundwater basins of the state, including adjudicated rights and valid licenses, permits, and claims. The results are to be compiled into periodic reports and kept as current as possible (I.C.A. 42-225).

In order to improve its records, a registration drive for unrecorded rights was initiated (42-243). All claims of rights to water use not obtained under the permit program nor adjudicated must file with the Department by June 30, 1983.

Whenever the Department of Water Resources deems it advisable to update its permit records, particularly for dealing with users believed to be in violation of the conditions of permits, it may propose to cancel such permits and notify such permit holders that they must appear and show cause why that action should not be taken (42-311). The Department may also initiate adjudication proceedings if the Director finds it would be in the public interest to have a determination of rights on any system (42-1406). After petitioning the court for authorization to commence, and publishing notice of the investigation, the Department undertakes a survey of the system and prepares a proposed finding of right (42-1407, 1408). On completion of the study, claimants are notified of the proposed determination by mail and through the newspaper, and required to file a statement of claim (42-1409). The Director examines the claims, makes necessary revisions, and submits his report to the court for hearings and final determination of relative rights (42-1410).

Any claimant of a water right may institute judicial proceedings to have water rights established by initial adjudication on any stream, lake, or groundwater basin (42-1401, 42-1734(C)). The claimant names as defendants all known parties with alleged rights in the system or source and the Department of Water Resources. All such parties are notified of the action, and any others claiming rights to the source of supply may intervene, or be joined on recommendation of the Department.



The Department will generally provide a report of a proposed finding of rights, based on its records and survey of the source.

Supplemental adjudications may be sought by claimants whose rights were not adjudicated in the initial proceeding by filing a complaint against the watermaster or Director of the Department of Water Resources (42-1405).

#### Montana

The Montana Constitution requires the legislature to provide for a system of centralized records of water rights (Art. IX, Sec. 3(4)). The Department of Natural Resources and Conservation is given this responsibility (R.C.M. 85-2-112). The Department is also directed to maintain a continuing, comprehensive inventory of the state's surface and groundwater resources (85-1-203). Since July 1, 1973, appropriations and changes in right have required approval of the Department (85-2-402).

In June, 1979, upon petition of the State Attorney General, the state Supreme Court issued an order of rights registration. The order provides that every person claiming a right existing prior to July 1, 1973, must file a statement of claim with the Department no later than June 30, 1983 (85-2-212). This action is the first step in a general adjudication process leading to a decree (85-2-234) and issuance of certificates of right (85-2-236) for each basin.

The district courts supervise the distribution of water. Whenever a controversy arises among users of a source the rights to which have not been adjudicated, any party to the controversy may petition the district court to grant injunctive relief pending the final decree of the general adjudication, or append its decision to the general adjudication (85-2-406).

#### Nevada

A determination of relative rights on a stream system may be initiated by petition signed by one or more users on the system, or by the State Engineer (N.R.S. 533.090). The Engineer then undertakes a study of the stream system to obtain the information necessary to a proper determination (533.100), collects proof of claims from users (533.110-125), and publishes a preliminary determination (533.140). After allowing objections and making such modifications as are appropriate (533.145-150), copies of the order of determination are published and filed with the county clerk, and a court hearing is scheduled (533.165). After the hearing, the court either affirms or modifies the determination (533.185), which may be appealed (533.200). The decree is otherwise final, except that modifications may be made within three years, but only with regard to the duty of water fixed by the decree (533.210).

#### New Mexico

The State Engineer is directed to conduct surveys of all stream systems and other sources of water supply in the state for determination,

development and adjudication of water rights (N.M.S.A. 72-4-13). Upon completion of the survey, the Engineer may request the Attorney General to file suit for a determination of rights so that the amount of unappropriated water may be known (72-4-15). Suits for determination of water rights may also be initiated by private claimants. All known claimants to the waters included must be notified and made parties to the suit (72-4-17). The court may submit any question of fact to a jury, or it may appoint referees to take testimony and report on rights of parties (72-4-18). The adjudication decree resulting from this process specifies the priority, amount, purpose, periods and place of use of every right on the system (72-4-19).

#### Utah

The water rights adjudication process may be initiated either by "five or more, or a majority" of water users upon a stream system petitioning the State Engineer (U.C.A. 73-4-1) or by the court as a consequence of hearing any suit over water rights (73-4-3).

The adjudication procedure involves a comprehensive survey of the water source and the ditches, canals, wells, tunnels, or other diversion works (73-4-3). The claimants are notified of the adjudication initiation and must report their claims for review and consideration. From survey information and claims, the State Engineer compiles a proposed determination of water rights for the system under adjudication (73-4-11). If no objections are filed, the court will approve the proposed determination. Otherwise, a hearing is held (73-4-12, 13). The adjudication proceeding is enforced by the State Engineer who may choose to appoint water commissioners to monitor and distribute water according to the adjudicated rights (73-5-1).

#### Wyoming

In Wyoming, the Board of Control may initiate adjudications and determine the order in which the various stream systems are to be adjudicated (W.S. 41-4-301). The Board may also adjudicate rights individually, after the Board accepts proof of a perfected application (41-4-104). For any given stream system, the State Engineer makes a study of actual water uses, examines proofs offered for the various claims, and provides the Board with a proposed determination of all water rights. The Board makes and records an order of determination of rights (41-4-317).

For groundwater, the appropriate superintendent initiates an adjudication proceeding of all the unadjudicated wells after the Board of Control designates and determines the boundaries of any groundwater control area (41-3-914). Upon completion of the adjudication, the State Engineer may call a public hearing and determine the adequacy of water for all appropriators. If he finds the supply to be inadequate, he may regulate withdrawals, respecting priorities or agreements among appropriators (41-3-915). The State Engineer, with Board concurrence, may order adjudication of any other wells, giving one year notice (41-3-

935(d)), or the Board may adjudicate the right after proof of beneficial use is submitted (41-4-513).

A requirement to tabulate adjudicated water rights, with biennial supplements, was initiated over two decades ago (41-4-208). Any subsequent appropriations (41-3-930, 41-4-501), changes in use or place of use (41-3-104), or exchanges (41-3-106), must be approved by the State Engineer or the Board of Control. Alteration of rights through court actions are noted in the records of the Board of Control (41-4-208). The owner of each reservoir in the state is required to compile annually a list of parties entitled to use water from the reservoir and the lands to be irrigated, and forward it to the water commissioner having jurisdiction (41-3-322).

The State Engineer is authorized to initiate forfeiture proceedings on any adjudicated or unadjudicated water right unexercised for five consecutive years (41-3-402(a)).

The State Engineer may also cooperate in the adjudication of interstate streams with other states upon written consent of the coordinating council and the governor.

#### Legal Harmony with Physical Principles

##### Arizona

Arizona has traditionally administered its surface and groundwater as though they were hydrologically separated. Defined as public and subject to appropriation for beneficial use are "the waters of all sources, flowing in streams, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, flood, waste, or surplus water, and of lakes, ponds and springs on the surface" (A.R.S. 45-131). Groundwater, however, has been treated as the property of the owner of the overlying land, specifically, "Water filtrating or percolating through the soil beneath the surface of the land in undefined and unknown channels is a component part of the earth, having no characteristic of ownership distinct from the land itself, and therefore belongs to the owner of the soil." (State ex. rel. Morrison v. Anway (1960) 87 Ariz. 206, 349 P.2d 744). By applying the rule that mention of one thing implies exclusion of things not mentioned to statutes pertaining to groundwater, the courts have ruled that the legislature has not classified groundwater for appropriation (Bristor v. Cheatham (1953) 75 Ariz. 223, 255 P.2d 173). A doctrine of reasonable use has governed groundwater withdrawals, in which property owners "have the right to capture and use underground water beneath their land for beneficial purpose on that land" (Town of Chino Valley v. State Land Dept. (1978) 119 Ariz. 243, 580 P.2d 704). Heavy reliance on groundwater and alarming drops in water levels have led the Arizona legislature to declare that "it is in the best interest of the general economy and welfare of the state and its citizens that the legislature evoke its police power to prescribe which uses of groundwater are most beneficial and economically effective" (45-401). A new groundwater code has been

implemented providing for greater regulation and administrative control in areas where withdrawals exceed normal recharge.

Coverage in water quality matters is broader, extending to both surface and groundwater (36-1851, 36-1854). In authorizing the Water Quality Control Council to promulgate water quality standards, the law recognizes "that due to variable factors no single standard of quality or the amount or degree of pollutants that is permitted to be discharged into the waters of the state is applicable to all streams or to different segments of the same waters or to different discharges into waters" (36-1857). The Council is directed to consider, among other things, size, depth, surface area covered, volume, direction, rate of flow, stream gradient, water temperature, adjacent land uses, and pollution from natural causes (36-1857).

### Colorado

The Colorado constitution declares the water of all natural streams in the state to be property of the public (Art. XVI, Sec. 5). This principle has been reaffirmed and expanded by statute to include all surface and groundwater originating in or flowing into the state (C.R.S. 37-82-101, 37-92-102). It is the declared policy of the state to "integrate the appropriation, use, and administration of underground water tributary to a stream with the use of surface water" (37-92-102). Owners of surface appropriative rights who have wells in the same drainage may, under certain circumstances, designate the well as an alternative point of diversion for the surface right (37-92-301(3)).

The administration of surface water is according to divisions, the boundaries of which are defined primarily by drainage basins (37-92-201), each with a division engineer (37-92-202) and water judge (37-92-203). The state and division engineers are responsible for administration, distribution, and regulation of the waters of the state (37-92-501).

Both surface and groundwater are subject to appropriation, but the groundwater statutes are based on a modified prior appropriation doctrine (maintenance of reasonable, not historical, pumping levels) (37-90-102). In formulating rules for groundwater management, the State Engineer must recognize that different types of aquifers may require different rules (37-92-501(2)). But he should not allow groundwater withdrawals to interfere with senior rights nor curtail groundwater withdrawals to satisfy prior rights unless such discontinuance would indeed make water available (37-92-501(1)).

Underground water tributary to natural streams is part of the water of natural streams, and subject to appropriation as provided in the constitution (Art. XV, Sec. 5, C.R.S.37-82-101). Groundwater not tributary to a natural stream, or which does not affect streamflow when withdrawn, is regulated by the Groundwater Commission under a modified appropriation permit program established in the Colorado Groundwater

Management Act (37-90-101).<sup>1</sup> The State Engineer is ex officio Executive Director of the Commission. In considering an application to appropriate designated groundwater, the Commission considers the geophysical conditions and average annual yield and recharge rate (37-90-107).

The Water Quality Control Commission may classify the state's waters for the purpose of more effective water quality administration, considering such characteristics as pollution from natural sources, adjacent land uses, surface or subsurface, volume, flow, depth, gradient, water temperature, and daily and seasonal variability (25-8-203). In setting standards and treatment requirements, the Commission must consider the feasibility of treatment for particular pollutants, variability of pollutant loads, and the extent to which the pollutant arises from natural causes (25-8-205).

### Idaho

Idaho's water statutes refer to all waters flowing in natural channels, including springs and lakes (I.C.A. 42-101). All groundwater in the state is declared to be property of the state, which has the responsibility to supervise its appropriation and allotment (42-226).

Idaho has a tradition of distinguishing between public and private water sources with the latter defined as those supplied entirely from within one's property. For example, spring water on private land not flowing into a natural channel is not public water subject to appropriation (Nordick v. Sorensen (1959), 81 Idaho 117, 338 P.2d 766). Originally, private water simply belonged to the landowner, and he did not need to apply for an appropriation to use it. The current statute (42-212) continues the tradition by requiring that an application to appropriate private water (including water from lakes of less than 5 acres of surface area) be accompanied by written approval of the landowner.

A groundwater appropriation whose withdrawals would adversely affect the present or future use of any other prior surface or groundwater right (42-237a) is not approved. Whenever the Director of the Department of Water Resources finds that a groundwater withdrawal affects stream flow supplying an organized water district, he may incorporate the groundwater area into the district (42-237a).

The state has been divided into water districts drawn up according to watershed boundaries or boundaries encompassing an independent water source (42-604).

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<sup>1</sup>The distinction between tributary and nontributary is not inherently precise. In Kniper v. Lundvall, for example, the Colorado Supreme Court held that groundwater that would take 178 years to reach one stream and 356 years to reach another was not tributary to either, but should be managed instead as designated groundwater (187 Colo. 40 (1974), 529 P.2d 1328).

Water right adjudications may include "streams, lakes, groundwaters, or any other body of water, tributaries, and contributory sources thereto in the state" (42-1401).

Water quality control authority extends to "all accumulations of water, surface and underground, natural and artificial, public and private" (39-103(9)).

#### Montana

The Department of Natural Resources and Conservation has "full control" of all water, including groundwater, of the state, except water under exclusive control of the United States or vested in private ownership (R.C.M. 85-1-204).

The principle of priority of right applies equally to both surface water and groundwater (85-2-401), implying that approval of applications to appropriate water or change a water right must consider impacts on existing rights to both surface and groundwater. Special conditions for groundwater are that large groundwater appropriations must be approved by the legislature (85-2-317), and groundwater areas experiencing or expecting heavy withdrawals may be designated as controlled groundwater areas (85-2-506). Controlled areas are subject to special attention in regulation of withdrawals (85-2-507) and new appropriations (85-2-508).

Water pollution control authority extends to any body of water, or irrigation or drainage system, whether surface or underground, except for irrigation water totally consumed within the system (75-5-103(9)). Regulatory authority also extends to drainage or seepage from all sources, including artificial ponds, if such drainage may pollute other state waters (75-5-104). The general policy of the state is to preserve and enhance water quality according to its most beneficial use (75-5-301), but it is not necessary that wastes be treated to a purer condition than that of the receiving waters (75-5-306).

#### Nevada

The water of all sources within the state, both surface and underground, is declared to belong to the public (N.R.S. 533-025, 534.020), and subject to appropriation for beneficial use (533.030). No appropriations or changes in use may be made without first applying for a permit from the State Engineer (533.325), who must consider the impacts of the proposed use on existing rights and on the public interest (533.370 (4)).

For purposes of water quality regulation, "waters of the state" include all bodies or accumulations of water, surface and underground, natural or artificial (445.191). It is illegal to discharge a pollutant from a point source into any waters of the state without a permit (445.221). The Environmental Commission may establish different standards for different stream segments or water bodies if justified by the circumstances (445.244(3)).

## New Mexico

All natural waters flowing in water courses are declared to belong to the public (N.M. Const. Art. XVI, Sec. 2, N.M.S.A. 72-1-1), subject to appropriation for beneficial use. For the purpose of economical apportionment of water, the State Engineer is authorized to divide the state into water districts (72-3-1).

While groundwater is declared to be public water subject to appropriation, no permit and license to appropriate are required outside basins declared to have reasonably ascertainable boundaries (72-12-20). No aquifer shall be so designated if its top is more than 2,500 below the surface and it contains nonpotable water (72-12-25).

Although rights to surface and groundwater may be secured under different administrative procedures, the substantive rights obtained are identical, as is the jurisdiction of the State Engineer (City of Albuquerque v. Reynolds (1962), 71 N.M. 428, 379 P.2d 73).

The Water Quality Commission is authorized to adopt standards and regulations to prevent or abate water pollution over the state, or for any watershed or subarea, and for any class of water (74-6-4). Regulations must give due consideration to, among other things, the degree of injury to health and welfare, and the technical and economic practicability of reducing or eliminating the contaminants involved.

## Utah

Since 1935, groundwater has been considered together with surface water as property of the public and subject to appropriation (U.C.A. 73-1-1, 73-3-1). Applications to appropriate (73-3-1) or change use (73-3-3) are denied if existing rights would be impaired. The permit system is designed to provide the State Engineer with sufficient detailed information about any proposed water use to determine whether it is hydrologically feasible (73-3-2 to 73-3-18). The court has recognized that surface-groundwater relationships enter into the consideration of potential water rights impairments, as in its ruling that a developer of groundwater near an appropriated surface source must demonstrate that his withdrawal will not interfere with those prior rights (Silver King Consol. Min. Co. v. Sutton, 85 U. 297, 39 P.2d 682).

Water pollution control authority extends to all streams, lakes, springs, wells, irrigation and drainage systems, and any other accumulations of water in the state, except those entirely contained on property, and do not constitute a nuisance, health hazard, or menace to fish and wildlife (73-14-2(f)). The Committee on Water Pollution may group the waters of the state into classes according to their present most beneficial uses and adopt regulations designed to maintain or improve the quality of such water (73-14-6).

## Wyoming

The state is divided into four water divisions (W.S. 41-3-501) as directed by the Constitution (Art. 8, Sec. 4). The Board of Control is

directed to further subdivide the state into water districts, with boundaries that conform with stream systems as far as practicable (41-3-601). The State Engineer is also authorized to determine the area and boundaries of districts overlying the various aquifers in the state (41-3-910).

Each water division in the state has an advisory commission to advise the State Engineer and Board of Control in matters pertaining to groundwater and the interests of users and the general public (41-3-908). The Board of Control may designate a groundwater control area where withdrawals are approaching recharge, groundwater levels are declining, conflicts or waste are occurring, or some other condition requires regulation in the public interest (41-3-912).

If it is determined that different aquifers, or combination of aquifers and surface waters, are so interconnected as to constitute a unified source of supply, the respective rights to use of water are to be correlated, and a single schedule of priorities established (41-3-916).

Pollution control standards and regulations, and conditions for approval of discharge permits, are required to give due consideration to the technical practicability of reducing or eliminating the source of pollution, and to keep control effort commensurate with the nature and degree of hazard created (35-11-302).

Surplus water--water in excess of the amount required to satisfy existing appropriations (41-4-318)--may be diverted for beneficial use by existing right holders in amounts not to exceed a) their proportionate share of the previously appropriated water or b) 1 cfs for each 70 acres of irrigated land (41-4-322). This provision was merged with the normal permit procedure in appropriations after March 1, 1945 (41-4-323), specifically, surplus water is simply unappropriated.

Foreign water is water withdrawn from interstate streams belonging to another state but acquired for use in Wyoming (41-3-201). The state is quite liberal concerning rights to such water, allowing 100 percent consumptive use (41-3-205, 207) and perhaps exemption from loss by condemnation to preferred uses (41-3-208). By-product water is that water produced from some economic activity and is available for appropriation by the developer or with his permission (41-3-904). Surplus water is any water in a stream in excess of that required to satisfy existing rights (41-4-318).

#### Provisions for Equitable Apportionment of Shortages

##### Arizona

Arizona follows the appropriation doctrine in apportioning available surface water. The first in time is the first in right (A.R.S. 45-141), and "so long as he continues to apply the water to a beneficial use, subsequent appropriators cannot deprive him of the rights his



appropriation gives" (Arizona Copper Co. v. Gillespie (1909) 12 Ariz. 190, 100 P 465, affirmed 33 S. Ct. 1004, 230 U.S. 46, 57 L.Ed 1384). Moreover, the prior right is absolute, regardless of whether the stream furnishes a sufficiency for all (Huming v. Porter (1898) 6 Ariz. 171, 54 P.584).

Only where applications for permits to appropriate exceed the available supply are uses ranked (A.R.S. 45-147).

### Colorado

The constitution of Colorado specifies use of a modified appropriation principle during times of shortage. Priority of appropriation, or seniority, determines the better right as between those using the water for the same purpose. But when the waters of any natural stream are not sufficient for the service of all those desiring to use it, those using the water for domestic purposes have preference over those claiming for any other purpose, and those using the water for agricultural purposes shall have preference over those using the same for manufacturing purposes (Art. XVI, Sec. 6). Otherwise, "no reduction of lawful diversion because of the operation of the priority system shall be permitted unless such reduction would increase the amount of water available to and required by water rights having senior priorities" (C.R.S. 37-92-102(2)).

### Idaho

The Idaho Constitution (Art. 15, Sec. 3) as implemented through I.C.A. 42-106 provides that priority of appropriation determines the better right. In cases where the flow in a natural stream is insufficient to serve all users, the constitution (Art. 15, Sec. 3) ranks uses, according first preference to domestic users, rating agriculture over manufacturing, and mining over agriculture and manufacturing in organized mining districts. These rankings enable preferred uses to condemn water in lower priority uses, subject to requirements of due process and fair compensation. Elsewhere (I.C.A. 42-101), the state is directed to "equally guard all the various interests involved."

Idaho courts have declared that "It was the intention of the framers of the Constitution, by provisions of this section, to provide that waters previously appropriated for manufacturing purposes may be taken and appropriated for domestic use, upon due and fair compensation therefor" (Montpelier Milling Co. v. Montpelier, 19 Idaho 212, 113 P.741).

Section 5 of Article 15 provides that, on agricultural lands, senior rights may be subject to reasonable limitations on quantity and time of use when supplies are insufficient for all.

The groundwater statute recognizes the doctrine of "first in time, first in right," but only protects prior appropriators to reasonable pumping levels (42-226). In groundwater management areas, the Director

may order well owners to reduce or cease withdrawals on a time priority basis until there is determined to be sufficient water (42-2336).

#### Montana

Montana follows the doctrine of prior appropriation (R.C.M. 85-2-401) in allocating water during periods of shortage. The supervision of water distribution by the district courts is governed by this principle (85-2-406).

#### Nevada

There is no special statutory provision for allocating water in times of shortage so Nevada may be presumed to adhere to the doctrine of prior appropriation in such situations.

#### New Mexico

The New Mexico Constitution (Art. XVI, Sec. 2) and N.M.S.A. 72-1-2 declare that priority of appropriation shall give the better right, and there is not provision for allocations to be made differently during times of shortage.

#### Utah

In general, the basis for water apportionment is governed by the doctrine of prior appropriation (U.C.A. 73-3-1). In times of scarcity, however, domestic uses have preference over use for all other purposes, and agricultural uses have preference over use for all other purposes except domestic (73-3-21). If the State Engineer determines that there is a significant shortage of water to meet existing rights he may draw up a re-apportionment schedule in keeping with the statutory intent.

#### Wyoming

The Wyoming Constitution establishes prior appropriation as the principle of apportionment (Art. 8, Sec. 3). In addition, however, uses are classified as preferred or nonpreferred. Nonpreferred rights may be condemned in favor of preferred uses (W.S. 41-3-103, 41-3-906). Preferred rights are ranked (41-3-102) and presumably the highest ranked uses would have priority in times of shortage. If a change of use to a preferred use occurs under the condemnation provision, just compensation must be paid (41-3-103).

Groundwater appropriations for stockwatering and domestic uses have preference over those for any other use, regardless of dates of priority (41-3-907). In a groundwater control area where it is determined that the supply is not adequate for all appropriators, the State Engineer may apportion the permissible total withdrawal in accordance with priority dates as far as is reasonable (41-3-915). However, if relative disadvantages to junior appropriators are highly disparate, he may order a rotation system, or the users may agree among themselves on proper apportionment (41-3-915).

## Legal Security of Water Rights

### Arizona

Anyone intending to acquire a right to use water in Arizona must apply to the Department of Water Resources for an appropriation permit, specifying the source of supply, purpose, and amount needed (A.R.S. 45-142). The Director approves properly executed applications, so long as the proposed use does not interfere with prior rights or the public interest (45-143). When the Director is satisfied that the water has been placed in beneficial use as stated in the approved application, a certificate of water right is issued (45-152).

Prior to adoption of this administrative system, water rights were obtained by successfully putting water to beneficial use. In 1974, provisions were made requiring registration of these earlier claims by 1980 (45-181). Those who failed to register as required were to lose their right.

Since 1974, water rights cannot be obtained through adverse use (45-188). Water rights generally run in perpetuity, and are only lost through nonuse (45-131, 45-189, 45-190), or through condemnation for a higher purpose (45-147). The courts have ruled that a water right is a vested right in the use of the water, which cannot be taken from the owner without his consent (*Adams v. Salt River Valley Water Users Association* (1939), 53 Ariz. 374, 89 P.2d 1060).

### Colorado

Anyone wishing a determination of water right, whether for completed appropriation or change in right, must apply to the water clerk of the relevant water division (C.R.S. 37-92-302(1)). The application is passed on to a referee, who may make a determination or refer it to the water judge for decision. A copy of the judgment and decree is mailed to the state and division engineers who must enter it in their records and regulate distribution accordingly (37-92-304(8)). A water right, perfected by appropriation and beneficial use, is considered real property. But the right is possessory in nature, and thus dependent on continuous use (*Knapp v. Colorado* (1955) River Water Conservation Dist. 131 Colo. 42, 279 P.2d 420).

Water quality statutes are not to be interpreted as abrogating or impairing rights to appropriate water for beneficial use (25-8-104).

Anyone wishing to appropriate groundwater in a designated basin must apply to the Groundwater Commission (37-90-107). If it is determined that the proposed use would not unreasonably impair existing rights or water quality, the State Engineer issues a conditional permit (37-90-107(3)). Anyone wishing to construct a well outside a designated groundwater basin must first make an application to the State Engineer for a permit (37-90-137). The Engineer issues a permit only if he finds there to be unappropriated water and the proposed well would not materially injure existing rights.

Prior appropriators of designated groundwater are protected against subsequent withdrawals reducing water tables below "reasonable" pumping levels, which are not necessarily the same as historical levels (37-90-102). However, permits will not be issued for uses that would unreasonably lower water levels or diminish water quality (37-90-107). Permits for wells in nondesignated or nontributary areas must be obtained from the State Engineer, who will not approve the applications if the wells would materially injure existing rights (37-90-137).

#### Idaho

The right to use unappropriated surface or groundwater may be acquired only by applying for a permit from the Department of Water Resources (I.C.A. 42-103, 42-201, 42-229). When provisions of an approved application to appropriate water have been completed, and proof of beneficial use provided, the Department of Water Resources issues a license to the user (42-219), which is binding upon the State (42-220). The license or "right to use" is not in itself a property right but becomes appurtenant to the place or thing on which the water is beneficially applied. The "right to use" may be lost by abandonment, but continued use cannot be denied except for nonpayment of delivery expense assessments (42-101). Nevertheless, the constitutional ordering of uses (Art. 15, Sec. 3) suggests that certain users may be deprived of their rights in condemnation proceedings.

Idaho does not grant a permit to appropriate "private" water (sources entirely within one's property and for lakes, less than 5 acres of surface area) without written approval of the landowner (42-212). Such sources simply belong to the landowner unless he allows them to be filed on.

Wells drilled for domestic purposes are exempt from the permit requirement (42-227). Domestic purposes are defined as water for household and livestock use, and for irrigation of up to 1/2 acre, up to a total of 13,000 gpd (42-230).

Any person claiming a water right may file suit in district court for adjudication of the rights in a water system (42-1401), or the Director may initiate the action (42-1406). Any claimant to an adjudicated system whose right was not included may file for a supplemental adjudication (42-1405). After receiving a proposed determination from the Director, and hearing objections, the court issues a decree detailing the water rights of each party (42-1410). Certified copies of decrees are sent by the clerk of the issuing court to the Department, which immediately records and classifies them by stream system, and sends to each water commissioner copies of the decrees in his division (42-1403).

#### Montana

The Montana Constitution specifies that "the legislature shall provide for the administration, control, and regulation of water rights, and shall establish a system of centralized records" (Art. VIII, Sec.

3). In general, a person may not appropriate water without first applying for and receiving a permit from the Department of Water Resources (R.C.M. 85-2-302). There are some exceptions: permits may be obtained after uses are made for wells with a maximum yield less than 100 gpm, for livestock watering impoundments on other than perennial streams (85-2-306), or under emergency circumstances (85-2-113). Upon a finding of completion of appropriation under terms of the approved application, the department issues a certificate of water right (85-2-315).

Water rights may be lost by abandonment (nonuse for 10 consecutive years) or other expressions of intent to abandon (85-2-404), or by failure to file a claim of existing right (in the case of rights initiated prior to 1973) by June 30, 1983 (85-2-255).

For rights initiated prior to 1973, a general adjudication program was begun in 1979 (85-2-212). This will culminate in a general decree in each water division after June 30, 1983 (85-2-234), and the issuance of certificates of right (85-2-236). However, claims for rights for livestock and individual domestic uses are exempted from the requirement to file a statement of claim (85-2-222). The original copy of certificate will be sent to the pertinent county clerk, and record will also be kept in the Department (85-2-236).

#### Nevada

Any person who wishes to appropriate any of the public waters of the state, or to transfer or change an existing right, must apply for a permit from the State Engineer before starting any work (N.R.S. 533.325). No right to use water may be acquired through adverse use or possession (533.060(3)). Permits will be approved only if the State Engineer determines that the proposed appropriation or change in right does not interfere with existing rights or pose a threat to public welfare (533.370). Upon receiving satisfactory proof of beneficial use, the State Engineer issues a certificate of appropriation to the permit holder, stating the appropriator's name and the date, source, purpose, and amount of appropriation (533.425). The State Engineer issues a certificate with the same contents after a final determination of relative rights on a stream system (533.265).

In any suit brought to determine rights, all those who claim the right to use water in the stream system are made party to the suit (533.240). Following the process of a determination of rights on a stream, the court holds hearings (533.165 et seq.) and issues a final decree (533.185). Upon the final determination of rights, the State Engineer is required to issue a certificate of right to each person with rights to the source, unless the printed decree contains a listing of the rights determined by it (533.265).

#### New Mexico

Anyone wishing to appropriate surface (N.M.S.A. 72-5-1) or ground (72-12-3) water must apply to the Engineer for a permit. On or before

the date set in the permit for application of the water to beneficial use, the Engineer will inspect the works and, if satisfactory, issue a license to appropriate (72-5-13). The records of the State Engineer are public, and include all applications filed, with date of filing, and all permits, certificates of completion, and licenses issued, along with other actions affecting claims to appropriate water (72-2-7).

All permits and decrees granting and defining water rights are also recorded in the county clerk's office of the county where the waterworks are located (72-5-21).

Upon adjudication, a certified copy of the decree is sent to the State Engineer, declaring the priority, amount, purpose, periods and place of use of each right (72-4-19).

The rightholder's interest is protected from all future actions that would change the pattern of use and availability of water on the stream system through subsequent appropriations (72-5-6, 72-5-7), changes of place of use (72-5-23), changes of purpose, changes of point of diversion (72-5-24), or leases (72-6-3). The State Engineer directs any applicant proposing such changes to publish a notice of application. Interested parties may then protest, and the State Engineer can determine whether other rights would be affected.

#### Utah

The right to use unappropriated water may be acquired only by applying to the State Engineer for a permit and satisfying the conditions placed on it (U.C.A. 73-3-1 et seq.). Changes in use or point of diversion similarly require approval of the State Engineer (73-3-3). The Engineer is required to reject any application for appropriation or change that would impair established rights (73-3-3, 73-3-8).

When satisfactory proof that an appropriation or change of use has been completed is submitted to the State Engineer, a certificate of right is issued stating the owner, purpose, amount and time of right, and place of diversion and use (73-3-17). The certificate cannot prejudice prior rights but otherwise serves as the owner's deed (Lake Shore Duck Club v. Lake View Duck Club, 50 U. 76, 166 P 309, L.R.A. 1918B, 620). The property right has been interpreted to consist of both the amount and the priority of the appropriation (Whitmore v. Murray City, 107 U. 445, 154 P.2d 748). Certified or decreed water rights are transferred by deed in substantially the same manner as real estate (73-1-10). The deeds are recorded in the office of the county recorder of the county where the water is diverted and where it is applied.

Finally, the legal standing of the existing claims upon a water source may be clarified by the court through the adjudication process. The State Engineer, under guidance of the court, reviews and verifies all water right claims on the relevant water source. The State Engineer makes a proposed determination of water rights and submits it to the court for review, hearings, and issuance of a formal decree. In this proceeding, the purpose of the court is much the same as in an

"action to determine title to real estate" (Logan, Hyde Park & Smithfield Canal Co. v. Logan City).

### Wyoming

All acquisitions of water, whether by appropriation, transfer, purchase or exchange, must be initiated by application to, and approval of, the State Engineer or Board of Control (W.S. 41-3-101, 41-3-104, 41-3-106, 41-3-110, 41-3-301, 41-3-302, 41-3-904, 41-3-930, 41-4-501). Granting of the permit constitutes an unadjudicated right, recorded by the State Engineer with a copy sent to the appropriator. Any judgment of a district court affecting the status of a water right must be forwarded by the court clerk to the Board of Control (41-4-207). The Board is to maintain and update a tabulation of adjudicated rights (41-4-208).

Upon completion of a determination of rights, the Board issues a certificate of appropriation describing each right. The certificates are forwarded to the appropriate county clerks for recording and given to the appropriator (41-3-914, 41-4-325). All deeds and leases to reservoir water are likewise recorded in the office of the county clerk where the reservoir is located with a copy sent to the State Engineer (41-3-324).

An adjudicated right is real property, vested by filing date (Budd v. Bishop, 543 P.2d 368 (Wyo. 1975)) and implying a continuing obligation to use the water beneficially (Basin Elec. Power Coop. v. State Bd. of Control, 578 P.2d 557 (Wyo. 1978)). Nonpreferred rights (as defined by 41-3-102) may be condemned to supply water for preferred uses with the approval of the State Board of Control and payment of just compensation (41-3-103, 41-3-906). Appropriations of groundwater for domestic or livestock watering purposes are preferred to other uses regardless of priority (41-3-907). Any person who fails to exercise a water right for five consecutive years without good reason is considered to have abandoned his right (41-3-401), and proceedings to withdraw the right may be initiated by the State Engineer (41-3-402).

### Specified Period of Use

#### Arizona

In statements of claim, required in the general registration of undocumented rights initiated prior to June 30, 1979, and in general adjudication proceedings, the claimant is required to specify the quantities of water and times of year use is claimed (A.R.S. 45-182(3), 45-254B). On the appropriation applications period of use information probably falls within the requirement to describe "the nature and amount of the proposed use" (45-142A(3)).

#### Colorado

The information required in the application for a determination of water right is established by the water judges, and includes "the amount

of water claimed, and the use or proposed use of the water" (C.R.S. 37-92-302(2)). The ruling of the referee with respect to the application includes a description of "the type of use, the amount and priority, and other pertinent information" (37-92-303(1)). The same categories of description are used in rulings of the water judges with respect to applications on which objections have been filed or which have been referred by the referee (37-92-304(7)). The description of rights in the 1978 tabulations by the division engineers, and in the subsequent court determinations, includes "volume and amount of the water rights" (37-92-402(8)).

#### Idaho

An application for the use of unappropriated water must state the period of use (I.C.A. 42-202). When the Department issues a license, or when an adjudication decree is issued, the period of use during the year is specified for each owner. The license is binding upon the state and cannot be lost except for failure to pay normal assessments (42-220) or abandonment (42-104, 42-222(2)).

#### Montana

The statement of claim requires in the general determination of rights a description of "the quantities of water and times of use claimed" (R.C.M. 85-2-224(1C)). The period of use is also stated on the final decree (85-2-234(4h)).

Applications to appropriate water are made in the form prescribed by the Department of Natural Resources and Conservation (85-2-302). The Department may issue permits subject to conditions and restrictions, including temporary permits (85-2-312), but may not approve an application unless it finds that "throughout the period during which the applicant seeks to appropriate, the amount requested is available" (85-2-311(1C)).

#### Nevada

The proof of claim form filed by water rights claimants at the beginning of an adjudication proceeding includes a statement of "the nature of the right or use" (N.R.S. 533.115.2). The information contained in the determination of relative rights is not explicit (533.140, 533.160, 533.185). However, the State Engineer is required to issue certificates of right, following the final determination, which specifies "the nature and extent of such right" (533.265.2(c)).

Applications to appropriate water are required to state "the amount of water which it is desired to appropriate" (533.335.3). Upon completion of the appropriation, or of a transfer or change in use, the applicant must file a proof of beneficial use stating "the number of months, naming them, in which water has been beneficially used" (533.400.12). After a satisfactory proof has been submitted, the Engineer issues a certificate describing "the date, source, purpose and amount of appropriation" (533.425.2).



## New Mexico

The application for and approval of a permit to appropriate water must contain specification of the periods of annual use (N.M.S.A. 72-5-1, 72-5-6). Once the permit is approved and the beneficial use made, the entitlement to use the water cannot be revoked except for nonuse (72-5-28, 72-12-8). The adjudication decree must specify for each right the period of use (72-4-19).

## Utah

Any person who wishes to acquire a right to use unappropriated water must apply for a permit to the State Engineer. The applicant must state the quantity of water to be appropriated, and "the time during which it is to be used each year" (U.C.A. 73-3-2). No permanent or temporary change is permitted without application to and approval of the State Engineer. Applications for permanent change require a description of "the place, purpose and extent of the present use, and the place, purpose, and extent of the proposed use and such other information as the State Engineer may require" (73-3-3). For temporary (less than 1 year) changes, the application must describe the water right and state the nature and time of the change, and the reason for it. When satisfactory proof of a completed appropriation or change of use has been submitted to the Engineer, a certificate of right is issued, stating the owner, purpose, and amount of the right, "the time during which the water is to be used each year," and place of diversion and use (73-3-17).

In a proceeding for determination of water rights, all those claiming water from the source in question are required to file a statement of claim describing the right, including "the time during which it has been used each year" (73-4-5). The judgment entered determines the rights of all the claimants to the source, including the amount and "time during which the water is to be used each year" (73-4-12).

## Wyoming

Any person who wishes to acquire a right to appropriate unappropriated water, or change a water right must apply to the Board of Control (W.S. 41-3-104, 41-3-930, 41-4-501). For changes, the application must contain "all pertinent facts about the existing use and proposed change in use" (41-3-104). For wells, the application must include "the nature of the proposed use, ... and such other information as the state engineer may require" (41-3-930). Appropriation applications must include a description of the nature of the proposed use (41-4-501).

A determination of priorities of rights records the "character and kind of use" of each right (41-4-317), with a certificate issued to each right holder (41-4-325).

Fostering Social Efficiency and  
Productivity in Water Use

Arizona

The Arizona law specifies what uses of water are beneficial and ranks them in importance as: 1) domestic and municipal, 2) irrigation and stock water, 3) power and mining, and 4) recreation and wildlife (A.R.S. 45-147). Otherwise, beneficial uses appear to be on an equal footing. Moreover, any person or the State of Arizona or a political subdivision thereof may apply for water under 45-141.A. "Person" is given a broad definition in A.R.S. 45-180.2. However, only the state or political subdivisions may receive transfers to recreation and wildlife uses (45-172), and it seems likely that private applications for instream rights would be rejected under the public welfare clause of A.R.S. 45-143.A.

In McClellan v. Jantzen (26 Az. App. 223, 547 P. 2d 494 (1976)) the appeals court held that recognition of appropriation for recreation and wildlife purposes removed the standard diversion requirement and allowed "in situ" appropriation (A.R.S. 45-141, n. 11.5).

Colorado

Uses considered beneficial are not fully listed (37-92-103(4)), but the constitutional provision does establish domestic uses as having preference over all others, and agriculture as having preference over manufacture, in cases where water is insufficient for all those wishing to use it. Moreover, beneficial uses explicitly include "impoundment of water for recreational purposes, including fishery or wildlife," and minimum stream flows "as are required to preserve the environment to a reasonable degree" (37-92-102(4)). Water cannot be appropriated for speculative sale or transfer (37-92-103(3)).

C.R.S. 37-92-102(3) authorizes the Water Conservation Board to appropriate or acquire (other than by condemnation) water for environmental preservation. In addition, the Wildlife Commission is authorized to acquire water (apparently by any means except appropriation and condemnation) for wildlife conservation or preservation (33-1-112 (1)). The appropriation requirement to "divert, store, or otherwise capture, possess, and control" a quantity of water makes it clear that only the state may appropriate for instream uses (37-92-103(3)).

Idaho

Article 15 section 3 of the Idaho Constitution guarantees the right to appropriate water for beneficial use. I.C.A. 42-101 affirms that appropriations must be for beneficial uses, and I.C.A. 42-219 states that the amount appropriated cannot be in excess of what is beneficially applied. All rights to use water are forfeited through failure to make beneficial use for five consecutive years without good reason (42-222(1)). The doctrine is extended to groundwater by I.C.A. 42-226.

Permits to appropriate water for hydroelectric power may be issued only to residents of the state, or corporations organized to do business in Idaho (42-206).

The protection of instream flow for fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, navigation, and water quality is declared a beneficial use (42-1501), but only the Water Resources Board may apply for and appropriate minimum flows.

#### Montana

The Montana Constitution (Art. 9, Sec. 3) decrees that all waters of the state (surface, atmospheric, and underground) are subject to appropriation for beneficial use by the people, and affirms existing rights to use for beneficial purposes. This provision is echoed in R.C.M. 85-2-101. Appropriation may only be made for beneficial use (85-2-301), and water may not be wasted (85-2-505, 85-2-114). Sellers of water who have a surplus are required to sell the surplus on demand for the usual and customary rates (85-2-415). The code excludes the slurry transport of coal as a beneficial use (85-2-104).

Any Montana or U.S. public agency may apply for an instream flow reservation (85-2-316). In fact, reservations for existing or future instream or offstream beneficial uses can be made by public agencies by demonstrating the public nature and need for the reservation, and otherwise complying with the normal appropriation procedure. Since May 9, 1979, the maximum reservation has been limited to 50 percent of the average annual flow.

The protection of fishing waters is a declared state policy (87-5-501), and no project sponsored by a public agency can alter habitat without review by the Department of Fish and Wildlife (87-5-502). Conflicts between the Department and project sponsor may be submitted for arbitration (87-5-505). Irrigation projects are exempted from these provisions (87-5-507).

#### Nevada

Beneficial use is declared to be the basis, measure, and limit of a water right (N.R.S. 533.035). The right to divert thus ceases when the need for the water no longer exists (533.045). The quantity of water that can be appropriated is limited to the amount reasonably required for the beneficial use (533.070). Use of water for recreational purposes is beneficial (533.030(2)).

Special restrictions or conditions are placed on Nevada's share of Colorado River water (533.370), on Lake Tahoe and the Truckee watershed (533.535), water for export (533.515), and water use in several other watersheds (533.060 (4)).

No special provision is made in Nevada law for instream flow reservations. The state may, however, reserve waters from appropriation, as provided for in N.R.S. 533.070 (4), and the public interest or

welfare can be the basis for withholding approval of proposed appropriations (533.370).

### New Mexico

New Mexico's constitution (Art 16, sec. 3) establishes beneficial use as the basis, measure, and limit of the right to use water. The principle is restated for surface waters (N.M.S.A. 72-1-2) and underground water (72-12-2). Willful waste of water is a misdemeanor (72-5-28), and failure to beneficially use part or all of a water right may be grounds for forfeiture (72-12-8).

Beneficial uses are not listed nor ordered in the statutes. While recreation and fishing have been recognized by the courts as beneficial uses (State v. Red River Valley Co., 1945), no specific provision is made for instream appropriation.

### Utah

Beneficial use is declared to be the basis, measure, and limit of rights to water use (U.C.A. 73-1-3). Beneficial uses specifically mentioned (73-3-8) are irrigation, domestic, stock watering, power, mining, manufacturing, and public welfare. Failure to use water beneficially may lead to forfeiture of the right (73-1-4).

The State Engineer may deny applications to appropriate water on the basis of interference with a more beneficial (potential) use or possible harm to the public welfare (73-3-8).

### Wyoming

Beneficial use is established as the basis, measure, and limit of water rights (W.S. 41-3-101) and failure to make beneficial use may result in forfeiture of the right (41-3-401). The beneficial concept has been interpreted to imply satisfaction of a continuing obligation if the appropriation is to remain valid (Basin Elec. Power Coop. v. State Bd. of Control, 578 P.2d 557 (Wyo. 1978)). An appropriator may not obtain a right to use more water than is beneficially needed for the purpose for which the right is sought (41-4-317). Even though a larger amount may have been adjudicated, the water right is subject to reduction in the amount found not being applied to beneficial purposes (41-4-320). Owners of reservoirs impounding more water than necessary for their beneficial use must, on demand, sell the excess to others who can beneficially use it (41-3-325). Where unappropriated water is available, appropriations may not be denied except when demanded by the public interest (Wyo. Const., Art. 8. Sec. 3, 41-4-503).

Water rights are divided among preferred and other uses, such that existing rights to nonpreferred uses may be condemned under eminent domain for preferred uses. Preferred uses are also ranked, with drinking water highest, followed by municipal, steam engines and railway uses, heating and cooling, and industrial purposes. Irrigation is absent from the list of preferred uses and power is the only instream

use specifically mentioned (41-3-102). Rights to groundwater are subject to the same provisions (41-3-906). The extraction of heat from water is specifically cited as a beneficial use (41-3-101).

Except for water involved in interstate allocations, Wyoming water may not be appropriated or transferred for use out of state without an act of the legislature (41-3-105, 115).

Environmental damage is a relevant consideration in the use of water (35-11-302). Also, the public interest clause in the constitution provides discretion for interpretation of what constitutes a more beneficial purpose.

"By-product water" is produced from some other economic activity, not put to a prior beneficial use, and not mixed with other waters, may be appropriated for beneficial use by the developer or with his permission (41-3-904). "Surplus water" in a stream in excess of that required to satisfy existing rights (41-4-318) may be appropriated by new users or apportioned to existing users under certain conditions that justify beneficial need.

In the administration of rights or consideration of applications, the State Engineer may require that water be provided for reasonable demands for instream stock watering purposes (41-3-306). Appropriations of groundwater for domestic and livestock watering give preferred rights over others uses regardless of priority (41-3-907).

#### Due Diligence in Implementing Entitlements

##### Arizona

An application for permission to appropriate water must specify the time needed for completion of the works required to divert and apply the water to beneficial use (A.R.S. 45-142). Construction must begin within two years of an application's approval (except for municipal uses), be prosecuted with "reasonable diligence" and be completed within a fixed time not to exceed five years. The administrator may, however, extend this limit for good cause (45-150).

##### Colorado

Within one year of receiving a conditional permit to appropriate designated groundwater, the applicant must complete the well and provide a record of it to the Ground Water Commission. An extension of six months may be granted upon a showing of good cause. Otherwise, the permit expires (C.R.S. 37-90-108(1)). Within three years of issuance of the permit, the applicant must submit evidence of beneficial use (37-90-108(2)). Applicants who fail to submit proof in time are notified by the Commission and given an additional 20 days after which time the permit and associated claims expire (37-90-108(4)). In nondesignated areas, proof of completion and beneficial use must be submitted to the State Engineer within one year, with an additional year extension upon showing good cause (37-90-137(3)).

After the granting of "a right to perfect a water right with a certain priority upon the completion with reasonable diligence of the appropriation upon which such water right is to be based" (37-92-103(6)), the owner of such a conditional right must file with the clerk for a determination of water right when the water is in actual use. If water is not placed in beneficial use within a four year period, the applicant must obtain a finding of reasonable diligence from the referee (37-92-301(4)) renewable in another four years. The statutes are not specific on what constitutes reasonable diligence. The courts have ruled that proof of due diligence requires a demonstration of intention to use the water, and concrete action showing efforts to finalize the appropriation (Orchard Mesa Irrig. Dist. v. City and County of Denver, 182 Colo. 59, 511 P.2d 25 (1973)).

#### Idaho

With the approval of an application, the Department of Water Resources fixes a time limit (up to five years) for commencement and completion of construction and application of the water to a beneficial purpose. Extensions of up to five years (seven years for large projects) may be obtained if good cause can be shown. Applicants who fail to comply with the time limits are held to have abandoned all rights under the permit (I.C.A. 42-204). Subsequent applicants may contest a permit not diligently prosecuted (42-301). Whenever the Department deems it advisable, it may issue notices of proposed cancellation of permit to any applicant believed to be in violation of the due diligence requirement (42-311). Applicants must then show cause for not having the permit cancelled.

#### Montana

In approving an application for a permit to use water, the Department of Natural Resources and Conservation may place a limit on the time allowed for commencement and completion of construction and application of the water to beneficial use (R.C.M. 85-2-312). The Department may extend the time limit at its discretion for good cause shown (85-2-312). However, failure to comply with the time limit without good reason may result in revocation of the permit (85-2-314).

The state, or its political subdivisions, or the United States may apply to the Board to reserve water for future beneficial use (85-2-316(1)). Approved reservations are subject to review and modification at least every 10 years (85-2-316(9)).

#### Nevada

Upon approval of an application to appropriate water, the State Engineer of Nevada fixes a limit on the time 1) within which construction must begin, not to exceed one year from approval, 2) within which construction must be completed, not to exceed five years from approval, and 3) within which to complete application to a beneficial

use, not to exceed 10 years from approval. These limits may be extended by the Engineer, following an application showing good cause (N.R.S. 533.380).

Proof of commencement and completion is required (and the Engineer may require interim statements), and failure to submit them within 30 days of notification from the Engineer results in cancellation (533.390). If at any time the Engineer has reason to believe an applicant is not proceeding diligently, he may require submission of proof of diligence, and may cancel an application if the evidence is unsatisfactory (533.395).

Proof of application to beneficial use must be filed on or before the date of the Engineer's approval (533.400). Failure to file proof within 30 days of notice that it is due results in cancellation of the permit (533.410).

#### New Mexico

On the approval of an application to appropriate water, the State Engineer specifies the time within which construction must be completed and beneficial use made (N.M.S.A. 72-5-6). The maximum construction period is five years, with a maximum of four more years for application to beneficial use. The Engineer may extend the construction period at two year intervals so long as he is convinced of the applicants good faith and diligence (72-5-8, 72-5-14).

#### Utah

When the State Engineer approves an application for appropriation, he must state on his endorsement the time limit for completion of work and application of the water to beneficial use (U.C.A. 73-3-10). If proof of completion is not submitted within this time, the application lapses. However, the Engineer may grant extensions when the applicant shows proof of diligence or reasonable cause for not completing works on time, and may reduce the priority of an application in doing so. Extensions beyond 14 years can be granted only after application and public hearing (73-3-12).

#### Wyoming

Anyone with a permit to appropriate either surface or underground water may apply for an extension of up to five years in the time limit for perfecting the right, but must show the exercise of due diligence and reasonable cause for nonuse (41-3-401, 41-4-506) otherwise the right will be forfeited. Any holder who fails to exercise a right for five consecutive years without good reason is considered to have abandoned the right (41-3-401).

Construction of a well must begin within one year of granting the permit, and beneficial use of the water must occur by the time specified in the permit, but not more than three years (41-3-934). For surface water, the State Engineer specifies on the permit the time for commencement of construction, completion (not more than five years from the

approval), and application to beneficial use (not more than five years from completion) (41-4-506).

Transfers of water rights from lands taken or affected by eminent domain must be completed within five years of the taking, or the right is forfeited (41-3-108).

### No Injury or Harm to Others

#### Arizona

Applications to appropriate water (A.R.S. 45-143) are rejected if the proposed use would conflict with vested rights, pose a menace to public safety, or be against the interests and welfare of the public. Transfers and changes in use are not allowed where existing rights would be impaired, nor without approval of affected irrigation districts (45-172). Although an appropriator's source of supply can be changed without his consent (*Adams v. Salt River Valley Water Users Association* (1939), 53 Ariz. 374, 89 P.2d 1060), as long as he applies water to beneficial use subsequent appropriators cannot deprive him of his rights to use, either by diminishing quantity or deteriorating quality (*Arizona Copper Co. v. Gillespie* (1909), 12 Ariz. 1980, 100 P.465, affirmed 33.5 Ct. 1004, 230 U.S. 46, 57 L.Ed. 1384).

It is unlawful to discharge any waste or pollutant into the waters of the state without a permit (36-1859), or so as to reduce the quality of the receiving waters in violation of established water quality standards (36-1858). However, the quality standards and permit program must be guided by the state policy that the water available for beneficial use in the state should not be diminished (36-1859.C, 36-1857(16)).

#### Colorado

Any party who, without legal right, alters flow so as to cause injury to any appropriator is liable for damages (C.R.S. 37-82-105). The division engineer is directed to order total or partial discontinuance of diversions to avoid material damage to senior appropriators (37-95-502(2)).

Although water users may unilaterally substitute water supplies, the substituted water must be of a quality and continuity sufficient for the normal purposes of senior appropriators (C.R.S. 37-80-120(3)).

Prior appropriators of designated groundwater areas are protected against subsequent withdrawals below "reasonable" pumping levels, which are not necessarily the same as historical levels (37-90-102). However, permits will not be issued for uses that would unreasonably lower water levels or diminish water quality (37-90-107). Wells in nondesignated or non-tributary areas must also obtain a permit from the State Engineer, who will not approve the application if the well would materially injure existing rights (37-90-137).



The provisions of the water pollution control program are to be developed with consideration given to their economic, environmental, public health, and energy impacts as well as their contribution to achieving water quality objectives (25-8-102(5)). No provision may be interpreted to supersede or impair the constitutional right to divert and apply water to beneficial uses, nor enforced so as to cause material injury to water rights (25-8-104). The Water Quality Control Commission cannot adopt control regulations which require agricultural nonpoint source dischargers to utilize treatment techniques that increase consumptive use and cause material injury to water rights (25-8-205(5)).

#### Idaho

Existing rights are legally protected against injury by later appropriations (I.C.A. 42-203), including instream appropriations (42-1503), exchange (42-105, 42-240), change in use (42-108, 42-222), and leases (42-1766). All of these actions are initiated by filing an application with the Department of Water Resources, and the Director becomes the first point of protection, charged with withholding approval if existing rights would be harmed. The subsequent appropriator has the burden of proof that his diversion will not injure prior appropriators (Cantlin v. Carter 88 Idaho 179, 397 P.2d 761 (1964)).

The courts have held that the right of use does not allow filling up natural stream channels or polluting the stream to the injury of other users (Hill v. Standard Mining Co., 12 Idaho 223, 85 P.2d 907 (1906)). Although proper use may unavoidably cause some contamination, deterioration cannot be allowed to the degree that other users are substantially injured (Rarndal v. Northfolk Placers, 60 Idaho 305, 91 P.2d 368 (1939)).

It is also state policy (42-1736A, no. 1) that the State Water Plan should not adversely affect existing water rights.

#### Montana

Where the Department determines that there is unlawful use of water, or the prevention of the movement of water to a prior appropriator, it may petition the district court to regulate the diversion controlling works and issue a cease and desist order (R.C.M. 85-2-114).

The Department is required to review applications for appropriations, changes in water rights, and transfers in use for possible adverse impacts on other appropriators (85-2-307, 85-2-402, 85-2-403). If the Department determines that other rights may be injured, it is directed to serve notice to those who may be affected, and allow them an opportunity to file objections to the proposal. Applications must be denied or altered when the evidence indicates existing rights will be adversely affected.

Protection against adverse impacts to prior appropriators does not extend to changes in the occurrence or availability of the water caused

by subsequent appropriators if the prior appropriator can still exercise his right under the changed conditions (85-2-401).

It is unlawful to cause pollution of state waters, or to discharge sewage, industrial wastes, or other wastes without a permit (75-5-605). The Board of Environmental Health and Sciences is authorized to formulate standards of water quality according to beneficial use (75-5-307), and establish a permit system for controlling discharges (75-5-401). The regulation and control authority extended to the Board does not alter rights of action by a municipality or other owner of water rights to suppress nuisances or abate pollution (75-5-102).

The Department of Fish, Wildlife, and Parks reviews all proposed projects that would physically alter a streambed or bank (75-7-111), but may not thereby impair existing rights (75-7-104).

Any reservations for instream flows are not allowed to impair existing rights (87-5-506).

#### Nevada

No appropriations, changes in use, or transfers can be made without first applying for a permit with the State Engineer (N.R.S. 533.325). The State Engineer is directed to refuse to issue a permit if the proposal "conflicts with existing rights, or threatens to prove detrimental to the public interest" (533.370(4)). A right holder who feels the Engineer's decision does not protect his right may appeal to the appropriate county court (533.450).

The State Environmental Commission is authorized to establish water quality standards designed to protect and ensure a continuation of the designated beneficial uses applicable to each stream segment or other water body in the state (455.244(1)).

#### New Mexico

The State Engineer is directed to deny applications for appropriation (N.M.S.A. 72-5-7), change of place of use (72-5-23), change of purpose or point of diversion (72-5-24), exchange (72-5-26), or lease (72-6-3) if it is determined that such action would be detrimental to existing rights. Unauthorized use or willful waste of water is considered a misdemeanor (72-8-4).

The New Mexico Water Quality Act provides that the Water Quality Commission may require a person to obtain a permit for discharge of contaminants into the water, and the permit may be denied if it appears that the discharge would violate state or federal standards or regulations (74-6-5). However, neither the Commission nor any other entity is authorized to take away or modify property rights in water, and the Water Quality Act is not intended to do so (74-6-12).

## Utah

The State Engineer must reject applications to appropriate water where the proposed use would impair existing rights (U.C.A. 73-3-8). Any person entitled to use water may change point of diversion, place of use, or purpose, providing that existing rights are not impaired (73-3-3).

It is the policy of the state "to provide that no waste be discharged into any waters of the state without first being given the degree of treatment necessary to protect the legitimate beneficial uses of such waters" (73-14-1), and it is unlawful to discharge wastes, or to change the nature of such discharge, without obtaining a permit from the Water Pollution Control Committee (73-14-5). In addition, the State Engineer may require repair or construction of diversion and conveyance facilities to prevent waste or pollution of water (73-5-9), and may deny stream alterations that would impair existing rights or unnecessarily endanger public recreation or the natural stream environment (73-3-25).

## Wyoming

Existing rights are to be protected by the State Engineer from adverse consequences from new appropriations (W.S. 41-4-503), changes in place or purpose of use (41-3-104), changes in point of diversion (41-3-114), impoundments (41-3-305), exchanges (41-3-106), or temporary changes (41-3-111). Uses not preferred are not protected where a condemnation for a change to a preferred use is involved, but where such change is approved fair compensation must be made (41-3-103). However, domestic and livestock water rights are preferred groundwater uses regardless of priority, and the State Engineer may order reduction of withdrawals by any interfering well (41-3-911).

The courts have ruled that priority of right applies to quality as well as quantity, and subsequent appropriators have no right to cause quality of the water to deteriorate to the point of impairment of prior rights (*Sussex Land and Live Stock Co. v. Midwest Ref. Co.*, 294 F.597 (Wyo. 1923)).

It is illegal to allow injurious substances to pass into public water, or to obstruct the natural flow or condition of streams (23-3-204). Discharge of pollution or waste into waters of the state is prohibited unless authorized by a permit from the Department of Public Health (35-11-301). The permit may be denied when the proposal would violate state or federal quality standards or regulations (35-11-302). In addition, the State Engineer may require the abatement of any condition introducing pollutants into a groundwater supply (41-3-909).

## Quantity-Quality Compatibility

### Arizona

Water quality matters are generally in the domain of the State Water Quality Control Council and the Department of Health Services.

The water quality program has been designed to conform in general to EPA requirements for state-administered programs. Unlike water quantity, water quality authority extends to all waters of the state, both surface and underground (A.R.S. 36-1851). In authorizing the Arizona Water Quality Control Council to promulgate water quality standards, the law recognizes "that due to variable factors no single standard of quality or the amount or degree of pollutants that is permitted to be discharged into the waters of the state is applicable to all streams or to different segments of the same waters or to different discharges into waters" (36-1857). The State Water Quality Control Council is reminded (36-1854.B and 36-1859.C) that its regulating activities are to be "guided by the principle that waters of the state are put to use within the state and become return flows to the waters of the state and subsequently reused, and that such rules and regulations shall not diminish the water available for such beneficial uses nor deprive the state of such water." In setting standards, the council is directed to consider such stream characteristics as the size, depth, surface area covered, volume, direction, rate of flow, stream gradient, water temperature, adjacent land uses, and pollution from natural causes (36-1857). The Council is directed to consider also present and future beneficial uses, and compare the benefit obtained from quality enhancement with the burden on the water user (36-1857).

Water rights are administered by the director of the Department of Water Resources. He must deny applications for water uses in conflict with the public interest and welfare, or with vested rights (45-143), and may prescribe the conditions for approval of changes in rights (45-172). Water quality considerations are not explicitly mentioned, except that the Director must confer with the Water Quality Control Council for their assistance in the development of state water plans (45-105.B).

### Colorado

General supervision of the distribution of surface waters in the state is the responsibility of the State Engineer and his division engineers and water commissioners (C.R.S. 37-80-102, 37-81-102), while groundwater is managed by the State Engineer and the Ground Water Commission (37-90-110, 111). Water right determinations are made by the water judges and their appointed referees (37-92-203). The statutes explicitly mention water quality only once, where proposed uses of water in designated groundwater areas are not permitted if they would unreasonably lower the water level, or cause an unreasonable deterioration in water quality (37-90-107). The courts apply the test of impairment of rights, without regard to whether the cause of the impairment is quality or quantity reduction.

Water quality control programs in Colorado are promulgated by the Water Quality Control Commission and administered by the Water Quality Division in the Department of Health (25-8-201, 301).

Water quality statutes are not to be interpreted as impairing the right to appropriate water for beneficial use, but the legislature

recognized that some dischargers might choose consumptive use as a compliance strategy. However, such dischargers are subject to the nonimpairment provisions of the water rights law (25-8-104).

The Commission may classify waters for purposes of regulation, considering such characteristics as present and future beneficial uses, and the need to protect water quality for certain beneficial uses (25-8-203). In setting standards, the Commission must consider beneficial uses of water and the impact of treatment requirements on water quality (25-8-204).

#### Idaho

The Department of Water Resources has authority and responsibility to supervise the appropriation and allotment of all public surface and groundwater in the state. This authority extends to matters of water quality, as the courts have held that, even though some contamination from use is to be expected, the permissible diminution in quality cannot go so far as to cause substantial injury on other users (Rarndal v. Northfolk Placers, (1939) 60 Idaho 305, 91 P.2d 360).

Water quality concerns are the jurisdiction of the Board and Department of Health and Welfare (I.C.A. 39-3601, 39-105). The Board is authorized to adopt standards, regulations, and require discharge permits to preserve and protect water quality (39-105). The water over which this authority extends includes "all the accumulations of water, surface and underground, natural and artificial, public and private, or parts thereof which are wholly or partially within, flow through or border upon" the state (39-103(9)).

#### Montana

The Department of Natural Resources has "full control" of all water of the state not under exclusive control of the United States or vested in private ownership, and administers the system of water rights and distribution (R.C.M. 85-1-204). Reservations of water may be made for the purpose of maintaining a minimum quality of water (85-2-316(1)).

The Department has the authority to require all wells discharging water that contaminates other waters to be plugged or capped, and to require wells to be constructed and maintained such that pollution is prevented (85-2-505).

The Board of Health and Environmental Sciences has authority to regulate water pollution in all waters of the state except consumptive agricultural use (75-5-301) and authority over all waters of the state used for public water supply, domestic purposes, or ice (75-6-103).

Any project that would alter a streambed or banks must be submitted for approval to a board of supervisors (Board of a Conservation District, Grass Conservation District, or County Commissioners) (75-7-111).

## Nevada

Water quality standards and regulations are developed and adopted by the State Environmental Commission (445.201), while the program is administered and enforced by the Department of Conservation and Natural Resources and its Division of Environmental Protection (445.214). Under the program it is unlawful to discharge a pollutant from a point source into any waters of the state (surface or underground, in natural or artificial accumulations) without a permit (445.221). Water quality standards are set at levels designed to protect the designated beneficial uses applicable to each stream segment or body of water (445.244-(1)), but are to be developed in recognition of historical irrigation practices in the state (445.201).

The groundwater law is intended to prevent both waste and pollution of underground water (534.020), and the State Engineer is authorized to order the repair or sealing of any well found to be defective (534.070(4)).

Water quantity matters are administered by the State Engineer (533.305, 533.325, 534.020), or his appointed water commissioners (533.270), ultimately answerable to the district courts (533.220). Water quality is not explicitly mentioned in this authority, but proposed appropriations are subject to conflicts with existing rights or threats to the public interest (533.370(4)).

## New Mexico

Water appropriations, changes in use, and transfers are under the jurisdiction of the State Engineer (N.M.S.A. 72-2-8) who also conducts hydrographic surveys of stream systems and sources of supply (72-4-13). Quality is not specifically mentioned as a decision criterion for the Engineer, rather, he is authorized to reject applications deemed not in the public interest (72-5-7), or which would be to the detriment of existing rights (72-5-23).

The Water Quality Control Commission in the Department of Health has jurisdiction for water quality management (74-6-3,4). The Commission is directed to adopt a comprehensive water quality program and promulgate regulations to prevent or abate water pollution in the state (74-6-4). The Commission may require that a permit be obtained prior to the discharge of any contaminant, which permit may be denied if it appears water quality standards would be violated (74-6-5). On the other hand, the Act "does not grant to the Commission or to any other entity the power to take away or modify property rights in water, nor is it the intention of the Water Quality Act to take away or modify such rights" (74-6-12).

## Utah

The State Engineer (Division of Water Rights) has primary responsibility for administering the appropriation and distribution of water (U.C.A. 73-2-1). The Engineer is required to reject applications

to appropriate water or change a water right if the proposed use would impair existing rights or interfere with more beneficial uses (73-3-8). Thus, among appropriators, the senior appropriator is entitled to protection from quality deterioration caused by subsequent appropriators (Moyle v. Salt Lake City, 111 U.201, 176 P.2d, 882). In addition, the Engineer may require repair of diversion, conveyance, or well features to prevent pollution of water (73-5-9). It is the policy of the state to "protect, maintain, and improve" the quality of its waters to protect the public health and beneficial use of the resource (U.C.A. 73-14-1). To this end, the water pollution control committee administers a comprehensive discharge permit system (73-14-5). Policy concerning the resolution of pollution controls that tend to impair established water rights is not mentioned.

### Wyoming

The appropriation, distribution, and diversion of the waters of the state are supervised by the Board of Control, composed of the State Engineer and the superintendents of each water division (Wyo. Const., Art. 8, Sec. 2). Although not explicit in the statutes, it has been established that water rights pertain to quality as well as quantity, and subsequent appropriators may not alter water quality so as to impair prior rights (Sussex Land and Live Stock Co. v. Midwest Ref. Co., 294 F.597 (Wyo. 1923)). Moreover, the State Engineer may require the abatement of any condition responsible for the introduction of pollutants into an underground water supply (W.S. 41-3-909).

Responsibility for water quality matters is located in the Water Quality Division of the Department of Public Health and Safety (35-11-105, 302). The Division of Water Quality, with its separate advisory board, may recommend water quality and effluent standards and regulations, and conditions for approval of permits, taking into consideration the affect of the pollution on the health and well-being of the people and the environment and the social and economic costs of eliminating the pollution source. No one may discharge pollution or alter discharges, alter water quality parameters, or construct or operate a public water supply or sewerage system without first obtaining a permit from the Division (35-11-301). The Division may recommend (to the Director) water quality and effluent standards, and conditions for approval of permits (35-11-302).

### Adequate Public Notice and Hearing

### Arizona

Although the Director may require an applicant to go to some lengths to prove his use will not impair existing rights, the Director is not statutorily required to publicize applications to appropriate (cf. A.R.S. 45-141 et seq.). For severance and transfer applications, however, a public hearing is required (45-172). The Director fixes a time and place for the hearing, and gives notice once in each of three successive weeks in a local newspaper of general circulation. Any interested person may appear and show cause for denial (A.R.S. 45-172).

In general adjudication proceedings, the Director is required to identify all known potential claimants and send them a copy, by registered mail, of the summons, petition, and statement of claimant form (45-253). The Director of the Department of Water Resources is directed to assist the court, or its appointed water master, in ascertaining the facts relevant to the adjudication of claims (45-256 A). His findings are compiled in a preliminary report, and claimants are notified when and where it is available for inspection and comment (45-256 C). The report is modified as necessary and submitted to the court as evidence, open to inspection and challenge by any claimant (45-256 B). After "due notice," the master holds hearings and takes testimony as necessary, and submits his findings to the court (45-257 A). Any claimant may file written objections within 180 days. After that period, the court makes the final determination (45-257 B).

Public notice and hearing provisions are given for each major category of the groundwater code. The Director was to propose and begin hearings on designated groundwater basins and subbasins by the beginning of 1982 (45-403), and issue his determination accordingly (45-404). The notice of proposal and hearing were to be published in a newspaper of general circulation within the proposed basin (45-403). The Director's decision can be appealed by any interested party (45-405). Any subsequent modifications of groundwater basin boundaries are subject to the same procedural requirements "as closely as practicable" (45-404 D).

Designation or modification of active management areas may be initiated by the Director (45-413, 45-417) or locally (45-415). The Director must publish notice of a hearing at least once a week for two weeks in a newspaper of general circulation within the affected area (45-413 B). Any person may submit evidence for or against the proposal, and the Director is required to give full consideration to such evidence (45-413 C). Local initiation of active management areas is accomplished by petition of 10 percent of the registered voters in the proposed area, followed by a special election (45-415).

Irrigation nonexpansion areas may be proposed 1) by the Director if he determines current withdrawals threaten a reasonably safe supply for irrigation (45-432), or 2) locally by petition to the Director of 25 irrigators or 10 percent of the affected registered voters (45-433). The Director is required to hold a hearing on the matter, subject to the same procedural requirements as described above for active management areas (45-435, 45-436).

Within 90 days after the designation of an active management area, the Director notifies affected water companies, property owners and appropriate officials of affected local governments of the requirement to apply for a certificate of grandfathered right (45-478). Any person residing in the area may file a written objection and request a hearing on any application filed (45-479). If a hearing is held, the Director gives 30 days prior notice to the applicant and objector (45-480 A). The hearing is informal, but all parties may present evidence and argument, and the Director's subsequent determination may be appealed (45-480 B, C).



In general, a person may not withdraw water from a nonexempt well in an active management area without a permit. Notice of applications is published once a week for two weeks in a newspaper of general circulation in the area (45-523 A), and residents of the area may file objections within 30 days (45-523 B). The Director will schedule a hearing if objections are filed, or otherwise at his discretion, subject to the same procedural requirements described above for certificates of grandfathered rights (43-523 C).

The Water Quality Control Council (36-1854(5)) and the Director of the Department of Health Services (36-1859 B) are required to give notice and hold hearings prior to adopting, modifying, or repealing water quality standards and discharge permits. Notice must be given at least three times in a newspaper of general circulation, beginning at least 30 days prior to hearing and action. A copy of the notice is sent to individuals and organizations who may be affected, or who have requested notification of such actions (36-1860 A,B). In the case of actions relating to a discharge permit, the Director is required to hold a hearing only if there is sufficient public interest, or if it is requested by the permittee (36-1860 B). Any data or reports which the Commission or Director intend to rely on in making a decision must be made available for public inspection at least 30 days prior to the hearing or decision (36-1860 C). Any interested person may submit written comments during the notice period or oral testimony at the hearing. Permit applicants are given 30 days after the notice period and hearing to respond to comments received (36-1860 D). All written comments must be considered in making the decision, and must be saved and made available for public inspection (36-1860 D).

### Colorado

Public hearings are required prior to the adoption of water classification or water quality regulations (C.R.S. 25-8-402). Notice and hearing procedures are provided (24-4-103). Any person may propose an alternative classification or regulation and may cross-examine witnesses at the hearing (25-8-402). Public notice of completed discharge permit applications must include at least one local newspaper publication, mail notice to anyone on request, a copy of the application and preliminary analysis at the office of the relevant county clerk, and mail notice to known interested parties (25-8-502). Alleged violations of permit provisions or regulations may be followed by a public hearing for the alleged violator to answer the allegations (25-8-603). In all such proceedings, the burden of proof lies with the Division of Water Quality (25-8-401).

Notice must be given of all applications to appropriate groundwater in designated groundwater basins by the Groundwater Commission within 30 days if a preliminary review indicates favorable consideration (37-90-107(2)). If objections are filed, the Commission must call a hearing in the basin where the proposed well is to be located. The required notice of application is once in each of two successive weeks in a paper of general circulation in the counties of concern, and objections must be filed in writing within 30 days of the last notice (37-90-112).

Hearings are to be held in the relevant groundwater basins, and both applicants and objectors have the right to subpoena witnesses and be represented by an attorney (37-90-113). Persons claiming injury from any other action taken by the Engineer or Commission may also petition for a hearing (37-90-114).

By the 15th of each month the water clerk of each division compiles and summarizes all the applications received and publishes the list by the end of each month in a newspaper of general circulation in each affected county (37-92-302(3)). The water clerk or referee notifies each person who they believe would be affected. Anyone who opposes the application may file an objection with the water clerk (37-92-302(2)). The referee either makes a determination or, where protests have been filed, refers the matter to the water judge (37-92-303). Determinations of the referee may be appealed within 20 days. Where protests are filed, a court hearing is held, in which all interested parties may participate, and the burden of proof is on the applicant (37-92-304(3)).

For temporary exchanges or loans, only written consent of all those party to the exchange is required (37-83-105).

#### Idaho

Notice of all applications to appropriate water (I.C.A. 42-203, 42-233a) change an existing right (42-222(1), 42-240), make short term leases to hydroelectric utilities (42-108B), or to extend time to make beneficial use (42-222(2)) must be published once a week for two weeks in a newspaper of general circulation in the county where the diversion lies. Written protest may be filed within 10 days and the protestants are entitled to a hearing. Leases other than to hydroelectric utilities must be approved by the Director, but are not required to follow the notice and hearing process (42-1763, 42-1766). Persons aggrieved by a decision of the Director of the Department of Water Resources may seek judicial review. Similarly, any person aggrieved by action or inaction of the Department of Health and Welfare may request a hearing before its Board, and may seek judicial review of the Board's final determination (I.C.A. 39-107).

Designation of a critical groundwater area must be accompanied by published notice and public hearing (42-233a).

Upon the Director's filing a petition for authorization to commence a "determination of rights," the district court publishes notice of a hearing on the petition once in each of three consecutive weeks in a newspaper of general circulation in each county in which the system is located. Any person claiming a right to water in the system may object to issuance of an order to commence and to the proposed boundaries of the system (42-1407). The same notice and hearing must be given after a claimant files suit for an initial adjudication (42-1401). Anyone claiming a right to use water in the system that was not included in the initial adjudication may file for a supplemental adjudication. The claimant must publish notice and description of the action in newspapers designated by the judge. Any person claiming a right that

may be injured by the published claim may file an objection with the district court and appear to defend it at the hearing (42-1405). After the Director completes his examination of the system, he so notifies the judge who publishes, once a week for three consecutive weeks in a newspaper of general circulation in the county where the water is used, a copy of the authorization of determination, an order of joinder of all claimants, and a summons for each claimant to file a notice of claim with the Director unless a valid application or permit is already on file (42-1409). The Director examines the claims, files a proposed determination with the district court, and sends a copy of the report to each claimant, who may file an objection within 60 days to be dealt with at a court hearing (42-1410).

Should the Board of Water Resources apply for a minimum flow appropriation, the Director must notify the interested state agencies and publish a notice of the application and date of a public hearing. This notice must be published once a week for two consecutive weeks in a newspaper of general circulation in the county in which the appropriation is proposed (42-1503). After the hearing, the Director rules on the application, mailing a copy to each party who testified at the hearing either for or against approval (42-1503).

The Board is directed to hold public hearings and allow no less than 60 days for written comment from any interested party on proposals for its state water resources plan (42-1734).

#### Montana

Notice of applications for appropriation, reservation, or change of right must be published once a week for three weeks in a newspaper of general circulation published in the area of the source (R.C.M. 85-2-307). The Department of Natural Resources and Conservation also serves notice on other claimants on record whom may be affected, on state agencies holding reserved rights, or other parties who the Department deems might be interested (85-2-307). No notice is required if the Department finds that no other rights would be adversely affected by the appropriation (85-2-307(3)). Objections to applications may be filed within 60 days, and valid objections (85-2-308) are entitled to a public hearing (85-2-309).

Notice of the general registration and adjudication process initiated in 1979 was to be published in every daily newspaper and at least one newspaper in every county in April of 1979, 1980, 1981, 1982, and 1983; posted in a conspicuous location in every county courthouse; and mailed in every property tax statement in 1979, 1980, 1981, and 1982 (85-2-213). The notice directs every claimant of water rights to file a statement of claim by June 30, 1983 (85-2-221). As soon as possible thereafter, the water judge is to issue a preliminary decree, based on the statements of claim and data submitted by the Department (85-2-231). A copy of the decree is to be mailed to each person who filed a claim; others may obtain a copy from the water judge (85-2-232). Any interested party is entitled to object to the preliminary decree and obtain a hearing (85-2-233), after which the preliminary decree is modified as

necessary and adopted as final (85-2-234). The final decree may be appealed by anyone who objected to the preliminary, or whose rights were altered because of a hearing (85-2-235).

Before adopting any part of the State Water Plan, the Department of Natural Resources and Conservation must hold a public hearing in that part of the state affected. The date and location of the hearing is advertised 30 days before the hearing for a two week period in a newspaper of general circulation in each county encompassed (85-1-203).

When the Department of Health and Environmental Sciences believes a violation of the water pollution laws or regulations has occurred, it must serve notice on the alleged violator, specifying the violation and corrective action required (75-5-611). The Department or the alleged violator may decide to air the matter in a public hearing (75-5-611).

Before classifying streams for water quality management purposes or establishing or changing standards or regulations, the Board of Health and Environmental Sciences must hold a public hearing. Time and place of this hearing must be advertised once a week for three weeks in a newspaper of general circulation in the area affected (75-5-307).

#### Nevada

The State Engineer publishes, at the applicant's expense, notice of all applications to appropriate or to change the nature and place of use. Notice is advertised in a newspaper of general circulation in the county where the water is diverted (N.R.S. 533.260). Any interested person may file an objection within 30 days, and the Engineer may hold a hearing to obtain more information and allow complaints to be registered (533.365). Persons feeling aggrieved by the State Engineer's decision may appeal the decision to the appropriate county court (523.450).

The process for adjudicating water rights on a stream system requires a variety of public notices and hearings. As soon as practical after entering an order for determination of relative water rights on a stream system, the State Engineer is directed to publish notice of when the proceedings are to begin in one or more newspapers of general circulation within the drainage for four consecutive weeks (533.095). After completing and filing a preliminary stream survey, the Engineer must give the same kind of notice of the commencement of taking "proof of rights." In addition, he is directed to notify each known claimant by mail (533.110). After the period for taking proofs, the Engineer abstracts the proofs taken and makes a preliminary determination (533.140). Each person submitting a proof is mailed a copy of the determination, abstracted proofs, and informed of how the evidence gathered may be examined (533.140). Any interested person not notified of the proceedings may intervene within six months of the Engineer's determination (533.130). Any interested person may file an objection to the determination (533.145), and be notified of the subsequent hearing (533.150). After the hearing, the Engineer files the order of determination with the clerk of the district court, and mails copies to all

parties interested (533.165). The Engineer obtains a date for court hearing, mails notice to all interested parties, and publishes the notice once a week for four weeks in newspapers of general circulation in the counties in which the stream system is located (533.165). Anyone dissatisfied with the Engineer's determination may file an exception with the court prior to the hearing, and may appear at the hearing to have the exception dealt with (533.170). After the hearing, the court enters a decree affirming or modifying the Engineer's determination (533.185), and each person filing an exception is informed of the court's findings (533.170). The decree may be appealed to the Nevada Supreme Court by any party in interest, with notice of such appeal served on the attorneys of all claimants (533.200).

Before it adopts any regulation, the Nevada Environmental Commission must hold a public hearing. Before adopting a water quality standard, notice must be published in a newspaper of general circulation in the area affected (445.207).

#### New Mexico

Hearings on matters concerning public waters are governed by N.M.S.A. 72-2-12 to 72-2-17. Hearings may be initiated on written request by an applicant, protestant, or the state. The State Engineer notifies all interested parties by mail, all of whom have the opportunity to present evidence and argument, and a record of the hearing is made (72-2-17). In a suit for water right determination, all claims of record, and others known, are made parties to the proceedings and are notified by mail. Notice is also published (72-4-17).

Any person aggrieved by a decision or action of the Engineer is entitled to a hearing before the Engineer or his appointed examiner, and may appeal to the courts until such hearing is held (72-2-16). Upon receiving a request for a hearing, the Engineer must notify the requestor and all interested parties by mail of the time, place, and nature of the hearing. Any interested party may appear and present evidence (72-2-17).

Upon receipt of an application for a permit for appropriation (72-5-7), change in place of use (72-6-23), change of purpose or point of diversion (72-5-24), exchange (72-5-26), or lease (72-6-3), the Engineer is required to publish notice thereof in a newspaper of general circulation in the affected watershed to allow interested parties the opportunity to file protests. The notice must appear once in each of three consecutive weeks (72-5-4, 72-5-23, 72-6-6, 72-12-3, 72-12-7). Objections to an application must be filed within 10 days of the final publication, in which case the engineer informs the interested parties and holds a hearing (72-5-5).

Any regulation or code adopted by the State Engineer must first be issued as a proposal, with notice of the proposal and time of public hearing published twice in at least five newspapers of general circulation (72-2-8, 72-2-9).

The Water Quality Commission is directed to develop notice and hearing procedures related to water pollution discharge permit applications (74-6-5).

#### Utah

On receiving a proper application for appropriation, the State Engineer is directed to publish notice of it for three successive weeks in a local newspaper of general circulation. No change in the application prejudicial to the rights of others may be accepted without republication (U.C.A. 73-3-6). Any interested person may file a protest within 30 days of the published notice, which must be duly considered by the Engineer in making his determination (73-3-7). The procedure is the same for permanent changes in purpose, place of use, or point of diversion, except that public notice may be waived for changes in the point of diversion of less than 660 feet (73-3-3). For temporary changes, or temporary appropriations, the Engineer investigates the proposal, and notifies by mail or public notice all those whose rights may be impaired, giving them an opportunity to voice objections (73-3-3, 73-3-5.5). In any case, persons who feel aggrieved by a decision of the State Engineer may appeal to the district court within 60 days for a plenary review (73-3-14).

Requests for extensions of time to make beneficial use must be approved by the Engineer and, if for more than 14 years, the Engineer must publish notice of the request and consider the objections that may be filed by any interested person (73-3-12). Any other applicant or water user may file a protest to the Engineer that due diligence is not being exercised (73-3-13). The Engineer must then notify the applicant to appear or show cause why the application should not be declared forfeit.

A determination of water rights on a stream system may be initiated by petition to the Engineer of "five or more or a majority of the users, or by court order as a result of a suit involving water rights" (73-4-1). Upon filing of the action, the court clerk notifies the Engineer, who publishes notice of the action once a week for two weeks in a newspaper specified by the court, requiring all claimants to inform the Engineer of their names and addresses (73-4-3). The Engineer compiles a list of claimants from his records and from responses to the notice, and files it with the court. At that time, the court serves a summons on those on the list by mail, and for those not on the list, summons are served by publication once a week for five weeks in a designated newspaper (73-4-4, 73-4-21, 73-4-22). After the list is filed by the State Engineer, he proceeds with the survey of the water source and diversion works, and additions to the list must be approved by the court (73-3-3). When the survey is completed claimants are directed to file a statement of claim within 90 days (73-3-5), which is considered notice to all persons of that claim (73-3-9). Failure to file a statement of claim within the specified period leads to forfeiture of all rights claimed, but the period may be extended an additional three months for those who were not served notice by mail if they were not informed in time to reply. But such claimants must publish notice of their claim in a

newspaper as directed by the court, allowing all interested parties to dispute the matter of the claimant's actual notice of the proceeding (73-4-9).

The State Engineer prepares a preliminary determination based on his survey and the filed claims, submits it to the court, and sends a copy to each claimant (73-4-11). If there are any objections to the preliminary determination, the court mails notice to all claimants of a hearing on the matter (73-4-13). Otherwise the Engineer's determination is adopted as final.

Prior to setting or changing quality standards, or classifying water, the Committee on Water Pollution is required to conduct public hearings (73-14-6(b)). Notice of the hearing is published in a newspaper of general circulation in the affected area, and mailed to individuals who the committee believes will be affected, as well as to the chief executive of each affected political subdivision. The decisions of the committee with respect to standards and classifications must be published in a newspaper of general circulation (73-14-6(c)).

#### Wyoming

Most actions altering patterns of water use and ownership require application to the State Engineer and are subject to notice and hearing. Appropriations are not subject to this process until the final proof of beneficial use is submitted (41-4-511). Change to a preferred use requires public notice and, if necessary, a public hearing (41-3-103). Exchanges are not required to give public notice and hearing (41-3-106). Transfers of rights from lands submerged by a reservoir require the applicant to publish at least one notice of a hearing inviting protests to the transfer (41-3-107). A petition to change point of diversion must include permission from all intervening diverters, or else a hearing must be held for which each diverter has been notified by registered mail (41-3-114).

Abandonments may be initiated by a potential claimant or the State Engineer. In either case, the owner of the affected right(s) must be notified by mail, if possible, and a hearing for interested parties must be advertised for three consecutive weeks, paid for by the initiator (41-3-401, 402). Adjudications require notification of the known claimants by mail and notice in two issues of a general circulation newspaper indicating when measurements and taking of proof will begin (41-4-302, 303), and at least one notice of where the evidence gathered may be inspected (41-4-309). Anyone wishing to contest the preliminary findings may file with the superintendent of the division for a hearing (41-4-312, 313). The Board makes its adjudication on the recommendation of the superintendent, subject to appeal to the district court within 60 days by anyone who feels aggrieved by the decision (41-4-401, 402).

Any water right holder who believes his right is being adversely affected by groundwater users of later priority may file a statement of complaint with the Director. If the Director believes the complaint to have sufficient merit, the individual making the complaint can

obtain a hearing and possibly a judgment before a local groundwater board (42-237b,c).

The Water Development Commission must give notice and hold a public hearing upon completion of a project feasibility study, and prior to submitting its recommendation to the legislature (41-2-115).

### Equitable Burden of Proof

#### Arizona

In Arizona, applications in "proper form" that do not conflict with vested rights, pose a threat to public safety, nor oppose the public interest are to be approved (A.R.S. 45-143.A). Applications for recreation and wildlife purposes must indicate the location and character of the area and specific purposes for which the area will be used (45-142 B(5)). This requirement is similar to that made of applications for other purposes.

Arizona ranks beneficial uses in order of importance, placing recreation and wildlife at the bottom of the four categories specified (45-147). This political ordering of social priorities is applied whenever the pending applications exceed available water in a given source, implying that recreation and wildlife will always be discounted where competition for water is present.

The Arizona court has ruled that only the state has a vested right to subject unappropriated waters exclusively to the use of recreation and fishing. The mention of exclusive use is of some interest since the court observed that merely stocking fish does not necessarily constitute an appropriation requiring a permit (McClellan v. Jantzen (1976) 26 Ariz. App. 223, 547 P.2d 494).

#### Colorado

Only the Water Conservation Board may appropriate or acquire, except by condemnation (37-92-102), water for instream flow uses in Colorado (C.R.S. 37-92-102(3)). The Board may request recommendations from the Divisions of Wildlife and of Parks and Outdoor Recreation before filing such claims. The Colorado court has held that usual diversion requirements may be waived in such cases (Colorado River Water Conservation District v. Colorado Water Conservation Board, 197 Colo. 469 (1979) 594 P.2d 570). Instream appropriations are subject to the following conditions: 1) if the appropriation is based on flows from imported water, the appropriation cannot constitute a claim against the importer on the imported water, 2) the appropriation is made subject to existing rights and practices, 3) the Board must determine that the natural environment can and will be preserved to a reasonable degree with the proposed water right, without material injury to existing rights, and 4) such rights do not entitle the state to acquire by condemnation rights-of-way to the location of the water body where the right has been awarded (37-92-102(3)).



Although the Board can presumably dispose of its rights, the transfer of rights out of instream uses once made appears unlikely. The beneficial use under which such appropriations must qualify--the preservation of the natural environment for the benefit and enjoyment of present and future generations (39-92-103(4))--seems to connote a fixed priority on instream flow protection on streams where such appropriations are made. On the other hand, the Board may not be the ideal locus of instream appropriation responsibility since it is unlikely to pursue means of acquisition other than appropriation, like purchase or exchange.

Minimum flows or water levels cannot be established as a means of water quality control (25-8-104), classifications and quality regulations may be based on the need to protect water quality for beneficial uses including recreation and fish and wildlife protection and propagation (25-8-203).

### Idaho

Instream flow reservations have been established through two mechanisms. First, they may be established directly by the legislature as was done for several portions of the Snake River (42-1736 A). However, the principal method begins with an application to appropriate a minimum flow by the Water Resources Board and approval by the Director and the legislature (42-1503).

The Board is authorized to entertain requests for minimum flow appropriations from any person wishing to establish instream flow, or act on its own initiative (42-1504). The Board must either reject or support the request within six months of its submission. There is no right of review of rejection decisions. If supported, the Board makes application to the Director, specifying the stream and the point of flow determination, the proposed minimum flow, the purpose of the flow, and the period of time during the year of the flow (42-1503). The Director notifies related state agencies of the application and publishes notice of a public hearing to consider the proposal. After the hearing, and any additional investigation, the Director either rejects or approves the application in whole or in part, based on whether: 1) the proposal would impair existing rights and applications, 2) it is in the public, rather than private, interest, 3) the minimum flow is necessary for the stated purpose, 4) the proposed flow is a minimum and not ideal level, and 5) the flow is capable of being maintained based on the records (42-1503).

The Director's findings are mailed to the Board and to anyone who testified at the hearing, and his decision may be appealed. If the Director approves the application, it is submitted to the legislature for final approval by joint resolution or by failure to act prior to the close of the session (42-1504).

All filings, permits, and decrees made since 1978 must be determined with respect to the effect they would have on the minimum daily flow of the effected stream (42-1736 B).

The appropriation of water for scenic beauty and recreation has been upheld as being beneficial, even though no physical diversion was made. (In regard to Permit Application No. 37-7108, 96 Idaho 440, 530 P.2d 924 (1974).)

Public waters are declared highways for recreation, and defined as navigable waters (with public rights of access) if reasonably usable for such purposes (36-1601).

### Montana

The state, its subdivision and agencies, or the United States may apply to the Board of Natural Resources and Conservation to reserve waters to maintain a minimum flow level or a specific quality of water (R.C.M. 85-2-316(1)). Applications for reserving instream flows are subject to the same notice and hearing process as applications for other purposes (85-2-316(2)). The applicants must establish to the satisfaction of the Board: 1) the purpose intended, 2) the instream flow need, 3) the amount of flow required, and 4) that the reservation is in the public interest (85-2-316(3)). Moreover, the Board must review all approved reservations within 10 years and may reallocate the water to another qualified reservant after notice and hearing (85-2-316(10)).

It also appears that instream flow rights may be acquired by the Department of Natural Resources and Conservation by condemnation (85-1-204(1)). When the Department acquires the right of appropriation, it may divert or authorize diversion at any point on the stream, so long as prior rights are not harmed (85-1-204(6)).

In the general adjudication process to determine claims to rights prior to 1973, the Department of Fish, Wildlife and Parks has been named to represent the public for the purpose of establishing any prior and existing public recreational use (85-2-223). Such a determination is authorized for the Yellowstone Basin (85-2-601).

### Nevada

No explicit statutory provision is made for instream flow reservations. The state may, however, reserve waters from appropriation (N.R.S. 533.070) or reject applications to appropriate waters which are not in the public interest (533.370). Furthermore, the use of water from any stream system or groundwater source for recreation is declared a beneficial use (533.030), and the Division of Fish and Game is authorized to acquire water rights necessary to the performance of its responsibilities (501.356(3)). The primary question thus seems to be whether the usual actual diversion requirement can be waived for instream flow uses.

An expressed purpose of the water quality law is to maintain water quality for public health and enjoyment, and for propagation and protection of terrestrial and aquatic life (445.312). Water quality standards are to reflect the water quality criteria defining the conditions

necessary to protect, support, and propagate wildlife and provide for recreation, if reasonably attainable (445.244(2)). Standards may be established for individual stream segments or bodies of water if justified by the circumstances (445.244(3)).

#### New Mexico

No explicit provision for instream flow rights is made in the New Mexico statutes. The state court has recognized recreation and fishing as beneficial uses, but appear to hold that appropriations on behalf of the public for such uses are unnecessary because unappropriated waters are already reserved for public use (State ex rel. State Game Commission v. Red River Valley Company (1945) 51 N.M. 207, 182 P.2d 421). The State Engineer is required to deny appropriation applications that propose a use contrary to the public interest (N.M.S.A. 72-5-7), and this appears to be the primary avenue available for securing instream flows.

The Water Quality Control Commission is authorized to set water quality standards defining the required level of performance for beneficial uses, including wildlife and recreation (74-6-4D). However, the Commission may not take away or modify property rights in water (74-6-12).

#### Utah

Utah law makes no explicit provision for instream flow. However, the Engineer is required to reject applications for appropriation that would unreasonably affect public recreation or the natural stream environment, or prove detrimental to the public welfare (U.C.A. 73-3-8). In addition, the Engineer must deny applications to alter points of diversion or stream banks that would unnecessarily affect recreational use or the natural stream environment (73-3-9(3)).

Although the Division of Wildlife is authorized to acquire water rights necessary to the pursuit of its responsibilities (23-21-1), there is some doubt that appropriations without physical diversion could withstand a court challenge. The more effective approach from the perspective of the Division is to intervene in appropriation and change in use applications.

It is the state's policy to protect the quality of public waters for legitimate beneficial uses, including recreation, and for propagation of fish and wildlife (73-14-1). The Water Pollution Control Committee is authorized to classify waters consistent with their most reasonable beneficial use, and to develop standards of quality accordingly (73-14-6). It is unlawful to discharge any pollutant harmful to fish and wildlife, or that would impair beneficial uses including recreation (73-14-5(a)). There is no indication that minimum flows might be adopted as a water quality control.

## Wyoming

Wyoming law divides water uses into preferred and nonpreferred, and further ranks preferred uses (W.S. 41-3-102). Recreation and environmental preservation are not among the preferred uses, so rights (if any) for such uses may be condemned to supply water for preferred uses.

Wyoming makes no explicit provision for instream flow reservations. In 1973, a stream preservation feasibility study was authorized to determine methods to preserve scenic and recreational quality of Wyoming rivers, and directed to report its recommendations by 1975 (41-2-101), but none of the instream protection bills subsequently considered by the legislature have been enacted. However, the State Engineer must reject appropriation applications that propose a use detrimental to the public interest (41-4-503), and it may be possible to protect minimum flows on this basis.

A purpose of the Water Development Commission is to encourage the development of water facilities for preservation and development of fish and wildlife resources, to make water available for recreational purposes, and the protection of the health, safety, and general welfare of the people of the state (41-2-112). Water resources plans are to be developed which identify appropriate development goals, including enhancement of recreation and the environment (41-2-109), and project feasibility studies are to be conducted which identify needs for minimum flows, and identify appropriate objectives, including protection and enhancement of the environment (41-2-114(c)).