

INSTREAM FLOW PROTECTION IN THE WEST

Revised Edition - 1993

from the Natural Resources Law Center
University of Colorado School of Law

Edited by
Lawrence J. MacDonnell
and **Teresa A. Rice**

Preface to Revised Edition

In late 1992 we discovered that we had completely sold out our printing of the original edition, published in 1989. A quick check with our original authors revealed an almost universal willingness to participate in an update to the first book. We asked all the authors to bring their original chapters up to date at a minimum and, for the state chapters, to provide something of an assessment of the status of in-place water protection in their state.

In most cases the chapters in this revised edition are substantially rewritten. Not only have important new developments since 1989 been added, but often, the analysis and presentation have been changed considerably. We have added one new chapter, and there are two new authors for our state chapters.

The result is a product that not only provides the most current and comprehensive discussion available of western in-place water resources law but also contains, in our view, a sophisticated analysis of the state of the law and its implementation to date. Perhaps no other area of western water law is experiencing a similar level of development and change. We are happy to be able to provide this update to the law of in-place water protection.

LJM and TAR
Boulder
December 6, 1993

Table of Contents

Part 1:	Policies and Issues	
Chap. 1:	Recognizing the Value of In-Place Uses of Water in the West: An Introduction to the Laws, Strategies and Issues	1-1
	<i>Steven J. Shupe and Lawrence J. MacDonnell</i>	
Chap. 2:	Instream Flows: Integrating New Uses and New Players Into the Prior Appropriation System	2-1
	<i>Christopher H. Meyer</i>	
Chap. 3:	People Preserving Rivers: The Public and its Changing Role in Protecting Instream Flows	3-1
	<i>Lori Potter</i>	
Chap. 4:	Instream Flows and the Public Trust	4-1
	<i>Harrison C. Dunning</i>	
Chap. 5:	The Federal Role in In-Place Water Protection	5-1
	<i>Lawrence J. MacDonnell and Teresa A. Rice</i>	
Chap. 6:	Benefits, Costs And Water Acquisition Strategies: Economic Considerations in Instream Flow Protection	6-1
	<i>Bonnie G. Colby</i>	
Chap. 7:	Quantifying Instream Flows: Matching Policy and Technology	7-1
	<i>Berton L. Lamb</i>	
Chap. 8:	Future Issues in Instream Flow Protection in the West	8-1
	<i>A. Dan Tarlock</i>	
Part II:	State Programs	
Chap. 9:	An Assessment of Instream Flow Protection in Alaska	9-1
	<i>Mary Lu Harle and Christopher C. Estes</i>	

Chap. 10:	Instream Flow Water Rights: Arizona's Approach	10-1
	<i>Herb Dishlip</i>	
Chap. 11:	A Reconsideration of Instream Appropriative Water Rights in California	11-1
	<i>Brian E. Gray</i>	
Chap. 12:	Colorado's Instream Flow Program: Integrating Instream Flow Protection Into a Prior Appropriation System	12-1
	<i>Steven O. Sims</i>	
Chap. 13:	Instream Flows in Idaho	13-1
	<i>Josephine P. Beeman</i>	
Chap. 14:	Minimum Desirable Streamflow in Kansas	14-1
	<i>Leland E. Rolfs</i>	
Chap. 15:	Instream Flow Policy in Montana: A History and Blueprint for the Future	15-1
	<i>Matthew J. McKinney</i>	
Chap. 16:	Nebraska Instream Appropriation Law and Administration . .	16-1
	<i>J. David Aiken</i>	
Chap. 17:	Protecting New Mexico's Instream Flows	17-1
	<i>Tim DeYoung</i>	
Chap. 18:	Instream Flow Protection in Oregon	18-1
	<i>Michael J. Mattick</i>	
Chap. 19:	Instream Flows in Utah	19-1
	<i>Mark A. Holden</i>	
Chap. 20:	Protecting Instream Resources in Washington State	20-1
	<i>Kenneth O. Slattery and Robert F. Barwin</i>	
Chap. 21:	Wyoming's Instream Flow Law	21-1
	<i>Gordon W. Fassett</i>	

Tables and Figures

Tables

Chap. 5	Table 1.	Ability of Federal Agencies to Protect In-Place Values and Uses of Water Within Western State Water Law Systems	5-18
	Table 2.	Primary Environmental Concerns Associated with Reclamation Facilities Studied	5-27
	Table 3.	Changes to Operation of Reclamation Facilities	5-28
	Table 4.	Primary Issues Encountered in Making Project Changes	5-29
Chap. 7	Table 1.	Instream Flow Recommendations for Fish Habitat Based on the Tennant Method	7-5
Chap. 10	Table 1.	Instream Flow Applications (As of February 1993)	10-11
Chap. 14	Table 1.	Minimum Desirable Streamflows	14-6
Chap. 20	Table 1.	Minimum Flow Levels	20-8
	Table 2.	1987 Enforcement Chronology in the Okanogan Valley	20-17

Figures

Chap. 2	Fig. 1.	Jones Farm	2-3
Chap. 5	Fig. 1.	Location of Case Studies	5-26
Chap. 6	Fig. 1.	Demand (Marginal Benefit) Functions	6-3

Chap. 7

Fig. 2. Economic Impacts of Water Reallocation 6-5

Fig. 1. Wetted Perimeter Method 7-7

Fig. 2. Output of Microhabitat Model 7-9

Fig. 3. Units of Available Habitat/% of Time Exceeded
(Using Habitat Time Series) 7-12

Fig. 4. Units of Available Habitat/% of Time Exceeded
(Three Alternative Habitat Time Series) 7-13

Fig. 5. Time Series of Population and Habitat Data 7-15

Chap. 9

Fig. 1. Comparison of Alaska with the "48" Contiguous
States 9-2

Fig. 2. United States Geological Survey Hydrologic
Subregions (units) for Alaska 9-10

Fig. 3. Locations of Instream Flow Applications Sites
(•) in Alaska 9-14

The Contributors

J. David Aiken – Professor of Agricultural Economics (Water & Agricultural Law Specialist), University of Nebraska-Lincoln. Professor Aiken is a leading authority on Nebraska water law with over 100 publications on water and related issues.

Robert F. Barwin – Water Quality Section Manager, Washington Department of Ecology, Yakima. Formerly Mr. Barwin worked in the state's instream flow program.

Josephine P. Beeman – Of Counsel, Moffatt Thomas Barrett Rock & Fields, Boise. Between 1976 and 1990, Ms. Beeman was the Idaho Deputy Attorney General, representing the Idaho Department of Water Resources.

Bonnie G. Colby – Associate Professor of Agricultural and Resource Economics at The University of Arizona. Her work focuses on the economic impacts of water reallocation between urban, agricultural, recreational and environmental water uses, on valuation of water rights and on regional conflicts over tribal water rights and reservation water uses.

Tim DeYoung – Attorney, Modrall, Sperling, Roehl, Harris & Sisk, Albuquerque. A professor in the Division of Public Administration of the University of New Mexico for 10 years, Mr. DeYoung has been in private practice since 1989.

Herb Dishlip – Deputy Director, Office of Water Management, Arizona Department of Water Resources, Phoenix. Mr. Dishlip has had lead responsibility in Arizona for implementing the state's instream flow program.

Harrison C. Dunning – Professor, School of Law, University of California, Davis. Professor Dunning is a prominent water law scholar and is author of Part VI of *Waters and Water Rights*, 1991 Edition, "The Public Right to Use Water in Place."

Christopher C. Estes – Division of Sport Fish, Alaska Department of Fish & Game, Anchorage. Mr. Estes is the statewide Instream Flow Coordinator with the Research and Technical Services Section.

Gordon W. Fassett – Wyoming State Engineer, Cheyenne. Mr. Fassett is a professional engineer and has been Wyoming State Engineer since 1987.

Brian E. Gray – Professor of Law, University of California, Hastings College of the Law. Professor Gray is a widely recognized expert on California water law.

Mary Lu Harle – Regional Water Rights Coordinator, Water Resources Branch, Division of Realty, U.S. Fish and Wildlife Service, Region 7. Ms. Harle was formerly with the Alaska Department of Natural Resources.

Mark A. Holden – Utah Division of Wildlife Resources, Salt Lake City. Mr. Holden is the Assistant Chief for Aquatic Resources in the Habitat Section.

Berton L. Lamb – U.S. Fish & Wildlife Service, Ft. Collins, Colorado. Dr. Lamb is a policy analyst with the National Ecology Research Center.

Lawrence J. MacDonnell – Director, Natural Resources Law Center, University of Colorado School of Law, Boulder.

Michael J. Mattick – Oregon Department of Water Resources, Salem. Mr. Mattick is a Water Rights Specialist for the department.

Matthew J. McKinney – Montana Department of Natural Resources and Conservation, Helena. Dr. McKinney recently became Director of the Center for Dispute Resolution in the Office of the Montana Governor.

Christopher H. Meyer – Partner, Givens Pursley & Huntley, Boise. Mr. Meyer is co-author of the *Handbook on Idaho Water Law: An Introduction for the Layperson and Guide for the Practitioner*. Formerly he was an attorney for the National Wildlife Federation.

Lori Potter – Director, Rocky Mountain Regional Office, Sierra Club Legal Defense Fund, Denver. She has been with the Sierra Club Legal Defense Fund since 1983.

Teresa A. Rice – Senior Staff Attorney, Natural Resources Law Center, University of Colorado School of Law, Boulder.

Leland E. Rolfs – Division of Water Resources, Kansas State Board of Agriculture, Topeka. Mr. Rolfs is Senior Legal Counsel.

Steven O. Sims – Colorado Office of the Attorney General, Denver. Mr. Sims represents the Colorado Water Conservation Board.

Steven J. Shupe – Shupe & Associates, Crestone, Colorado. Mr. Shupe is an attorney, consultant, and professional mediator.

Kenneth O. Slattery – Senior Policy Analyst for the Water Resources Program of the Washington State Department of Ecology, Olympia. He works closely with the Governor's office and the State Legislature on Washington water issues.

A. Dan Tarlock – Professor, Chicago-Kent Law School, Illinois Institute of Technology. Professor Tarlock is co-author of a leading casebook on water law and author of the treatise *Law of Water Rights and Resources*.

Recognizing the Value of In-Place Uses of Water in the West: An Introduction to the Laws, Strategies, and Issues

Steven J. Shupe

Lawrence J. MacDonnell

Free-flowing waters have been appreciated and revered in the western United States for as long as people have inhabited the region. Over the centuries, water in western rivers, lakes, and streams played major pragmatic roles in tribal fishing, transportation, and in maintaining important habitat for hunting. But the value of these waters went well beyond practical functions. When new settlers immigrated from the East and South, they found people to whom free-flowing waters were key to spiritual sustenance and religious practices.

Although many of the 19th century settlers undoubtedly appreciated the intangible value of free-flowing waters, this appreciation was dominated by the concurrent belief that diverting large quantities of water was essential to prospering in this arid land. Entire streams were taken from their channels when placer miners discovered gold deposits to be washed from the Sierra Nevada hillsides of California. Rivers were reduced to empty beds during the end of hot, dry summers on the Colorado high plains as pioneers irrigated their thirsty crops. Throughout the West, water was taken from once-thriving streams to satisfy the needs of crops, people, and new economies.

This belief in the need for water diversions was reflected in the laws that developed in local courts and legislatures. The first person to take water from a stream and apply it to "beneficial" use acquired a vested right to continued use of the water. Unlike the easterner who was constrained by riparian water law, a western water user generally could dry up the stream even if people who lived along its banks later wanted to use a bit of water for their homes and livestock. "First in time, first in right" rang through western courtrooms, and this doctrine of prior appropriation¹ accelerated the emptying of rivers and streams of the West: No water right was created unless the flow was diverted from its natural bed—and the law rewarded the quickest to act.

A doctrine of prior appropriation was consistent with a young nation's desire to settle the West and to encourage the exploitation of its vast resources base. It failed, however, to take into account the important functions that free-flowing waters serve in this arid region. As the decades passed and additional diversions occurred, people began fighting to maintain the values—both economic and intangible—that result from the in-place presence of water. State legislators considered various proposals to protect important rivers and streams. Tribal governments asserted their rights to streamflows needed to at least partly support fisheries and religious practices. Private groups and individuals sought to wrest from prior appropriators the waters needed to replenish

natural levels. And the federal government worked to protect instream flows on its western land holdings.

Despite frequent resistance by irrigators and other consumptive user groups, many of the attempts to protect free-flowing and in-place waters under western law have succeeded. Currently, a variety of laws, programs, and strategies are being applied to maintain and enhance in-place water resources in most areas of the West.

After describing the multiple benefits of undeveloped waters, this chapter looks at the ways in which in-place water protection is pursued in both the public and private sectors. The analysis begins with programs established by western state legislatures to promote instream resources. These include prohibitions on additional diversions, conditions imposed on new water use permits, the creation of instream flow rights, and transferring existing water entitlements to instream uses. Next, the efforts of Indian tribal governments are assessed, followed by ways in which the private sector is asserting instream flow protection. These analyses incorporate discussions of Indian reserved water rights, tribal water codes, the Public Trust Doctrine, and opportunities for intergroup cooperation. The chapter then describes federal strategies, including ways that both statutes and administrative procedures are able to promote instream resources. It concludes with a summary of the issues needing resolution in this emerging—and controversial—field of in-place water protection.

The Multiple Benefits of In-Place Water

The intangible value of free-flowing water in the West is significant to many people. The aesthetics of a waterfall, the peacefulness of a mountain brook, and the power of a torrent cutting through steep canyons would be sorely missed if they disappeared from the western landscape. Those whose lives are subtly but significantly enhanced by free-flowing waters have fought with some success to ensure that water remains in the natural beds of rivers and streams. It is doubtful, however, that aesthetic and spiritual values of instream flows alone would have compelled state legislators and administrators to initiate the protective statutes and actions of recent years. Instream flow enactments in the West have sprung from a recognition of the broad economic, as well as intangible, benefits that free-flowing water brings to a region.

Recreation

As agriculture, mining, and energy each took a downturn in the West during the 1980s, the reliability and economic importance of the recreation and tourism industries became increasingly evident to state policy makers. Since these industries are heavily dependent on water-related activities throughout the western states, the value of instream flows to the overall economy likewise grew in the minds of officials. For example, in a

1985 water policy speech by then-governor Richard Lamm of Colorado, the wisdom of perpetuating historic water uses at the expense of instream values was questioned. To emphasize this point, the governor stated that alfalfa, which consumes 27 percent of Colorado's water, injected only \$156 million/year into the state's economy, while recreation and tourism accounted for more than \$4 billion in annual statewide benefit.

Similar disparities in value occur in other regions of the West where fishing, commercial rafting, boating, and scenic waterways attract large numbers of people. Millions of dollars in revenue are lost when these activities are undermined by diminished streamflows, losses that debilitate local economies and disrupt businesses statewide. The loss of recreational opportunities also has a non-economic detrimental effect on those who find pleasure and a release of urban tensions in water-based activities.

Other Economic Benefits

Sectors of the western economy unrelated to recreation and tourism are also enhanced by free-flowing waters. In many areas of the West, revenues from water-borne commerce and hydropower are important to the economy. Similarly, commercial fishing is highly dependent on instream flows. And an environment enhanced by streams and lakes helps to attract new businesses looking to locate in areas where their employees can enjoy a high quality of life.

Instream flows save cities and industries millions of dollars in sewage and effluent treatment costs. Wastewater typically must be treated to ensure that the receiving waters do not exceed contaminant standards. A loss of instream flows to dilute the effluent can result in more stringent treatment requirements on the city or industry prior to discharging its effluent.

Role in the Environment

The benefits of in-place water to the natural environment are readily apparent in the West. Streamflows are needed to maintain endangered fish species and the aquatic environment as a whole. Free-flowing waters are also crucial to terrestrial species. Natural rivers, streams, and lakes create ribbons of habitat throughout the arid West that are essential to the life cycles of various species as well as to the general ecosystem. In-place water is essential to the existence of wetlands. The benefits generated by water in these areas translate into additional economic value where hunting, bird watching, and other land-based activities add to local revenues.

A less obvious, but very important function played in the natural environment by instream flows involves maintaining the physical capacity of streambeds and river channels to carry runoff. Channel capacities often depend on instream flows to transport

sediment that would otherwise clog the channel and create a number of problems. When natural flows are depleted, the resulting sediment build-up can cause flooding, erosion, meandering of the streambed, and a reduction in the overall capacity to carry runoff. In addition, in areas where reservoirs or major diversions prevent periodic high spring runoff that historically scoured the streambed, new vegetation growth can encroach on the channel and further reduce its capacity.

Instream Flow Strategies of Western States

In recognition of the many benefits of undeveloped waters, most western state legislatures have enacted statutes to protect in-place uses. The purposes of these laws typically incorporate the desire to protect fish life, although the enabling statutes also reflect the variety of values associated with instream waters. For instance, California officials are authorized to protect free-flowing water for recreation and the enhancement of wildlife resources.² In Idaho, instream flow protection includes the promotion of hydropower,³ while Colorado's statute broadly provides that instream flow rights be designed to "protect the natural environment to a reasonable degree."⁴ Alaska legislators specified that instream flow rights may be created to promote navigation, water quality, fish migration, wildlife habitat, float plane landing, and a number of other beneficial uses.⁵

As of 1993, only five of the 17 western states do not have legislatively created programs to promote instream flow protection. In two of these states, Arizona and Nevada, officials have administratively recognized the right to establish instream flow rights under certain conditions independent of expressed legislative authorization. Only New Mexico, North Dakota, and South Dakota have elected to neither administratively nor legislatively recognize instream flows as a protectable beneficial use of water under any circumstances.

The characteristics and effectiveness of in-place water protection strategies embodied in statutes differ greatly from state to state. The legislatively created programs fall into four basic categories described in the following sections.

Prohibitions Against New Diversions

The earliest form of in-place water flow protection to appear legislatively in the West involved prohibiting new diversions from specified streams. In the 1920s, Oregon placed a moratorium on new withdrawals from a number of streams with important salmon fisheries and scenic beauty. A typical statute read:

The unappropriated waters of Milton Creek and its tributaries are withdrawn from appropriation except for

domestic use through the year and storage during the period beginning November 1 and ending April 30 of each year.⁶

Some western states expanded this concept into a comprehensive program for protecting wild and scenic rivers from further appropriation. For example, in 1972, California declared that it was state policy "that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free-flowing state."⁷ The legislature provided that no dams could be built on certain rivers and no diversions approved that would adversely affect the natural character of the river. As in Oregon, however, an exception was carved out to allow for new domestic water diversions if needed.

Prohibiting new water withdrawals is an effective way to maintain existing instream flow levels with a minimum of administrative red tape. This strategy, however, can prove too restrictive for streams which, during certain seasons and wet years, carry sufficient water for new diversions without injuring the in-place values. Consequently, a number of states have developed more flexible alternatives for in-place water protection.

Water Use Permit Denial and Conditions

Every western state requires that an application be filed in order to obtain a new, protectable water right. These applications undergo various review procedures, and the states generally issue a permit for the new water right if it meets approval criteria. Also, the issuing agency generally may condition the permit with restrictions to prevent injury to other water users or to promote the public interest. A number of states have used this permit review process as an avenue for instream flow protection.

The explicit right to protect instream flows during the water use permitting process first appeared in the West in 1949. In that year, the Washington state legislature authorized the water administrative agency to deny a permit application if the new water use might result in lowering the streamflow below the level "necessary to adequately support food fish and game fish populations."⁸ Similarly, the Utah legislature provided that a permit could be denied if it "will unreasonably affect public recreation or the natural stream environment."⁹

Because outright denial of a new water diversion lacks the flexibility needed in some instances, a number of states allow the new permit to be issued subject to protective conditions for instream flows. Two types of instream flow conditions are frequently incorporated into water use permits. The first, applied extensively in California and to some extent in Alaska, provides for a specified level of the natural flow to be left in the stream by the new permittee. It is the duty of a new permittee to ensure that the minimum flow is allowed to bypass its diversion at all times.

The second type of permit condition creates a similar result, incorporating the requirement that when the natural stream level falls below a specified flow, the permittee must discontinue diverting water. This strategy is used effectively on critical salmon streams in central Washington where, following a basinwide study of instream flow needs, the water agency conditions all new permits to require curtailment of diversions during low flow periods.

Recognition of Instream Water Rights

Denying or conditioning permits on a case by case basis can result in inconsistencies and prove cumbersome to administer. Consequently, a number of state legislatures have authorized the creation of instream flow rights on the same legal footing as municipal diversions, irrigation withdrawals, and other consumptive water rights. These instream rights may be established under state law through appropriation or reservation or through the transfer of senior water rights.

Appropriation

The concept of appropriations to protect natural waters dates back to 1925 when the Idaho legislature designated certain lakes for the preservation of their scenic beauty and recreational values.¹⁰ The associated water right was issued to the governor to be held in trust for the people of Idaho. It was not until the 1970s, however, that the concept blossomed into comprehensive administrative programs to systematically establish instream flow rights on important rivers and streams.

In 1973, the Colorado legislature empowered the Colorado Water Conservation Board (CWCB) to establish water rights on behalf of the public to maintain instream flows and natural lake levels. Since that time, the CWCB has established new water rights on thousands of miles of Colorado's streams and rivers and on scores of natural lakes. A typical instream flow right designates a specified level of flow (e.g., 15 cubic feet per second from April through October; eight cfs during the winter) over a stream segment stretching up to several miles. The right does not ensure that such flow will actually be maintained, because senior water rights may already exist that deplete the stream below the specified level. But the instream flow rights do give the CWCB the authority to curtail junior diversions and to limit proposed transfers of senior rights that could injure the instream rights.

The appropriation of instream flow rights has proven an effective way to systematically establish protection of instream resources, and a number of state legislatures have recently set up programs similar to Colorado's program. These include Wyoming in 1986 (after a citizens' initiative drive got a similar law proposed on the ballot), Hawaii in 1986 (as part of a comprehensive state water code), and Oregon in

1987 (which changed administratively set instream flow levels into vested public water rights).

Reservations

State reservations of instream flows are similar in concept to appropriative instream rights. Pursuant to statute, waters are reserved for instream flow maintenance to prevent future users from diverting water below the set levels. The Montana and Alaska legislatures followed this approach in creating instream water rights.

In Montana, the water reservations system was established in the 1973 Water Use Act.¹¹ Under the statute, political subdivisions of the state (as well as federal agencies) may apply to the Montana Board of Natural Resources and Conservation to reserve water for instream purposes as well as for future consumptive needs. After an environmental impact statement is filed and a hearing on the application held, the Board may order the water reserved if it is in the public interest.

Alaska's reservation program allows any entity or person to apply for an instream flow right. The Department of Natural Resources will issue the right if the applicant demonstrates that the reservation will not affect prior appropriators, that a need exists for the instream reservation, that unappropriated water is available, and that the proposed reservation is in the public interest. The resulting instream flow right is vulnerable, however, to future consumptive uses—the legislature provided that the state shall review the reservation every ten years to determine if it is still needed and consistent with the public interest.¹²

Transferring Existing Water Entitlements

In many basins of the arid West, waters have been fully appropriated by consumptive users. Under these circumstances, junior instream water rights are of little value in protecting instream resources. An effective alternative for enhancing natural flows in these areas is for states to acquire and dedicate existing water rights to the stream.

Legislation in Utah, Wyoming, and Colorado has explicitly sanctioned this mode of instream flow enhancement. In Utah, the State Division of Wildlife may file for a change of use to instream flow purposes from an existing water right given to the division or purchased by funds from the legislature.¹³ In Colorado, the State Water Conservation Board may acquire water rights for instream needs through "grant, purchase, bequest, devise, lease, exchange, or other contractual agreement."¹⁴ Similarly, Wyoming may acquire water rights through voluntary transfer or gift for instream flow uses.¹⁵

Legislation in Oregon during the 1987 session provided an innovative twist to the transfer of water rights to instream purposes. The new law allows irrigators who conserve water to sell or use the historically unavailable losses that they save. Such use, however, is predicated on the condition that roughly 25 percent of the saved water shall be dedicated to the state for maintaining streamflows if needed for the public interest.¹⁶

States may also promote the temporary transfer of water to enhance instream flows during critical periods. In 1989, Montana enacted a statute authorizing the Department of Fish, Wildlife and Parks to lease existing water rights and keep appropriated water instream to protect a fishery.¹⁷ California used its state water bank to transfer water to meet environmental needs during the 1991-92 drought years.¹⁸

Efforts of Indian Tribes

Like state government, Indian tribes have the authority to manage, regulate, and control waters in their jurisdictions. Waters flowing through or underlying an Indian reservation generally fall under tribal jurisdiction regardless of whether the water is used by the tribe, by individual tribal members, or by non-Indians residing within the reservation boundaries. The courts have recognized the rights of tribes to issue water use permits pursuant to tribal water codes and, in 1986 and 1987, Congress authorized tribal governments to assume primacy on Indian reservations over major provisions of the Clean Water Act and Safe Drinking Water Act.¹⁹

A number of Indian tribes have enacted comprehensive water codes to promote the management, use, and protection of reservation water resources. These codes typically reflect, among other policies, the desire to maintain the natural environment supported by free-flowing waters. For example, the Navajo Nation Water Code (which regulates water use on the Navajo reservation in northeastern Arizona, northwestern New Mexico, and southeastern Utah) directs the tribal Division of Water Resources to administer water to ensure that adequate levels remain in streams, rivers, ponds, and lakes. More specifically, in approving new water use permits, the director of the Division shall incorporate conditions designed to maintain "pools and stream flows for fish, wildlife, recreation, aesthetic and Navajo religious values."²⁰ The Tribes of the Fort Peck Indian Reservation have implemented a similar permit condition strategy in their water code, calling for "protection for fish, wildlife, recreational and aesthetic values."²¹

Tribal governments have opportunities similar to those available to states to implement the various instream flow strategies listed in the previous section. They also carry an important additional tool with which to protect instream flows, based on their history as independent sovereign nations that made treaties and agreements with the United States. In 1908, the U.S. Supreme Court recognized that an Indian tribe has reserved water rights that supersede non-Indian water uses established under state law after creation of the reservation.²² Subsequent court decisions have established that

these Indian water rights include instream flows needed to support the fishing and hunting rights that tribes retained pursuant to treaty.

The strength of this instream flow protection mechanism was recently demonstrated in a case involving the Tribes of the Flathead Reservation in northwestern Montana who argued with local irrigators over water distributed by the federal Bureau of Indian Affairs (BIA). Initially, the tribes filed suit claiming that the BIA had historically delivered too much water to non-Indian irrigators, thereby reducing instream flows and destroying important fish populations. In 1986, the BIA altered its distribution criteria, protecting instream waters in order to support tribal fishing rights guaranteed by the 1859 Treaty of Hells Gate. The irrigation districts in turn sought an injunction, claiming that the reduced diversions injured their members.

The federal district court judge ruled in favor of the non-Indian irrigators, stating that the BIA must be guided by the principle of "just and equal distribution of all waters of the Reservation." The Ninth Circuit Court of Appeals overturned this finding in November 1987, referencing its finding in a previous case that language similar to that in the Treaty of Hells Gate,

accompanied by a history indicating that one of the essential purposes in creating the reservation was to preserve Indians' right to fish, created a reserved [instream] water right in the Tribe.²³

The court then invoked the concept of first in time, first in right, concluding:

Because any aboriginal fishing rights secured by treaty are prior to all irrigation rights, neither the BIA nor the Tribes are subject to a duty of fair and equal distribution of reserved fishery waters.²⁴

Consequently, the BIA must continue to administer the water distribution network to ensure that sufficient flows remain in the natural stream to support tribal fishing activities.

Opportunities in the Private Sector

Tribal instream flow rights are frequently viewed with caution by water user groups that want maximum flexibility under state law to use and manage local waters. Similarly, instream flow rights held by private individuals or organizations are often perceived as constraints to future water development. As a consequence of this latter fact, most western state legislatures have authorized only governmental agencies to hold in-place water rights under programs that balance competing instream and consumptive

uses. Utah and Wyoming, in their 1986 instream flow legislation, and Colorado, in its 1987 amendments to its enabling statute, all specified a single state agency to hold instream water rights established under state law.

This does not mean, however, that private interests are unable to participate in in-place water protection. For example, The Nature Conservancy has either established or purchased and transferred water rights to in-place uses in several states.²⁵ Also, a number of other strategies have been asserted by instream flow advocates to enhance free-flowing waters in the West. As explained below, these include private appropriation of instream water rights, coordination of water uses and reservoir releases, and assertion of the Public Trust Doctrine.

Private Instream Appropriation

Despite the fact that several western legislatures have explicitly prohibited the creation of in-place water rights held by the private sector, individuals and organizations in some other western states are asserting this appropriation strategy. Most notably, during the early 1980s an environmental advocacy group applied for two instream flow rights on an ecologically important river in southern Arizona. The state Department of Water Resources approved the applications after determining that fish and wildlife protection is a beneficial water use under Arizona law, a physical diversion is not required for appropriating a new water right, and the applicant had followed the necessary procedures for establishing a valid right. Approval of these two private applications encouraged numerous new instream flow filings in Arizona, submitted by a variety of applicants.

Only in Alaska has a western state legislature explicitly empowered the private sector to participate in an instream flow program as a rights holder. The Alaska Water Use Act allows any person to reserve a quantity of water for stream or lake level maintenance for a number of purposes. These include protection of fish and wildlife habitat, migration and propagation; recreation and park purposes; navigation and transportation; and sanitary and water quality purposes.²⁶ To date, however, no private instream flow rights have been reserved in Alaska. Although a small number of applications have been received by the state, they were found to be procedurally deficient.

Coordinating Water Use and Releases

Because most states prevent the private sector from appropriating instream rights, advocates of free-flowing waters have turned to alternatives to promote their goals. One option is to purchase and dedicate water rights to the state for instream flow protection, but this is often costly. In the Colorado Rockies above Denver, a ten cfs senior irrigation

might sell for more than \$1 million under current market conditions. Although water rights in other western states generally sell for less than in Colorado, purchases for instream flow maintenance are nevertheless prohibitively expensive in many instances.

In lieu of purchasing water rights, some advocates have negotiated to induce reservoir owners to alter their operations in order to enhance instream flows during critical times. This strategy is particularly applicable in the West since one-quarter of all the farmland in the region is served by federal Bureau of Reclamation reservoirs. In addition, scores of private reservoirs are scattered throughout the region, providing opportunities for innovative operating criteria that promote instream resources.

Examples of this strategy have occurred on the Rio Chama in New Mexico, an area devoid of state-recognized instream flow rights. On the Rio Chama, a river heavily fished and rafted, recreational users negotiated with owners of water in an upstream reservoir to alter their operating criteria to maximize releases of stored water on summer weekends. This arrangement did not cost the water owners anything since they were able to recapture the water for subsequent beneficial use in a downstream reservoir—and the commercial rafting industry and recreational users received enhanced opportunities on weekends.

High in the headwaters of the Rio Chama, another arrangement was entered into between fishing interests and the Bureau of Reclamation to promote instream flows. In Heron Reservoir, the Bureau stores water imported from the Colorado River basin for the benefit of Albuquerque and other Rio Grande basin users. Pursuant to contracts with the Bureau, the users must take delivery of their water by December 31 or lose it. Since many contractors did not request deliveries until close to the deadline, December found the Rio Chama with very high flows followed by extremely low flows during critical winter months. This release schedule proved detrimental to the local trout population, and talks with fishing interests commenced to persuade the Bureau to extend the delivery deadline into April. An agreement was reached which results in no harm to the Bureau, provides more breathing room to water contractors, and enhances winter flows in the Rio Chama.

Throughout areas of the West, alteration of reservoir operations may prove useful to instream resources. Also, opportunities for enhancement may exist even in those locales without reservoir storage. For example, instream flows could be enhanced simply by moving the place of use or point of diversion of a senior irrigation right further downstream. Also, where needed, arrangements could be made with irrigators to defer diversions during critical dry spells to enable the survival of local fish populations. Paying an irrigator for crop damage during infrequent drought events would be far less expensive than purchasing the permanent water right.

Where none of these cooperative strategies suffice to adequately protect instream resources, free-flowing water advocates have been assessing and in some cases asserting their ultimate tool—the Public Trust Doctrine.

Asserting the Public Trust

The Public Trust Doctrine is perceived by many westerners as the vehicle through which the public interest in fully appropriated streams can be reestablished without costly expenditures. Others view it as an underhanded means of sidestepping constitutional protections and taking the vested property rights of farmers and other senior water users. Each attitude reflects the understanding that the doctrine indeed wields the potential for greatly enhancing instream flows in the western states.

The roots of the Public Trust Doctrine reach into English common law where the sovereign could not prevent the people from using tidelands and coastal waters for fishing and navigation needed for the public good. This concept was carried into American jurisprudence, and constrained state governments from turning over coastal lands to private enterprises to the detriment of the public needs in these areas. Then in 1983, the California Supreme Court applied this public trust concept to inland waters, setting off both considerable hope and consternation in various westerners who wondered if the doctrine would be applied in their states as well.

The California Supreme Court in its 1983 decision ruled that Los Angeles' diversions from tributaries of Mono Lake were subordinate to the public values supported by the lake.²⁷ To the extent that the diversions were lowering the lake level and destroying important public values (e.g. bird habitat, scenic beauty), the diversions had to be curtailed. Under the Public Trust Doctrine, California as the sovereign had no right to issue permits for water diversions that undermine the public values entrusted to the state on behalf of its citizens. The court remanded the case for a determination of what level of flow was needed in the tributaries to ensure maintenance of the public trust values in Mono Lake.

The Mono Lake decision threw open the door to the reallocation of water resources from historic uses to instream flows in the West. In most western states, however, the courts have not ruled on whether the Public Trust Doctrine applies to the protection of local inland waters. Only in Idaho has the state supreme court followed the lead of California in explicitly recognizing the strength of the doctrine.²⁸

Protections Under Federal Law

The preceding sections have demonstrated the various strategies invoked by states, Indian tribes, and private interests to promote free-flowing waters. A description of in-

place water protection is incomplete, however, without a look at the options available to the federal government. Not only may federal agencies apply for instream rights under the laws of several western states, but independent avenues exist under federal law for such agencies to establish effective instream resource protections. Opportunities spring from federal permitting programs, environmental statutes enacted by Congress, and the reserved water rights doctrine.

Licensing and Permit Conditions

Federal permits or licenses are usually required prior to the development of new water diversion and storage projects. If the project involves water developed on or from the National Forests, application must be made to the Forest Service for a permit to construct diversion and storage facilities. In issuing a permit, the Forest Service considers the need for streamflows to maintain fisheries, recreational opportunities, and other uses important to forest users. If hydropower is part of a water project, the Federal Energy Regulatory Commission (FERC) becomes involved irrespective of whether the project is on federal lands. FERC, in issuing hydropower licenses, generally includes conditions that require adequate bypass flows for instream resource protection. The U.S. Army Corps of Engineers undertakes a similar, although generally less stringent, review prior to issuing its permits for works such as dams placed in navigable waterways.

Secondary Effects of Environmental Statutes

In issuing permits or taking other action, federal agencies are guided by Congressional enactments to protect the environment. Key among these is the Endangered Species Act which has no explicit provisions for instream water rights but by implication can have significant effects on water diversions and use in the West. Because the Act prevents federal agencies from adversely affecting endangered species and their habitat, federal actions (including the issuance of permits) must not cause the diminishment of instream flows that support endangered species.

The way in which the Endangered Species Act can promote maintenance of instream flows is demonstrated in western Colorado. Endangered fish species, including the humpback chub, squaw fish and bonytail chub, live in the Colorado River. The U.S. Fish and Wildlife Service has worked on developing plans for the preservation and recovery of the species in the Upper Colorado River basin, including purchasing existing water rights to enhance streamflow levels. Any new water diversions in this region will have to conform to instream flow mitigation measures mandated by the final recovery plan.

The protections potentially afforded instream flows by the Endangered Species Act have also been demonstrated in the South Platte River basin of eastern Colorado.

Irrigators who wanted to build a reservoir on a tributary of the South Platte were denied their initial request for a permit from the Corps of Engineers due to potential effects on endangered species habitat. The reservoir itself did not affect any on-site endangered species, but the capture of spring runoff that would otherwise flow downriver to the mainstem of the Platte River was deemed a potential threat to whooping crane habitat in Nebraska. High spring runoff on the Platte helps maintain the habitat needed to keep whooping cranes safe from predators during their journey through Nebraska. Consequently, issuance of the Corps permit is contingent upon the irrigators demonstrating that the effects of the reservoir project on the whooping crane will be insignificant or mitigated.

Although the Endangered Species Act is the most far-reaching example, streamflow protection is potentially required by other federal environmental statutes as well. For instance, instream flows may need to be maintained in order to dilute non-point source pollution or other contaminants controlled under the Clean Water Act. The Salinity Control Act of 1974 also creates pressures to maintain streamflows, primarily in the headwaters of the Colorado River, that dilute high salinity levels downstream.

Reserved Water Rights

A final—and potent—method under federal law for streamflow protection involves the establishment of senior instream rights on federal lands. As mentioned above, the U.S. Supreme Court in 1908 stated that water rights were reserved for tribal use at the time that Indian reservations were created. In 1963, the Court applied this concept of reserved water rights to non-Indian federal reservations carved out of the public domain (national forests, military bases, national monuments, etc.).²⁹

Consequently, national parks, national wildlife refuges, and other federal lands needing natural water bodies to achieve their purposes carry instream water rights. Consumptive water uses which began diverting after the creation of the federal reservation are legally subordinate to the associated federal instream flow requirements.

In 1976, the Supreme Court demonstrated the strength of this federal reserved rights doctrine in Cappaert v. United States.³⁰ This case involved the protection of a natural pool of water in Devils Hole National Monument (near the Nevada/California border) which supports the Monument's primary attraction—the desert pupfish. In its ruling, the Court restricted groundwater pumping by nearby irrigators that was lowering the pool to the detriment of the pupfish. The Court ruled that the Monument's reserved water right was senior to the injurious groundwater pumping because the irrigation began after establishment of the Monument.

While the Cappaert controversy was brewing, the United States also sought to establish reserved instream water rights on its national forest lands. The Forest Service

claimed that instream flows were needed to support the purposes for which Congress had established the national forest system. Reserved instream water rights were therefore created concurrently with the designation of federal lands as national forest, according to the Forest Service's attorneys. In 1978 the Supreme Court rejected this argument, stating that Congress's original intent in establishing the national forest system in 1897 did not include the protection of instream resources.³¹ Instead, the primary purposes of the national forests were to promote timber supplies and to protect forested watersheds to prevent flooding and facilitate the delivery of reliable water supplies. The original purposes, the Court concluded, did not include recreational or environmental amenities.

In response to this defeat, the Forest Service undertook to establish instream flow rights based on the Supreme Court's finding that a primary purpose of the national forests was "securing favorable conditions of flow" to prevent flooding and to deliver reliable water supplies to downstream users.³² The Forest Service's new instream flow claims are based on the fact that instream flows help transport sediment which could otherwise clog stream channels to create erosion and flooding problems. Without viable stream channels maintained by instream flows, the national forests could not secure favorable conditions of flow for downstream users as mandated by Congress. This argument is currently being asserted by the Forest Service in several western states, with ultimate resolution of the issue uncertain.³³ Another unresolved reserved instream water rights issue involves federal wilderness areas.

The Task Ahead: Broadening the Vision

While the origins of instream flow law trace back to the early part of this century the modern era of recognizing and protecting in-place values of water is effectively only a generation old. Much has been accomplished in this roughly 20-year period. As the western states move into second-generation programs, policies, and laws much remains to be done. We identify here some issues that should be given attention in this on-going process. Most of these issues go to more fully legitimizing the place of environmental uses of water within the legal framework governing the allocation and use of western water resources.

There is a growing recognition that water serves a large number of valuable functions as it moves within the hydrologic cycle. In a very real sense water that is removed from the hydrologic cycle is simply being reallocated to some other function believed by the one removing the water to be more valuable or important than the functions provided by in-place uses of water. Water law can be understood as the rules by which reallocation of water out of the hydrologic cycle is permitted. Unfortunately most such reallocation decisions were made with little or no regard for the in-place benefits of water. Particularly in the western United States the legacy of this disregard is increasingly apparent.

Under prior appropriation rules legal protection extended only to water uses involving physical capture of water. Beneficial use thus effectively becomes equated with out-of-stream consumptive use.³⁴ Under this approach water is regarded as just another extractive resource, effectively unrelated to the river or wetland or aquifer of which it is a part.

State instream flow programs are often held out as evidence of the adaptability of water law to new needs. Indeed these laws and programs do represent adaptation of a sort. But, taken on the whole, it is a grudging, tentative adaptation—one filled with limitations and restrictions beyond those associated with other publicly-sanctioned water uses. The result is, as Christopher Meyer points out in the following chapter, that the western states generally give in-place uses of water—where they are protected at all—distinctly second class treatment.

The first generation of laws, summarized in Part II of this book, reflects a general appreciation that some minimum level of flow in streams is desirable where possible, particularly if there is a viable fishery (preferably a sport fishery) in the stream.³⁵ A major challenge in the development of the second generation of laws and programs will be to move beyond this narrow view of the value of in-place water and to invite consideration of all valuable in-place uses that warrant legal protection.

Acknowledging the value of water in-place is not to deny its value for out-of-stream uses. Substantial continuing out-of-stream uses of water are essential to human inhabitation of the West. Out-of-stream uses require the manipulation of water resources, a manipulation that inevitably alters the hydrologic cycle. In recent years, however, an appreciation has developed that such uses of water must also be ecologically sustainable. Destruction or serious impairment of the ecological integrity of water systems for any purpose impose costs that are increasingly viewed as unacceptable. The primary concern is not the existence of out-of-stream water uses but the manner in which these uses are made.

We believe that maintenance, protection, and restoration of the ecological integrity of the water systems of the West present perhaps the major challenge for water policy in the coming years. In its call for protection of the physical, chemical, and biological integrity of the nation's waters the Clean Water Act identified this challenge more than 20 years ago. Since then, scientists have been scrambling to give policy-relevant content to this concept. In the introductory chapter to Ecological Integrity and the Management of Ecosystems Henry Regier explains:

A living system exhibits integrity if, when subjected to disturbance, it sustains an ongoing, self-correcting capability to recover toward an end-state that is normal and "good" for that system. End-states other than the pristine or naturally whole may be taken to be "normal and good."³⁶

In a later chapter James Kair notes that "[e]cological health is the condition when a system's inherent potential is realized, its condition is stable, its capacity for self repair, when perturbed, is preserved, and minimal external support for management is needed."³⁷ Much work remains to be done on defining the parameters by which ecological health of a watershed can be objectively measured and evaluated. But scientists seem to be suggesting that it is the functionality of an ecosystem that defines its integrity, not some notion of a pristine, unaltered state.

Natural systems are altered for valid social reasons. It is not necessarily the nature or degree of alteration that is important but whether the alteration impairs or destroys important ecosystem functions. Conditions threatening the continued existence of plant and animal species are regarded as unacceptable, and general ecosystem health is increasingly regarded as the goal. Water laws, including instream flow laws, do not yet embrace this goal.

A first step would be to eliminate the narrow purposes that presently confine most western state instream flow laws.³⁸ There is no sound reason for statutorily limiting the reach of these programs, as is often now the case, to the minimum water required by fish. As a general matter the water allocation system should be available to recognize and protect any valuable use of water. Thus, for example, water needed to support valuable wetlands ought to be legally protectable under state water allocation systems; at present, such protection is either unavailable or is subject to meaningless requirements.³⁹

A second, related step would be to eliminate statutory restrictions regarding who may seek and hold an in-place water allocation. Most western states allow only certain specified state agencies to officially request protection of in-place water; usually only one state agency can formally apply for and hold the legal protection for the water. Thus, in Colorado only the Colorado Water Conservation Board can file for an instream appropriation in water court, though the Division of Wildlife and the Division of Parks and Outdoor Recreation are to identify instream needs and the Departments of Agriculture and the Interior are invited to offer "recommendations" to the Board.⁴⁰ Cities, nongovernmental organizations, businesses, and individuals are precluded from seeking and obtaining an in-place right through the state program.⁴¹

A third step would eliminate existing statutory restrictions found in some states to a "minimum" permissible quantity of water available for in-place uses. The beneficial use requirement of prior appropriation law already makes clear that water uses are limited to only that amount of water necessary to accomplish the intended use. Explicit statutory references to a minimum amount of water only in relation to in-place uses suggest again a second-class status for these uses. Language in the Nebraska statute limiting instream flow appropriations to the minimum necessary to maintain the use prompted a challenge to a proposed application as excessive since fish could survive on lower flows than those sought.⁴² The Nebraska Supreme Court noted that the purpose of the proposed instream flow appropriation was to protect a high quality trout fishery and upheld the

administrative determination that the claimed amount was in fact the minimum necessary for this purpose. In-place uses are no different than any other proposed water allocation: the purpose must be clearly identified as must be the water needed to accomplish the purpose.

Implicit in these and other statutory restrictions is a legislative distrust of the ability of the water allocation decision-making process in the state to identify legitimate claims for in-place water needs and to reject claims that do not represent valuable and desirable water uses. Extreme examples are Idaho and Kansas where the legislature itself must pass on all instream flow appropriations. In retrospect it may be that such restrictions will be understood as a reflection of the limited understanding of the value and function of in-place uses of water at the time the laws initially were established. Opponents of instream flows warned that environmental interests would lay claim to all unappropriated water if allowed to make such claims—neglecting to mention that such claims would, of course, have to be approved by the state water allocation agency or entity. Proponents of the importance of streamflows for fisheries developed the first scientifically-based methodologies for quantifying flow requirements, thus making such claims objectively reviewable in existing allocation processes.⁴⁹ It is perhaps unsurprising then that some states initially restricted instream flow protection to state agencies and only for fish.

If ever there existed a rational basis for limited acceptance of in-place uses of water that basis no longer exists. Once the water needs of fish are recognized as legitimate it is a relatively short step to recognizing the water-related needs of wildlife, riparian vegetation, wetlands, water quality and so on. Once claims made by state agencies for in-place water uses are scrutinized and accepted by the state's water allocation decision maker it is a relatively short step to acknowledging the legitimate interests of federal agencies in meeting their public land management responsibilities, of cities wanting to protect and enhance greenways within their boundaries, of conservation and hunting and fishing organizations wanting to protect valuable fish and wildlife habitat, and so on. An important task of the next generation of in-place water laws is to eliminate artificial and meaningless obstacles and move instead to a process under which all beneficial uses of water are permitted to compete freely for recognition and protection within the legal system. The real challenge is not whether to do this but how to make it work.

On the horizon are the promising developments involving watershed-based planning, decision, and management processes. A watershed approach offers a framework within which water can be reintegrated with the system of which it is a part. It provides an opportunity to look comprehensively at the existing manner in which the water resources of a definable area are providing benefits, to evaluate satisfaction with this present mix of benefits, and to consider alternative mixes and how those alternatives might be accomplished.

Linkages need to be developed between these watershed initiatives and state and federal actions ultimately determining the use and protection of water resources. Experience with river basin planning and management in the 1960s and 1970s suggests that a centralized, top-down approach is not likely to work. More attractive would be a process where participation results from incentives that are available. Perhaps foremost among these incentives would be the opportunity to have a meaningful effect on the outcome. Related would be the opportunity to accomplish objectives not adequately provided for under existing approaches.

Notes

1. See, e.g., *Coffin v. Left Hand Ditch Co.*, 6 Colo. 443 (1882); *Irwin v. Phillips*, 5 Cal. 140 (1855).
2. CAL. WATER CODE § 1243 (West Supp. 1993).
3. Idaho Const., art. XV, § 3.
4. COLO. REV. STAT. § 37-92-102(3) (1990).
5. ALASKA STAT. § 46.15.145(a) (1991).
6. OR. REV. STAT. § 538.300 (1988).
7. CAL. PUB. RES. CODE § 5093.55 (West 1984 and Supp. 1988).
8. WASH. REV. CODE tit. 75 (1962 and Supp. 1993).
9. UTAH CODE ANN. § 73-3-8 (1989).
10. IDAHO CODE § 67-4301. See also IDAHO CODE § 67-4304 (1989).
11. MONT. CODE ANN. § 85-2-316 (1993).
12. ALASKA STAT. § 46.15.145(f) (1991).
13. UTAH CODE ANN. § 73-3-3 (1989).
14. COLO. REV. STAT. § 37-92-102(3) (1990).
15. WYO. STAT. § 41-3-1007 (Supp. 1993).
16. S.24, 64th Leg., Reg. Sess., 1987 Or. Laws 411 (codified at OR. REV. STAT. §§ 537.455 to -.500 and 540.510 (1988)).
17. MONT. CODE ANN. §§ 85-2-436 & 437 (1993).
18. Brian Gray, "Water Rights, Laws and Institutions," in Raymond Coppock and Marcia Kreith, eds., *California Water Transfers: Gainers and Losers in Two Northern Counties*, Proceedings of a conference sponsored by Water Resources Center, University of California, Davis (1993).
19. See Shupe, *Water in Indian Country: From Paper Rights to a Managed Resource*, 57 U. COLO. L. REV. 561 (1986).
20. NAVAJO TRIB. WATER CODE § 703(m) (1985).
21. FORT PECK TRIB. WATER CODE § 603(i) (1986).
22. *Winters v. United States*, 207 U.S. 564 (1908).

23. Joint Board of Control of the Flathead, Mission and Jocko Irrigation Districts v. United States, 832 F.2d 1127, 1131 (9th Cir. 1987).
24. *Id.* at 1132.
25. Robert Wiggington, "Update on Market Strategies for the Protection of Western Instream Flows and Wetlands," Natural Resources Law Center Occasional Paper (1990).
26. ALASKA STAT. § 46.15.145(a) (1991).
27. National Audubon Society v. Superior Court, 658 P.2d 709, *cert. denied*, 464 U.S. 977 (1983).
28. In the Matter of Application for Permit to Appropriate Water No. 36-7200, Memorandum Decision and Order of the Director, Idaho Department of Water Resources, July 22, 1987.
29. Arizona v. California, 373 U.S. 546, 601 (1963).
30. 426 U.S. 128 (1976).
31. United States v. New Mexico, 438 U.S. 696 (1978).
32. *See* 16 U.S.C. § 475 (1988).
33. In 1993, a Colorado Water Court denied the need for a reserved water right for channel maintenance in the Arapahoe and Roosevelt National Forests.
34. For a discussion of the policies implicit in prior appropriation *see* SARAH BATES ET AL., SEARCHING OUT THE HEADWATERS (Island Press, 1993).
35. In retrospect it is perhaps unfortunate that the title to this book is INSTREAM FLOW PROTECTION IN THE WEST because it tends to reinforce the overly narrow focus on "streams" instead of water and watersheds and on "flows" instead of water-dependent functions and values. Of course, streamflows are a critical dimension of healthy, functioning surface water systems but they are just one part of the much larger hydrologic cycle.
36. Henry Reiger, *The Notion of Natural and Cultural Integrity in* ECOLOGICAL INTEGRITY AND THE MANAGEMENT OF ECOSYSTEMS (Stephen Woodley, James Kay & George Francis, eds., St. Lucie Press, 1993) at 31 (hereafter ECOLOGICAL INTEGRITY).
37. James R. Kair, *Measuring Biological Integrity: Lessons from Streams*, in ECOLOGICAL INTEGRITY at 85-86.
38. The in-place water values recognized by the western states are summarized in Table 1 in MacDonnell & Rice, "The Federal Role in Streamflow Protection," chapter 5 in this book.
39. MacDonnell, *Water Rights for Wetlands Protection*, 2 RIVERS 277 (1991).
40. COLO. REV. STAT. § 37-92-102 (3) (1990).

41. For examples of efforts being made in Colorado to get around the restrictive provisions of this state's instream flow laws, *see* Christopher Meyer, "Integrating New Uses and New Players Into the Prior Appropriation System," chapter 2 in this book, text accompanying notes 28-42.
42. In re Application A-16642, 463 N.W. 2d 591 (Neb. 1990).
43. The early leader in this work was the U.S. Fish and Wildlife's National Ecology Research Center in Fort Collins, Colorado. For a discussion of quantification methodologies *see* Berton Lamb, "Quantifying Instream Flows: Matching Policy and Technology," chapter 7 in this book.

Instream Flows: Integrating New Uses and New Players Into the Prior Appropriation System¹

Christopher H. Meyer

The Traditional Diversion Requirement

Traditionally, western states required a "diversion" to beneficial use before a water right could be recognized. Under a literal reading of this requirement, a legally enforceable right to the use of water could only be obtained for water removed from a natural watercourse. A person seeking to protect natural (or, for that matter, artificial) streamflows from subsequent appropriation and diversion simply could not do so.

In a classic early case, a federal court sitting in Colorado denied a water right to a resort town constructed around a cascading waterfall whose spray created an oasis of lush vegetation in the desert mountains near Colorado Springs.² The waterfall, the court suggested, was an "inefficient" means of irrigation.³ The decision would have authorized a hydropower company to destroy the central attraction of a thriving town by diverting the falls. (As it turns out, the project never was built.⁴) In today's thinking, the decision may seem strangely reasoned. While it is true that using a waterfall may be an inefficient means of irrigating flora, it is certainly an efficient way of supporting a resort community—a point seemingly lost on the court.

Given a compelling fact setting like that of *Cascade Town*, the diversion requirement seems frustratingly arbitrary—a sort of Catch-22 for instream users. In fact, however, the diversion requirement had its basis in perfectly sensible public policy of the day. It protected against three types of abuse: First, it prevented speculators from obtaining water rights simply by asserting a claim to unappropriated water—and then selling the water to legitimate users arriving later. Second, it served an important notice function. In days prior to sophisticated record keeping and administration, about the only way a user could determine the state of water rights was to take a look at the stream. If people could hold rights for water left flowing in the stream, subsequent users could be misled into thinking that more water was available for appropriation than actually was the case. Third, the diversion requirement eliminated wasteful uses, for instance by users who sought to command the entire flow of a stream simply to run a waterwheel or irrigate adjacent lands by natural overflow.⁵

In addition, the diversion requirement simply reflected the pragmatic view of the early settlers that eking out a living was more important than protecting the natural environment. Indeed, this clash of values has fueled decades of hostility between traditional consumptive water users and a growing cadre of river activists. Some water

users have charged that environmentalists simply fail to appreciate the economic benefits we all enjoy as a result of the sweat and determination of those who reclaimed the West. Some environmentalists, on the other hand, have charged that the prior appropriation doctrine callously ignores natural values. Others, thankfully, have come to recognize that the prior appropriation doctrine is well suited to accommodate both environmental and developmental interests.

Today most western states have determined that these policy goals can be achieved without sacrificing instream values.⁶ Recognizing that instream uses serve legitimate economic as well as environmental goals, sixteen of the nineteen western states have taken steps to accommodate them within the prior appropriation doctrine. Of these, however, not one puts instream flow water rights on a par with consumptive uses.

Typically, states which recognize instream flow rights have adopted special statutory restrictions. Many states allow only a single state agency—not private parties, municipalities, or others—to hold instream flow rights. Additional procedures, such as special tests or legislative approval, often are required to obtain instream rights. A variety of conditions may be attached. They may be sharply restricted in rate of flow (e.g., to the "minimum" needed to sustain fish life). Their duration may be limited, or they may be subject to subsequent re-evaluation. Some states limit their availability to specific geographic areas. Their transfer may be restricted. Even their priority date may be modified. In short, while most western states now have recognized instream water rights, they have been accorded by the legislatures a "second class" status.

The Mechanics of Instream Flows

Instream flow rights are no different in concept from ordinary water rights. They must be approved by the state just like any other right. They are then placed on the state's books with a fixed priority date, a specified flow rate, time and place of use, and are administered like any other water right. Thus, if the instream flow right is "in priority," it can "call out" junior users upstream and force them to bypass water to support the instream flow. (To "call out" means to demand that upstream diverters forgo their uses so that water remains available for the downstream senior use). Of course, this does not guarantee that enough water will be in priority to meet the instream flow. In this sense, the often used term "minimum flow" is misleading. Flows may well drop below the minimum. Whether the minimum flow will be met is a function of mother nature and senior rights.

The only difference in administration is that a consumptive water right has one or more discrete points of diversion, while an instream flow right applies throughout a specified reach of the stream (from one point to another). How one determines the endpoints of an instream flow is a matter of judgment. Theoretically an instream flow could reach all the way from the headwaters to the state line—assuming the right was

large enough to be measured that far.⁷ Ordinarily, however, instream flow are protected within some discrete reach, e.g., the location of an important fishery.⁸

If an existing consumptive use is transferred to an instream use, the protected reach might be anywhere downstream of the point of diversion. Arguably it could include the reach upstream of the point of diversion, too. The previous water right served as a sort of *de facto* instream right down to the point of diversion, in that it could call flows to that point. The new owner should be able to claim the same right by stepping into the shoes of the previous owner.

Despite its name, an "instream" right does not have to be in a moving stream. It may also be obtained for a lake (or other standing body of water) or even a wetland. In such a case, the right would be for whatever quantity of water is needed to maintain a particular lake level or other condition.

There are many misconceptions about how instream flow water rights integrate with other water rights. Some people believe that a gallon of water committed to instream use is a gallon of water unavailable for other uses. Other people believe that because instream flow rights consume no water, they have no adverse effect on other users. While either conclusion might be right in a particular fact situation, neither statement is accurate across the board. The truth generally lies somewhere in between.

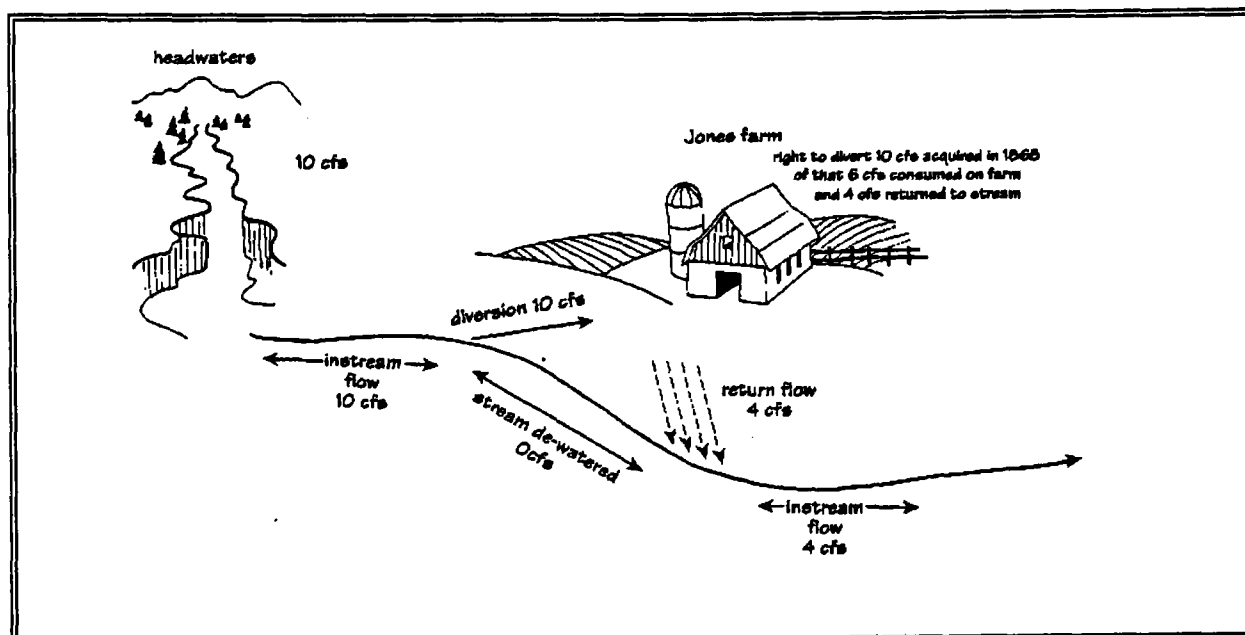


Figure 1 A junior instream appropriation cannot deprive Farmer Jones of his senior water right, but it could protect the *status quo* above and below his diversion.

Consider the somewhat oversimplified example illustrated in Figure 1 below. Suppose that the streamflows at 10 cubic feet per second ("cfs"). And suppose that

Farmer Jones has a senior water right to divert the entire 10 cfs of water from the stream, but that 4 cfs of that diversion finds its way back to the stream as return flow below the Jones Farm. Because instream rights must take their place in the priority system along with all other water rights, instream rights may only be obtained for what is left flowing in the stream. As a matter of law, Farmer Jones *cannot* be injured by a newly appropriated instream flow (or any other new appropriation, for that matter.) Thus, instream flow rights could be obtained today for up to 10 cfs for the reach between the headwaters and the point of diversion, for up to 4 cfs downstream of the Jones Farm return flow, and for none in between.⁹ (An instream right would not necessarily be sought or approved for the entire remaining flow. It might claim considerably less if a lesser amount is all that is needed to achieve the beneficial use sought.)

Because instream rights are administered within the priority system, Farmer Jones will always be able to make his diversion first, even if it has the effect of reducing flows below his farm to less than 4 cfs. For instance, if flows drop to 8 cfs, Farmer Jones would be free to take it all and (assuming the same 40 percent return rate) would return only 3.2 cfs below his farm. In short, the prior appropriation system guarantees that existing uses are not to be affected by junior instream rights.

If an instream flow right cannot take water away from existing uses, what is the point of securing an instream flow water right with a junior priority? The answer is that it preserves the *status quo*. It does this in two respects:

First, if there is any water left in the stream after the seniors satisfy their needs, that remaining flow may be protected from subsequent new appropriators. For instance, a new user could not build a hydroelectric diversion project upstream of the Jones Farm. (If it consumed no water and returned the water to the stream prior to the Jones diversion, the project would not injure Jones, but it would injure the instream flow right upstream of the Jones farm). Nor could a new user take additional water out of the protected stretch downstream of the Jones Farm.

Second, and this is important, the junior instream right prevents seniors (like Farmer Jones) from moving their points of diversion upstream into the protected reach. Suppose that in 1995 Farmer Jones decides to sell his water right to Big City, and Big City wants to take out the water farther upstream toward the headwaters (so that it will flow into town without pumping). Even though Big City steps into Farmer Jones' shoes and obtains a senior water right, it may *not* change the point of diversion if to do so would injure any other water right—including junior instream flow rights. In other words, it is possible to protect pristine mountain streams with very junior instream flow water rights.

The long and the short of it is that instream flow rights pose no threat to any existing use of water. On the other hand, they may block or complicate further development (in the form of changes, transfers and new users). But then again, so do all

water rights. For example, a major hydroelectric dam or other project downstream on a river has the effect of preventing all new upstream consumptive use of that water. This is the way the prior appropriation doctrine always has operated.

Instream Flows: "Water Rights" or "Reservations"?

Some states have statutes providing for the "reservation" of water for instream uses, rather than the "appropriation" of instream rights.¹⁰ Although these reservations are not technically water rights, their practical effect is much the same, at least so far as their interaction with other water rights goes. (Of course, the reservation approach to protecting minimum flows makes clear that only the state may do the reserving.)

On the other hand, California's system of reserving water for instream purposes at the time of processing applications for consumptive use was found to be preempted by the Federal Power Act.¹¹ The decision left the implication that had California created true water rights for instream flow, the Federal Energy Regulatory Commission might not have been able to override them (as it did California's minimum flow reservations) in the course of licensing a hydropower project.

Indeed, states interested in protecting their instream flow programs against federal preemption would be well advised to strip away the baggage. The more they load up their program with special restrictions, the less they look like ordinary "proprietary" property rights, and the greater the chance that courts will determine them to be a preempted regulatory program.

The Inundation Issue

We usually think of a water right as a right to "call out" junior upstream diverters. An unanswered question is whether an instream right also may be used to prevent junior users from inundating the protected stretch of river with a new reservoir. We know that the holder of an instream right may complain when there is not enough water flowing in the river. May the instream right holder also complain when the river is "full" of water, but the water is sitting virtually still in a reservoir? In other words, does an instream right imply a right to free-flowing conditions?

Take an example. Suppose Trout Unlimited held an instream right to 25 cfs on Swift Creek. When Growing Metropolis proposes to dam Swift Creek, may Trout Unlimited object on the basis of injury to its water right? Certainly Trout Unlimited will have a right to object if the dam would halt flows on the river altogether. Suppose, however, that Growing Metropolis promised to allow 25 cfs to pass through the reservoir at all times. Technically speaking, Trout Unlimited still has the same "flow." Twenty-five cfs doesn't look like much moving through a reservoir, but it is there. On the other

hand, Trout Unlimited may argue that the very purpose of its water right is destroyed by the reservoir, and that destruction should qualify as legal "injury." Who is right? The prior appropriation doctrine simply does not afford a clear answer.¹²

Who Benefits from Instream Flow Legislation?

Traditionally, environmentalists have favored recognition of instream flow water rights, while other water users often have opposed their recognition. That is changing today. Instream flow rights benefit many entities, not just people interested in fishing and boating.

For instance, instream flows also may be used to protect multi-million dollar investments in water treatment systems (and to ensure compliance with permit requirements) which depend on a particular flow regime to assimilate treated waste. They also may be of critical use to developers who are required to undertake mitigation measures to offset the environmental impacts of their projects. For instance, without the opportunity to provide replacement wetlands and other enhancements, many developers may face denial of section 404 permits.¹³ Cities may make use of instream rights to protect their investment in parks and to make their communities more appealing to desirable new industries. Some homebuilders and commercial developers are beginning to recognize that protecting instream flows can add significantly to the attractiveness (and value) of their projects. Surprisingly, perhaps, agricultural users may be among the biggest beneficiaries. By enabling them to enter into leases and other voluntary arrangements which commit unneeded water rights to instream uses, they may protect themselves from forfeiture and abandonment actions while gaining a critical financial advantage.

A viable state instream flow program serves also to protect the integrity of state law against federal preemption.¹⁴ Recognition of instream rights also reduces the temptation of courts to graft more radical reforms onto the prior appropriation doctrine.¹⁵ Last, but by no means least, those concerned with the exportation of water to out-of-state uses should know that water protected by instream rights is far more difficult to move out-of-state than is unappropriated water.¹⁶ In sum, viable instream flow programs should not be seen as threatening state control over the prior appropriation doctrine. Quite to the contrary, such programs may be the prior appropriation doctrine's best defense.

Enforcement of State-held Instream Flow Rights by Other Persons

Even if it is determined that only a state agency may appropriate water for instream purposes, there may, nevertheless, be a role for the public to play in the administration of such rights. Two "enforcement" questions may arise. First, may citizen

groups, homeowners, municipalities or even affected industries oppose the issuance of a new consumptive water right on the ground that it will injure an existing state-held instream right? Second, may such groups force the state agency to call for water to fulfil an instream right?

These questions are not squarely addressed by the statutes, nor have they been addressed by the courts.¹⁷ Arguments exist, however, in favor of both types of citizen enforcement. One commentator has suggested that the public's right to oppose water rights applications which would adversely affect instream flows (that is, to protect or enforce the instream rights where the state agency which is the nominal holder declines to do so) derives from the nature of the public's right in the resource.¹⁸ The public's right or entitlement in a licensed or decreed instream flow differs from state to state, but may be traced to one of four general, but related, concepts: specific statutory entitlements or rights as third party beneficiaries; public interest provisions in the states' water codes; contract rights; and public trust notions of the people's heritage or resources. Under each of these concepts, the public may acquire a protectable interest in the instream flow right.

In many western states with instream flow rights, citizens may acquire an implied interest in those rights as the actual beneficiaries. Western water law recognizes the right of beneficiaries who are the users, but not the legal owners, of water rights to enforce those rights.¹⁹

The public interest provisions found in most western states' water codes supply a similar argument. These provisions typically require the administrative agency to review a water rights application to ensure that its issuance will conform with the public interest or public welfare.²⁰ The provisions further specify that water right applications may be denied if approval is contrary to the public interest. Instream flow rights that are granted under such statutory schemes must be presumed to meet this explicit public interest standard. Thus, members of the public may be able to argue that instream rights, which are held for the public and its welfare, cannot be injured or abandoned without the public's consent.

Colorado has recognized expressly the right of persons donating water rights to the state for instream uses to attach enforceable conditions to the transfer.²¹ One such condition might be enforceability by citizens.

Finally, instream flow rights may be regarded as having been obtained and held as part of the public trust. While the public trust doctrine has been litigated extensively, no court yet has utilized the doctrine in the context of enforcement of instream rights.

Instream Appropriations by Private Persons

Although many states' minimum streamflow statutes specifically provide for the appropriation of instream rights by a specified state agency, they sometimes fail to state expressly whether this is the *sole* means of obtaining instream appropriations. It may be that the statute has left open the question of whether a new appropriation of instream flow rights might be made by a private appropriator. Particularly where the appropriation of such water for fisheries and related values is made a beneficial use, there is at least some basis to argue that the act allows any person to make instream appropriations.²²

Moreover, even if the legislature plainly intended to limit the acquisition of instream rights to a single state agency, such restriction may violate the state constitution. The "right to divert" expressed in many state constitutions²³ has been read by some western courts as a "right to appropriate"²⁴ which, arguably, may not constitutionally be restricted to particular classes. Thus, if it is a beneficial use for one, it is a beneficial use for all. Moreover, any restriction on the transfer of a water right to instream uses may run afoul of constitutional prohibitions against uncompensated "takings"²⁵ or equal protection requirements.²⁶

In contrast to most Western states, which have ventured cautiously toward recognition of instream rights while prohibiting (directly or by implication) private ownership of instream rights, at least two states, Alaska and Arizona, expressly have opened their doors to private protection of instream rights.²⁷

Circumventing the Prohibition Against Private Ownership of Instream Rights: When is an Instream Flow not an Instream Flow?

Perhaps the most telling development in the law is the extent to which appropriators in Colorado have succeeded in circumventing legislative restrictions which authorize only a designated state agency to hold instream flow rights.²⁸ Of course, it has long been held that reservoir storage and hydropower water rights are legitimate, on the theory that the dam is itself a "diversion." Now others are employing the same strategy to expand the definition of "diversion" to encompass situations which otherwise might be characterized as "instream flows," thereby enabling water rights to be issued to entities other than the state board.

The first such case to reach the Colorado Supreme Court was *City of Thornton v. City of Fort Collins*.²⁹ The City of Fort Collins applied for a conditional surface water right³⁰ of 55 cfs along a segment of the Cache La Poudre river which runs through parks and open space areas within the city. In the initial application, Fort Collins described the rights it sought as "instream rights" and named the river corridor itself as the diversion structure. After negotiations with the Colorado Water Conservation Board ("CWCB"),

the city agreed to amend its application. The amended application deleted the reference to the river corridor as the diversion structure, and substituted "the Fort Collins Nature Center Diversion Dam" and "the Fort Collins Power Plant Diversion Dam" as the diversion points. The Nature Dam was then being build by the city in order to divert the river back into its historic channel and away from a channel cut during heavy rains in 1983 and 1984. Despite its name, the Power Dam does not supply hydropower, but is so-named after a nearby power plant. The Power Dam was then being modified by adding a boat chute for kayaks and inner tubs, and a fish ladder.

The court held that Fort Collins was entitled to water rights for both the Nature Dam and the Power Dam. The court noted that the statutory definition of "divert" encompassed both water which is "removed" or "controlled." "Clearly, a diversion in the conventional sense of the term, meaning removing water and carrying it away from its natural course or location, is no longer required. . . . Controlling water within its natural course or location by some structure or device for a beneficial use thus may result in a valid appropriation."³¹

The court found that the kayak chute and fish ladder in the Power Dam each constituted a sufficient "structure or device" to qualify as a diversion because they "concentrate the flow of water to serve their intended purposes."³²

Although the Colorado General Assembly had expressly declared that the CWCB was "vested with the exclusive authority" to appropriate minimum streamflows,³³ the court ruled that Fort Collins rights were different: "The exclusive authority vested in the CWCB to appropriate minimum streamflows does not detract from the right to divert and to put to beneficial use unappropriated waters by removal or control."³⁴

What is truly remarkable about the case is that the court declared that the water right was good not only to call water down to the point of diversion (the two dams), but could be used to keep water in the river downstream: "Thus, Fort Collins may validly exercise dominion over the Poudre River water once it passes the Nature Dam and continues within that segment of the river in which water is put to beneficial use."³⁵ In other words, once having "concentrated" a small fraction of the flow of the river as it flowed over some boulders arranged into a boat chute or through a fish ladder, the entire 55 cfs right could then be protected as it continued to flow down the river through parks and open space.

The similarity of such a right to an instream right was noted by the court: "Although controlling water within its natural course or location by some structure or device may effect a result which is similar to a minimum flow, that does not mean that the appropriation effected by the structure is invalid under the Act [which vested exclusive authority of instream flow appropriations in the CWCB]."³⁶

Another case, decided later that year, went even further. In *Board of County Comm'rs. of the County of Arapahoe v. Upper Gunnison River Water Conservancy Dist.*,³⁷ the court approved a water right for reservoir storage which is used both for irrigation and to enhance a downstream fishery. This case is complicated, even in the simplified version presented here, but it is worth the effort to understand because of the importance of the precedent it sets.

The Taylor Park Reservoir was built on the Taylor River, a tributary of the Gunnison River, in the 1930s to firm up water supplies on the Gunnison Tunnel, some 100 miles downstream, which had been constructed by the Bureau of Reclamation at the turn of the century.³⁸ Resulting flow fluctuations below Taylor Reservoir proved harmful to the trout fishery on the Taylor River. Following completion of the Aspinall Unit³⁹ downstream on the Gunnison in the 1970s, local residents and businesses suggested that water for the Gunnison Tunnel might be provided more efficiently out of the Aspinall Unit (which had considerable uncontracted storage space and was positioned not far upstream of the Gunnison Tunnel). This, they figured, would allow the Taylor Park Reservoir to be operated in a manner less harmful to the fishery. In 1975 the parties with an interest in the reservoirs entered into an exchange agreement to implement this idea. The reservoirs were then so operated to the great benefit of the Taylor River fishery and the area's growing recreational economy.

No one, however, sought to confirm the arrangement with the Colorado Water Court. That did not matter until 1986, when two separate development schemes were proposed to divert water from the Gunnison Basin to Colorado's Front Range communities. At that point the Upper Gunnison River Water Conservancy District, a signatory to the 1975 contract, filed claims for water rights consistent with how the project then was being operated.⁴⁰

Specifically, the Upper Gunnison District sought a water right for a "second filling" of the Taylor Park reservoir.⁴¹ Under the law in most western states, a reservoir storage right may be exercised through only one physical filling per year. Thus, once a reservoir is filled and drawn down, it may not fill again during the same year, to the extent other users (including juniors) call for the water. If a second filling is desired, the appropriator must obtain an additional water right for the second filling.

Here is the tricky part. The Taylor Park Reservoir did not physically fill more than once a year. But enough water was passed through the reservoir that it could have filled twice, if it had been operated that way. In order to enhance the fishery below, however, the reservoir was operated so as to bypass much of the flow. Consequently, it filled more slowly that it otherwise would have.

In order to make out a claim for a second filling, the Upper Gunnison District argued that all water which it was in priority to store should be counted toward the first filling. Thus the first filling was accomplished when the reservoir was, say, half full.

After that, all water which the reservoir was in priority to store would be counted toward the second fill, whether it was stored or was merely bypassed.⁴² Thus, in rough terms, by the time the reservoir was physically full, it would have accomplished its second fill for administrative purposes.

This may seem like smoke and mirrors to the uninitiated, but the approach was adopted by the water court and approved by the Colorado Supreme Court. The reason it makes sense is that any water entering a reservoir, which the reservoir is entitled to store, will count against its fill regardless of whether the reservoir actually stores it or bypasses it. Otherwise, a reservoir operator could bypass water in the winter and store water during the irrigation season. This would not be permitted (absent a second fill right) because it could cause injury to surface irrigators who would have been better off had the reservoir filled up with winter water. In short, water which is not stored, but could have been stored, counts toward a storage right.

What all this means is that the Taylor Park Reservoir obtained decreed water rights to call (for both bypass and storage) virtually the entire flow of the Taylor River in a coordinated program designed specifically to enhance a downstream fishery as well as to serve irrigation purposes. And all this was done outside of Colorado's supposedly "exclusive" instream flow program administered by the Colorado Water Conservation Board.

These cases offer dramatic evidence both of the ingenuity of western water lawyers and of the willingness of western courts to find ways to accommodate new uses of water which make sense. In short, instream use constitutes an idea whose time has come. One way or another, it may be expected to find its way into practice.

Transfers to Instream Uses

Another interesting question is whether a person holding a valid consumptive use right, such as an irrigation right, may change the nature of the right to an instream flow use. Curiously, many instream flow statutes simply fail to address this question, focusing instead solely on the acquisition of instream rights by appropriation.⁴³

One state which has struggled, unsuccessfully, with the issue is Idaho. In the 1991 and 1992 sessions, the Idaho legislature considered but rejected legislation drafted by the Department of Water Resources which would have established a procedure for transfers to instream uses.⁴⁴ The legislation would have allowed a willing holder of a water right to assign or donate the right to the Water Resource Board, which, in turn, would seek approval to hold the right for instream purposes, without loss of priority. Strangely, the legislation would have empowered the Department to adjust the priority date if necessary to "prevent injury." Such a concept is entirely foreign and deeply offensive to the prior appropriation doctrine, whose central premise is protection of priority of right. Only that

portion of a water right which can be changed without injury should be eligible for transfer. Typically, this is the amount of water which is consumptively used. Because no injury results, the priority date should never be changed in a transfer proceeding. (If injury can be shown, the transfer should not be permitted, period.)

As unappropriated water becomes increasingly scarce, private willing seller transactions become essential to an effective instream flow program. Indeed, they would benefit not only those interested in protecting habitat, but also farmers (who could gain income and forestall abandonment actions), cities and industries (who could buy rights to protect investments in waste discharge permits, parks, and so on), and developers (who increasingly will be called upon to mitigate habitat in order to obtain federal permits).

A sound instream flow transfer program would permit transfers of water rights to instream flows when such transfer avoided injury to all other existing or permitted uses (junior as well as senior) and satisfied the state's public interest criteria. Artificial statutory restrictions (such limitations to some "minimal" quantity of flow) should be eliminated. When transferred, either permanently or temporarily, the water right should retain its original priority date.

Unfortunately, these limitations are fairly common. The courts, however, have demonstrated impatience with them. In one Idaho case, (Minnie Miller Springs), the state's Water Resource Board and the Department of Water Resources agreed that the "minimum" was the entire amount of flow available. In a recent Nebraska Supreme Court decision, *Nebraska Game and Parks Comm'n. v. The 25 Corp., Inc.*⁴⁵, the court sidestepped the limitation in Nebraska's statute to the "minimum necessary to maintain the instream use".⁴⁶ The court observed that the minimum necessary depended upon what the use was. If the use was to keep fish alive, that was not much water. But where, as in this case, the objective was to maintain a high quality trout fishery, the "minimum" flow was necessarily the "optimum" flow.

Just how much of the original water right could be committed to the new instream use would depend on the facts of the particular transaction. For instance, suppose Farmer Jones (in Figure 1) sold his 10 cfs water right to The Nature Conservancy. If users downstream relied upon his return flow of 4 cfs, Farmer Jones could only convey a water right for the reach downstream of his return flow equal to his consumptive use (6 cfs). However, he should be able to convey an instream right for the full 10 cfs in the reach between his point of diversion and the return flow. (Unfortunately, this critical point is sometimes overlooked in state instream flow legislation.)

The Prognosis for Instream Rights

While the traditionally recited requirement of a *diversion* to beneficial use served historically as an impediment to the recognition of instream uses, that constraint (if it

ever existed outside of folklore and *dictum*) is rapidly falling out of favor across the West. The great majority of western states have come to recognize—to a limited extent—the role of instream uses within the prior appropriation system.

Barriers still stand, however, to the full integration of instream uses into state water allocation systems. Barriers (such as the "second class" treatment of instream flows discussed above) are not due to any natural incompatibility between instream rights and the prior appropriation doctrine. Far from it; the doctrine is fully up to the task of accommodating modern needs. All that remains is to eliminate those legislative restrictions which are essentially alien to the doctrine's nature.

The most pervasive and frustrating limitation on instream rights in most western states is the prohibition against ownership of instream rights by persons other than a designated state entity. This prohibition is a curious twist on the prior appropriation doctrine. It reflects a basic discomfort with the concept of instream rights and an underlying distrust of those entities which may seek to acquire them, particularly environmental groups and the federal government. Many states, it seems, have struck a compromise in which instream values are recognized as legitimate, but the people acting through the prior appropriation doctrine are not trusted to fairly allocate those rights.

Ironically, then, the drafters of such programs have turned away from the market-based principles which underlie the prior appropriation system, and have embraced principles of command-and-control resource allocation—socialism, if you will—with respect to instream rights.⁷ In short, western states for over a century have entrusted farmers, municipalities, and hydroelectric companies with making fundamental decisions about where water will flow. Yet these same states suddenly lose confidence in the prior appropriation system when it comes time to allocate resources between consumptive users and those whose interests are benefitted by leaving water in rivers.

Much of the hostility to instream flow programs, it seems, is based on misapprehension of their function. Properly administered, instream uses pose no threat to the valuable property rights of existing users. While they may "tie up" a stream and complicate efforts of new users to develop sources of supply, so do *all* water rights. That is the nature of property rights generally. In the long run, the people are better served by the state facilitating negotiation and market transactions than they are served by government control of instream flows by fiat.

Indeed, an effective instream flow program is the West's best defense against threats to the integrity of state control posed by the federal government, over-zealous environmental litigators, and out-of-state users. Farmers, cities, developers, and industries—as well as recreational users—each may benefit from a viable free market in instream flows. Such a market, free of unnecessary government interference, is what the prior appropriation doctrine was meant to provide.

Notes

1. This chapter is based on a section of a copyrighted publication entitled *Handbook on Idaho Water Law: An Introduction for the Layperson and Guide for the Practitioner*. It is reproduced here with permission of Givens Pursley & Huntley, Boise, Idaho.
2. *Empire Water and Tower Co. v. Cascade Town Co.*, 205 F. 123 (8th Cir. 1913).
3. Strictly speaking, this case was not decided on the diversion issue. Indeed, the court recognized that a water right could be obtained for natural *irrigation* without a diversion, *Id.* at 129, but not for aesthetic purposes: "[W]e think complainant [the town] is not entitled to a continuance of the falls solely for their scenic beauty. The state laws proceed upon more material lines. . . . It may be that if the attention of the lawmakers had been directed to such natural objects of great beauty they would have sought to preserve them, but we think the dominant idea was utility, liberally and not narrowly regarded, and we are constrained to follow it." *Id.*
4. On remand the parties consented, for reasons not recorded, to a decree providing that the town had a senior right for all of the water of Cascade Creek except for one-half cfs. *Empire Water and Power Co. v. Cascade Town Co.*, Case No. 413, In Equity (U.S. District Court for the District of Colorado Decree issued Oct. 15, 1915).
5. In *Schodde v. Twin Falls Land and Water Co.*, 224 U.S. 107 (1912), the U.S. Supreme Court, applying Idaho law, denied relief to a senior appropriator when a junior appropriator built a downstream reservoir which stilled the waters upstream and rendered the senior's waterwheels ineffective. This conclusion was based on the fact that to command the entire flow for a marginal benefit was unreasonable. Likewise, in *Walsh v. Wallace*, 67 P. 914, 917 (Nev. 1902), early appropriators claimed a water right in the natural overflow of the Reese River upon which they relied to irrigate their adjoining land. The court rejected the right, declaring "[T]here must be an actual diversion of the same, with intent to apply it to a beneficial use" *Cf.*, *Thomas v. Guiraud*, 6 Colo. 530, 533 (Colo. 1883) (allowing an appropriation of bank overflow for irrigation). S.V. CIRIACY-WANTRUP, ET AL., *WATERS AND WATER RIGHTS*, vol. 1, § 19.5 (R.E. Clark ed., The Allen Smith Co., Indianapolis, 1967), contains an interesting discussion entitled "Judicial tolerance of wasteful practices." The thrust is that the courts tolerate waste until demand outstrips supply. A good example is that irrigation by bank overflow initially was viewed as beneficial, but eventually came to be regarded as wasteful.
6. "Most western water experts agree that the actual diversion requirement serves no function that cannot be served by other water law doctrines and statutory procedures. . . . For these reasons instream uses should be valid without the requirement of an actual diversion, and these uses should be presumed beneficial." Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211, 221.
7. A 25 cfs right measured on a tributary which typically flows at 100 cfs is simple enough to administer. As that 25 cfs moves downstream, administration may be less certain, as the river goes through "gaining" and "losing" reaches, and the small flow is dwarfed in a larger river. Thus, there may be practical reasons why the state would not grant an instream right for a small quantity over a substantial distance.

8. See discussion of *City of Thornton v. City of Fort Collins*, 830 P.2d 915 (Colo. 1992), *infra* at notes 29 - 36.
9. In the real world, streams do not flow at a fixed rates year round. Thus it might be possible to obtain an instream flow right for higher flows which would come into priority only during high flow periods.
10. *E.g.*, 1977 Mont. Laws ch. 452 § 26 (codified at MONT. CODE ANN. §§ 85-2-102(2)(a), 85-2-316 (1992).
11. *California v. Fed. Energy Regulatory Comm'n.*, 495 U.S. 490, *reh'g. denied*, 497 U.S. 1040 (1990).
12. Colorado has been struggling with this issue recently. It enacted an instream flow statute in 1973, and the state has since approved over 1,000 instream rights on over 7,000 miles of streams. Now developers are beginning to argue that they should be allowed to build reservoirs "on top" of some of the streams with instream rights.

The issue almost came to a head in Colorado in 1985 when developers proposed construction of a new, on-stream reservoir (the North Sheep Mountain reservoir) and for enlargement of the existing Button Rock reservoir. Together, the reservoirs would have inundated approximately five miles of North St. Vrain Creek, state-designated "Wild Trout Waters" which arise in Rocky Mountain National Park and flow through a canyon that is part of Colorado's Natural Areas program.

The Colorado Water Conservation Board ("CWCB") holds an instream flow right of 14 cfs with a 1978 priority for the stretch of the North St. Vrain between the boundary of Rocky Mountain National Park and the inlet of Button Rock reservoir at its current level. The CWCB deliberated, but ultimately voted against filing statements of opposition to the applications. Members expressed the view that enforcing instream flows in derogation of junior water storage rights was not the legislature's intent in creating the instream flow program. After the CWCB decided not to protect its instream flow rights, the Sierra Club filed a motion to intervene and statements of opposition to the applications. On the date the response to Sierra Club's motion was due, the developers instead withdrew the applications for water storage rights.

Subsequent efforts to clarify the law through legislation have been defeated, and the issue is now being addressed through a rulemaking procedure by the Colorado Water Conservation Board. See chapter 11 of this book.

13. Clean Water Act, § 404, 33 U.S.C. § 1344 (1989).
14. If the federal government cannot protect under state law its water on federal lands, it simply overrides state law. The result is what is known as the federal reserved rights doctrine. *Winters v. United States*, 207 U.S. 564 (1908); *Arizona v. California*, 373 U.S. 546 (1963); *Cappaert v. United States*, 426 U.S. 128 (1976); *United States v. New Mexico*, 438 U.S. 696 (1978). In a similar vein, see *Riverside Irrigation Dist. v. Andrews*, 758 F.2d 508 (10th Cir. 1985) (holding that the Clean Water Act may override water rights obtained under state law). As state instream flow programs gain recognition in the West, courts (and the Congress) may be less inclined to expand the body of federal law protecting instream rights. Also, see discussion of FERC preemption at text accompanying note 11.

15. For instance, every western state (save Colorado) which as addressed the issue has recognized some form of public trust doctrine. *E.g.*, *Shokal v. Dunn*, 707 P.2d 441 (1985); *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983), *cert. denied*, 464 U.S. 977 (1983). Taken to its extreme, the public trust doctrine has the potential to transfer privately owned water rights to instream uses—*without compensation*. *Sax, Some Thoughts on the Decline of Private Property*, 58 WASH. L. REV. 481 (1983).

For an overview of the public trust, its historical roots, and present day issues, *see generally* Joseph L. Sax, *The Public Trust Doctrine in Natural Resources Law*, 68 MICH. L. REV. 471 (1970); Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986); Dunning, *The Public Trust Doctrine and Western Water Law*, 30 ROCKY MTN. MIN. L. INST. 17-1 (1985). A summary of public trust doctrine cases follows:

- California *Ward v. Mulford*, 32 Cal. 365 (Cal. 1867); *People v. Gold Run Ditch & Mining Co.*, 4 P. 1152 (Cal. 1884); *People ex. inf. Webb v. California Fish Co.*, 138 P. 79 (Cal. 1913); *Colberg, Inc. v. State ex rel. Department of Public Works*, 432 P.2d 3 (Cal. 1967), *cert. denied* 390 U.S. 949 (1968); *Marks v. Whitney*, 491 P.2d 374 (Cal. 1971); *Hitchings v. Del Rio Woods Recreation & Park Dist.*, 55 Cal. App. 3d 560 (1976); *People ex rel. Younger v. County of El Dorado*, 96 Cal. App. 3d 403 (1979); *City of Berkeley v. Superior Court of Alameda County*, 606 P.2d 362 (Cal.), *cert. denied* 449 U.S. 840 (1980); *State v. Superior Court of Lake County*, 625 P.2d 239 (Cal.), *cert. denied* 454 U.S. 865, *rehearing denied* 545 U.S. 1094 (1981). *State v. Superior Court of Placer County*, 625 P.2d 256 (Cal.), *cert. denied* 454 U.S. 865, *rehearing denied* 454 U.S. 1094 (1981); *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709 (Cal.), *cert. denied*, 464 U.S. 977 (1983); *Truckee Donner Public Utility Dist. v. County of Nevada*, No. 35920 (Superior Court of Cal. 1988).
- Colorado *People v. Emmert*, 597 P.2d 1025 (Col. 1979)
- Hawaii *Robinson v. Ariyoshi*, 658 P.2d 287 (Haw. 1982), *reconsideration denied*, 726 P.2d 1133 (1983).
- Idaho *Kootenai Environmental Alliance, Inc. v. Panhandle Yacht Club, Inc.*, 671 P.2d 1085 (Idaho 1983); *Shokal v. Dunn*, 707 P.2d 441 (Idaho 1985); *In the Matter of Application for Permit to Appropriate Water No. 36-7200* (Idaho Department of Water Resources July 22, 1987).
- Montana *Montana Coalition for Stream Access, Inc. v. Curran*, 682 P.2d 163 (Mont. 1984); *Montana Coalition for Stream Access, Inc. v. Hildreth*, 684 P.2d 1088 (Mont. 1984); *Galt v. State of Montana By and Through Dep't of Fish, Wildlife and Parks*, 731 P.2d 912 (Mont. 1987).
- Nebraska *Crawford Co. v. Hathaway*, 93 N.W. 781 (Neb. 1903); *Kirk v. State Bd. of Irrigation*, 134 N.W. 167 (Neb. 1912).
- N. Dakota *United Plainsmen Ass'n. v. North Dakota Water Conservation Comm'n*, 247 N.W.2d 457 (N.D. 1976).
- Oregon *Morse v. Oregon Div. of State Lands*, 590 P.2d 709 (Or. 1979).
- S. Dakota *Flisrand v. Madson*, 152 N.W. 796 (S. D. 1915).
- Utah *J.J.N.P. Co. v. State, by and through Div. of Wildlife Resources*, 655 P.2d 1133 (Utah 1982).
- Washington *Stempel v. Department of Water Resources*, 508 P.2d 166 (Wash. 1973); *Caminiti v. Boyle*, 732 P.2d 989 (Wash. 1987); *Orion Corp. v. State*, 747 P.2d 1062 (Wash. 1987).
- Wyoming *Day v. Armstrong*, 362 P.2d 137, 152 (Wyo. 1961).

16. This fact was not lost on the Idaho legislature: "The legislature further declares that minimum flow is a beneficial use of water of the streams of this state for the purpose of protecting such waters from interstate diversion to other states or by the federal government for use outside the boundaries of the State of Idaho. Minimum stream flows as established hereunder shall be prior in right to any claims asserted by any other state, governmental agency, or person for out of state diversion. It is, therefore, necessary that authority be granted to receive, consider, approve or reject applications for permits to appropriate water of the streams of this state to such beneficial uses to preserve such water from subsequent appropriation to other beneficial uses under the provisions of chapter 2, title 42, Idaho Code." Minimum Stream Flow Act, IDAHO CODE § 42-1501 (1991).
17. The question has arisen twice in Colorado, *Concerning the Applications for Water Rights of St. Vrain/Left Hand Water Conservancy District and City of Longmont, Colo.*, Case Nos. 85 CW 456 and 85 CW 457 (Water Ct., Div. No. 1 filed Dec. 31, 1985); *City of Aurora v. Division Engineer for Water Division No. 5*, 799 P.2d 33 (Colo. 1990). Each time, however, a resolution was reached on before a judicial determination.
18. Lori Potter, *The Public's Role in the Acquisition and Enforcement of Instream Flows*, 23 LAND & WATER L. REV. 419, 428-30 (1988).
19. See, e.g., *City and County of Denver v. Northern Colorado Water Conservancy Dist.*, 276 P.2d 992, 1012 (Colo. 1954) ("[W]here the interests of beneficiaries are not represented or protected by their trustees, the beneficiaries become proper and necessary parties with the right to appear and present their case.").
20. See, e.g., ALASKA STAT. §§ 46.15.040 and -.080(a) (1992), 11 ALASKA ADMIN. CODE § 93.930(c); ARIZ. REV. STAT. ANN. §§ 45-142 and -143 (1987); CAL. WATER CODE §§ 1225, 1255 (1971 and West Supp. 1993); IDAHO CODE §§ 42-203A(5)(e), 42-203C, 42-222(1), 42-1501, 42-1503(b) (1990); KAN. STAT. ANN. §§ 82a-705 and -711 (1989); MONT. CODE ANN. §§ 85-2-302 and 311(2) (1991); NEB. REV. STAT. §§ 46-233, -234, -2,116 (1988 and Supp. 1991); NEV. REV. STAT. §§ 533.325, -.370(3) and 534.040(1); N.M. STAT. ANN. §§ 72-5-1, -6, -7, 72-12-3 and -3.E (Michie 1985); N.D. CENT. CODE §§ 61-04-02 and -06 (1985 and Supp. 1991); OR. REV. STAT. §§ 537.130 and -170(4) (1988); S.D. CODIFIED LAWS ANN. §§ 46-1-15, -5-10, -6-3 and -2A-9 (1987); TEX. WATER CODE ANN. §§ 11.121 and -134(3) (West 1988); UTAH CODE ANN. §§ 73-3-1 and -8(1) (1989); WASH. REV. CODE ANN. §§ 90.03.250, -290, -44.050 and -44.060 (West 1992); and WYO. STAT. §§ 41-4-503, 41-3-930 to -932 (1977 and Supp. 1992); see generally, Clyde, *Legal and Institutional Barriers to Transfers and Reallocation of Water Resources*, 29 S.D. L. REV. 232, 243-44 (1984); Clyde, *Allocation of Water for Resource Development*, 14 NAT. RESOURCES L. 519 (1981); Robie, *The Public Interest in Water Rights Administration*, 23 ROCKY MTN. MIN. L. INST. 917 (1977).
21. COLO. REV. STAT. § 37-92-103(3) (1990).
22. In 1969 the Nevada legislature amended the state's water code to recognize recreation as a beneficial use: "The use of water . . . for any recreational purpose, is hereby declared to be a beneficial use." 1969 Nev. Stat. 141 (codified at NEV. REV. STAT. § 533.030(2) (1991)). In 1988 the Nevada Supreme Court ruled unanimously that this action implicitly repealed Nevada's statutory diversion requirement and allowed instream flow water rights to be protected under state law. *State v. Morros*, 766 P.2d 263 (Nev. 1988). The case involved an application for a water right by the U.S. Bureau of Land Management to protect a trout fishery at Blue Lake in

northwestern Nevada. While the court did not squarely address the issue, its reasoning would support recognition of instream flow water rights by private parties as well.

23. E.g., "The right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses, shall never be denied, except that the state may regulate and limit the use thereof for power purposes." Idaho Const., art. XV, § 3. "The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied." Colo. Const. art. XVI, § 6. "The right to divert unappropriated waters of every natural stream for beneficial use shall never be denied except when such denial is demanded by the public interest." Neb. Const. art. XV, § 6.
24. "The sole time [the word 'divert'] appears as to water is in Colo. Const. Art. XVI, § 6: 'The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied.' The reason and thrust for this provision was to negate any thought that Colorado would follow the riparian doctrine in the acquisition and use of water. . . . The word 'divert' must be interpreted in connection with the word 'appropriation,' and with other language used in the remaining sections of [the constitution] referring to the subject of irrigation." Colorado River Water Conservation Dist. v. Colorado Water Conservation Bd., 594 P.2d 570, 573 (Colo. 1979) (quoting from Larimer County Reservoir Co. v. Luthe, 9 P. 794 (Colo. 1886)).
25. "[N]or shall private property be taken for public use, without just compensation." U.S. Const. amend. V (takings clause). Most states have similar versions. E.g., "Private property may be taken for public use, but not until a just compensation, to be ascertained in the manner prescribed by law, shall be paid therefor." Idaho Const. art. 1, § 14.
26. "No state shall . . . deny to any person within its jurisdiction the equal protection of the laws." U.S. Const. amend. XIV, § 1. Idaho's state version is typical: "All political power is inherent in the people. Government is instituted for their equal protection . . ." Idaho Const., art. 1, § 2;
27. ALASKA STAT. §§ 46.15.145, 46.15-260 (1991); ARIZ. STAT. ANN. § 45-141A (Supp. 1992).
28. Back in the 1970s a Colorado water court interpreted Colorado's instream flow statute, which authorized the Colorado Water Conservation Board ("CWCB") to hold instream rights, to eliminate the diversion requirement for all citizens. In the Matter of Applications for Water Rights of R.I. Vader & Sons, et al., No. W-1991 (Colorado Water Court Div. No. 4, referee's ruling confirmed Feb. 11, 1975). In Board of County Comm'rs. of the County of Arapahoe v. Collard, 827 P.2d 546 (Colo. 1992), the Colorado Supreme Court upheld similar privately held instream flow rights on *res judicata* grounds, but hinted that the challenged rights may have been granted improvidently. In response to the *Vader* case (and others), the Colorado law was amended in 1987 in order to "clarify" that only the CWCB could obtain instream flow water rights. Senate Bill 212, 1987 COLO. SESS. LAWS ch. 269 at 1305 (codified at COLO. REV. STAT. § 37-92-102(3) (1990)).
29. 830 P.2d 915 (Colo. 1992).
30. Colorado's "conditional right" is the rough equivalent of most states' permit. That is, a conditional right secures the appropriator's priority date while the project is developed. In Fort Collins' case, the water rights were conditional while the Nature Dam and Power Dam construction projects were underway.
31. 830 P.2d at 930.

32. 830 P.2d at 932.
33. COLO. REV. STAT. § 37-92-102(3).
34. 830 P.2d at 930.
35. 830 P.2d at 931.
36. 830 P.2d at 931.
37. Board of County Comm'rs. of the County of Arapahoe v. Upper Gunnison River Water Conservancy Dist., 838 P.2d 840 (Colo. 1992).
38. The Taylor Park Reservoir and Gunnison Tunnel are part of the Bureau of Reclamation's Uncompaghre Project. Act of June 22, 1938, ch. 577, 52 Stat. 941 (1938) (codified at 43 U.S.C. §§ 371-84 (1988)).
39. The Aspinall Unit, which was initially termed the Curecanti Unit, is composed of three reservoirs: Blue Mesa, Morrow Point, and Crystal. It was authorized in the Colorado River Storage Project Act ("CRSPA"), ch. 203, 70 Stat. 105 (codified as amended at 43 U.S.C. §§ 620-620o) (enacted April 11, 1956).
40. Under Colorado's unique water court system, a later filed claim (such as the Gunnison District's) can beat out earlier filed claims (such as those of the Front Range diverters) so long as it is filed in the same calendar year and claims an earlier priority date.
41. In a separate filing the Upper Gunnison District also sought to add fishery purposes to the original water right (decreed in 1941 with a 1904 priority date) for the Taylor Park Reservoir. This was denied on the basis that the Upper Gunnison District did not hold that right and had no authority to change it.
42. An important side issue in this debate was the calendar date on which accounting was to begin each year for administration purposes. Suffice it to say that the Upper Gunnison argued (and won) a fixed November 1 administration date (which is consistent with how irrigation reservoirs are typically administered), while the district's opponents argued for a floating date set when the reservoir was at its lowest point during the year (which is consistent with how multi-purpose reservoirs are typically administered).
43. As enacted in 1973, Colorado's law also was silent on whether it authorized transfers to instream use. In 1986 the legislature clarified that instream flow water rights could be obtained by transfer of existing rights as well as appropriation of unappropriated water. Senate Bill 91, 1986 Colo. Sess. Laws ch. 235 at 1095-96 (codified at COLO. REV. STAT. § 37-92-102(3) (1990)).
44. The 1991 version was designated Senate Bill 1087. The 1992 version was not even printed by the committee.
45. Nebraska Game and Parks Comm'n. v. The 25 Corp., Inc., 463 N.W. 2d 591 (Neb. 1990) (aka In re Application A-16642).
46. NEB. REV. STAT. §§ 46-2, 107 to 46-2, 119 (1988 and Supp. 1992).

47. Two arguments can be made in response to this charge of socialism: First, one might observe that socialism is not entirely foreign to water development in the West. Most major water projects have been centrally planned and shielded from the harsh realities of market forces. Moreover, prior appropriation doctrine has never been purely laissez faire, but has long been overlain by at least some attention to the larger public welfare (e.g., *Schodde v. Twin Falls Water Co.*, 224 U.S. 107 (1912) (favoring larger junior appropriator over small senior)). Second, one might argue that political realities require government ownership and control over instream rights if the public is to obtain large instream rights on major rivers. These are fair observations. It may well be that in some instances socialized control is the expedient and intelligent way to go. I continue to believe, however, that it should not be the only vehicle for protecting instream values, and that if market forces can be applied to these transactions (with an appropriate governmental oversight role), all users may be made better off.

People Preserving Rivers: The Public and its Changing Role in Protecting Instream Flows

Lori Potter¹

Introduction: Rethinking the Public's Rights in Instream Flow Preservation

Five years ago, I wrote of a revolutionary change taking place in the thinking and the actions of members of the public who use and enjoy instream flows.² No longer content to let farmers and cities and industries lay undisputed claim to the title "water user," the ever-expanding community of rafters, land trusts, hunting resorts, conservationists and others were moving in to assert their interests as water users, too. And, once these non-traditional water users thought of themselves in this new way, I predicted, it would not be long before they began to flex their muscles and exercise the same sorts of rights and remedies that we long have associated as belonging to consumptive water users.

The prediction was wrong only in that it was too cautious. The public is much further ahead of the curve than I suggested. Discouraged or impatient with state instream flow programs, the "new water users" have made creative use of the Endangered Species Act, legislation creating federal reserved water rights, and other strategies to protect flows in rivers. Meanwhile, ironically, some fairly traditional water users are beginning to push the envelope of the state programs. Those programs are still lagging somewhat behind the increasingly vocal and ambitious public demands for stream preservation, but they are struggling to make reforms.

This chapter will survey those developments, discuss their ramifications, and venture a few more predictions on where the current of streamflow protection is taking us. Colorado continues to be something of a laboratory for experimentation with instream flow regimes, perhaps because of its oft-cited surfeit of water lawyers, and therefore provides the majority of illustrations for the points developed here.

Developments in the Law of Public Enforcement

Whatever the many differences between them, state instream flow statutes and federal environmental protection laws alike appear to have protection of the public welfare as their core concern. One need only dip at random into this pool of authority to spot this common theme: compare, for example, the statute authorizing a state

instream flow program ("[the Colorado water conservation board may appropriate instream flows] on behalf of the people of the state of Colorado ... to preserve the natural environment to a reasonable degree")³ with the organic legislation for this country's system of wild and scenic rivers ("[i]t is hereby declared to be the policy of the United States that certain selected rivers ... shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit of present and future generations."). This common thread unravels, however, with the notion of public enforcement.⁴ Congress, on the one hand, has seen fit to delegate the enforcement of environmental laws to the concerned and affected public.⁵ In fact, the public has virtually exclusive enforcement authority under two of the most critical sections of the Endangered Species Act.⁶ None of that openness to citizen enforcement infuses state instream flow laws or programs, however.

With few exceptions, the state programs and the instream flow water rights themselves remain very closely held by the state agencies who are their jealous masters. While most western states' water codes grant a broad right, usually to "any person," to object to applications for water rights,⁷ experience shows that in practice the states seek to limit the efforts of organizations or individuals who would attempt to enforce instream flow rights nominally held by the state agency. Two recent Colorado cases illustrate the point.

In *City of Aurora v. Bell*,⁸ conservation groups filed statements of opposition to applications to change the proposed points of diversion for a water project in the Holy Cross Wilderness. The groups asserted that moving the diversion upstream—and farther into the wilderness—would injure the public's decreed, junior instream flow rights in the reaches of three streams above the originally decreed points of diversion, since western water law⁹ protects even junior rightholders from injury due to changes in water rights. In other words, instream rights, like any other junior water rights, are entitled to the continuation of conditions on the stream as they existed when the junior priority was acquired. The Water Court upheld the groups' standing to advance this argument,¹⁰ but this proved to be a hollow victory. The cities' rejoinder, that the right to oppose their plans belonged solely to the Colorado Water Conservation Board (CWCB), had the effect of bringing the state agency into the case. After a remand from the Colorado Supreme Court for clarification of the Water Court's directive that the state's instream flow rights be protected against the proposed changes in points of diversion, the state agency stipulated with the cities that federally-imposed bypass flows—albeit at lower rates of flow than those decreed to the state under the instream flow law—provided sufficient protection to the streams.¹¹

The state's justification for its acquiescence in lower instream flows than it had a legal right to call for is noteworthy. In the fieldwork done as a predicate to making an instream flow appropriation, the CWCB typically takes a very limited number of transects, or stream sections at which it measures the volume and velocity of flows, as the basis for its appropriation. When a development project later threatens to injure

instream flows at some point on the stream other than the location of the transect, the agency can backpedal, rationalizing that it lacks precise data to support its instream flow right at the point of the proposed development. This is what happened in *Aurora v. Bell*. The transects had been taken at points downstream of the newly proposed diversion, and the agency was willing to presume that rates of flow lower than the officially decreed ones were adequate to protect the environment; hence, the stipulation to less than the CWCB's decreed instream rights.

*Aspen Wilderness Workshop v. Colorado Water Conservation Board*¹² posed a challenge to the CWCB's decision to reduce an existing, decreed streamflow on Snowmass Creek. The agency argued that it was merely correcting a computational error which had gone undetected since its pre-filing field work, while the citizens' groups opposing the reduction alleged that the agency actually was succumbing to pressure from the Aspen Ski Company, which planned to expand onto terrain near Snowmass Creek and saw the Creek as a water source for snowmaking. The plaintiffs charged that the reduction violated the public trust, the state constitutional prohibition against transfers of public property to private entities, the CWCB's fiduciary duty, and a number of other authorities. The court upheld the agency's claim that it was rectifying a mistake and dismissed the case.¹³

Even assuming that it was only a coincidence that the agency's alleged mistake dovetailed precisely with the skiing company's needs, this resolution dodged several thorny legal issues. Does the public trust permit the CWCB to relinquish part of the rights it has appropriated on behalf of present and future generations of Coloradans? The opinion concludes that the CWCB, "like any other holder of a decreed water right," has authority not to use all of those rights.¹⁴ But is the CWCB like any other water right holder, and are the public's instream flow rights like any other water rights? Colorado law precludes collateral attacks on water right decrees on grounds of mistake more than three years after the decree;¹⁵ assuming that the public's trustee may launch its own "attack," what process rights are due to the public?

If *Aspen Wilderness Workshop* were an anomaly, it would be easy enough to chalk it up to human error. But when viewed as one panel of a triptych that includes the *Aurora* case and a recent proposal to decrease instream flow rights at Cottonwood Creek¹⁶—a plan just surfacing as this book goes to press—a troubling pattern emerges. It is a pattern of the state's instream flow steward finding ways to sacrifice the public's decreed rights in specified instream flows when competing interests make demands. It is a pattern which threatens the credibility of the entire program.

Two factors combine to make public enforcement difficult, if not impossible, under current statutory schemes. First, the principle of administrative law that affords deference to the decisions of administrative agencies¹⁷ leaves the public with an uphill battle from the start. Second, this principle of deference feeds into a reluctance on the part of the courts, particularly when operating in the politically sensitive area of western

water law, to interpret state laws and Constitutions to confer greater rights on the public than have been affirmatively and positively bestowed upon it. Thus, a Colorado water court has declined even to take evidence on how a major new water right application might adversely affect the public's interest in that water.¹⁸ The court reasoned:

It would be presumptuous for the undersigned as one of seven water judges in this state to attempt to carve out a 'public interest exception' to the existing constitutional and statutory framework which at present authorizes the adjudication of water rights without requiring consideration of public interest factors. At present there are no standards to guide the water courts in the application of the 'public interest concept' and if this court were to adopt the opposers' position, it would then be left to its own subjective reasoning in attempting to balance the competing interests which would be presented.¹⁹

Ultimately, this leaves to legislatures the issue of precisely what rights citizens may have in instream flow protection. But if recent experience is any guide, the legislatures are moving much more slowly on the point than are citizens, leaving citizens casting about for other solutions to the problem, as is discussed in a later section of this chapter.

Trends in Private Acquisition of Instream Flows: The Same Old Boat

State attitudes toward private acquisition of instream flows parallel the attitudes just discussed: limited and restrictive. In response to a series of water right applications that looked and smelled suspiciously like instream flows²⁰—even though the applications did not necessarily denominate themselves as such—the Colorado Legislature in 1987 amended the statute to direct that the Colorado Water Conservation Board has "the exclusive authority" to appropriate instream flows.²¹

The Colorado courts have had occasion to grapple with some of the issues that followed in the wake of that statutory amendment. *In the Matter of the Application for Surface Water Rights of William Thompson*,²² the water court upheld the exclusivity provision against a challenge that it violated the Colorado Constitution's ban on special legislation. Protecting fisheries under the instream flow law is a state interest, the court reasoned, so restricting to a state agency the right to appropriate does not violate the special legislation clause.

In Arapahoe County v. Collard,²³ the Colorado Supreme Court pondered the soundness of a private instream flow right acquired prior to enactment of the statutory exclusivity language. The Court upheld the validity of the right, turning back a collateral

attack on the water court's subject matter jurisdiction to grant the water right without endorsing that court's reasoning.

Colorado's enactment of exclusivity language brought the state into line with the explicit²⁴ or implicit exclusivity policy of all other western states at the time except Arizona and Alaska. The following year, Nevada joined the ranks of those states recognizing instream flow water rights by affirming in *Nevada v. Morros* the right of the United States to appropriate instream flows under state law for fish, wildlife and recreation.²⁵ Although the issue in the case (whether a diversion is necessary to establish a water right) was a familiar one and the Nevada Supreme Court disposed of it easily, this failed to prevent an old-fashioned western water tussle in which the State of Nevada sued its own State Engineer for granting the non-traditional rights.²⁶ The holding in *Morros* left open the question of whether a private individual or group may obtain instream rights but, by relying on a provision of Nevada law that allows "any person" to apply for a water appropriation permit, the court opened the door to private applications under the Arizona approach.

While the states have been taking sides on the exclusivity issue, the upshot of landing on one side of that line or the other is less than clear. Calls for relaxing the nearly west-wide embargo against public acquisition of instream flows have gone unheard²⁷, and experience shows that even in those states that nominally permit private appropriations little has taken place. In Arizona, for example, the Department of Water Resources has issued only a handful of instream flow permits, and the first final instream flow certificate took The Nature Conservancy 11 years to obtain.²⁸ In Alaska, the outlook is no more optimistic.²⁹

Colorado ostensibly has opened its doors to cooperative instream flow partnerships with federal land managing agencies,³⁰ but when the Forest Service made the first attempt to walk through that door by recommending an aggressive instream flow appropriation under state law for the proposed Piedra wilderness the CWCB refused to implement the recommendation.³¹ The Piedra provides a good case study of the breadth of the gap which separates the states from their detractors on this issue. In general, the states argue for unconditional state authority over water matters, while the public and, in some instances, the federal government, maintain that the states should not enjoy plenary power over water because water is inextricably related to other land, wildlife, and natural resource values in which the public and the federal government have undeniable interests. In the case of the Piedra, the CWCB asked the State's Attorney General for a formal opinion regarding the agency's authority to protect and enforce instream flows in federal wilderness areas. The result was an unequivocal affirmation of the state's authority—and ability—to do so.³² At the very same time, Congress asked its Research Service (CRS) to conduct a similar analysis. The CRS concluded that "there is some doubt that the [Colorado Water Conservation] Board has the authority to grant enforceable, permanent rights for instream flows."³³ This familiar power struggle over

control of western water has only one clear loser: the public interest in permanent protection for water-related resources.

Finally, when The Nature Conservancy attempted to donate a sizeable conditional water right to the Colorado Water Conservation Board for dedication to instream flows, it found that even to give water away for this purpose is not easy: it took four years for the Nature Conservancy to negotiate the terms of acceptance by the CWCB, and the water court is yet to hold a hearing on the change of water rights.³⁴

In sum, the option of private ownership or private cooperation in acquisition of instream flows is fraught with difficulty. Again, the temptation for the public has been to look elsewhere for a smoother path.

The Other Bank of the River: Instream Flow Success Stories

At the same time that courts have had trouble with the attempts of nontraditional water users to advance innovative theories, they have been enormously receptive to creative efforts by more familiar litigants. Two recent Colorado Supreme Court decisions uphold remarkable new conceptions of what constitutes an instream flow water right and thereby have expanded instream flow protection in an unforeseen and potentially dramatic new way. In both of these cases, the traditional water users who advanced the new formulation of the right were bucking the same sort of resistance to openness in instream flow acquisition and enforcement which, as discussed, has been fatal to the arguments of conservation groups. Significantly, the traditional water users succeeded.

The two cases, *Board of Commissioners of Arapahoe County v. Upper Gunnison River Water Conservancy District*³⁵ and *City of Thornton v. City of Ft. Collins*,³⁶ affirmed water rights applications which, for all practical purposes, involved no diversions and served beneficial in-place purposes such as fisheries maintenance and recreation. Both cases receive full treatment in Chris Meyer's piece elsewhere in this book.³⁷ I share Mr. Meyer's belief that the uncommon results in those cases are due in part to the relative willingness of the courts to have the law make sense for our times. But I disagree with his suggestion that the identity or stratagems of the lawyers in the cases had much to do with the results; rather, I suspect it was the identity of the parties that made the difference.

Where State Instream Flow Programs Provide Too Little, Too Late: Other Approaches to Protecting Streamflows

Recognizing that keeping streams flowing is a vital ingredient of biodiversity and land preservation, the "new water users" increasingly have turned toward other strategies to meet that goal. Most of these approaches invoke federal statutes and offer many advantages over toiling, state by state, with restrictive instream flow programs. First of all, the pertinent federal laws tend to be written in mandatory terms, while the state programs reserve copious discretion to the state agencies. Second, a federal strategy often permits a basin-wide or interstate approach to protecting rivers. Third, the federal approaches are not so conservative or rule-bound as the state programs tend to be, which allows for innovative interpretations of the laws. Fourth, some of the federal statutes contemplate affirmative or anticipatory preservation measures rather than a case-by-case, reactive or defensive posture. Fifth, public participation in the formative stages of policy development, and public enforcement after the fact, are the norm in the federal arena. Finally, the streamflow preservation movement has found a far more receptive audience in the federal arena than it has with the states.

Using the Endangered Species Act to Protect Riparian Ecosystems

The Endangered Species Act³⁸ (ESA) has proven to be a powerful tool for the preservation of streamflows and associated flora and fauna. The ESA is a complicated statutory scheme with three core provisions: sections 4, 7 and 9.³⁹ Section 7 sets up a process for anticipating and preventing the harmful effects on endangered species of actions which are federally permitted or funded. Section 9 contains broad prohibitions against actions, whether private or governmental, which have lethal or harmful effects ("takes" or "takings") on listed species. Both have frequent application to water resources projects, particularly in the West, but the fastest-growing body of law—and the one with the most pervasive effect on streamflow preservation—springs from section 4.

Section 4 of the Act contains the criteria and sets the mandatory timetables under which plants or animals in peril must be added to the official list of endangered or threatened species. Section 4 also requires the federal agency to designate the "critical habitat" of each new species it lists and to formulate a recovery plan to bring the species back from the brink of extinction. The Act defines critical habitat as "the specific areas within the geographical area occupied by the species ... on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection," as well as unoccupied areas which may be essential to the conservation of the species.⁴⁰ In the case of riverine or riparian-dwelling species such as fish, the constituent elements of critical habitat consist of spawning sites, seasonal wetlands, water quality and water quantity.⁴¹ Several cases illustrate the broad reach of section 4—whether standing alone, or in tandem with sections 7 and 9 of the Act—and its potential to protect key reaches of certain streams.

A diverse coalition of citizens, irrigators and fish and wildlife groups have won back-to-back section 4 lawsuits with major implications for streamflow preservation throughout the 3,500 miles of the Colorado River Basin. The first, *Colorado Environmental Coalition v. Turner*,⁴² forced the U.S. Fish and Wildlife Service to add the razorback sucker, a rare native fish, to the list of endangered species. The companion suit, *Colorado Wildlife Federation v. Turner*,⁴³ compelled the agency to fulfill its mandatory duty to designate the razorback's critical habitat. In response to a court-ordered timetable, the Fish and Wildlife Service proposed in January, 1993 to designate 2,094 of the 3,370 river miles in the Colorado and its tributaries as vital territory for the razorback and three other similarly endangered species of native fish: the humpback chub, Colorado squawfish, and bony-tailed chub.⁴⁴

The map which accompanied the proposed listing notice (Figure 1) illustrates the magnitude of the affected area, which includes parts of seven western states. The Service's pending revised proposed rule will flesh out the designation proposal with specific instream flow recommendations.⁴⁵ The proposed rule, published January 1993, gave some indication of the specific habitat conditions which must be monitored and protected:

The primary constituent elements determined necessary to the survival and recovery of the four Colorado River endangered fishes include, but are not limited to:

. . . .

Water. This includes a quantity of water of sufficient quality (i.e., temperature, dissolved oxygen, contaminants, nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is required for the particular life stage for each species.⁴⁶

Final critical habitat designation remains subject to agency consideration of public comment as well as an administrative process in which the biological benefits of the designation will be weighed against the economic impacts.⁴⁷ Once a final critical habitat rule has been published (under the federal district court's order, by March 15, 1994), any activity—private or governmental—which adversely modifies that habitat will violate sections 7 and 9 of the act and subject the violator to civil or criminal penalties.

The Colorado River Basin is by no means a unique case. Fish and other creatures that live in North American waterways are disappearing much faster than land-based fauna, and only dramatic measures to curb pollution and other habitat degradation will keep the rate of aquatic extinction from accelerating.⁴⁸ This crisis for our native aquatic species means that the Endangered Species Act potentially has nearly boundless application to our nation's waterways. In fact, ESA-based cases already are underway to rescue the dwindling stocks of Pacific salmon,⁴⁹ the Delta smelt⁵⁰ and other species.

Where the federal government has designated critical habitat for riverine creatures, as it has done on a number of occasions, it has mandated protection for such exacting constituent elements of fish habitat as "quality and permanence of streamflow in shallow areas of the streams (riffles)" (Maryland darter) and "small permanent streams with riffles, or intermittent creeks with pools and riffles ... with clean unpolluted water ... free of introduced exotic fishes" (Beautiful shiner).⁵¹

Conservation groups have not been alone in invoking the protections of the Endangered Species Act to conserve streamflows, particularly in the face of governmental failure to act. In *Sierra Club v. Lujan*,⁵² several cities and water districts joined the Sierra Club to protest the failure of the Texas and federal governments to prevent overdrafting of the Edwards Aquifer in central Texas. Springs and pools fed by the aquifer provide the only habitat of several endangered species. The court granted sweeping injunctive relief, including issuance of interim springflow requirements, an order to notify all Edwards Aquifer pumpers of the judgment and of the prospect of section 9 violations if pumping is not regulated, and repeated warnings to the State of Texas that its continued failure to prevent overdrafts would result in the fall of the "blunt axe" of federal regulation.⁵³

Another case which illustrates the point that perfunctory state programs will give way to more rigorous federal protection for streamflows is *U.S. v. Glenn-Colusa Irrigation District*.⁵⁴ In *Glenn-Colusa*, the Irrigation District's heavy pumping from the Sacramento River pulled migrating chinook salmon into the pumps and killed them—as clear a "taking" under the Endangered Species Act as ever there will be. The California Department of Game and Fish had begun efforts to address this problem as early as 1920, eventually installing a fish screen on the District's pumps.⁵⁵ After this measure proved ineffective, the state made other efforts (e.g., "endors[ing] building of a new fish screen,"⁵⁶) but the State's lack of mandatory controls or other substantial legal leverage doomed such efforts. Consequently, it took a civil enforcement action by the United States under the Endangered Species Act to enjoin the District from pumping during the salmon's peak migration season of July 15 through November 30 of each year.⁵⁷ In so doing, the court made short shrift of the District's argument, based on § (2)(c)(2) of the ESA, that state water rights should prevail over the restrictions in the Act: "The Act provides no exemption from compliance to persons possessing state water rights, and thus the District's state water rights do not provide it with a special privilege to ignore the Endangered Species Act. Moreover, the enforcement of the Act does not affect the District's water rights but only the manner in which it exercises those rights."⁵⁸

Thus, even where a state program sets out to protect riparian species, the program must be evaluated by its performance, not its goals. Most of the western states have instream flow programs—described in detail throughout this book—but many of them draw criticism for being ineffectual. To the extent that these programs are not endowed with strong instream flow acquisition and enforcement powers—or have, but fail to use,

those powers—these programs flirt with superfluousness, especially where endangered riparian species are at risk.

Developments in the Law of Federal Reserved Water Rights as a Streamflow Protection Measure

The last five years have seen a revolution in the approach to creation of federal reserved water rights. Although textbook reserved rights doctrine holds that this type of water right may arise either expressly or by implication from the language of land reservation documents, the reserved rights that courts have grappled with for decades have been chiefly of the implied variety. Litigation brought in the 1980's to establish the principle that federal wilderness areas have an implied water right to protect wilderness qualities⁵⁹ changed all that, however—and possibly forever.

The Reagan Administration's reaction to the federal district court's holding that wilderness areas are entitled to water rights to fulfill wilderness purposes was to cease claiming any such rights, anywhere, as a matter of policy.⁶⁰ Congress reciprocated by making an equally blanket policy of refusing to enact new land reservations without dealing affirmatively with water protection issues. The result: Congress has created express reserved water rights in an array of public land legislation.

These second wave reserved rights are too new to characterize in terms of quantification or effectiveness. As a tool to protect flows in thousands of miles of western streams, explicit reserved rights cast a long shadow. Moreover, these express reservations have created a powerful new pattern against which future legislation is judged. The inventory of lands to which express reserved rights attach includes the Cache la Poudre Wild and Scenic River,⁶¹ Colorado; the Arizona Desert Wilderness⁶² which embraces many miles of the lower Colorado River and its tributaries; the Clarks Fork Wild and Scenic River,⁶³ Wyoming; the San Pedro River Riparian Conservation Area,⁶⁴ Arizona; the Washington Parks Wilderness;⁶⁵ the El Malpais National Monument, New Mexico;⁶⁶ and the Nevada Wilderness.⁶⁷

Over the same period of time that Congress has begun the trend toward explicit water reservations, the courts have become hostile to implied reserved rights for land and wildlife purposes.⁶⁸ (One could argue over which phenomenon was cause and which was effect.) These court decisions, like the conservative approaches of state instream flow programs, fuel the search for more effective protection.

Doing the Unthinkable: Reoperation of Dams

A final component of the new set of strategies for protecting instream flows is dam reoperation.⁶⁹ Several forces drive this phenomenon which would have been

unthinkable two decades ago. First, and increasingly, the law demands it. Dam operations are the kind of major federal action affecting—and often adversely modifying—threatened and endangered riparian species and their critical habitats. The Endangered Species Act requires an evaluation of such impacts.⁷⁰ The spate of new species listings and critical habitat designations will spawn new looks at the impacts of many major dams. Second, the Electric Consumers Protection Act⁷¹ requires fresh consideration of recreational and ecological values when FERC-licensed projects come up for renewal, as is occurring with hundreds of the oldest dams in the west.⁷²

Even where the law does not yet insist on considering dam reoperation, the public does. The most prominent examples come from the nearly ubiquitous Bureau of Reclamation dams in the west. After years of foot-dragging, the Secretary of the Interior acceded to citizens' requests to study the operation of Glen Canyon Dam, with its infamous peaking power operations causing wildly fluctuating flows through the Grand Canyon.⁷³ And, as part of a record of decision on another Bureau project in the Colorado Basin, the agency agreed to negotiate a long-term water service contract with the National Park Service to protect flows in the Black Canyon of the Gunnison.⁷⁴

These are just the most prominent examples, but there is nothing extraordinary about them. In fact, new Bureau of Reclamation Commissioner Dan Beard has made environmentally sound management of the Bureau's 397 western water projects the centerpiece of his job.⁷⁵ Dam reoperation opens a new realm of issues, such as how—and how far—the federal government can control the instream flows it leaves in the rivers below its newly reoperated dams. Yet, for all the difficulty inherent in questions like these, they are far more tantalizing to the new water users than questions about how to tackle slow-to-change state programs.

Responses from the States

The individual chapters of this book contain the most up-to-date information available on western states' efforts to meet the challenges sketched out above. The states are changing, slowly.

Taking Colorado once again as a guide, we see the promulgation of new rules and regulations concerning the instream flow program. In general, the draft rules establish broad policy which then must be applied and elaborated in specific cases. For example, the draft rules call inundation of the Board's instream flow rights (by construction of a dam backing up water in a stream reach on which the CWCB holds an instream flow right) "an interference," but provides that case-by-case analysis must be done to determine whether to exercise its discretion to oppose an actual instance of inundation.⁷⁶ Given that the Board's reaction to inundation in the past was to deny that it constituted injury,⁷⁷ the position taken in the draft rules represents some progress. But the tentative nature of the Board's stance toward inundation, acceptance of conditional rights as

donations, and enforcement in general reflects the tension inherent in the Board's being both the steward of instream flows and a promoter of consumptive water use and development.⁷⁸

The story from the states has other dimensions, to be sure. In Nebraska, two decisions show a remarkable sensitivity by the state agency and the courts to the use of state instream flow programs and the public interest test. In *Upper Big Blue Natural Resources Dist. v. Fremont*,⁷⁹ the Nebraska Supreme Court denied on public interest grounds several interbasin diversions which would have depleted flows in the Platte River, home to several endangered species. And, in *Nebraska Game and Parks Comm'n v. 25 Corp.*, the same court interpreted the statutory term "minimum necessary [flows]" to accord not the least water possible but the more generous formulation, "lowest flow rate which would assure no degradation in the quality of the habitat."⁸⁰

Conclusion

If the "new water users" are impatient with state instream flow programs, it is because the problem is dire and time is running out. Twenty-eight percent of amphibian species and subspecies, 34 percent of fishes, 65 percent of crayfish and 73 percent of mussels are imperiled in degrees ranging from rare to extinct.⁸¹ The numbers are even worse in the West.⁸² The policies of state instream flow programs, driven as they are by the politics and economics of consumptive use, contribute to the problem. Until state programs elevate biodiversity and quality of life considerations to truly co-equal status with traditional notions of beneficial use, the new water users will continue to look elsewhere for solutions. The upshot of overlooking this powerful constituency of new water users is to put state programs on a fast-track to obsolescence.

Notes

1. Ms. Potter represents conservation groups and other non-traditional water users in legal actions to protect rivers throughout the Rocky Mountain West, including the following cases and matters discussed in this chapter: *Colorado Wildlife Federation v. Turner*, 23 *Env'tal Law Rptr.* 20402 (D. Colo. 1992); *Aurora v. Bell*, 799 P.2d 33 (Colo. 1990); *Colorado Environmental Coalition v. Turner*, Civ. Action No. 91-S-1765 (D. Colo. 1991); the *Sierra Club* wilderness water litigation cited in note 59, *infra*, and the legislation cited in notes 61-7, *infra*.
2. Lori Potter, *The Public's Role in Acquisition and Enforcement of Instream Flows*, 23 *LAND & WATER L.REV.* 419 (1988). A revised version of that article appeared in *INSTREAM FLOW PROTECTION IN THE WEST* (L. MacDonnell, et al., eds., 1989). Many of the issues in this chapter are introduced in the earlier pieces. Ms. Potter has represented citizens' groups in many of the cases and legislative matters discussed in these writings.
3. COLO. REV. STAT. § 37-92-102(3) (1990).
4. One could also argue that federal environmental laws and state instream flow laws have differing degrees of tolerance, or, to put it another way, that the federal protections are more absolute while state ones are more tentative. I treat this point at greater length below in the discussion of "where state instream flows provide too little, too late."
5. Federal statutes again provide a model for public enforcement of environmental laws. Citizens may file suit to enforce public rights or enjoin violations under, *inter alia*, the Clean Air Act, 42 U.S.C. § 7604(a) (1983), the Endangered Species Act, 16 U.S.C. § 1540(g) (1985), the Clean Water Act, 33 U.S.C. § 1365(a) (1986), the Outer Continental Shelf Lands Act, 43 U.S.C. § 1349(a)(1) (1986), the Toxic Substances Control Act, 15 U.S.C. § 2619(a) (1982 and Supp. 1988), the Deep Seabed Hard Minerals Resources Act, 30 U.S.C. § 1427(a) (1986), the Safe Drinking Water Act, 42 U.S.C. § 300j-8(a) (1983), the Noise Control Act, 42 U.S.C. § 4911(a) (1983), the Energy Policy and Conservation Act, 42 U.S.C. § 6305(a) (1983), the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1270(a) (1986), the Natural Gas Pipeline Safety Act, 49 U.S.C. § 1675(a) (1988 Appendix), the Resource Conservation and Recovery Act, 42 U.S.C. § 6972(a) (1983 and Supp. 1988), and the Emergency Planning and Community Right-to-Know Act 42 U.S.C. § 11046(a)(1) (1988 Pamphlet). Citizens and groups have used these remedies effectively. *See generally* Austin, *The Rise of Citizen Suit Enforcement in Environmental Law*, 81 *NW. U. L. REV.* 220 (1987); Roisman, *The Role of the Citizen in Enforcing Environmental Laws*, 16 *ENV'T REP. (BNA)* 10,163 (July 1986); DiMento, *Citizen's Suits - A Defense Perspective*, 16 *ENV'T REP. (BNA)* 10,162 (July 1986); Fadil, *Citizen Suits Against Polluters*, 9 *HARV. ENVTL. L. REV.* 23 (1985).

Most of these citizen suit provisions also contain a requirement that the plaintiff give 60 days notice prior to commencing the action. The notice requirement enhances voluntary compliance and also serves to inform the affected public agency of a possible violation.

6. *See* Kilbourne, *The Endangered Species Act Under The Microscope: A Closeup Look From A Litigator's Perspective*, 21 *ENVTL. L.* 499, 501-2 (1991).
7. *E.g.*, Colorado allows "any person" to file a statement of opposition to an application for a water right, COLO. REV. STAT. § 37-92-302(b)(Supp. 1987). "Any person" may protest or support a ruling of the water referee. *Id.* at § 304(2). "Any person" opposed to a change application may propose

terms or conditions on the change to prevent injury to a water right. *Id.* at § 305(3). In certain circumstances, "any person" may move to intervene in water court proceedings. *Id.* at §§ 304(3), 503(3). See also MONT. CODE ANN. § 85-2-307(2) and -2331 (1987) ("persons" may file written objections), MONT. CONST. art. IX, § 1(3) ("the legislature shall provide adequate remedies for the protection of the environmental life support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources"); OR. REV. STAT. § 540.520(5) (1987) ("any person" may protest approval of a water right application); UTAH CODE ANN. §§ 73-3-7(1), -14(1)(a) (1987) ("any person interested" may file a protest; "any person aggrieved" may seek judicial review); NEV. REV. STAT. § 533.365(1) (1986) ("any person interested" may file a protest); ALASKA STAT. §§ 46.15.133(c), (e), and -065(e) (1987) ("an interested person" may file an objection; "a person aggrieved" may seek judicial review); IDAHO CODE §§ 42-203A(4) and (6) (1987) ("any person ... concerned in such application" may file a protest; "any person ... aggrieved by the [administrative] judgment" may seek judicial review); WASH. REV. CODE § 90.03.200 (1987) ("any interested party" may file exceptions); WYO. STAT. § 41-4-312 (1987) ("any person ... claiming any interest in the stream or streams involved in the adjudication").

8. 799 P.2d 33 (Colo. 1990).
9. *E.g.*, COLO. REV. STAT. § 37-92-102(3)(c) (Supp. 1987); ALASKA STAT. § 46.15.080(b)(6) (1987); WYO. STAT. § 41-3-1001(b) (1987); IDAHO CODE § 42-1503 (1987).
10. In the Matter of the Application for Water Rights of the City of Aurora, et al., Case Nos. 85 CW 151, 85 CW 582, and 85 CW 583, Order dated May 20, 1986, (Water Div. 5, Colorado). The cities contested the conservationists' standing again on appeal, but the Supreme Court did not disturb this holding. *Aurora v. Bell*, *supra* note 7.
11. *Id.*, Stipulation of CWCB and Cities of Aurora and Colorado Springs.
12. Case No. 92-CV-6091, (Dist. Ct., Denver, July 2, 1993).
13. *Id.*, Order on cross-motions for summary judgment (July 2, 1993).
14. *Id.*, slip op. at 3-4.
15. See *Arapahoe County v. Collard*, 827 P.2d 546 (Colo. 1992).
16. The proposal to lower the CWCB's instream flow on Cottonwood Creek came before the CWCB at its May 6, 1993 and subsequent meetings. The Colorado Division of Wildlife requested that the CWCB's instream flow be reduced from 20 cfs to 6 cfs in order to expand a DOW fish hatchery. Telephone interview with Steve Craig of Colorado Trout Unlimited, October 12, 1993. In language reminiscent of the Holy Cross wilderness and *Aspen Wilderness* cases, TU stated: "Colorado Trout Unlimited (CTU) is becoming quite concerned over the ease and ability of water users (junior) to modify downward an older ISF right. It is beginning to appear as though one can adjust IFIM studies to gain free water by modifying a senior ISF right in an amount just equal to a desired flow. Is it the wish of the CWCB to make all ISF rights open to downward modifications? Equity would then require all senior rights (such as the Trout Creek Ditch, 1872) to be vulnerable to advancing science and technologies (such as water saving agricultural practices.)" Letter from Nick Doperalski, Colorado Trout Unlimited, to Dan Merriman, CWCB, June 9, 1993 at 1.
17. See *Aspen Wilderness Workshop v. CWCB*, No. 92-CV-6091 slip op. at 2-3 (Dist. Ct., Denver July 2, 1993).

18. Concerning the Application for Water Rights of the City of Aurora, Colorado, Case No. 86-CW-37 (District Court, Water Div. No. 4, Colorado), Order Ruling on Motions Presented at Oral Argument Held in Montrose, Colorado on April 20, 1988 (May 5, 1988) at 4.
19. *Id.*
20. See Lori Potter, *The Public's Role in Acquisition and Enforcement of Instream Flow Laws*, in detail in *INSTREAM FLOW PROTECTION IN THE WEST* (MacDonnell, et al., eds. 1989) 56-7.
21. COLO. REV. STAT. § 37-92-102(3) (1990) (emphasis added).
22. Case No. 87-CW-040, (Colo. Dist. Ct., Water Div. No. 5, February 7, 1988).
23. 827 P.2d 546, 553 (Colo. 1992).
24. See COLO. REV. STAT. § 37-92-102(3) (1973 & Supp. 1988) (Colorado Water Conservation Board); IDAHO CODE § 67-4301 to -4311 (1980) (the governor); NEB. REV. STAT. § 46-2,110 (1988) (Nebraska natural resource districts and Game and Parks Commission); N.D. CENT. CODE § 61-02-30(1985) (North Dakota Water commission); OR. REV. STAT. § 536.410(1988) (Oregon Water Resources Commission).
25. Nevada v. Morros, 766 P.2d 263 (Nev. 1988).
26. For a more detailed history and analysis of the issues in the case, see Potter, Nevada v. Morros: Instream Flow Rights for Nevada, *RIVERS* Vol. 1 No.1 at 65 (1990).
27. See Comment, THE CASE FOR PRIVATE INSTREAM APPROPRIATIONS IN COLORADO, 60 COLO. L. REV. 1087 (1989).
28. Burkhart, *Water Rights take Big Step*, ARIZONA REPUBLIC, Friday, November 30, 1990 at E6. As of 1990, Arizona had granted only four instream flow permits, the step before granting a final certificate—two to The Nature Conservancy and two to the Bureau of Land Management. *Id.*
29. A. Dan Tarlock, *Future Issues in Instream Flow Protection*, in *INSTREAM FLOW PROTECTION IN THE WEST* (L. MacDonnell, et al., eds. 1989) 147.
30. The Colorado Legislature amended COLO.REV.STAT. § 37-92-102(3) in 1986 to direct the Colorado Water Conservation Board to seek instream flow recommendations from federal land managing agencies.
31. See U.S. Forest Service "Instream Flow Needs Assessment and Recommendations for the Proposed Piedra Wilderness" (1991). To date, the CWCB has taken no action on the Recommendations. Telephone interviews with Anne Janicki, CWCB, and Vern Schmidt, U.S. Forest Service, (August 12, 1993).
32. Memorandum from Gale A. Norton to Colorado Water Conservation Board, (September 11, 1991).
33. Memorandum by Pamela Baldwin, Congressional Research Service, American Law Division (December 9, 1991) at CRS-2.

34. Under COLO. REV. STAT. § 37-92-102(3), "The board also may acquire, by grant, purchase, bequest, devise, lease, exchange, or other contractual agreement, from or with any person, including any governmental entity, such water, water rights, or interests in water as the board determines may be required for minimum stream flows or for natural surface water levels or volumes for natural lakes to preserve the natural environment to a reasonable degree. The Colorado State Office of The Nature Conservancy began its quest to donate the Pittsburg and Midway conditional right to the CWCB in 1988, but as of August 1993 the court proceedings still were not final. Telephone Interview with Robert Wigington, attorney, The Nature Conservancy (August 12, 1993).
35. 838 P.2d 840 (Colo. 1992).
36. 830 P.2d 915 (Colo. 1992).
37. Christopher Meyer, *Instream Flows: Integrating New Uses and New Players Into the Prior Appropriation System* (see Chapter 2 of this book). See also White, *Colorado Instream Flows*, 4 RIVERS No.1, at 55 (Jan. 1993).
38. 15 U.S.C. § 1531 (1988) *et seq.*
39. 15 U.S.C. §§ 1533, 1536, and 1539 (1988).
40. 15 U.S.C. § 1532(5)(A) (1988).
41. 50 C.F.R. § 424.12(b)(5) (1992).
42. Civil Action No. 91-S-1765 (D. Colo. 1991).
43. 23 ENVTL. L. RPTR. 20402 (D. Colo. 1992).
44. 58 Fed. Reg. 6578 (Jan. 29, 1993).
45. Readers wishing to follow the progress of critical habitat designation for the endangered fish of the Colorado River Basin may search the Federal Register database for updates to the original proposed rule of January 29, 1993. See note 43, *supra*.
46. 58 Fed.Reg. 6578, 6582 (Jan. 29, 1993).
47. See 15 U.S.C. § 1533(b)(2) (1988) (describing the "economic exclusion" process).
48. Brody, *Water-Based Animals Are Becoming Extinct Faster Than Others*, N.Y. TIMES, April 23, 1991 (reporting on studies by The Nature Conservancy, the American Fisheries Society, and others on the rate of extinction of North American freshwater species).
49. See *Northwest Salmon at the Crossroads*, HIGH COUNTRY NEWS special issue, April 22, 1991.
50. American Fisheries Society v. Verity, Civ. No. 88-0174-RAR-JFM (E.D. Cal.), mooted by 55 Fed. Reg. 12, 831 (April 6, 1990), see also *U.S. v. Glenn-Colusa*, *infra* note 53.
51. 50 C.F.R. § 17.95(e) (1992).

52. 36 Env't Cases 1533, 1993 WL 151353 (W.D. Tex. 1993).
53. 1993 WL 151353 at *19, *23, *27.
54. 788 F. Supp. 1126 (E.D. Cal. 1992). For a thorough description of the case, see Weber, *The Endangered Species Act: New Weapon Enters Sixty-Year Fish Fight*, 3 RIVERS 276 (Oct. 1992).
55. *Id.* at 1129.
56. *Id.* at 1130.
57. *Id.* at 1135.
58. *Id.* at 1134.
59. *Sierra Club v. Block*, 615 F. Supp. 44 (D. Colo. 1985); *Sierra Club v. Lyng*, 661 F. Supp. 1490 (D. Colo. 1987); *dismissed as unripe sub nom Sierra Club v. Yeutter*, 911 F.2d 1405 (10th Cir. 1990).
60. Sol. Op. M-36914 (Supp. III)(July 26, 1988); letter from Attorney General Edwin Meese to Secretary of Interior Donald Hodel (July 28, 1988); letter from Interior Dept. Solicitor Ralph Tarr to Rep. George Miller (July 29, 1988).
61. Pub. L. No. 99-590 § 102, 100 Stat. 3330, 3331 (Oct. 30, 1986).
62. Pub. L. No. 101-628, § 101(g) Stat. 4469 (Nov. 28, 1990).
63. 16 U.S.C. § 1274 (1990).
64. Pub. L. No. 100-696, § 102, 102 Stat. 4571 (Nov. 18, 1988).
65. Pub. L. No. 100-668, § 502, 102 Stat. 3961, 3968 (Nov. 16, 1988).
66. Pub. L. No. 100-225, § 509, 101 Stat. 1539 (Dec. 31, 1987).
67. Pub. L. No. 101-195, § 103 Stat. 1784 (Dec. 5, 1989).
68. Perhaps the most closely watched such case in recent years was that of the National Forest Service for instream flows in several Colorado forests for channel maintenance. See Memorandum of Decision and Order, In the Matter of the Amended Application of the United States, Case Nos. W-8439 *et al.*, Water Div. No. 1, Colorado (February 12, 1993). These claims under the National Forest Organic Act constituted a creative, albeit unsuccessful, response to *U.S. v. New Mexico*, 438 U.S. 696 (1978), the decision which marked the beginning of the trend toward extremely cramped interpretations of the implied reserved rights doctrine.
69. Reoperation of existing dams in the American West is the subject of a provocative and thoughtful new study. See Bolin, *Of Razorbacks and Reservoirs: The Endangered Species Act's Protection of Endangered Colorado River Basin Fish*, 11 PACE UNIV. ENV'T L. REV. __ (Fall, 1993, Forthcoming).
70. See 50 C.F.R. § 402.16 (1992).

71. 16 U.S.C. § 797(e) (1988).
72. Collins, *The Public Gets a Chance to Revamp Dams Built 50 Years Ago*, HIGH COUNTRY NEWS, December 2, 1991, at 1.
73. See Order of Secretary of Interior Manuel Lujan, 54 Fed. Reg. 43870 (October 27, 1989).
74. Bureau of Reclamation News Release, "Long-Term Protection of Gunnison River Flows to be Negotiated," January 21, 1992.
75. Doyle, *Can Dan Beard Reclaim Reclamation?*, HIGH COUNTRY NEWS, August 9, 1993, at 5.
76. Colorado Water Conservation Board, "Statement of Basis and Purpose and Rules and Regulations Concerning the Colorado Instream Flow and Natural Lake Level Program," Public Review Draft, March 4, 1993, at 7.
77. See Potter, *supra* note 19, at 47-8 (describing the Board's decision not to oppose development which would have inundated senior instream flow rights on North St. Vrain Creek).
78. *Id.* at 5.
79. 495 N.W.2d 23 (Neb. 1993)
80. 463 N.W.2d 591 (Neb. 1990).
81. Stevens, *River Life Through U.S. Broadly Degraded*, N.Y. TIMES, January 26, 1993, at C1 (citing 1990 study by The Nature Conservancy).
82. *Id.*

Instream Flows And The Public Trust

Harrison C. Dunning

Introduction

In 1976 a dozen science students, most of them from Stanford University and the University of California at Davis, obtained some modest federal funding to undertake a study of environmental problems at California's Mono Lake.¹ That lake, an ancient and very salty body of water lying directly east of Yosemite National Park, had then received relatively little scientific (or political or legal) attention, compared to its more famous neighbor to the north, Lake Tahoe.² But in the several decades preceding 1976, Mono Lake had been severely impacted by water development projects undertaken by the City of Los Angeles. Those projects by the early 1970s were diverting about 100,000 acre-feet of fresh water a year from several of the streams which flow into the lake and were sending that water south to the Owens Valley and the two hundred thirty-three mile Los Angeles Aqueduct to the city.³ This had led to a dramatic lowering in the water level of Mono Lake.⁴

The students set out to study the environmental consequences of Los Angeles' water projects in the Mono Basin. But, alarmed by what they found, they did not simply report back to the sponsoring agency, publish a scientific paper and move on to other work. Instead, some of them decided to organize politically in order to try to save Mono Lake. Among their concerns was the possibility of severe damage to the lake's food supply for local and migratory bird populations,⁵ as well as the prospect of substantial disruption of nesting patterns.⁶

The result of these initial student research and organizational efforts was the formation of the Mono Lake Committee,⁷ which contributed to a fascinating series of events. The story is not yet complete, but one clear consequence of the students' initiative has been an important evolution regarding the ancient legal doctrine of the "public trust." This development is undoubtedly of major importance to California water rights law today and may, like the introduction of the prior appropriation doctrine by the courts in mid-nineteenth century California,⁸ ultimately be important to water rights law in all the western states, if not the entire nation. Whether this doctrinal evolution will lead to the "saving" of Mono Lake or comparable lakes and streams, as preservationists would understand that term, is however an entirely different matter. As to that, the consequences of the students' effort are far from certain.

In this chapter I shall deal first with the doctrinal evolution represented by the Mono Lake decision handed down by a unanimous Supreme Court of California in 1983. I then will discuss post-1983 developments relevant to the integration of the public trust

doctrine and water rights law in California, three possible scenarios regarding future developments of the public trust doctrine as a tool for the preservation of instream flow, and my perspectives on legal aspects of the future of free-flowing waters in the western landscape.

Doctrinal Evolution: From Tidelands Controversies To Mono Basin Water Diversions

Long before 1983 the courts in California had made it plain that the public trust doctrine has a significant function with regard to land associated with navigable water. The concept was employed as early as the 1850s with regard to land around the edge of San Francisco Bay,⁹ and the courts at that time drew on an ancient tradition with regard to navigable bays and rivers.¹⁰ The core idea was that, because of the public's interest in navigation, commerce and fishing, private titles to tidelands and submerged lands would be held subject to a "public trust," often articulated as a public trust easement.¹¹ Notably, the legitimacy of private ownership and development of these special lands was thus usually accepted.¹² Perhaps that was inevitable, given the intense development pressure on much of California's coastal land during the nineteenth century. Furthermore, it was accepted that the public easement over small areas could be terminated in order to advance trust values in a large area.¹³ But, in principle at least,¹⁴ where those criteria for termination were not satisfied, the public right could not be extinguished.¹⁵ Apparently in California such extinction cannot occur even by way of explicit legislative mandate,¹⁶ so the doctrine takes on the dimensions of an implied constitutional limitation upon legislative power.¹⁷

Twentieth Century Developments

During this century the California courts have been expansive in their elaboration of the public trust interest in lands associated with navigable water. Private persons have been allowed standing to sue on the basis of the public trust doctrine¹⁸ and, in dicta, courts have repeatedly stated that public trust interests encompass far more than the classical trilogy of navigation, commerce and fishing.¹⁹ Of particular interest to those who support instream flow protection is judicial mention, in the context of tidelands, of the preservation of public uses such as scientific study, open space and wildlife habitat.²⁰ Finally, the California Supreme Court has laid to rest any suggestion that the public trust doctrine is limited to tideland or coastal areas. The key is not that land is on the coast, but that it is associated with navigable water. Thus, private titles to lands around the edge of inland navigable lakes such as Lake Tahoe and Clear Lake have been held to be burdened by the public trust easement.²¹

Typically the development proposal which would trigger a lawsuit invoking the public trust doctrine in California would involve something like a marina along the edge

of a bay or buildings to be constructed on fill in a bay.²² Prior to 1983, land development rather than water development was generally the concern,²³ although occasionally courts intimated that the public trust doctrine might have to do with protection of public interests in navigable water as well as those in land associated with navigable water.²⁴ Since the public uses in the classic trilogy—navigation, commerce and fishing—involve the use of water directly, and the use of associated land only indirectly, it required no great leap of imagination to suggest interference with navigable water alone might trigger public trust review. To dry up a lake through diversion of the streams which feed it obviously destroys navigation and other water-dependent uses just as definitively as fill could ever do.

In 1977, when at the request of environmental organizations, lawyers began to examine theories which might be used to protect inflows to Mono Lake, the public trust doctrine quickly became a prime candidate. Inspired by an influential law review article that touted the doctrine as a tool by which preservationists could achieve effective judicial intervention in disputes over the allocation of natural resources,²⁵ researchers seized on the idea of basing a legal challenge to the operations of the City of Los Angeles Department of Water and Power on the public trust doctrine.²⁶ About that same time a staff paper prepared for a blue-ribbon commission engaged in a review of California water law noted the logic of applying the public trust doctrine to protect instream flows,²⁷ and favorable commentary appeared elsewhere.²⁸ The momentum for a challenge was building, and suit was filed in 1979.²⁹ By 1983, after a series of procedural matters had been resolved,³⁰ the matter was before the Supreme Court of California for a decision on whether the plaintiffs could properly base their action upon the public trust doctrine.³¹

The Mono Lake Decision

The Mono Lake opinion which emerged is an elegant and forceful analysis authored by Justice Allen Broussard. It is unanimous on the fundamental question of the relevance of the public trust doctrine to damage to public uses of navigable waters caused by the exercise of appropriative rights.³² The environmental threat to Mono Lake is noted, and the history of both the public trust and the appropriation doctrine are reviewed in some detail. Borrowing a phrase from an article by Professor Ralph Johnson,³³ Justice Broussard in his opinion describes the two doctrines as "on a collision course."³⁴ But he concludes that the collision can be avoided and doctrinal harmony achieved if the California courts will simply integrate the two doctrines.³⁵ To do this, Justice Broussard suggests it will be necessary to modify somewhat the rigor with which, in his view, the public trust doctrine has been applied to land rights.³⁶ But, with this adjustment, integration of the two doctrines will preserve the viability of California's massive water development system while minimizing environmental harm whenever feasible.³⁷

The most serious threat to success for the plaintiffs in the Mono Lake suit in 1983 was an argument advanced by the state attorney general. This argument in effect acknowledged the logic of applying public trust doctrine thinking to water diversion situations, but provided an ingenious explanation of why that logic had not been developed in recent decades. The explanation was that the public trust doctrine, with its preservationist flavor, had been superseded by a public policy keyed more to water development than to preservation. The policy, formalized in a constitutional amendment in 1928,³⁸ called for the maximum reasonable beneficial use of water resources. According to the attorney general's argument, any one reasonable beneficial use of water is by nature as acceptable constitutionally as any other—it is as if the public trust were to include irrigation, power production and municipal water supply as equal in stature to navigation, commerce and fishing.³⁹

A consequence of this view would be to sort out uses by priority, subject to the power of the state pursuant to the constitutional policy to make modifications in the name of reasonableness. Instream uses would be protected or enhanced not because a public property right is being vindicated, but because the state has broad authority to rearrange the rights of appropriators—for example, those engaged in diversions from the source.⁴⁰

Despite a series of recent judicial opinions in which state authority has been upheld or expanded,⁴¹ Justice Broussard in the Mono Lake opinion resisted any temptation to follow the line of reasoning suggested by the attorney general. His opinion acknowledged that the public trust doctrine serves to strengthen and broaden State Water Resources Control Board (SWRCB) authority—clearly the board's predecessor erred in 1940 in thinking that, in passing on Los Angeles' application to appropriate water in Mono Basin, the detrimental consequences for Mono Lake could not legally be taken into account.⁴² But by keeping the public trust doctrine separate from the reasonable beneficial use doctrine, Justice Broussard was able to conclude that the trust also imposes a *duty* on the state to act in a way protective of *in situ* public trust uses of water.⁴³

Although the Mono Lake opinion makes no reference to the fact, by 1983 it was clear there was a political stalemate in California with regard to the protection of instream uses of water. Late in the 1950s the legislature had taken some steps toward better instream protection, for example by providing that fish, wildlife and recreation uses are beneficial uses of water.⁴⁴ In 1972, on the heels of cancellation of a planned unit in the State Water Project,⁴⁵ a California Wild and Scenic Rivers Act was passed into law.⁴⁶ But then in 1979 the court of appeal in two different decisions held that private persons with no plans to divert or otherwise physically control water are not eligible to have their applications to appropriate water considered,⁴⁷ and efforts to overturn those rulings by legislation were unsuccessful.⁴⁸ Similarly, efforts to provide for comprehensive instream flow regulations, as proposed by a blue-ribbon commission,⁴⁹ have been turned down by the legislature.⁵⁰ This occurred despite extensive documentation of the

enormous damage to instream resources which has resulted from water development projects.⁵¹ The court in earlier decisions had displayed an awareness of and sensitivity to the policy objectives of the Governor's Commission,⁵² and a similar attitude on the instream protection question may have played some unarticulated part in the Mono Lake decision.

In conclusion, what the Mono Lake decision provided was approval of a theory: that the ancient public trust doctrine may in the proper circumstances serve to limit how much water may be diverted pursuant to an appropriative right. Los Angeles was not ordered to give up anything. Instead, it was put on notice that the environmentalist challenge could proceed and that the many obvious questions would have to be resolved later on. These include factual determinations as to the extent, if any, to which the city's diversions are causing or will cause harm to the public trust uses of Mono Lake; the methodology for integrating legitimate claims for protection pursuant to the public trust doctrine with equally legitimate claims to use water pursuant to the appropriation doctrine; whether diminution of use of water by an appropriator can in any public trust circumstance constitute a taking of property for which just compensation is owed; and, if so, the appropriate taking analysis to apply.

Developments Since 1983: The Lower American River And Bay-Delta Disputes

In the Mono Lake litigation which produced the California Supreme Court's landmark decision, progress since 1983 to further the integration of the public trust doctrine and the prior appropriation doctrine has been very slow.⁵³ Initially, the litigants were preoccupied with the question of what forum would undertake that task.⁵⁴ Subsequently, attention was devoted to judicial establishment of interim flow requirements and to the preparation of various studies which may lead to a permanent reallocation of the waters of the Mono Basin. The meaning and implementation of the 1983 mandate have, however, also been under active consideration with regard to two other important water controversies in California. These will now be described in some detail, for they provide useful factual contexts within which the reader can imagine alternatives for fleshing out what meaning the public trust doctrine will have or should have for the exercise of water rights. The nature of what will eventually emerge is crucial to answering the question whether the public trust doctrine will ever be the basis for effective protection or enhancement of instream values.

The Lower American River Dispute

One of these controversies involves a proposed diversion from the lower American River. This river, which flows through the heart of California's capital at Sacramento, was initially untouched by the massive federal Central Valley Project (CVP) begun in the

1930s.⁵⁵ But since World War II Congress has authorized three CVP dams on the lower American, as well as the Folsom South Canal to divert water from the river just above Sacramento.⁵⁶ (See map at Appendix A.)

To date only two of the three authorized dams and about 27 miles of the canal have been constructed. Completion of the largest of the dams, Auburn Dam, has been blocked by concerns over seismic safety, vehement opposition from environmental groups and questions about cost-sharing. Without Auburn Dam, a decision by the state providing for substantial instream flows in the American River as it passes through Sacramento is not legally effective.⁵⁷ Nonetheless, since 1962 the Sacramento County Board of Supervisors has invested more than \$20 million in an extensive parkway along both sides of the American River below the canal's point of diversion.⁵⁸

The amenity value of the American River Parkway would be greatly decreased without the river's present instream flows, themselves in part a result of the two CVP dams already in place. One way to preserve those flows would be to complete the construction of Auburn Dam, but as noted above that course is now doubtful. In the absence of Auburn Dam or some substitute for it, to preserve those flows it is necessary to prevent or minimize future diversions of water to the Folsom South Canal.

To date the only water delivered through the canal was sold pursuant to a contract to deliver up to 75,000 acre-feet a year of cooling water to the Sacramento Municipal Utility District's now-closed Rancho Seco nuclear power plant.⁵⁹ A second contract, however, entered into in 1970 by the U.S. Bureau of Reclamation, provides for delivery through the Folsom South Canal of up to 150,000 acre-feet annually to the East Bay Municipal Utility District (EBMUD). EBMUD may at a future date want to use water obtained pursuant to this contract to augment supplies for its service area in the rapidly growing region to the east of San Francisco Bay.

The EBMUD-Bureau of Reclamation contract has been controversial. The Environmental Defense Fund (EDF) and others brought suit in the early 1970s against EBMUD with regard to it. The plaintiffs alleged if EBMUD took delivery of the water as contemplated by the contract, the district would be in violation of the reasonableness provision of the California constitution in two ways: first, it would be ignoring its legal obligation to engage in a program to reclaim waste water; and second, by taking a water supply from an upstream location rather than from an available downstream location, EBMUD would be precluding multiple beneficial use of much of the water in the lower American River.⁶⁰ In effect, EDF was asking that any diversion be from below Sacramento to maximize the amenity value of the parkway, e.g., the fishing and boating associated with substantial instream flows.

EDF and the County of Sacramento (an intervenor) were unsuccessful on the waste water reclamation claim, but the point of diversion claim survived an initial ruling by the California Supreme Court that any constraint imposed by the state constitution

was preempted by operation of the federal Reclamation Act of 1902.⁶¹ By the time the case had made its way to the U.S. Supreme Court and back to the state court system,⁶² the 1983 Mono Lake decision was on the books. So in late 1984, when a California Superior Court appointed the SWRCB as referee in the case, the public trust doctrine was of major concern.

In the ensuing court reference proceeding before the SWRCB, the question of the integration of the public trust doctrine with conventional water rights—in this case, the contractual rights of EBMUD rather than the appropriative ones of the Bureau of Reclamation—was extensively debated. A lengthy legal report prepared by SWRCB staff expressed many conclusions regarding the public trust doctrine as it relates to California water law: for example, that the doctrine applies to contractors for the use of water; that new projects to appropriate water may be required to release water at rates exceeding natural flow during some seasons to minimize harm to public trust resources; that the public trust may be considered notwithstanding the absence of all parties whose conduct might affect a river (e.g., the Bureau of Reclamation, not a party to the lawsuit); and that a diverter with the required water rights should be permitted to take water from a river whenever there is flow surplus to that necessary to maintain constitutionally reasonable public trust uses.⁶³

These generally expansive understandings of the public trust doctrine were of little practical consequence to the plaintiffs, however, because the board found as a matter of fact that, even under conditions of maximum diversion pursuant to the EBMUD contract, there would be only a minor effect on the public trust uses of the lower American River.⁶⁴ It was as if, after an extensive fact-finding process, the decision were that Los Angeles' Mono Basin diversions are causing only minor adverse consequences for the natural resources dependent upon Mono Lake. This administrative finding of fact did not, however, withstand exceptions to the referee's report presented to the trial court. In a decision of considerable significance for the evolution of the public trust doctrine, that court concluded that, although the Folsom-South point of diversion may be used for EBMUD, any diversions of water to the East Bay must be made subject to a rather stringent flow regime for the lower American River. This regime is one which requires feasible resource-based levels of protection in order to protect public trust values through what the court terms a "physical solution." Furthermore, the court appointed a special master to aid and advise the court in the implementation of this physical solution.⁶⁵

The Bay-Delta Dispute

A similar result seems much less likely in California's other major current public trust water rights controversy. This controversy involves the protection and enhancement of water quality in the Sacramento-San Joaquin Delta, where a serious threat to water quality comes from salinity intrusion. (See map at Appendix B.)

Before the time of major water projects on the rivers of California's Central Valley, salinity often intruded beyond San Francisco Bay upward through the Delta. Sometimes it went almost as far north as the City of Sacramento, normally late in the summer months when the runoff from the Sierra snowpack was gone and the fall rains had not yet begun. By way of contrast, enormous unregulated flows in the winter and spring would often push the saline water back toward San Francisco Bay and the Pacific Ocean.⁶⁶

One consequence of the many projects on rivers which flow toward San Francisco Bay has been to even out the instream flows. Flood control takes the peaks off the winter flows, and the use of the river channels to deliver stored water augments the summer flows. As has happened with the lower American River, advantage has been taken of this new situation. In particular, there has been intensive development of the Delta for several important purposes: agriculture on the Delta's many islands; industry at several locations; and the export of water, both for agricultural use in the San Joaquin Valley and for municipal and industrial water supply in the Bay Area and in Southern California. In addition, many people have relied on the continued existence of the fish and wildlife which live permanently in or pass through the Delta.

Many of these activities require, however, that nature not be permitted again to push saline waters up through the Delta. Much consideration at one time was given to proposals to construct physical barriers somewhere in the estuary,⁶⁷ but instead the state has relied on a hydraulic barrier to do the job. The mechanism has been to place conditions on the permits to appropriate water of the two largest diverters from the Delta: the CVP and the State Water Project (SWP), which parallels the CVP in many respects. Most of the permits issued to the operators of those two projects since the late 1950s have contained conditions pertaining to water quality and to coordination of terms and conditions among the many CVP and SWP permits. The conditions contemplate that salinity control will be obtained either by a reduction or cessation of exports from the Delta or by releases from natural flow or water in storage at upstream facilities maintained by both projects.

In view of the complexity of the interaction of Delta inflow, Delta consumptive uses, export diversions, agricultural return flows and tidal action, the state has taken the position that salinity control conditions for the Delta should not be of unlimited duration. Instead, conditions are fixed on an interim basis, and jurisdiction is reserved to reexamine the situation and consider revised conditions at some point in the future.

The last decision made by the SWRCB in furtherance of this reserved jurisdiction was Decision 1485 (D1485) in 1978.⁶⁸ D1485 contemplated that the board would reopen its hearing on Delta salinity control by 1986, in order to reexamine its standards in light of additional information gathered in the interim. The hearing was in fact reopened in the summer of 1987, and it has been a protracted and highly controversial process. Pursuant to the so-called Racanelli decision,⁶⁹ Phase I of what are known as the Bay-

Delta hearings was designed to identify the beneficial uses of the waters of the San Francisco Bay-Delta estuary, to determine the water quality objectives that will maintain such uses and to gather information on how these objectives should be implemented. Phase I culminated in promulgation by the SWRCB of a Water Quality Control Plan for Salinity for San Francisco Bay/Sacramento-San Joaquin Delta Estuary, but portions of this plan after review by U.S. EPA were disapproved as inadequate to halt the ongoing decline in fish resources such as striped bass. EPA, which derives its authority in this regard from Section 303 of the Clean Water Act,⁷⁰ threatened through 1992 and early 1993 to promulgate federal water quality standards for the estuary. Although in response the SWRCB did nothing to revise its water quality control plan, it did in 1992 conduct an evidentiary proceeding on "interim" water rights actions to protect the estuary. This led in December 1992 to promulgation by the board of a draft Water Right Decision 1630, designed to establish terms and conditions for interim protection of public trust uses of the estuary. Draft D1630 emphasize measures to change the timing of exports from the Delta in order to reduce or eliminate reverse flows in the southern Delta at times when these are deemed most damaging to fish and to provide "pulse flows" to assist young anadromous fish in their migration to the ocean.

D1630, however, proved to be highly controversial. Ultimately it was withdrawn by the SWRCB at the request of Governor Wilson, who suggested that its utility had been superseded by action taken by federal agencies pursuant to the Endangered Species Act. Subsequently the federal government and a group of environmental plaintiffs announced a proposed settlement of a suit brought by the environmentalists to compel promulgation of water quality standards by EPA under Section 303. According to this proposed settlement, the EPA will propose a draft rule establishing water quality standards for the estuary by December 15, 1993. The final rule must then be adopted within 90 days.

The relevance and meaning of the public trust doctrine were important subjects of consideration in the Bay-Delta hearings, both in Phase I and in the work on D1630. Enormous amounts of evidence were introduced on the impact of water projects and pollution on public trust uses of Bay-Delta waters. Similarly, attention was devoted to the benefit of exports of water from the Delta, thus laying the basis for the ultimate weighing of public trust damage and export benefit. This work will very likely be reflected in the water quality standards for the estuary expected to be promulgated by the EPA.

Three Scenarios For The Future

In thinking about what difference the public trust doctrine might make with regards to water resource controversies such as those involving Mono Lake, the lower American River and the Bay-Delta, it may be useful to consider three possible scenarios for future development. Doubtless, more than three can be suggested and, the future

reality probably will not conform precisely to any of these three or other possible models. But consideration of these three possibilities may help to clarify the issues.

The Interpretation Scenario

The first scenario might be called the "interpretation" scenario, in that the public trust doctrine here functions mainly as an aid in the interpretation or construction or fortification of other norms.

In this scenario the public trust doctrine is an evocative name for an elusive creature of the law—a sense that, for certain special natural resources such as navigable water, great care must be taken. Of course, to what end care must be taken is never entirely clear. It may be the end is established by some sense of the direction in which public policy is moving in the period when the job of interpretation arises.

Professor Charles Wilkinson's study of the public trust doctrine in public land law is suggestive.⁷¹ When the dominant public policy favored disposition of federal lands to states and settlers, the public trust doctrine supported the federal government's fiduciary obligation to hold land for future disposition.⁷² When the federal government began to be a more aggressive manager of its land, the doctrine supported extensive federal authority.⁷³ And when it was understood that the greatest threat to preservation of certain public values on federal lands might be the federal government itself, the public trust was used as a foundation for imposing obligations on the government.⁷⁴

Another example of a trust notion, the significance of which has changed over time as public policy has shifted, is provided by the federal law dealing with tribes of Native Americans. Initially, the trust served as the basis for a federalist judge to resist the exercise of state power over tribes viewed as dependent upon the federal government.⁷⁵ Later, at the threshold of a period of intense pressure to assimilate Indians into the dominant society, the trust arising from the dependent status of tribes served to justify very extensive—indeed "plenary"—federal power over tribes, even where no explicit constitutional basis could be found for the exercise of that power.⁷⁶ Finally, in recent years, when public policy has been more protective of tribal self-government, the trust has served as a basis for obligations imposed on the federal government vis-a-vis a tribe.⁷⁷

With regard to water rights, the interpretation scenario would call for the public trust doctrine to be used to buttress the dominant contemporary public policies regarding water. One such policy that can be easily identified is the policy in favor of the protection and enhancement of water quality. This policy has been important since the modern environmental protection movement gained the public's attention in the late 1960s and early 1970s, but it seems even more important now that there is great focus on toxics in drinking water supplies.

Interestingly, in the most important public trust judicial decision in California since the 1983 Mono Lake ruling, the court of appeal drew on the public trust doctrine in the D1485 case mainly in order to support the authority of the SWRCB to enforce water quality standards for nonconsumptive, instream uses.⁷⁸ This point was made as one basis for refuting the contention of the Bureau of Reclamation that, once a permit to appropriate has been issued, the SWRCB has no authority to modify it. The court of appeal was able to draw on Justice Broussard's observation in the Mono Lake decision that appropriators of water have no "vested" right to divert in a manner harmful to the interests protected by the public trust.⁷⁹

Significantly, independent of the public trust doctrine, it is clear that appropriators of water in California have no vested right to use water unreasonably.⁸⁰ Indeed, the court of appeal itself noted that the SWRCB is "authorized to modify . . . permit terms under its power to prevent waste or unreasonable use or methods of diversion of water."⁸¹ Furthermore, water quality standards could be enforced against permittees on the basis of statutory authority to reserve jurisdiction to impose new standards on projects in the name of the public interest.⁸² Thus, both with regard to the enforcement of water quality standards and the vestedness of water rights, the public trust doctrine served only to fortify an idea already found in the law.

The Consideration Scenario

The second scenario could be called the "consideration" scenario, as the emphasis here is upon the obligation of a resource allocator to consider all aspects, particularly all environmental aspects, of a resource allocation decision. In the Mono Lake situation, the SWRCB's predecessor board in issuing the appropriation permits to Los Angeles in 1940 indicated that under its view of the law it could not take into account the detrimental impact the diversions might have on the aesthetic and recreational value of the Mono Basin.⁸³ Clearly that view of what to consider in the exercise of resource allocation authority was wrong, as we now know from Justice Broussard's opinion.

As with the interpretation scenario, it is not clear how much the consideration scenario really adds to contemporary resource allocation decision-making. For decisions on new appropriations of water, in California there already are extensive consideration requirements in the California Environmental Quality Act (CEQA).⁸⁴ This statute, modeled upon the National Environmental Policy Act (NEPA),⁸⁵ mandates documentation as well as consideration in many situations. CEQA does not reach back to decisions made before 1970,⁸⁶ but as noted above, earlier allocation decisions—at least those made after 1928—are subject to reexamination pursuant to the state constitutional reasonableness requirement. And contemporary reexamination would come under CEQA.

The "consideration" scenario seems very consistent with the practice of the SWRCB since 1983. There has been no revolution in decision-making, or even any noticeable change except with regard to nomenclature. There are now "public trust" findings made in addition to or in lieu of other findings, but there is little to indicate any change in the content of decisions.

One result of the comparison of the public trust doctrine with CEQA (or NEPA) is to suggest that any change brought by Justice Broussard's opinion will be purely procedural. To the dismay of many environmentalists, NEPA and CEQA have turned out to be powerful procedural tools but entirely ineffective in laying down normative guidelines for the substance of agency action.⁸⁷ This is true even though the policy sections of those two statutes are rather detailed and generally preservationist in tone.⁸⁸ The public trust doctrine, although preservationist as it is understood today, lacks even the amount of substantive detail found in NEPA and CEQA.

The Property Right Scenario

The third scenario is a "property right" scenario. This scenario takes the "public trust" as literally analogous to a private trust where, in addition to a trustee, there are beneficiaries and the latter are considered to be the equitable owners of the trust assets. Here the state is the trustee of navigable waters and associated lands, and members of the public within the state are the beneficiaries and therefore the equitable owners of the waters and lands in question.

This interpretation draws support both from the closely related Equal Footing doctrine of federal law⁸⁹—clearly a "property right" doctrine in its application to land under navigable or tidal water—and from statutory statements to the effect that all water within the state is "the property of the people of the state,"⁹⁰ although use rights may be acquired according to the law. It also draws on the implication in judicial pronouncements on the public trust doctrine that the legislature is constrained in its freedom to act by the people's property right—that, for example, in the words of Justice Broussard, the people's "common heritage of streams, lakes, marshlands and tidelands" may be surrendered by the state only "in rare cases when the abandonment of that right is consistent with the purposes of the trust."⁹¹

The most useful analogy for the property right scenario is the development of the "reserved" right of federal water rights law. Federal courts responded to the prospect of Indian tribes settled on lands with inadequate water supplies by developing the notion that, when Congress (or the executive exercising properly delegated authority) reserved public lands for tribes, it also impliedly reserved an adequate water supply.⁹² The same idea was subsequently applied to other federal land reservations, such as national recreation areas, wildlife refuges, forests and parks.⁹³ Similarly, in a public trust property right scenario, the emphasis would be upon judicial fashioning of a public right

to deal with inadequate legislative provision for the protection of instream values important to the public.

In the case of federal reserved water rights, 55 years elapsed between the time the U.S. Supreme Court clearly established the right for the benefit of Indian tribes (1908) and the time the content of the right was laid down (1963).⁹⁴ Even now, it appears the standard as to content—"practically irrigable acreage"—may be limited to situations where the Indians are engaged in irrigation, as opposed, for example, to those where they need water to support a fishery. So it may similarly be that a period of time will be needed in state law to let the legitimacy of the public trust limitation on water rights become established, before courts begin the task of establishing the precise boundaries of the public's water right. For the time being it may be enough simply to say that the public right requires enough water in a stream or in a lake to protect indefinitely—"whenever feasible"—the viability of the major public trust uses of the source.

Of the three scenarios under discussion, it is the property right scenario which has the greatest potential for impact in situations like the Mono Lake case where established (if not for these purposes "vested") water rights exist. Similarly, it is the property right scenario which is most likely to produce claims that an unconstitutional taking has occurred. Los Angeles itself, as a creature of the state engaged in the putative taking, may encounter difficulty in presenting a taking argument.⁹⁵ But, in other situations, for example those where privately held rights are effectively limited because a public trust claim is held to have created a superior property right, it may be necessary to deal with the taking point. And this will occur in a context in which the U.S. Supreme Court, already arguably hostile to the public trust doctrine as understood by the California courts,⁹⁶ may have hardened its position on when a taking exists.⁹⁷ Nonetheless, the law with regard to "judicial" takings of this sort is far from settled,⁹⁸ making any prediction hazardous. And, even if application of the public trust is held to have worked a taking, in California the damages to be awarded to appropriators which hold their water rights under a permit or license are limited to the "actual amount paid to the State."⁹⁹

Free-Flowing Water And The Law In The West

For its first hundred years water law throughout the western states clearly was dominated by the claims of diverters.¹⁰⁰ Protection was provided almost exclusively for actions associated with diversion—the capture of water and, except in the case of the production of electricity, the movement of that water to some place away from the source. The claims were numerous: for mining, agriculture, municipal water supply and other beneficial uses associated with the settlement and development of the arid West.

Early Decisions Based On Non-Protective Considerations

Occasionally, there were situations in those first hundred years when courts seemed to protect the natural integrity of rivers, but on closer examination those cases seem ultimately more concerned with out-of-stream considerations than with instream values. It is well known, for example, that in 1884 courts in California used nuisance theory virtually to put an end to the practice of hydraulic mining.¹⁰¹ The unfortunate consequence of that sort of mining was the creation of enormous amounts of mining debris, much of which ended up in rivers and the estuary downstream. But the heart of the nuisance actions was not that the water was degraded by the mining debris, but that the build-up of debris in the beds of rivers reduced the carrying capacity of the channels and led to increased flooding of and deposit of debris on farmland and towns near the river.¹⁰² Protection of land away from the stream from damage by water, not protection of the integrity of a natural watercourse or protection of established or anticipated instream uses, was central to the decisions.

Similarly, in 1926 when the California Supreme Court vindicated Mrs. Herminghaus's famous riparian claim vis-à-vis the Southern California Edison project planned upstream,¹⁰³ it protected her right as a riparian to seasonal flood waters because she wanted them as an inexpensive means for irrigation of her grazing land.¹⁰⁴ There was no sense that any instream value of the sort we discuss today was being protected.

During that first hundred years, the appropriation doctrine became the dominant legal vehicle for the satisfaction of diverters' claims. It was never the exclusive doctrine in the West. It had much less importance for groundwater than for surface water, and even for surface water some states recognized rights to divert water based on riparian,¹⁰⁵ pueblo,¹⁰⁶ or prescriptive status.¹⁰⁷ But clearly, to understand the heart of western surface water law from the 1850s to the 1950s, one has to understand the doctrine of prior appropriation.

Development Of Protective Attitude

For California, I think the 1950s is the appropriate decade to select for the beginnings of a change in attitude—for initial recognition that, alongside the diversion of water, there are important values represented by nondiversion or the "free" flow of water. Initially, this change was signaled by an amendment to the Water Code to the effect that certain instream uses of water are "beneficial" uses.¹⁰⁸ Thus, the concept in appropriation theory that the origin, measure and termination of an appropriative water right depend on beneficial use was adapted to the instream situation. The consequence was not that water could be appropriated for instream beneficial use,¹⁰⁹ but that appropriations for diversion could be limited by permit conditions imposed in the name of protection of an instream beneficial use.¹¹⁰

Since the 1950s other devices have emerged in the law for protection of instream values. The most dramatic and comprehensive is a wild or scenic river designation,¹¹¹ for it can preclude almost all development on the designated stretch of river. But others clearly exist: federal reserved rights,¹¹² instream flow appropriation,¹¹³ water marketing,¹¹⁴ flow preservation regulations,¹¹⁵ and riparian rights are among the most interesting.¹¹⁶ And condemnation deserves more attention than it has received.¹¹⁷

The Public Trust Doctrine As Both A Protective And Corrective Mechanism

Among all these approaches to instream flow preservation we have the public trust doctrine. What are its comparative advantages, and will it spread throughout the West as prior appropriation once did?

I believe the comparative advantages of the public trust doctrine as a tool for instream flow protection are principally its ability to help undo past mistakes in an historically legitimate fashion and the fact the doctrine is a creature of state law. Each of these points requires elaboration.

Many of the legal devices for instream flow protection are effective only with regard to diversion rights established in the future. An instream appropriation, for example, is junior to all previously established appropriations. Wild and scenic rivers status normally is provided only for presently undeveloped stretches of river. Conditions placed on an appropriation permit affect only that appropriation, not all which have gone before.

A public trust right, by way of contrast, to the extent it is understood as a public property right, can be viewed as in existence from time immemorial. In Justice Broussard's words, the right is part of the "common heritage" of the people,¹¹⁸ like the air we breathe or the sky we enjoy. It predates any appropriative right, although in defining the scope of each kind of right accommodation in the name of fairness may be necessary.¹¹⁹ The public trust right is thus available as a tool to correct mistakes of the past, to the extent that can be done without running afoul of a constitutional restriction.

The public trust doctrine is of course not the only means for dealing with the present consequences of past mistakes. Police power regulation can do the same thing, subject again to constitutional restraints. But police power regulation lacks the ancient historical roots of the public trust doctrine, which provide a legitimacy for an unusual legal regime for very special natural resources—a regime less accommodating of private interests in resources than is true in other areas. Furthermore, normally police power regulation is stated in general terms to apply across a range of situations. The public trust doctrine can be similarly stated—for example, as a foundation for public access to dry sand areas of a state's beaches.¹²⁰ But it also can be tailored to the physical facts and political realities of individual situations. Thus, it may in the end operate differently

depending upon whether the situation is that of Mono Lake, the lower American River or the Bay-Delta. This may be a great advantage for a legal doctrine which, despite its ancient origins, is largely a new one in the instream flow protection arena.

A second comparative advantage of the public trust doctrine is its association with state law.¹²¹ By way of contrast, the reserved right—which to some extent also allows the correction of past mistakes¹²²—is a creature of the federal law.¹²³ And, with regard to water rights law in the West, federal law plays a secondary role. This has led the U.S. Supreme Court in recent years to emphasize that the paramount federal policy on western water rights is deference to state law and that, consequently, the scope of the federal reserved right will be narrowly understood.¹²⁴ The public trust doctrine, as a creature of state law, need not be interpreted in the same restrictive manner.

Since 1983 there have been indications that the courts in some states other than California also find the public trust doctrine an attractive tool for the resolution of water resources controversies. The best example is Idaho, where shortly after the 1983 Mono Lake decision the supreme court emphasized in dicta that it approved of the integration of the public trust doctrine with the appropriative rights doctrine.¹²⁵ Then in 1985 the Idaho Supreme Court, in the context of a controversy over appropriative water rights, noted that statutory public interest requirements must be understood in the larger context of the public trust doctrine.¹²⁶ This would require a public interest analysis not only upon filing of an application for a new water right permit, but also upon evidence of significant damage to public trust values from exercise of a water right created long ago.¹²⁷

Montana also has employed the public trust doctrine in ways of interest to those concerned with instream flow protection. In two decisions handed down in 1984, the Montana Supreme Court relied on the doctrine to protect public access to and use of streams for recreational purposes,¹²⁸ and subsequently it affirmed the constitutionality of most of a statute which codified that decision.¹²⁹ In one of the 1984 decisions, however, the court indicated that public use rights are subordinate to an established appropriative right.¹³⁰ Whether this point of view, clearly one inconsistent with the California and Idaho decisions, will be followed in case of an actual conflict between public use and a private appropriative right remains to be seen.¹³¹

Conclusion

Today we are witnesses in many places throughout the West to a broad change in thinking about the utilization of water resources. Few question the need in an arid region to use some of the limited supplies of surface water for irrigation, municipal water supply and other beneficial uses which require diversion. But many believe that our institutions and legal standards geared to water development have in some instances gotten out of control and that, as a consequence, we need to do two things. First, we

must follow a more balanced approach in future water development projects—an approach far more sensitive to environmental amenities threatened by these projects. Second, we must begin to think much more seriously about correcting at least some of the many situations where serious mistakes have been made in the past.¹³² For those of this point of view, environmental restoration is as important as more sensitive decision-making on future projects.

The public trust doctrine has its greatest potential as a tool for an aggressive approach to environmental restoration. There is great legitimacy to the claim of a public property right in navigable water. That right is expressed as the public trust doctrine, and it should become a viable basis for the restoration of instream flows or, in the case of Mono Lake, the restoration of needed water levels.¹³³ Public trust proponents will do much less than is possible if they settle for an "interpretation" or "consideration" public trust scenario, when so much more is achievable in a "property right" scenario. As in any reallocation of water rights, the legitimate needs of urban areas like Los Angeles which have been relying on water projects cannot be ignored. But the central task is to replace the status quo with a more balanced solution. For this, at Mono Lake and perhaps at other locations throughout the West, the public trust doctrine is an appropriate vehicle.

Notes

1. The study was funded by the Student Originated Studies Program of the National Science Foundation. Institute of Ecology Publication No. 12, University of California, Davis, AN ECOLOGICAL STUDY OF MONO LAKE, CALIFORNIA 145 (David W. Winkler ed. 1977) (hereinafter "Winkler"). The Mono Basin Research Group consisted of five Stanford students, five UC Davis students and one student each from Earlham College and UC Santa Cruz, *id.* at 143, who undertook a program of field and laboratory work during the summer of 1976. David Gaines, "Foreward: A Note on the History of Mono Lake," in Winkler, *id.* at i.
2. Mono Lake is "one of the oldest lakes in North America," Mono Basin Ecosystem Study Committee, THE MONO BASIN ECOSYSTEM: EFFECTS OF CHANGING LAKE LEVEL 18 (1987) (National Research Council; hereinafter "NRC Committee"), and, with no outflow, it is highly saline; Lake Tahoe, with its outflow via the Truckee River, is "still described as oligotrophic, free from excess nourishment, rich in oxygen, or more generally, youthful." John Ayer, WATER QUALITY CONTROL AT LAKE TAHOE: DISSERTATION ON GRASSHOPPER SOUP, 1 Ecology L.Q. 3, 4 (1971).
3. California Department of Water Resources, REPORT OF INTERAGENCY TASK FORCE ON MONO LAKE 11-13 (1979) (hereinafter "DWR Task Force").
4. In recent times the historic high for the lake's water level was 6,428 feet above sea level on July 18, 1919. NRC Committee, *supra* note 2, at 17. In 1941, when Los Angeles began its diversions, the level was 6,417. *Id.* On December 17, 1981, the lake's water level reached an historic low of 6,372. *Id.* Several very wet years since then have caused some recovery, to 6,380 feet in August 1986. *Id.* at 16. An interagency task force recommended the lake level be stabilized at 6,388 feet, which on the basis of 1979 estimates would have required diversions by Los Angeles to be reduced about 85 percent. DWR Task Force, *supra* note 3, at 55.
5. The principal foods are brine shrimp and brine flies, and the students concluded that "although the possibility exists that the brine shrimp and fly larvae of Mono Lake may be able to adapt themselves physiologically to a slowly increasing salinity or to evolve a genetic tolerance enabling survival, the weight of evidence examined here indicates that the present populations of these animals will not be able to withstand the increasing salinity predicted for Mono Lake." Winkler, *supra* note 1, at 69. And they noted that if the food organisms disappear from the lake, "the bird populations which depend on them are almost sure to follow." *Id.* at 3. The increasing salinity is caused by a declining lake level, NRC Committee, *supra* note 2, at 44-48, which in turn is caused mainly by exports of water from the basin. This general view of the relationships between water export, lake elevation, salinity level, food organism survival and bird populations seems to be shared by the authors of a report published by the National Research Council, *id.* at 2-6, as well as those of another report prepared for the California legislature. Daniel B. Botkin, et al., THE FUTURE OF MONO LAKE 12-17 (1988).
6. WINKLER, *supra* note 1, at 3. Increased air pollution in the form of dust storms fed by material from the newly exposed alkaline mud flats around the lake's shoreline was also a concern. *Id.*
7. Sally Gaines, "Way Back—The First Ten Years: From Creamed Tuna to the Supreme Court," *The Mono Lake Newsletter*, Winter 1980, at 4 (describes "how a group of idealistic biologists started a single-issue organization"). The Executive Director of the Mono Lake Committee has suggested that "[i]f there had been no Mono Lake Research Group, I doubt there ever would have been a

campaign to save the lake." Letter from Martha Davis to the author (Feb. 19, 1988). Tragically, David Gaines—author of the forward to the research group's report and the founder and chairperson of the Mono Lake Committee—was killed in 1988 in an automobile accident. *Sacramento Bee*, Jan. 13, 1988, at A3. In addition to the Mono Lake Committee, Friends of the Earth was actively involved in the early efforts to protect Mono Lake. BRECHIN, "A Matter of Trust," *SF Focus* (Sept. 1985).

8. *Irwin v. Phillips*, 5 Cal. 140 (1855). See generally, ROBERT G. DUNBAR, *FORGING NEW RIGHTS IN WESTERN WATERS* (1983).
9. *Eldridge v. Cowell*, 4 Cal. 80, 85 (1854).
10. Jan S. Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right*, 14 U.C. DAVIS L. REV. 195 (1980).
11. See generally, Harrison C. Dunning, *The Significance of California's Public Trust Easement for California Water Rights Law*, 14 U.C. DAVIS L. REV. 357 (1980).
12. *Id.* at 368-74.
13. See *id.* at 370. The leading federal decision made the same point somewhat more loosely in stating that legislatures could validly grant private entities land under navigable waters for improvements related to commerce on those waters, e.g. wharves, or where occupation of the parcels does not "substantially impair the public interest in the lands and waters remaining" *Illinois Central R.R. v. Illinois*, 146 U.S. 387, 452 (1892).
14. In recently summarizing the California law regarding the duties and powers of the state as trustee, the California Supreme Court noted that the state may surrender public trust protection "only in rare cases when the abandonment of that right is consistent with the purposes of the trust." *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 441, 658 P.2d 709, 724, 189 Cal. Rptr. 346, 361 *cert. denied*, 464 U.S. 977 (1983) (emphasis added). Unfortunately, there is no empirical study of land development in coastal areas of California which would allow one to judge the extent to which this principle has been reflected in practice. Elsewhere developers have contended that by obstructing clear title the public trust doctrine "makes it difficult to obtain mortgage financing or to ensure the alienability of urban property at its true value." John F. Carlson, *The Public Trust Doctrine and Urban Waterfront Development in Massachusetts: What is a Public Purpose?*, 7 HARV. ENVTL. L. REV. 71, 71 (1983). Lack of knowledge as to the practical consequences of the public trust doctrine for coastal land utilization and development make prediction about the consequences of the doctrine for water resources development particularly hazardous.
15. To sustain the public trust easement in the face of a legislative act of termination, one opinion suggested one must produce "evidence indicating that the abandonment of the public trust will impair the power of succeeding legislatures to protect, improve, and develop the public interest in commerce, navigation, and fisheries." *Mallon v. City of Long Beach*, 44 Cal. 2d 199, 207, 282 P.2d 481, 486 (1955).
16. See *supra* note 14. Although the dicta in *Audubon* and earlier cases are fascinating, I have not found any example in the recently reported California decisions of a judicially invalidated conveyance or a development judicially prohibited on public trust grounds following explicit legislative approval. The best example from another state is *Lake Michigan Fed'n v. United States Army Corps of Eng'rs*, 742 F. Supp. 441 (N.D. Ill. 1990). There a private institution, Loyola

University of Chicago, was permanently enjoined from placing fill material on an 18-acre parcel under Lake Michigan, even though the state legislature in granting the parcel to the university for expansion of its lakeshore campus had made numerous findings that the project would be in the public interest. The court invalidated the conveyance as "a transparent give-away of public property to a private entity." *Id.* at 447. It further declared that the lakebed of Lake Michigan "is held in trust for and belongs to the citizenry of the state. The conveyance of lakebed property to a private party—no matter how reputable and highly motivated the private party may be—violates this public trust doctrine." *See also* *People ex rel. Scott v. Chicago Park District*, 66 Ill. 2d 65, 360 N.E.2d 773 (1976). There the Illinois legislature conveyed land beneath Lake Michigan to U.S. Steel for construction of a new factory. The legislation included a finding that the grant was made in aid of commerce and would create no impairment of the public interest in the remaining lands and waters. *Id.* at 80, 360 N.E.2d at 781. The court termed the public benefit "too indirect, intangible and elusive" to satisfy the criteria for termination; found private benefit to be the "direct and dominating" purpose of the grant; and invalidated it. *Id.* at 80-81, 360 N.E.2d at 781. Presumably, the result would be the same if, instead of attempting to place the situation within the ambit of the established public trust termination criteria, the Illinois legislature simply stated that the prior criteria were eliminated and termination could occur for whatever reason (or no reason) deemed suitable by it.

17. *See* Harrison C. Dunning, *The Public Trust: A Fundamental Doctrine of American Property Law*, 19 ENVTL L. 515, 520-24 (1989). It is interesting to compare this implied constitutional aspect of the state law public trust doctrine with the similar quality accorded the federal law "Equal Footing" doctrine. *Id.* at 524. The latter provides that the U.S. government holds title to land under navigable water in territories in trust for future states and that upon admission to the Union a beneficiary state automatically takes title to such land. *Pollard v. Hagan*, 44 U.S. (3 How.) 212 (1845). Although a state's beneficial interest can be defeated in some circumstances, *see e.g.*, *Choctaw Nation v. Oklahoma*, 397 U.S. 620 (1970); *cf.* *Utah Div. of State Lands v. U.S.*, 482 U.S. 193, 107 S. Ct. 2318 (1987), where such do not exist the federal government must acknowledge state ownership of the land, despite the lack of any explicit constitutional language to that effect. This puts states created from federal territories on the same footing as states formed by the original thirteen colonies.
18. *Marks v. Whitney*, 6 Cal. 3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971).
19. *Id.* at 259, 491 P.2d at 380, 98 Cal. Rptr. at 796.
20. *Id.* at 259-60, 491 P.2d at 380, 98 Cal. Rptr. at 796. Water quality control will perhaps soon be added to the list. *See generally* Ralph W. Johnson, *The Emerging Recognition of a Public Interest in Water: Water Quality Control by the Public Trust Doctrine*, in *WATER AND THE AMERICAN WEST: ESSAYS IN HONOR OF RAPHAEL J. MOSES* (David H. Getches ed. 1988).
21. *State of California v. Superior Court (Fogerty)*, 29 Cal. 3d 240, 172 Cal. Rptr. 713, 625 P.2d 256, *cert. denied*, 454 U.S. 865 (1981) (Lake Tahoe); *State of California v. Superior Court (Lyon)*, 29 Cal. 3d 210, 172 CAL. RPTR. 696, 625 P.2d 239, *cert. denied*, 454 U.S. 865 (1981) (Clear Lake). Such land lies between the high and low water marks of these lakes. In the aftermath of *Lucas v. South Carolina Coastal Council*, 112 S.Ct. 2886 (1992) and *Nollan v. California Coastal Comm'n*, 483 U.S. 825 (1987), there may now be renewed interest in the relevance of the public trust doctrine for dry sand areas adjacent to both inland lakes and the ocean. *See Matthews v. Bay Head Improvement Assoc.*, 95 N.J. 306, 471 A.2d 355, *cert. denied*, 469 U.S. 821 (1984).

22. *Marks v. Whitney*, 6 Cal. 3d 251, 261, 491 P.2d 374, 381, 98 CAL. RPTR. 790, 797 (1971) (marina on Tomales Bay); *Atwood v. Hammond*, 4 Cal. 2d 31, 37, 48 P.2d 20, 25 (1935) (public buildings on reclaimed area in San Diego Bay).
23. *See generally*, DUNNING, *supra* note 11.
24. *See People v. Gold Run Ditch & Mining Co.*, 66 Cal. 138, 151-2, 4 P. 1152, 1159 (1884); *People v. Russ*, 132 Cal. 102, 64 P. 111 (1901).
25. Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 473 (1970).
26. Other theories under consideration included the contention that the city's use of water was in violation of the reasonableness limitation in the California Constitution, CAL. CONST. ART. X, § 2, and the argument that federal littoral rights to the waters of Mono Lake should be asserted to obtain some restoration of the lake's water level. The first argument was abandoned, but the second one was pursued in petitions filed by the Sierra Club and the Natural Resources Defense Council with the Secretary of the Interior. The premise of the second argument—that federal agencies such as the forest service *have* littoral rights in California—was recently affirmed by the Supreme Court of California. In *re Water of Hallett Creek Stream Sys.*, 44 Cal. 3d 448, 749 P.2d 324, 243 Cal. Rptr. 887 (1988), *cert. denied California v. United States*, 488 U.S. 824 (1988). Even if federal agencies have littoral rights in California, however, they may insist they have no duty to assert them. *See Robert H. Abrams, Water in the Western Wilderness: The Duty to Assert Reserved Water Rights*, 1986 U. ILL. L. REV. 387 (1987).
27. Anne J. Schneider, *Legal Aspects of Instream Water Uses in California* 6-29 (1978). *See also* GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, FINAL REPORT 110 (1978).
28. Ronald B. Robie, *The Public Interest in Water Rights Administration*, 23 ROCKY MTN. MIN. L. INST. 917, 927 (1977).
29. In addition to alleging a violation of the public trust, the complaint filed by the National Audubon Society and others alleged violation of article XVI, section 6 of the California Constitution (gift of public money); a cloud on plaintiff's public trust title; public and private nuisance; and violation of article X, section 4 of the California Constitution (access to navigable water). An amended complaint filed after removal of the case to federal court added a claim arising under the federal common law of nuisance.
30. These matters are discussed in Harrison C. Dunning, *The Public Trust Doctrine and Western Water Law: Discord or Harmony?*, 30 Rocky Mtn. Min. L. Inst. 17-1, 17-28 to 17-29 (1984).
31. Another event which increased interest in and awareness of the public trust doctrine in California between 1978 and 1983 was a two day conference in 1980 at UC Davis attended by some 650 people. One part of that conference dealt with "The Public Trust Doctrine and Inland Water Resources." The conference proceedings were published in *THE PUBLIC TRUST DOCTRINE IN NATURAL RESOURCES LAW AND MANAGEMENT* (Harrison C. Dunning, ed. 1981). Several of the conference papers also appear at 14 U.C. DAVIS L. REV. (1980).

32. The court divided on the question whether the courts and the State Water Resources Control Board have concurrent jurisdiction over suits to determine rights to water. The majority expressed doubts on this point, *National Audubon Society v. Superior Court*, 33 Cal. 3d 419, 451, 658 P.2d 709, 731, 189 Cal. Rptr. 346, 368, *cert. denied*, 464 U.S. 977 (1983), but concluded in the affirmative.
33. Ralph W. Johnson, *Public Trust Protection for Stream Flows and Lake Levels*, 14 U.C. Davis L. Rev. 233, 233 (1980).
34. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 425, 658 P.2d 709, 712, 189 Cal. Rptr. 346, 349, *cert. denied*, 464 U.S. 977 (1983).
35. Justice Broussard notes that to administer the appropriative water rights system without consideration of the public trust doctrine "may cause unnecessary and unjustified harm to trust interests." *Id.* at 446, 658 P.2d at 728, 189 Cal. Rptr. at 365.
36. He observes that the "prosperity and habitability" of much of California are built upon "the diversion of great quantities of water from its streams for purposes unconnected to any navigation, commerce, fishing, recreation, or ecological use relating to the source stream" and concludes from that observation that the state "must have the power to grant non-vested usufructuary rights to appropriate water even if diversions harm public trust uses." *Id.* at 426, 658 P.2d at 712, 189 Cal. Rptr. at 349. At another point in the opinion this power is grounded upon "current and historical necessity." *Id.* at 446, 658 P.2d at 727, 189 Cal. Rptr. at 364. Although the Mono Lake opinion suggests the rules of inland water resources are thus different from those for tidelands and submerged lands, it is likely in reality many of the latter in fact have been filled for purposes "unconnected to any navigation, commerce, fishing, recreation, or ecological use" relating to the navigable water. *See* note 14 *supra*; *see generally* DUNNING, *supra* note 11.
37. Another important element in Justice Broussard's analysis is the conclusion that diversions from streams whose navigability has not been established implicate the public trust doctrine where the public trust uses of a downstream navigable lake or river are impaired. *National Audubon Society v. Superior Court*, 33 Cal. 3d 419, 436, 658 P.2d 709, 720, 189 Cal. Rptr. 346, 357, *cert. denied*, 464 U.S. 977 (1983). The navigability of Mono Lake was established in *City of Los Angeles v. Aitken*, 10 Cal. App. 2d 460, 466, 52 P.2d 585, 588 (1935), but no decision has been made on the navigability of the various fresh water creeks which flow into the lake. On the elusive concept of navigability, *see generally* Richard M. Frank, *Forever Free: Navigability, Inland Waterways, and the Expanding Public Interest*, 16 U.C. Davis L. Rev. 579 (1983).
38. CAL. CONST., ART. X, § 2.
39. *See generally* Roderick E. Walston, *The Public Trust Doctrine in the Water Rights Context: The Wrong Environmental Remedy*, 22 SANTA CLARA L. REV. 63 (1982). Independently of the public trust doctrine, there are statements of use preference in California water rights law, e.g. CAL. WATER CODE §§ 106, 1254 (West 1971), but these and other similarly specific directives have generally been superseded by the more general "public interest" standard for new appropriations of surface water resources. *See United States v. State Water Resources Control Bd.*, 182 Cal. App. 3d 82, 103-04, 227 Cal. Rptr. 161, 169-70 (1986).
40. A similarly broad view of the state's reasonable beneficial use authority was evidenced in a recent decision of the California Court of Appeal that has come to be known (after the author of the opinion) as the "Racanelli" decision. There, in a situation where water rights are being limited in

order to achieve water quality objectives, the court indicated that where diversions of water cause adverse effects, the State Water Resources Control Board has authority "to modify . . . permits to curtail . . . use of water on the ground that . . . use and diversion of the water [has] become unreasonable." *Id.* at 130, 227 Cal. Rptr. at 187. In light of this decision, perhaps the environmentalists in the Mono Lake litigation erred in not asserting a violation of article X, section 2 of the California Constitution (reasonable beneficial use). *See supra* note 26.

41. *People v. Shirokow*, 26 Cal. 3d 301, 605 P.2d 859, 162 Cal. Rptr. 30 (1980); *In re Waters of Long Valley Creek System*, 25 Cal. 3d 339, 599 P.2d 656, 158 Cal. Rptr. 350 (1979); *see Bank of America v. State Water Resources Control Bd.*, 42 Cal. App. 3d 198, 116 Cal. Rptr. 770 (1974).
42. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 427-28, 658 P.2d 709, 713-14, 189 Cal. Rptr. 346, 350-51, *cert. denied*, 464 U.S. 977 (1983). The agency based its position on use preference provisions, *supra* note 39, which favor domestic use over other uses.
43. This is qualified only in that public trust uses must themselves pass the constitutional reasonableness test. *Id.* at 443, 658 P.2d at 725, 189 Cal. Rptr. at 362.
44. CAL. WATER CODE § 1243 (West 1971).
45. MARC REISNER, CADILLAC DESERT 371-73 (1986) (Dos Rios Dam).
46. CAL. PUB. RES. CODE, §§ 5093.50 et seq. (West 1984).
47. *Fullerton v. State Water Resources Control Board*, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979); *California Trout, Inc. v. State Water Resources Control Board*, 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).
48. A ballot initiative, which, among many other changes, would have permitted appropriation without physical control, was defeated in November 1982 in a state-wide election.
49. GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, FINAL REPORT 112-114 (1978).
50. The legislative leader of efforts to authorize instream appropriations in California was Assemblyman Robert Campbell.
51. References are provided in *Schneider*, *supra* note 27.
52. *See, e.g., People v. Shirokow*, 26 Cal. 3d 301, 605 P.2d 859, 162 Cal. Rptr. 30 (1980); *In re Waters of Long Valley Creek Sys.*, 25 Cal. 3d 339, 599 P.2d 656, 158 Cal. Rptr. 350 (1979).
53. Some related developments of interest have also occurred in litigation over fisheries in the lower reaches of two of the creeks which are tributary to Mono Lake and are sources of water exported from the Mono Basin by Los Angeles. As a result of unusually wet years from 1982 through 1986, substantial releases of water were made from the city's dams into these lower reaches. Significant numbers of trout were released with the water, and they caused fisheries to be reestablished or augmented below the dams. A fisherman and two fishing organizations then filed a lawsuit based in part on Fish and Game Code Sections 5937 and 5946 in which they sought injunctive relief against the city again dewatering the lower reaches by failing to release water from the Grant Lake Dam on Rush Creek. Section 5937 provides that the owner of any dam shall release "sufficient"

water "to keep in good condition any fish that may . . . exist below the dam." Section 5946 explicitly provides for the application of section 5937 to licenses to appropriate issued after September 9, 1953, for projects within the district in which Los Angeles has its Mono Basin diversion facilities.

With regard to section 5937 the trial court noted if it is mandatory, it gives "absolute priority to fish" and as such may violate the reasonable beneficial use provision of the state constitution (ART. X, SECTION 2). *Dahlgren v. City of Los Angeles*, No. 8092, slip op. at 15 (Mono Cty. Sup. Ct. Aug. 17, 1985). The court, however, suggested that in light of *Audubon* the code section might be read as non-mandatory and the court might instead use the *Audubon* principles "to balance the public trust values in Lower Rush Creek vs. the needs of the people of the City of Los Angeles." *Id.* Subsequently the court required the city to maintain a release of at least nineteen cubic feet per second from the dam.

Similar developments occurred with regard to Lower Lee Vining Creek, for which a preliminary injunction required Los Angeles to release up to five cubic feet per second of water from its dam in order to maintain a minimum flow of three cfs at the beginning of a designated downstream reach. *Mono Lake Comm. v. City of Los Angeles*, No. 8608, (Mono Cty. Sup. Ct. Oct. 21, 1987).

In the consolidated appeal of these two actions, the California Court of Appeal ruled that Sections 5937 and 5946 together create an absolute priority to maintain fish in "good condition." *California Trout, Inc. v. State Water Resources Control Bd*, 207 Cal. App. 3d 585, 625, 255 Cal Rptr. 184, 208 (1989). "The Legislature's policy choice of the values served by a rule forbidding the complete drying up of fishing streams in Inyo and Mono Countries in favor of the values served by permitting such conduct ... is manifestly not unreasonable." The court ordered the State Water Resources Control Board to incorporate in the Mono Basin licenses issued to the City of Los Angeles language requiring downstream releases of water in compliance with Fish and Game Code Sections 5937 and 5946. *Id.* at 585, 255 Cal. Rptr. 184 (1989); *see also California Trout, Inc. v. Superior Ct.*, 218 Cal. App. 3d 187, 266 Cal. Rptr. 788 (1990). Restoration work on Mono Basin streambeds has been initiated to accommodate court-ordered releases of water to those streams.

54. Nearly 18 months after the final decision of the California Supreme Court and the remand of the matter to the federal district court, that court decided that all claims except that based on the federal common law of nuisance should be severed and remanded to the state court system in order to avoid an inappropriate exercise of federal pendent jurisdiction over issues of state law. *National Audubon Soc'y v. Department of Water and Power*, No. Civil S-80-127 LKK, slip op. at 34 (E.D. Cal. Nov. 8, 1984). On appeal, however, it was decided the entire case should be remanded to the state courts. *National Audubon Soc'y v. Department of Water and Power*, 869 F.2d 1196 (9th Cir. 1988). Subsequently, in response to a reference from the trial court with jurisdiction over the litigation, the SWRCB began work on the matter. *See California State Water Resources Control Board, Draft Environmental Impact Report for the Review of Mono Basin Water Rights of the City of Los Angeles* (May 1993). Hearings on this draft EIR are scheduled for fall 1993.
55. On the CVP, *see generally*, ERWIN COOPER, *AQUEDUCT EMPIRE* (1968).
56. At one time the federal plan was to extend that canal some 300 miles down the east side of the San Joaquin Valley, in order to deliver water to various points as far south as Kern County. *Id.* at 161-62.

57. The decision, D1400, is explicit that the substantial instream flows approved are required only once Auburn Dam is constructed.
58. WATER EDUCATION FOUNDATION, WESTERN WATER 5 (Nov./Dec. 1985).
59. *Id.* at 6. Rancho Seco used about one-third of the contracted amount. The Sacramento Bee, March 7, 1988, at B2, col. 4. Approximately an additional 175,000 acre-feet of American River water are sold annually by the U.S. Bureau of Reclamation to others, mostly local cities and water agencies, who hold contractual rights for up to 935,000 acre-feet of water. *Id.* at B1, col. 5.
60. Environmental Defense Fund, Inc. v. East Bay Mun. Util. Dist., 52 Cal. App. 3d 828, 125 Cal. Rptr. 601 (1975).
61. Environmental Defense Fund, Inc. v. East Bay Mun. Util. Dist., 20 Cal.3d 327, 572 P.2d 1128, 142 CAL. RPTR. 904 (1977), *vacated*, 439 U.S. 811 (1978).
62. Environmental Defense Fund, Inc. v. East Bay Mun. Util. Dist., 439 U.S. 811 (1978) (judgment vacated and case remanded).
63. CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, LEGAL REPORT (1987).
64. CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, REPORT OF REFEREE 10 (1988).
65. This unreported trial court decision is described at Somach, *The American River Decision: Balancing Instream Protection with Other Competing Beneficial Uses*, 1 RIVERS 251 (1990). On the "physical solution" generally, see Harrison C. Dunning, *The "Physical Solution" in Western Water Law*, 57 U. COLO. L. REV. 445 (1986).
66. Cooper, *supra* note 55, at 265-66.
67. *Id.* at 266-67 (Reber Plan).
68. This decision was challenged in litigation, and a trial court overturned it in several respects. On appeal, the court was critical of several agency determinations, but it left D1485 intact as hearings on a decision to replace it were about to begin. *United States v. State Water Resources Control Bd.*, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986) (Racanelli decision).
69. *Id.* The breadth of material being considered is attributable largely to critical comments in this decision. D1485 aimed to maintain "without project" conditions in the Delta, with "project" meaning only the CVP and the State Water Project. Other diverters and polluters were not considered, but this meant that "the Board erroneously based its water quality objectives on the unjustified premise that upstream users retained unlimited access to upstream waters, while the projects and Delta parties were entitled only to share the remaining water flows." *Id.* at 118, 227 Cal. Rptr. at 179. More generally, the decision criticized the SWRCB's decision to exercise its water quality and water rights functions in a single proceeding and suggested that as a consequence of that "unwise" procedure "the water quality standards were established only at a level which could be enforced against the projects." *Id.* at 119-20, 227 Cal. Rptr. at 180.
70. 33 U.S.C. § 1313.

71. Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. Davis L. Rev. 269 (1980).
72. *Pollard v. Hagan*, 44 U.S. (3 How.) 212 (1845) is a leading example. *See supra* note 17.
73. A good example is *Camfield v. United States*, 167 U.S. 518, 524 (1897). *Light v. United States*, 220 U.S. 523, 537 (1911), is termed the leading case by Wilkinson. *See Wilkinson, supra* note 71, at 282.
74. By far the best example of this is the Redwood National Park litigation. *Sierra Club v. Department of the Interior*, 376 F. Supp. 90 (N.D. Cal. 1974); 398 F. Supp. 284 (N.D. Cal. 1975); and 424 F. Supp. 172 (N.D. Cal. 1976).
75. *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1 (1831); *see also Worcester v. Georgia*, 31 U.S. (6 Pet.) 515 (1832).
76. *United States v. Kagama*, 118 U.S. 375 (1886).
77. *See, e.g., Morton v. Ruiz*, 415 U.S. 199 (1974).
78. *United States v. State Water Resources Control Bd.*, 182 Cal. App. 3d 82, 148-52, 227 CAL. RPTR. 161, 200-02 (1986).
79. *Id.* at 150, 227 Cal. Rptr. at 201.
80. *Erickson v. Queen Valley Ranch Co.*, 22 Cal. App. 3d 578, 99 Cal. Rptr. 446 (1971).
81. *United States v. State Water Resources Control Bd.*, 182 Cal. App. 3d 82, 129, 227 Cal. Rptr. 161, 187 (1986).
82. CAL. WATER CODE § 1394 (West 1971).
83. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 427-28, 658 P.2d 709, 713-14, 189 Cal. Rptr. 346, 350-51, *cert denied*, 464 U.S. 977 (1983).
84. CAL. PUB. RES. CODE §§ 21000-21176 (West 1986).
85. 42 U.S.C. §§ 4321-4370a (1988).
86. *See County of Inyo v. Yorty*, 32 Cal. App. 3d 795, 805-6, 108 Cal. Rptr. 377, 384-85 (1973); *cf. CAL. PUB. RES. CODE § 21169* (West 1986).
87. Joseph L. Sax, *The (Unhappy) Truth About NEPA*, 26 Okla. L. Rev. 239 (1973); *cf. Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989); *Strycker's Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223 (1980).
88. NEPA, for example, declares that it is the continuing policy of the federal government to use all practicable means "to create and maintain conditions under which man and nature can exist in productive harmony." National Environmental Policy Act § 101, 42 U.S.C. § 4331 (1988); CEQA, *inter alia*, initially declared that the state policy was to ensure that the long-term protection of the environment shall be "the" guiding criterion in public decisions. California Environmental Quality

Act, CAL. PUB. RES. CODE § 21001 (West 1986). In 1979 this was qualified by the addition of the following: "consistent with the provision of a decent home and suitable living environment for every Californian." California Environmental Quality Act, CAL. PUB. RES. CODE § 21001(d) (West 1986).

89. *See supra* note 17. The relationship between the Equal Footing and public trust doctrines is considered in some detail in *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469 (1988) (states upon entering union acquire title to all land beneath water subject to tidal influence, even if the water was not navigable-in-fact).
90. CAL. WATER CODE § 102 (West 1971); *see generally* Peter A. Fahmy, *The Public Trust Doctrine as a Source of State Reserved Water Rights*, 63 DEN. U. L. REV. 585 (1986).
91. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 441, 658 P.2d 709, 724, 189 Cal. Rptr. 346, 361 *cert. denied*, 464 U.S. 977 (1983).
92. *Winters v. United States*, 207 U.S. 564 (1908).
93. *Arizona v. California*, 373 U.S. 546 (1963); *United States v. City and County of Denver*, 656 P.2d 1 (Colo. 1982).
94. From *Winters v. United States*, 207 U.S. 564 (1908) to *Arizona v. California*, 373 U.S. 546 (1963). *See also* *Wyoming v. United States*, 492 U.S. 406, *reh'g. denied*, 492 U.S. 938 (1989), *affirming without opinion* *In re the General Adjudication of All Rights to Use Water in the Big Horn Sys.*, 753 P.2d 76 (Wyo. 1988).
95. *Trenton v. New Jersey*, 262 U.S. 182 (1923).
96. *See Summa Corp. v. California ex rel. State Lands Commission*, 466 U.S. 198, 205 (1984). *But cf.* *Phillips Petroleum Co. v. Mississippi*, *supra* note 89.
97. *See Lucas v. South Carolina Coastal Commission*, 112 S.Ct. 2886 (1992) and *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987).
98. *Robinson v. Ariyoshi*, 753 F.2d 1468 (9th Cir. 1985), *vacated and remanded*, 477 U.S. 902 (1986); 676 F. Supp. 1002 (D. Haw. 1987) *app. den.* 854 F.2d 1189 (9th Cir. 1988) (change in state water rights law as an unconstitutional taking); *cf.* Kevin M. O'Brien, *New Conditions for Old Water Rights: An Examination of the Sources and Limits of State Authority*, 33 ROCKY MTN. MIN. L. INST. § 24-1 (1987) ("Consistent with *Nollan*, courts should closely scrutinize terms and conditions which affect [the priority] of the appropriative right."); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631, 674-75 (1986) (the public trust doctrine "adds little to the degree of governmental immunity from taking challenges to governmental environmental protection and conservation measures"); Barton H. Thompson, Jr., *Judicial Takings*, 76 VA. L. REV. 1449 (1990).
99. CAL. WATER CODE § 1629 (West 1971) (license to appropriate); CAL. WATER CODE § 1392 (West 1971) (same language regarding permit to appropriate). These provisions, of course, deal with the water right but not the physical facilities which may be useless if there is no water right. As to the latter, in the comparable situation in federal power law, when the government takes over project works upon the expiration of a license, the licensee is only entitled to payment for its "net investment." 16 U.S.C. § 807 (a) (1988). That term is defined at 16 U.S.C. § 796 (1988).

100. See generally DUNBAR, *supra* note 8.
101. *People v. Gold Run Ditch & Mining Co.*, 66 Cal. 138, 4 P. 1152 (1884); *Woodruff v. North Bloomfield Mining Co.*, 18 F. 753 (C.C. Cal. 1884). See generally ROBERT L. KELLY, GOLD VS. GRAIN: THE MINING DEBRIS CONTROVERSY IN CALIFORNIA'S SACRAMENTO VALLEY (1959).
102. *Woodruff v. North Bloomfield Mining Co.*, 18 F. 753, 758-61 (C.C. Cal. 1884). Injuries to navigation were also of deep concern. *Id.* at 761-62. See generally Anne Ziebarth, *California's First Environmental Battle*, 4 CAL. LAWYER 56, 58 (No. 8, 1984); Grove K. Gilbert, *Hydraulic-Mining Debris In the Sierra Nevada* 43 (U.S. Geological Survey Professional Paper No. 105, 1917) (volume of earth moved from 1849 through 1909 "eight times as great as the volume moved in making the Panama Canal").
103. *Herminghaus v. Southern California Edison Co.*, 200 Cal. 81, 252 P.607 (1926), *cert. dismissed*, 275 U.S. 486 (1927).
104. This decision led directly to enactment of an anti-waste, pro-water development amendment to the state constitution, CAL. CONST. ART. X, § 2.
105. Of the Western states, California has been the most protective of the riparian water right. Recently, in fact, the California Supreme Court unanimously confirmed that federal agencies can claim these rights on the same basis as private landowners. In re Water of Hallett Creek Stream Sys., *supra* note 26.
106. *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 537 P.2d 1250, 123 Cal. Rptr. 1 (1975).
107. *People v. Shirokow*, 26 Cal. 3d 301, 605 P.2d 859, 162 Cal. Rptr. 30 (1980).
108. CAL. WATER CODE § 1243 (1971) (enacted 1959).
109. Where no physical control is taken of the water, such appropriation is prohibited in California. *Fullerton v. State Water Resources Control Bd.*, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979); *California Trout, Inc. v. State Water Resources Control Bd.*, 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).
110. In D1485, this was done to protect such uses identified in a water quality control plan. See *supra* note 68.
111. CAL. PUB. RES. CODE §§ 5093.50-5093.69 (West 1984); WILD AND SCENIC RIVERS ACT, 16 U.S.C. § 1271 (1988).
112. Although such rights arising by implication of the Organic Administration Act of June 4, 1897, 16 U.S.C. § 473, have been narrowly construed, *United States v. New Mexico*, 438 U.S. 696 (1978) (to serve only principal purposes of a national forest, which do not include aesthetics, recreation or fish preservation), other statutes may have a broader meaning. *Sierra Club v. Block*, 622 F. Supp. 842 (D. Colo. 1985); *Sierra Club v. Lyng*, 661 F. Supp. 1490 (D. Colo. 1987) (Wilderness Act basis for reserved right to instream flows), *vacated as not ripe for adjudication*, in *Sierra Club v. Yeutter*, 911 F.2d 1405 (10th Cir. 1990).

113. See generally A. Dan Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on 'New' Public Western Water Rights*, 1978 UTAH L. REV. 211 (1978).
114. Although the term "water marketing" is often used to describe the *initial* sales of water from a new water development project, the current policy debate on the concept focuses on the *reallocation* of water rights through market mechanisms. See generally Jarret C. Oeltjen & Loyd K. Fischer, *Allocation of Rights to Water: Preferences, Priorities, and the Role of the Market*, 57 NEB. L. REV. 245 (1978). Instream protection can be achieved, for example, if senior diversion rights are purchased and dedicated to nondiversion. See CAL. WATER CODE § 1707 (West Supp. 1993). Ways to restructure water rights and otherwise encourage private markets to "produce" instream flow are discussed in TERRY LEE ANDERSON, *WATER CRISIS: ENDING THE POLICY DROUGHT* 73-85 (1983).
115. Proposals for such regulation can be found in GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, FINAL REPORT 113-14 and 120-28 (1978).
116. Litigation in California over the question whether federal agencies hold riparian water rights under state law was triggered by a Forest Service claim as a riparian to water for "wildlife enhancement." In re Water of Hallett Creek Stream Sys., *supra* note 26, at 889. A proposal to deny federal agencies state law riparian rights but permit them instream flow appropriations for public purposes is presented in COMMENT, *California Water for National Forests: Reserved Rights, Riparian Rights, and Instream Appropriations*, 20 U.C. DAVIS L. REV. 921, 950-53 (1987).
117. See *supra* note 99, regarding conditions precedent which would affect the valuation of appropriative rights to water held under permit or license in California.
118. National Audubon Soc'y v. Superior Court, 33 Cal.3d 419, 425, 658 P.2d 709, 712, 189 Cal. Rptr. 346, 349, *cert. denied*, 464 U.S. 977 (1983).
119. This has frequently occurred in the tidelands and submerged lands cases, City of Berkeley v. Superior Court, 26 Cal.3d 515, 606 P.2d 362, 162 Cal. Rptr. 327, *cert. denied, sub nom.* Santa Fe Land Improvement Co. v. City of Berkeley, 449 U.S. 840 (1980); Illinois Cent. R.R. v. Illinois, 146 U.S. 387 (1892), and in fact in waters rights cases generally there is far more bending of doctrinal "rules" to achieve a result perceived as fair than is commonly recognized. See generally Harrison C. Dunning, *State Equitable Apportionment of Western Water Resources*, 66 NEB. L. REV. 76 (1987).
120. Matthews v. Bay Head Improvement Assoc., Inc., 95 N.J. 306, 471 A.2d 355 (1984), *cert. denied*, 469 U.S. 821 (1984).
121. The leading federal precedent arguably treats the doctrine as one of state law, Illinois Central R.R. v. Illinois, 146 U.S. 387, 436-37 (1892), and it has been so construed in a later decision. Appleby v. New York, 271 U.S. 364, 395 (1926). On the other hand, the public trust doctrine is closely related to the federal Equal Footing doctrine, *supra* notes 17 and 89. Furthermore, whether the public trust doctrine is founded on sovereignty or prior ownership, the federal government generally has both and consequently could in theory develop a federal law public trust doctrine. In some sense this has been done for federal public lands, *supra* note 71, and it could in the future be done with regard to navigable water. Perhaps the well-recognized existence of a Commerce Clause-based federal navigational servitude has inhibited such a development.

122. The priority of a reserved water right is the date upon which the associated federal land was reserved for particular federal purposes. *Cappaert v. United States*, 426 U.S. 128 (1976). Generally such dates are rather early, so if the scope of a reserved right is sufficient to encompass an instream use, exercise of that right may preclude dewatering of a stream by the exercise of junior rights to divert.
123. *See supra* note 112.
124. *United States v. New Mexico*, 438 U.S. 696 (1978).
125. *Kootenai Environmental Alliance, Inc. v. Panhandle Yacht Club, Inc.*, 105 Idaho 622, 671 P.2d 1085 (1983). The court followed *Illinois Central* in attributing implied constitutional status to the public trust doctrine. It said that doctrine "at all times forms the outer boundaries of permissible government action with respect to public trust resources." *Id.* at 632, 671 P.2d at 1095. It also included property values among the trust interests protected by the doctrine.
126. *Shokal v. Dunn*, 109 Idaho 330, 336 n.2, 707 P.2d 441, 447 n.2 (1985).
127. Both *Shokal* and *Kootenai* are clear that any grant to use state waters is subject to the public trust. *Id.*; *Kootenai Environmental Alliance, Inc. v. Panhandle Yacht Club, Inc.*, 105 Idaho 622, 631, 671 P.2d 1085, 1094 (1983). Interestingly, whereas *Kootenai* repeatedly describes the trust as applicable to "navigable" water, *id. passim*, *Shokal* says the state holds "all" waters in trust. *Shokal v. Dunn*, 109 Idaho 330, 336 n.2, 707 P.2d 441, 447 n.2 (1985).
128. *Montana Coalition for Stream Access v. Hildreth*, 684 P.2d 1088 (Mont. 1984); *Montana Coalition for Stream Access v. Curran*, 682 P.2d 163 (Mont. 1984); *cf. Gibson v. Kelly*, 15 Mont. 417, 423, 39 P. 517, 519 (Mont. 1895).
129. *Galt v. State*, 731 P.2d 912 (Mont. 1987).
130. *Montana Coalition for Stream Access v. Curran*, 682 P.2d 163, 170 (Mont. 1984).
131. R. Mark Josephson, *An Analysis of the Potential Conflict Between the Prior Appropriation and Public Trust Doctrines in Montana Water Law*, 8 PUB. LAND L. REV. 81, 112 (1987) ("Under Montana's current expression of the public trust doctrine no ground exists for the court to effect a reallocation of a vested water right in favor of a broad recreational use without requiring just compensation.")
132. For a dramatic example of reform of an existing reclamation project, see Title 34, Reclamation Projects Authorization and Adjustment Act of 1992, Pub L. No. 102-575, (1992). *See also* Harrison C. Dunning, *Confronting the Environmental Legacy of Irrigated Agriculture in the West: The Case of the Central Valley Project*, 23 ENVTL. L. 943 (1993).
133. For a full development of the history and current use of the public trust doctrine in regard to water rights, *see generally* Harrison C. Dunning, *The Public Right to Use Water in Place*, in WATERS AND WATER RIGHTS, Part VI (Robert E. Beck ed., 1991 plus annual supplements).

The Federal Role In In-Place Water Protection

Lawrence J. MacDonnell

Teresa A. Rice

States continue to exercise primary responsibility for determining particular uses of water within their borders, but an increasing number of federal requirements now guide and constrain the exercise of this authority. Historically, federal interest in water resources centered primarily on the navigational value of rivers in support of commerce, on development of water for economic uses, and on flood control. Today, the federal role is more multidimensional and is increasingly concerned with the ecological values of water.

This chapter provides an overview of the significant federal role in protection of in-place values of water in the western states. That there is and, many would say, must be some federal role is a source of irritation (or worse) for some in the West but, while this role is constantly changing, federal involvement in matters of western water resources seems unlikely to disappear. Water is a resource shared by many users and among many uses. Involvement of the federal government in decisions concerning allocation, use, and protection of water often results from the diversity of interests in the water resource that may not be of direct concern to some water users or even to states. An important contemporary example is protection of water-dependent endangered species. Moreover, much federal involvement in water resource matters derives from the ability of the federal government (diminishing though it is) to provide financial support necessary to accomplish desired water-related objectives. Historically this meant funds for "improvements" such as deepening channels for navigation or for building dams to store water to be used for irrigation. Today it may mean the substantial costs of restoration of degraded watersheds. In addition, federal responsibility for management of the public lands and for the welfare of Indian tribes on reservations raises important water-related concerns.

The more longstanding federal water interests of navigation, flood control, hydropower, and comprehensive river development are taken up first in this chapter. Next we consider federal laws and programs involving such interests as fish and wildlife, endangered species, and water quality insofar as they relate to streamflow or other in-place water uses. We then turn to water-related issues associated with public lands and Indian reservations. Finally we consider emerging directions in federal programs related to ecosystem restoration and protection and watershed management.

We give particular attention to the tensions between federal and state interests in the utilization and protection of streamflows and other in-place water resources. Western states jealously guard their primary role in determining uses of the water.

resources within their borders and generally regard federal efforts related to streamflow protection as unwarranted interference with this prerogative. While in many respects there is a growing convergence of views respecting the need for in-place protection of water resources there remain inevitable differences in priorities—particularly short term—and in the manner in which these priorities should be determined and implemented. We argue that a watershed approach, in which the broad range of interests in water uses are considered in a coordinated manner, offers considerable promise as a framework within which to address these differences.

Federal Involvement in River Development

The traditional role of the federal government in water matters related primarily to the importance of water for economic development. During this nation's first century the federal government focused on the use of the nation's rivers for navigation in support of trade and commerce. Then federal interests expanded to include matters such as flood control, irrigation, and hydropower development. Gradually the federal role expanded into one of planning and implementing what came to be called "comprehensive development" of river basins.

Navigation and Flood Control

Waterways long have served as "public highways," essential for travel and for commerce. In an 1824 decision, *Gibbons v. Ogden*,¹ the U.S. Supreme Court found that the power to regulate interstate commerce enumerated in article I, section 8 of the U.S. Constitution gave control over navigable waterways to the federal government. In that same year Congress provided funds to the Army Corps of Engineers to make some minor navigational improvements in the Mississippi and Ohio Rivers.² According to the 1973 report of the National Water Commission, the United States had spent over \$3 billion since 1824 to make improvements in its more than 25,000 miles of commercially navigable inland waterways.³

The federal role related to navigation also includes a strong regulatory component. The U.S. Supreme Court decision in *Gibbons v. Ogden* struck down a New York statute that gave a monopoly to a single company to provide steamboat services on rivers in that state. In 1851 the Supreme Court precluded state-authorized construction of a bridge over the Ohio River that would obstruct navigation⁴, and in 1865 the court explained:

The power to regulate commerce comprehends the control for that purpose, and to the extent necessary, of all the navigable waters of the United States which are accessible from a State other than those in which they lie. For this purpose they are the public property of the nation, and

The Federal Role In In-Place Water Protection

Lawrence J. MacDonnell

Teresa A. Rice

States continue to exercise primary responsibility for determining particular uses of water within their borders, but an increasing number of federal requirements now guide and constrain the exercise of this authority. Historically, federal interest in water resources centered primarily on the navigational value of rivers in support of commerce, on development of water for economic uses, and on flood control. Today, the federal role is more multidimensional and is increasingly concerned with the ecological values of water.

This chapter provides an overview of the significant federal role in protection of in-place values of water in the western states. That there is and, many would say, must be some federal role is a source of irritation (or worse) for some in the West but, while this role is constantly changing, federal involvement in matters of western water resources seems unlikely to disappear. Water is a resource shared by many users and among many uses. Involvement of the federal government in decisions concerning allocation, use, and protection of water often results from the diversity of interests in the water resource that may not be of direct concern to some water users or even to states. An important contemporary example is protection of water-dependent endangered species. Moreover, much federal involvement in water resource matters derives from the ability of the federal government (diminishing though it is) to provide financial support necessary to accomplish desired water-related objectives. Historically this meant funds for "improvements" such as deepening channels for navigation or for building dams to store water to be used for irrigation. Today it may mean the substantial costs of restoration of degraded watersheds. In addition, federal responsibility for management of the public lands and for the welfare of Indian tribes on reservations raises important water-related concerns.

The more longstanding federal water interests of navigation, flood control, hydropower, and comprehensive river development are taken up first in this chapter. Next we consider federal laws and programs involving such interests as fish and wildlife, endangered species, and water quality insofar as they relate to streamflow or other in-place water uses. We then turn to water-related issues associated with public lands and Indian reservations. Finally we consider emerging directions in federal programs related to ecosystem restoration and protection and watershed management.

We give particular attention to the tensions between federal and state interests in the utilization and protection of streamflows and other in-place water resources. Western states jealously guard their primary role in determining uses of the water.

resources within their borders and generally regard federal efforts related to streamflow protection as unwarranted interference with this prerogative. While in many respects there is a growing convergence of views respecting the need for in-place protection of water resources there remain inevitable differences in priorities—particularly short term—and in the manner in which these priorities should be determined and implemented. We argue that a watershed approach, in which the broad range of interests in water uses are considered in a coordinated manner, offers considerable promise as a framework within which to address these differences.

Federal Involvement in River Development

The traditional role of the federal government in water matters related primarily to the importance of water for economic development. During this nation's first century the federal government focused on the use of the nation's rivers for navigation in support of trade and commerce. Then federal interests expanded to include matters such as flood control, irrigation, and hydropower development. Gradually the federal role expanded into one of planning and implementing what came to be called "comprehensive development" of river basins.

Navigation and Flood Control

Waterways long have served as "public highways," essential for travel and for commerce. In an 1824 decision, *Gibbons v. Ogden*,¹ the U.S. Supreme Court found that the power to regulate interstate commerce enumerated in article I, section 8 of the U.S. Constitution gave control over navigable waterways to the federal government. In that same year Congress provided funds to the Army Corps of Engineers to make some minor navigational improvements in the Mississippi and Ohio Rivers.² According to the 1973 report of the National Water Commission, the United States had spent over \$3 billion since 1824 to make improvements in its more than 25,000 miles of commercially navigable inland waterways.³

The federal role related to navigation also includes a strong regulatory component. The U.S. Supreme Court decision in *Gibbons v. Ogden* struck down a New York statute that gave a monopoly to a single company to provide steamboat services on rivers in that state. In 1851 the Supreme Court precluded state-authorized construction of a bridge over the Ohio River that would obstruct navigation⁴, and in 1865 the court explained:

The power to regulate commerce comprehends the control for that purpose, and to the extent necessary, of all the navigable waters of the United States which are accessible from a State other than those in which they lie. For this purpose they are the public property of the nation, and

subject to all the requisite legislation by Congress. This necessarily includes the power to keep them open and free from any obstruction to their navigation, interposed by the States or otherwise; to remove such obstructions when they exist; and to provide, by such sanctions as they may deem proper, against the occurrence of the evil and for the punishment of offenders.⁵

In the Rivers and Harbors Act of 1890⁶, Congress explicitly required federal approval of any obstruction to the navigable capacity of waterways and prohibited the discharge of refuse which would tend to impede or obstruct navigation.⁷ In 1899, the U.S. Supreme Court upheld use of this authority to prevent the construction of a dam in the upper Rio Grande River intended to store water for irrigation use.⁸

In this century flood control became an important federal activity, often funded and built in combination with navigation improvements. The Flood Control Act of 1936, noting that destructive floods "constitute a menace to national welfare," authorized a national program of flood control to be implemented by the Army Corps of Engineers.⁹ In 1944 Congress broadened the definition of flood control to include "channel and major drainage improvements."¹⁰

Navigation and flood control activities have not been especially significant in the western states with the exception of the Sacramento River in California and the Missouri River Basin. The 1944 Flood Control Act authorized irrigation (as well as recreation) as a possible use of water controlled by flood control projects, and projects have been built in the western states in which the Corps of Engineers controls the flood control function and the Bureau of Reclamation controls the irrigation function.¹¹ The 1944 Act also announced a policy of specifically subordinating the navigation function of such projects built in states partly or wholly west of the 98th meridian to consumptive water uses such as for irrigation.¹²

Irrigation

The dominant federal water-related role in the western states in this century has been the construction and operation of large water storage and delivery facilities, primarily to provide water for irrigation use. Since passage of the Reclamation Act of 1902 the Bureau of Reclamation built more than 600 dams and diversion structures on rivers across the West for 189 projects. On average, these facilities deliver 30 million acre-feet of water per year to agricultural, industrial, and urban users in 17 western states. From a political perspective, federal support for the reclamation program (amounting to a public investment of about \$10 billion to date) can be understood as a western counterpart to the navigation and flood control investments in the eastern states.¹³

The purpose of these projects is to control the highly variable flows of the rivers on which they are built to make water available for human use at the times and places desired. Originally, projects were built only for irrigation use, but their authorized purposes expanded over time. The first major multipurpose project was Hoover Dam, authorized by Congress in 1928 for river regulation, irrigation and domestic uses, and hydroelectric power development.¹⁴ The cost of the facilities to water users, particularly irrigators, has been substantially subsidized; revenues from hydroelectric power generation from the facility often are an important source of project payments.

Hydropower

Federal control over hydropower development stems from its constitutional power related to interstate commerce and navigation and its statutory power governing placement of obstructions in navigable rivers. The Inland Waterways Commission, appointed by President Theodore Roosevelt, noted in its 1908 report that hydroelectric power should be considered together with navigation and other uses of the nation's rivers and that the value of power generation could help pay the costs of the various physical improvements that would be necessary to make these uses possible.¹⁵ The 1920 Federal Power Act provided a general licensing process for all non-federal hydroelectric projects; licenses of up to 50 years were to be issued to projects found to be "best adapted to a comprehensive plan for improving or developing a waterway."¹⁶

Federal hydroelectric power development became increasingly important in the 1930s. Beginning with Hoover Dam, virtually all federal water projects built in the West included hydroelectric power as one of the designated uses. Revenues from hydropower became an essential part of the economic justification for these projects. Federal hydropower development in the Columbia River Basin of the Pacific Northwest marks perhaps the most extensive dedication of streamflows to this use anywhere in the West.

Comprehensive Development

During much of this century it appeared that the ultimate federal role in water resources was to plan and implement full-scale water development on a basin-wide basis. The 1908 report of the Inland Waterways Commission emphasized the importance of broad-based river development. The 1920 Federal Power Act required a comprehensive plan for development of water resources. The Tennessee Valley Authority, created by Congress in 1933, represented a one-of-a-kind federal experiment in comprehensive river basin development. Growing acceptance of the approach led the President's Water Resources Policy Commission to conclude in its 1950 report:

We believe all will agree that there should be coordination of the uses of a river and of the structures in it to fulfill as many

as possible of the sometimes conflicting purposes for which waters may be used or controlled, and that such uses should be integrated with land practices in the surrounding watershed. If this be so, comprehensive development, as applied to water resources and related land uses, may be defined as basin-wide development for optimum beneficial uses of a river system and its watershed.¹⁷

This view reached its most complete expression in the 1965 Water Resources Planning Act¹⁸ which created a Water Resources Council consisting of federal departments and agencies with water-related responsibilities and which charged the Council with coordinating the water policies and programs of the federal agencies and state governments. River basin commissions were to be established for the purpose of developing comprehensive plans for the development of the basin. At the very time that institutional mechanisms for comprehensive water development finally came into being, sharp opposition to this approach developed. Critics included economists who questioned the benefits of some of the investments that were being made and a growing constituency concerned about the environmental effects of structural water development. By the 1980s federal support for comprehensive water development was virtually dead, and the federal role had shifted to one of environmental protection and ecological restoration.

Protecting, Restoring, and Enjoying the Water-Related Environment

The transition of the federal role from developer to protector is now well underway. As discussed, the federal government historically has had a regulatory role related to water as evidenced by its control over navigable waters and its licensing of hydroelectric facilities. Moreover, federal interest in protection of fish and wildlife resources extends back at least to 1888 when the Secretary of the Army was given discretionary authority to provide fish passageways as a part of navigation improvements.¹⁹ And the regulatory roots of the "point source" discharge program under the Clean Water Act are found in the statutes passed by Congress in the 1890s giving the U.S. control over the placement of any type of materials into navigable waters.²⁰

Fish and Wildlife

Inadequacy of state laws to protect certain forms of wildlife, particularly migratory birds, prompted a number of federal actions around the turn of the century. For example, the Lacey Act of 1900²¹ and the Migratory Bird Treaty Act of 1918²² sought to establish a single set of rules regulating the hunting and transport of certain game

species. In addition, areas of the public lands were set aside as wildlife refuges and as breeding grounds for migratory birds. By 1910, 44 Executive Orders had withdrawn areas of the public land from entry and set them aside as refuges.²³

As Congress moved the federal government increasingly into the water development business in the 1930s it recognized that these activities affected fish and wildlife resources. With the Fish and Wildlife Coordination Act of 1934²⁴ Congress required "consultation" with the Bureau of Fisheries (now the Fish and Wildlife Service) prior to the construction of a dam and called for consideration of the use of impounded waters for "fish-culture stations" and for migratory bird uses "not inconsistent with the primary use of the waters."²⁵ Congress strengthened this act in 1946 by requiring consultation with the Fish and Wildlife Service "[w]henver the waters of any stream or other body of water are authorized to be impounded, diverted, or otherwise controlled for any purpose whatever by any department or agency of the United States, or by any public or private agency under Federal permit."²⁶ Furthermore, "adequate provision" had to be given to the conservation of wildlife "consistent with the primary purposes of such impoundment, diversion, or other control."²⁷ Finally, in 1958 Congress amended the Fish and Wildlife Coordination Act to require that wildlife conservation be given "equal consideration" with other objectives of water resources development.²⁸

Despite the Fish and Wildlife Coordination Act, for most of this century federal supervision of hydropower development remained remarkably insensitive to effects of this development on fish and other environmental values. In 1967 the U.S. Supreme Court directed the Federal Power Commission (now the Federal Energy Regulatory Commission) to take account of the substantial harm to the salmon fishery in the Snake and Columbia Rivers caused by dams it was licensing for hydroelectric power generation—an obligation the commission itself had denied.²⁹ Finally, in 1986 Congress amended the Federal Power Act to require FERC to give "equal consideration" to nonpower uses in its licensing process, to consider fish and wildlife agency recommendations, and to "adequately and equitably protect, mitigate damages to and enhance fish and wildlife (including spawning grounds and habitat)."³⁰

By regulation, FERC requires applicants to submit a report, called an Exhibit E, which must include a description of measures recommended by state or federal agencies for protection of fish, wildlife, and botanical resources.³¹ These measures are the outcome of the consultation process required by the Fish and Wildlife Coordination Act. FERC may order flow releases or bypass flows based on its own analysis. It is not required to follow recommendations of other agencies. Nor, apparently, is it required to follow state law concerning water use, including state instream flow requirements.³²

Over the next two decades, as FERC processes relicensing applications for a large number of hydroelectric projects in the U.S., it will face increasing pressure to consider fish and wildlife agency recommendations for the benefit of nonpower values. Between 1993 and 2010, 413 projects nationwide—40 percent of all FERC-licensed projects—will be

up for relicensing.³³ About 115 of these projects are located in the eleven western states.³⁴ Moreover, FERC is still processing an estimated 200 applications for licenses nationwide that expired from the 1970s through 1992.³⁵ Most of these licenses, originally issued in the first half of this century, pre-date more modern environmental laws and licensing requirements that mandate consideration of environmental impacts. Relicensing of the projects is likely to have a significant effect on nonpower resources because of the number of projects and river systems involved.³⁶

The Northwest Power Planning Council is an innovative institutional approach for integration of concerns about protection of the anadromous fisheries and operation of hydroelectric facilities in the Columbia River Basin.³⁷ Established by Congress in 1980 under the Pacific Northwest Electric Power Planning and Conservation Act³⁸, the Council is an eight-member body with two representatives from each of the northwest states of Idaho, Montana, Oregon, and Washington. It is an interstate compact agency with authority to set policy concerning uses of the Columbia River for hydroelectric power generation and for fish and wildlife protection and enhancement.

Under the auspices of its Columbia River Basin Fish and Wildlife Program the Council has taken the lead in developing a series of specific measures to help rebuild and protect viable populations of salmon and steelhead. Following the Salmon Summit convened in late 1990 by Oregon Senator Mark Hatfield and the governors of Washington, Oregon, Idaho, and Montana the Council implemented a four-phase plan with immediate actions including screening of major diversion outlets to protect migrating fishes, improvements to fish passages at hydroelectric dams, and the institution of a "fish flush" involving timed releases of water from storage in the Snake and Columbia Rivers to assist the migration of young salmon to the ocean in the spring.

Occasionally, Congress makes specific provisions to protect fish and wildlife or other streamflow-related values in legislation authorizing the construction of water projects or modifying their operation. For example, in authorizing the Trinity River Project in 1956, Congress directed the Secretary of the Interior to maintain a specified minimum streamflow "to insure the preservation and propagation of fish and wildlife."³⁹ Congress authorized the Washoe Project in 1956 to include facilities "to permit increased minimum water releases from Lake Tahoe and restoration of the Pyramid Lake fishery."⁴⁰ The section of the Flood Control Act of 1962 revising the authorization for the New Melones Project required that the Secretary of the Army maintain a minimum flow level in the Stanislaus River.⁴¹

Shifting congressional priorities are reflected in H.R. 429, the Reclamation Projects Authorization and Adjustment Act of 1992.⁴² In one sense, H.R. 429 is classic pork barrel water legislation—containing 40 titles spreading federal benefits to virtually all of the western states. But, while some water development is supported, the benefits are clearly tilted in favor of recreation and environmental enhancement. For example, in return for providing funding necessary to complete the Central Utah Project (CUP), Title

III of the bill sets up an elaborate program for fish and wildlife protection measures including commitments for providing certain streamflows in the upper Strawberry River Basin and in drainages associated with the Bonneville Unit of the CUP.⁴³ This law also makes major changes in the operations of the Central Valley Project of California. Particularly striking is the provision mandating the dedication of 800,000 acre-feet of project water yield each year to fish, wildlife, and habitat restoration measures.⁴⁴ This is an altogether new kind of reclamation bill in which the emphasis is decidedly on environmental restoration and protection rather than water development.

Endangered Species

Perhaps no law has done more to spotlight the ecological effects of water development than the Endangered Species Act of 1973 (ESA). Rather than requiring "consideration" of effects (in the manner of the Fish and Wildlife Coordination Act) the ESA affirmatively proscribes federal actions that would jeopardize the continued existence of any protected plant or animal species.⁴⁵ Furthermore, the ESA prohibits any person from "taking" a protected species, a prohibition that extends to an action involving significant habitat modification directly injurious to the survivability of the species.⁴⁶ The power of this law became evident when the U.S. Supreme Court ruled in 1978 that its provisions prevented completion of the nearly fully-constructed Tellico Dam in Tennessee because operation of that dam would jeopardize the endangered snail darter.⁴⁷

Water development in the flow-limited West dramatically altered the natural conditions of its streams and rivers. Particularly in areas of substantial development this alteration caused the extinction of some native species, most commonly fishes, and threatens the extinction of other species. Any proposed major new water development must be able to demonstrate that it will not harm protected species, and existing development may be subject to challenge on this basis. The imperatives of the ESA are forcing a wholesale reexamination of water development and use in the West.

The Upper Colorado River Recovery Program is one approach that has developed in response to concerns about protecting four native fish species in the Colorado River that are threatened with extinction. Construction of large main-stem reservoirs in the Colorado River Basin to "tame" the river dramatically altered its most fundamental characteristics including its rate of flow (chopping off the spring runoff peak, for example), temperature, and sediment content (releasing cold, clear stored water from the reservoirs instead of the warmer, muddy water of the undammed river). Certain native fishes were virtually eliminated from the lower part of the basin and were determined to be in danger of extinction in the upper basin. Beginning in 1977 the U.S. Fish and Wildlife Service (FWS) concluded that any additional significant depletions of water in the upper basin would jeopardize the continued existence of these fishes. In biological opinions prepared as part of the consultation process under Section 7 of the

ESA, the FWS began recommending measures believed to offset the detrimental effects of proposed water development such as increased releases of water for streamflow enhancement from existing storage.

In 1987, the FWS, upper basin states, water users, environmental interests, and others worked out a formal agreement for recovery of the endangered fishes.⁴⁶ There are five key elements in the 15 year, \$60 million program: (1) provision of instream flows determined to be necessary to recover the fishes; (2) development and maintenance of habitat; (3) stocking of hatchery-reared fishes; (4) management of non-native fishes to reduce competition with endangered species; and (5) research, monitoring, and data management.⁴⁹ A ten-member Upper Colorado River Implementation Committee oversees the implementation of the program. In general, the program contemplates that additional water development may occur in the upper basin so long as the recovery program is implemented.

Perhaps the most striking application of the ESA to water use involves the massive Edwards Aquifer in Texas. In 1993 a federal district court in Texas agreed with the Sierra Club that the Secretary of the Interior was obligated under the ESA to regulate the massive withdrawals of groundwater from this aquifer to protect several endangered species dependent on discharges of water from springs at the downgradient end of the aquifer creating habitat essential for their survival.⁵⁰ Groundwater withdrawals in Texas were not regulated under state law. Uses of water from this major groundwater source increased over the years, exceeding its recharge and its safe yield. In response to the court decision the Texas Water Commission and the FWS reached an interim agreement including some limitations on pumping. The Commission determined that annual pumping would have to be reduced from its present 540,000 acre-feet per year to 225,000 acre-feet per year to ensure continuous springflows from the aquifer in an extended drought period.⁵¹ The Texas legislature created the Edwards Aquifer Authority in the 1993 session and set a limit of 450,000 acre-feet of groundwater withdrawals from the aquifer, to be reduced to 400,000 acre-feet by the year 2008.⁵² Groundwater users must obtain a permit from the Authority. In addition, the Authority is directed to ensure flows from the springs necessary to protect listed species by 2012.

Water Quality and Wetlands Protection

Fishable/swimmable water quality and, less directly, wetlands protection, became national objectives under the Federal Water Pollution Control Act Amendments of 1972.⁵³ The amendments announced congressional intention to restore and maintain the chemical, physical, and biological integrity of the nation's waters.⁵⁴ Three principal means of achieving these objectives are provided: control of pollutant discharges from discrete "point" sources such as pipes through a permit system; regulation of dredge and fill activities; and subsidized construction of municipal wastewater treatment facilities. Of

these measures, dredge and fill regulations have been most significant for protection of in-place values of water.

Regulation of dredge and fill activities occurs under Section 404 of the Clean Water Act. Permits for dredge and fill activities in waters of the U.S. (construed to include wetlands⁵⁵) must be obtained from the Army Corps of Engineers. Among other considerations, such activities must satisfy guidelines designed to protect aquatic ecosystems including wetlands.⁵⁶ Conditions may be attached to 404 permits to provide this protection. The federal government used this authority to deny a 404 permit needed to construct the proposed Two Forks Dam on the South Platte River in Colorado in 1990.⁵⁷

The Clean Water Act recognizes continued state primacy in allocating water and suggests a cooperative approach to meeting federally mandated objectives.⁵⁸ Not surprisingly, however, when clearly stated federal water quality requirements run counter to the interests of those holding state-recognized water rights courts have been inclined to uphold the federal requirements.⁵⁹ The Justice Department in 1982 produced a thoughtful analysis of this general problem and offered a list of factors to be weighed in balancing federal and state interests in water resources:

the extent to which federal programs can be or have been adapted to state law; the role played by the federal government, the significance of the federal interests at stake, and the risks to federal goals and interests posed by application of state law; and the extent to which application of federal rules will disrupt private expectations.⁶⁰

Not long thereafter the Tenth Circuit Court of Appeals effectively applied this approach in deciding a case involving the Clean Water Act and the Endangered Species Act. In *Riverside Irrigation District v. Andrews*⁶¹ the irrigation district proposed to build a dam on a small tributary of the South Platte River in Colorado and sought Section 404 approval from the Corps of Engineers under the so-called "nationwide permit" category. The Corps determined that it would need to go through the full public interest review requirements of Section 404, primarily because of a Fish and Wildlife Service determination that depletions of water made possible by this project would further jeopardize the existence of the protected whooping crane by impairing critical habitat located 250 miles downstream in Nebraska. The federal circuit court supported the Corps and held that "both the statute and regulations authorize the Corps to consider downstream effects of changes in water quantity as well as on-site changes in water quality in determining whether a proposed discharge qualifies for a nationwide permit."⁶² What is needed, said the court, is an "accommodation" of federal and state interests.⁶³

As the limits of water quality protection through regulation of direct sources of pollution are reached, emphasis is shifting to more broadly based approaches. For example, state water quality standards now must provide for protection of certain high quality waters and for protection of designated uses now possible under existing conditions.⁶⁴ Increased attention is being given to more diffuse sources of water quality impairment (nonpoint sources). Amendments to the Clean Water Act in 1987 required states to identify these sources of impairment and to develop plans for their correction.⁶⁵ A watershed-based approach to water quality management, currently under consideration by Congress in proposed revisions to the Clean Water Act,⁶⁶ would provide the kind of framework necessary to consider a more complete range of options for achieving water quality (and other) objectives.

Section 401 of the Clean Water Act requires federal permittees proposing a discharge into a waterway to obtain a certificate from the state that the activity will comply with state water quality standards.⁶⁷ States have used this authority in a few instances to require maintenance of streamflows necessary to protect designated uses or to consider matters beyond direct pollution caused by the activity. For example, in *Department of Ecology v. PUD No. 1 of Jefferson County*⁶⁸ the Washington Supreme Court upheld a state requirement that a proposed hydroelectric facility maintain a specified minimum flow in the affected reach of the Dosewallip River.⁶⁹

The ongoing saga of the Bay/Delta water quality process in California illustrates the direct link between water development and use and effects on water quality, and the way that endangered species often are a result of such situations. The Sacramento and San Joaquin Rivers drain 40 percent of the land area of California.⁷⁰ The two rivers converge in an area northeast of San Francisco known as the Delta—738,000 acres of sloughs, braided river channels, and rich soils. It is a highly productive agricultural area, an industrialized area, an urbanized area. It also contains the Suisun Marsh—a 113,000 acre area representing 15% of California's remaining wetlands.

There is major upstream water storage in both river basins and large-scale diversions for irrigation and other uses. The single largest withdrawal from the system occurs in the Delta itself where massive pumps for the federal Central Valley Project and the California State Water Project annually take more than 5 million acre-feet of water out of the Delta for use by irrigators in the Central Valley and by cities in the southern part of the state. Operation of these pumps causes the Old and Middle Rivers (branches of the San Joaquin River in the south Delta) to reverse course at certain times of the year. Flows from the Sacramento River are diverted towards the pumps through the Delta Cross Channel. At times when the flows of the Sacramento River are low and the diversions for the pumps are high, saline water from the lower Sacramento River and Suisun Bay can be pulled upstream. Flow reversals, increased salinity, and direct entrainment of eggs, larvae, and young fish in the pumps have substantially reduced populations of several fish species including salmon and Delta smelt.

In December 1992 the State Water Resources Control Board issued a draft decision (D1630) that would have substantially changed the pattern and manner of water use in this vital source of supply.⁷¹ The draft decision contained several provisions of major significance including (1) imposing limitations on operation of the pumps in certain critical times of year to protect spawning and migration of fish; (2) requiring releases of water from certain upstream reservoirs to create flows sufficient to make possible migration of the salmon to the ocean; (3) imposing a mitigation fee on water users to help pay the costs of the plan; and (4) requiring urban water users to implement water conservation measures to which they agreed in 1991. The effect of the decision, shelved by Governor Wilson in 1993, would have been to reduce actual water diversions from the Delta on the order of 600,000 acre-feet per year. The Environmental Protection Agency is expected to establish water quality standards for the Delta that will force the State of California to impose comparable or stricter measures than those outlined in D1630.

Federal involvement in decisions directly or indirectly affecting the use of water resources has expanded dramatically since the 1960s to meet greatly enlarged public interest in the environmental and ecological values of water. We turn next to the more traditional role of the federal government as manager of the federal public lands and as trustee for Indian tribes and find that many of these same environmental concerns are driving federal actions in this area.

Public and Tribal Lands

Nearly one third of the land area of the United States is public land managed by federal agencies. Several million additional acres are set aside as reservations governed by Indian tribes. These federal and tribal lands contain water resources essential to their management and use. The water law of the state within which the lands are located provides the basic framework within which water allocation decisions are made, but the special interests of the federal government and the tribes respecting the water resources of these lands result in an additional set of rules modifying state laws in several important respects. Most important is the reserved water right.

Reserved Water Rights

Public lands reserved for specific purposes carry with them the right to an amount of water necessary to fulfill the primary purposes of the reservation. This right may be implied from the reservation itself or, as is increasingly the case, may be established explicitly at the time the reservation is created. The U.S. Supreme Court first announced the existence of the implied right in 1908 in the context of assuring adequate supplies of water for tribal uses on a reservation.⁷² In later cases the Court extended the existence of the right to other federal reservations of public lands including national forests, national parks and monuments, and wildlife refuges.⁷³

Federal and tribal reserved water rights exist independent of state water law. The right exists in any situation in which a reservation of public lands has been made and water is needed to accomplish the purposes of the reservation. To help reduce potential conflicts with states, the Supreme Court has defined implied reserved rights as extending only to primary purposes of the reservation.⁷⁴ Moreover, the Court has limited the amount of water that can be claimed under a reserved right to the minimum reasonably necessary to accomplish the purposes.⁷⁵ Congress made federal claims for water subject to state adjudication proceedings in the 1952 McCarran Amendment.⁷⁶ The priority date of a federal reserved right is the date the reservation is established.

Protection of streamflows or levels of water has figured in several cases involving implied reserved rights for public lands. In *Cappaert v. United States*⁷⁷ the U.S. Supreme Court found that the reservation of the Devil's Hole National Monument, a deep limestone cavern in Nevada containing a pool of water populated by a unique species of fish, carried with it the right to preserve groundwater levels necessary to protect the fish. In *United States v. New Mexico*,⁷⁸ however, the court denied a claim of reserved rights for a minimum instream flow for aesthetic, recreational, and fish-preservation purposes in a national forest in New Mexico. The court held that reserved rights in national forests are limited to water necessary to accomplish the primary purposes specified in the 1897 Organic Act—namely, securing favorable conditions of water flows and furnishing a continuous supply of timber. In 1993 a Colorado water court rejected an effort by the U.S. to claim streamflows in national forests for the maintenance of stream channels necessary to provide favorable conditions of water flows.⁷⁹

The status of implied reserved rights for wilderness areas remains unsettled. There are now more than 90 million acres of public lands in wilderness status. In 1985 a federal district court in Colorado ruled that wilderness area designations carry an implied right to water necessary to fulfill their purposes.⁸⁰ The 10th Circuit later reversed this decision without ruling directly on the existence of wilderness reserved rights.⁸¹ In new wilderness designations Congress generally provides express language regarding its intentions concerning water. For example, in the Arizona Desert Wilderness Act of 1990, Congress expressly reserved "a quantity of water sufficient to fulfill the purposes of this title."⁸²

The Wild and Scenic Rivers Act declares a national policy that "certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition."⁸³ Reserved water rights for designated rivers are explicitly recognized in the act, albeit as Professor Tarlock has stated, "in a back-handed manner."⁸⁴ There are now over 140 rivers or river segments in 33 states designated as part of the national wild and scenic river system.⁸⁵

Indian Reserved Rights

The reserved rights doctrine originated to protect the interests of Indian tribes settled onto reservations of land and to fulfill the federal responsibility to the tribes under the document establishing the reservation. The nature and extent of the reserved rights derive from the primary purposes contemplated by the tribe and the U.S. and evidenced by the treaty or order creating the reservation. Commonly, the U.S. assumed that the tribes would support themselves with irrigated agriculture. Thus, the U.S. Supreme Court developed the notion of "practicably irrigable acreage" within a reservation as a means of measuring the extent of the reserved water right.⁸⁶ Courts have recognized, however, that the hunting and fishing rights of tribes may provide another means of determining reserved rights.

In *Colville Confederated Tribes v. Walton*⁸⁷ the tribes argued that reserved water rights necessary to protect a fishery on the reservation should be granted. Finding that a primary purpose of the reservation was to preserve the tribe's access to fishing, the Ninth Circuit held that the tribe has "a reserved right to the quantity of water necessary to maintain the Omak Lake Fishery."⁸⁸ Similarly, in *United States v. Adair*, the Ninth Circuit found that the reserved rights necessary to fulfill the purposes of the Klamath Reservation included "a quantity of the water flowing through the reservation not only for the purpose of supporting Klamath agriculture, but also for the purpose of maintaining the tribe's treaty right to hunt and fish on reservation lands."⁸⁹ The tribe's fishery right in this case consists not in being able to divert and consume water but in being able "to prevent other appropriators from depleting the stream's water below a protected level in any area where the non-consumptive right applies."⁹⁰ Professor Blumm has characterized such rights as creating a "negative servitude" restricting other activities that damage the right.⁹¹

Tribal reserved water rights are not permanently restricted to the use for which they are quantified. Courts have approved tribal uses of water obtained on the basis of need for irrigation for other uses.⁹² The Wyoming Supreme Court rejected an effort by the tribes on the Wind River Reservation, however, to convert their irrigation-based reserved right to instream flow purposes independent of the state program for administration of instream flows.⁹³

The uncertainty and expense of reserved rights litigation have encouraged the use of negotiated settlements to establish the extent and nature of Indian water rights. At least three settlement agreements recognize or support instream flow rights for tribes: Fort Peck, Fort Hall, and Pyramid Lake. For example, the Fort Hall agreement authorizes the Shoshone-Bannock tribes to change water rights obtained under the agreement to instream flow uses.⁹⁴

Other Mechanisms

To address the water-related needs of the public lands, federal land management agencies are using several strategies in addition to the assertion of reserved water rights. These agencies have broad management authority for the uses of lands under a variety of statutory mandates. Management of national forests, for example, is guided by the 1976 National Forest Management Act⁹⁶ and the 1897 Organic Act⁹⁶, among others. National parks are managed under the National Park Service Organic Act of 1916, as amended.⁹⁷ The unreserved public domain lands are managed by the Bureau of Land Management under the 1976 Federal Land Policy and Management Act.⁹⁸ These statutes and others set out the uses of the public lands and provide general authority to the agencies to manage lands for these purposes. Moreover, the National Environmental Policy Act⁹⁹ requires federal agencies to evaluate the environmental effects of their actions and to search for less environmentally harmful alternatives. In this section we look specifically at three tools being used by federal land management agencies to provide for the water needs of the public lands: conditioning right-of-way permits, conditioning hydroelectric power licenses, and asserting state-recognized water rights.

Rights of Way

Federal land management agencies are authorized to issue special use permits to parties needing a right of way across the public lands. Under the Federal Land Policy and Management Act, both the BLM and the Forest Service must include terms and conditions in right-of-way authorizations to "minimize damage to scenic and aesthetic values and fish and wildlife habitat and otherwise protect the environment."¹⁰⁰ Additionally, under the National Forest Management Act, the Forest Service must ensure that new right-of-way authorizations are consistent with the forest plan, and existing authorizations are to be revised where possible to be made consistent with the plan.¹⁰¹

There has been some judicial recognition of the agencies' authority to impose bypass or minimum streamflows as a condition of public land use. The Forest Service used this authority in the Medicine Bow National Forest to require the Cheyenne Board of Public Utilities to maintain minimum streamflows as a condition of obtaining an easement needed for constructing a water project. Although not directly at issue in this case, the use of this authority by the Forest Service was approved in *Wyoming Wildlife Federation v. United States*.¹⁰² In a recent reserved water rights case in Colorado, the Water Court recognized that

[t]he Forest Service has broad powers to regulate the construction of irrigation structures within the national forests and, as a practical matter, to control the ability of others to make diversions within the forests. Permits are required to

establish such structures and these permits must be renewed from time to time.¹⁰³

Nevertheless, water users in Colorado are actively contesting the right of the Forest Service to require bypass flows as a condition of a right-of-way permit; litigation to address the issue appears likely.¹⁰⁴

Hydropower Licensing

Under the Federal Power Act, as amended by the Electric Consumers Protection Act of 1986, the Federal Energy Regulatory Commission (FERC) must give equal consideration to nonpower values during the licensing process.¹⁰⁵ While FERC must consider these other values, the agency ultimately has much discretion as to how competing values should be balanced. Under section 4(e), however, FERC is required to include conditions that the Forest Service deems necessary for the protection of public land resources, if the permit is issued.¹⁰⁶ Section 4(e) applies only to reservations of public lands, thereby excluding most lands managed by the BLM.

The BLM and the Forest Service have used their authority under FLPMA to condition right-of-way permits as a way to protect streamflows below hydropower projects on public lands. In *California v. Federal Energy Regulatory Commission*,¹⁰⁷ the Ninth Circuit held that the BLM cannot require a FERC applicant to obtain a FLPMA right-of-way authorization. Congress overturned this decision in the Energy Policy Act of 1992 by amending FLPMA to clarify that the BLM and the Forest Service have the authority and responsibility for issuing land use permits or rights-of-way for new FERC projects, and that, like section 4(e) conditions, FERC must recognize conditions imposed in these permits.¹⁰⁸

State Water Rights

Federal agencies can acquire water rights under state law for land management purposes.¹⁰⁹ Consumptive uses necessary to manage the public lands generally are small, involving such water uses as residential and office needs of agency personnel, visitor centers, and fire fighting. Agencies needing water for such purposes may seek an appropriate water right from the state in which the lands are located; they may purchase an existing water right or acquire water rights appurtenant to land which they receive as a gift, in an exchange, or otherwise; or, in some cases they may use eminent domain proceedings to obtain a water right.¹¹⁰

Federal agencies desiring state water rights for instream flow purposes face a more difficult challenge in most states. As described in this book, almost all western states now provide for the protection of instream flows in some manner; the approaches

taken, however, vary widely and generally do not appear adequate to meet the needs of federal agencies: the purposes for which instream flows may be protected typically are limited to protection of fish; the quantity of water protectable is likely to be the minimum necessary to protect the fishery; and, in many states, instream flow rights or reservations can be held only by state agencies. Because of these and other limitations in state law, it may be difficult for a federal agency to protect instream flows in a manner deemed necessary to fulfill its management responsibilities.

The public lands are managed for a broad range of purposes. Moreover, major federal actions on these lands must take full account of their environmental consequences under the National Environmental Policy Act.¹¹¹ Protection of in-place water may legitimately be associated with a number of these management actions. However, state laws generally take a restrictive view of the purposes for which instream flows may be established. Instream values recognized in the laws of fourteen western states are shown in Table 1. Protection of fish is the predominant value. Recreation is now recognized in a few states. Very few recognize broader ecological values or aesthetics.

While state water laws have been changing in recent years to recognize a wider range of water-related values, a considerable disparity remains between the management purposes of at least some public lands and state-recognized uses of water. Uses of the public lands are directed by Congress. There can be major differences in the use depending on the status of the land. National parks, for example, have a distinctly preservation-for-human-enjoyment purpose while wilderness areas have a dominantly preservation-for-preservation purpose. In both cases their preservation function suggests a very high degree of protection for the natural hydrologic system (as well as for other resources) irrespective of what may be contemplated under state water law.

As is also shown in Table 1, only in Nevada, Arizona, and Alaska does it appear that the U.S. can directly hold an instream flow water right not associated with a diversion of water. Nevada recognized this right in the 1988 case of *Nevada v. Morros*¹¹² which upheld the grant by the Nevada State Engineer to the United States of a water right for in-place purposes. The Bureau of Land Management had requested a water right for Blue Lake to maintain lake levels for public recreation and fishery purposes. Noting that Nevada law recognizes recreation as a beneficial use of water, the Nevada Supreme Court ruled that a water right in Nevada does not require the diversion of water. In 1991, the Nevada State Engineer went a step further in granting a permit to the Bureau of Land Management for an instream flow water right in Mahogany Creek for recreation and riparian habitat values.¹¹³ The Arizona Department of Water Resources has approved instream flow rights for the BLM and the Forest Service under its state program.¹¹⁴ Alaska granted an instream flow water right to the BLM in 1989 for the Beaver Creek National Wild River.¹¹⁵

Table 1. Ability of Federal Agencies to Protect In-Place Values and Uses of Water Within Western State Water Law Systems

STATE	IN-PLACE BENEFICIAL USES RECOGNIZED UNDER STATE LAW	SPECIAL RESTRICTIONS ON IN-PLACE WATER PROTECTION	CAN FEDERAL AGENCIES HOLD IN-PLACE APPROPRIATIVE RIGHTS?	PROVISION FOR FEDERAL AGENCY INVOLVEMENT IN STATE IN-PLACE WATER PROTECTION PROGRAM
Alaska	protection of fish and wildlife habitat, migration, and propagation; recreation and parks purposes, navigation and transportation purposes; sanitary and water quality purposes, Alaska Stat. §46.15.145 (1992)	<ul style="list-style-type: none"> - reservations only - reviewable every 10 years for continuing need 	reservation is regarded as an appropriation	instream flow statute lists the federal government as a party allowed to apply for instream reservation
Arizona	recreation and wildlife, including fish, Ariz. Rev. Stat. Ann. §45.151.A (1987)	<ul style="list-style-type: none"> - special administrative review procedure 	yes (two such permits issued to date)	no state program
California	preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in or on the water, Cal. Water Code §1707 (West Supp. 1993)	applies only to changes of use of existing water rights	only by changing the use of existing water rights	only through participation as protestant in state water rights proceedings
Colorado	to preserve the natural environment to a reasonable degree, Colo. Rev. Stat. §37-92-102 (1990)	<ul style="list-style-type: none"> - "minimum" streamflow - restricted to Colo. Water Conservation Board - must be a natural environment that can be preserved 	only if it involves a diversion	<ul style="list-style-type: none"> - CWCB does "request recommendations" from the Departments of Agriculture and Interior - recommendations must be made "with specificity and in writing"

Table 1, Cont'd.

STATE	IN-PLACE BENEFICIAL USES RECOGNIZED UNDER STATE LAW	SPECIAL RESTRICTIONS ON IN-PLACE WATER PROTECTION	CAN FEDERAL AGENCIES HOLD IN-PLACE APPROPRIATIVE RIGHTS?	PROVISION FOR FEDERAL AGENCY INVOLVEMENT IN STATE IN-PLACE WATER PROTECTION PROGRAM
Idaho	protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, transportation and navigation values and water quality, Idaho Code §42-1501 (1990)	<ul style="list-style-type: none"> - the minimum amount required to protect beneficial uses, which is capable of being maintained - approved by the legislature 	not settled	federal agency may request Idaho Water Resources Board to consider a minimum flow
Kansas	water quality, fish, wildlife, aquatic life, recreation, general aesthetics, domestic uses, and protection of existing water rights, Kan. Stat. Ann. §82a-928i (1989)	<ul style="list-style-type: none"> - minimum desirable streamflow - approved by the legislature 	no	no
Montana	fish and wildlife, recreational uses, and maintenance of water quality, Mont. Code Ann. §85-2-316 (1993), Mont. Admin. R. §36-16.102(3)	<ul style="list-style-type: none"> - the amount must be necessary for purpose and cannot exceed 50% of average annual flow on gaged stream - reservation only - reviewed at least once every 10 years and may be modified in 5 years 	yes, but only if a diversion of water is involved	The U.S. or any agency thereof may apply to reserve a minimum stream flow
Nebraska	recreation, fish and wildlife, Neb. Rev. Stat. §46-2,108 (1988)	<ul style="list-style-type: none"> - minimum amount necessary - available only to Game and Parks Commission or a natural resources district 	no	only as a party to state allocation decision process

Table 1, Cont'd.

STATE	IN-PLACE BENEFICIAL USES RECOGNIZED UNDER STATE LAW	SPECIAL RESTRICTIONS ON IN-PLACE WATER PROTECTION	CAN FEDERAL AGENCIES HOLD IN-PLACE APPROPRIATIVE RIGHTS?	PROVISION FOR FEDERAL AGENCY INVOLVEMENT IN STATE IN-PLACE WATER PROTECTION PROGRAM
Nevada	any recreational purpose, Nev. Rev. Stat. Ann. §533.030(2); wetland protection, Nev. Rev. Stat. § 502.322.		yes, (at least 2 such permits granted)	no state program
New Mexico	no statutory in-place protection		perhaps involving a diversion	no state program
North Dakota	no statutory in-place protection		perhaps involving a diversion	no state program
Oregon	conservation, maintenance and enhancement of aquatic and fish life, wildlife and fish and wildlife habitat, Or. Rev. Stat. §537.336 (1988)	<ul style="list-style-type: none"> - minimum perennial streamflows - restricted to Dept. of Fish and Wildlife, Dept. of Environmental Quality and State Parks and Recreation Dept. 	no	
South Dakota	no statutory in-place protection		yes, involving a diversion	no state program
Utah	propagation of fish, public recreation, the reasonable preservation or enhancement of the natural stream environment, Utah Code Ann. §73-3-3 (1993 Supp.)	<ul style="list-style-type: none"> - limited to transfer of existing rights only - restricted to Dept. of Wildlife Resources and State Parks and Recreation Dept. 	yes, involving a diversion	

Table 1, Cont'd.

STATE	IN-PLACE BENEFICIAL USES RECOGNIZED UNDER STATE LAW	SPECIAL RESTRICTIONS ON IN-PLACE WATER PROTECTION	CAN FEDERAL AGENCIES HOLD IN-PLACE APPROPRIATIVE RIGHTS?	PROVISION FOR FEDERAL AGENCY INVOLVEMENT IN STATE IN-PLACE WATER PROTECTION PROGRAM
Washington	protecting fish, game, birds or other wildlife resources, or recreational or aesthetic values of said public waters whenever it appears to be in the public interest, Wash. Rev. Code. Ann. §90.22.010 (West 1992)	- restricted to Dept. of Ecology, but Dept. of Fisheries and Dept. of Wildlife may request consideration	perhaps involving a diversion	
Wyoming	to establish or maintain new or existing fisheries Wy. Stat. Ann. §41-3-1001 (1993 Supp.)	- minimum flow necessary - need identified by Game and Fish Commission, application made by Water Development Commission	yes, involving a diversion	In Clarks Fork River via special congressional legislation

A 1988 California Supreme Court decision concluded that riparian rights attach to federal public lands in that state.¹¹⁶ In particular, the court ruled that while such rights on public domain lands may be subordinated to the rights of subsequent appropriators as a consequence of the Desert Lands Act, riparian rights on reserved public lands had not been so subordinated. This decision appears to open the way for the Forest Service to exercise its riparian rights for protection of instream flow values. However, it will have to seek approval of the State Water Resources Control Board which must "evaluate the proposed use in the context of other uses and determine whether the riparian use should be permitted in light of the state's interest in promoting the most efficient and beneficial use of the state's waters."¹¹⁷

Even where federal agencies may be permitted to hold state water rights for in-place uses of water, state water law restrictions may present problems. For example, a Water Master in Montana rejected Bureau of Land Management claims for in-place water rights for glacial pothole lakes that serve as critical waterfowl breeding and rearing habitat.¹¹⁸ The Water Master based his decision on a 1988 Montana decision finding that a diversion was required under state law for recreation, fish, and wildlife uses.¹¹⁹ Several states now specifically provide for consideration of federal agency requests or recommendations in their instreamflow protection process.¹²⁰

In most states, however, federal agencies apparently have no direct legal status to protect instream flows designated by the states. Thus, even if a state agrees to protect flows on public lands there is no guarantee that these flows would continue to be protected. Colorado law now provides for enforceable agreements between the state agency which must handle all instream flow rights and any entity providing "water, water rights, or interests in water" for minimum streamflow purposes.¹²¹ However, this would apply only in circumstances where the federal agency comes with a legal right to use water which it wants to change to instream flow purposes.

Western states long have pressed for federal agencies to follow state laws in meeting their federal responsibilities, and Congress has been remarkably willing to accede to this demand—at least as a general matter. Even if Congress has been unwilling to face up to it, the U.S. Supreme Court long ago recognized the incongruity of Congress directing specific uses of federal lands dependent on water and then leaving the federal agencies to the vagaries of state water laws to accomplish the use. Thus was born the much maligned federal reserved water right.

The increasingly sharp debate respecting protection of water within wilderness areas and other special management areas of the federal public lands is forcing Congress to deal more directly with its intentions. Unfortunately, the debate to date has centered almost exclusively on federal reserved water rights instead of a consideration of approaches that would meet federal needs while not unduly undermining state prerogatives respecting use of water. In our view what is needed is congressional direction to the federal land and resources agencies to identify the water requirements

necessary to carry out their statutory mandates and to pursue the legal rights for meeting the requirements under state procedures. This directive should clarify the manner in which the agencies make this determination—perhaps through an enumeration similar to the factors laid out in the 1982 Justice Department memorandum.¹²² Furthermore, while state procedures are to be followed, the directive should make clear that the only question is whether the water in the manner requested is required as a matter of federal law and is available under state law. State law limitations that might apply to other appropriators would not apply to federal agencies.

For their part, federal agencies need to be clear about public land water requirements through their planning and land management processes. The more explicitly identified the water resources needs the easier it will be for the federal agency to get state recognition of that need. Furthermore, the agency should consider a range of options available to it to protect the values of concern. It may be that a water right, even a federal reserved water right, is not the only or even the best means of achieving the agency's objective.

At the same time states need to open up their water allocation and use processes to fully include federal participation. Unnecessary restrictions such as requiring a physical diversion to obtain a water right and limiting the purposes for which a water right may be obtained should be eliminated, and federal agencies should be explicitly permitted to hold water rights under state laws and programs for any legitimate federal purpose. There must continue to be a demonstrated need for water to accomplish a valuable use, and the amount of water claimed would be restricted both by physical and legal availability as well as by the quantity needed to accomplish the purpose. Open state processes that fairly consider these factors are the appropriate forum for making these decisions.

Ecological Restoration and Watershed Management

Increasingly, the federal role in water involves restoration of rivers and watersheds to bring back ecological values damaged or lost in the pursuit of other uses of the water.¹²³ In many instances these efforts are driven by the requirements of the Endangered Species Act. We have already described the strong restoration emphasis in the 1992 Omnibus Reclamation Act and the efforts of the Upper Colorado Fish Recovery Program and the Northwest Power Planning Council. These are all prominent examples of the increased attention now given to ecological restoration involving active federal participation.

Restoration Through Undoing Federal Projects

Serious consideration is being given to removal of the Elhwa Dam in the State of Washington. Built in 1914 for hydroelectric power generation five miles from the mouth of the Elhwa River at the Strait of San Juan de Fuca, this dam and a companion dam (Glines Canyon Dam, built in 1928 seven miles further upstream) blocked the spawning routes of five species of Pacific salmon. One of the species is now totally gone from the river which flows out of Olympic National Park on the Olympic Peninsula, and the others are severely reduced in numbers. In 1990 the National Park Service called for the removal of both dams, and Congress subsequently passed legislation directing a study of the feasibility of doing this.¹²⁴

The Army Corps of Engineers has embarked on a remarkable effort to undo the work it did to the Kissimmee River in Florida. Between 1962 and 1971 the Corps transformed the Kissimmee from a meandering, flood prone river slowly working its way over a 103-mile course to Lake Okeechobee into a 56-mile canal, 30 feet deep and 250 to 400 feet wide.¹²⁵ In the process much of the 45,000 acres of wetlands existing in the floodplain of the river disappeared, leading to a 90 percent reduction in the number of ducks and resident waterfowl and a 70 percent reduction in nesting bald eagles.¹²⁶ River bottom plants and fish died in the deepened channel.

Congress removed one potential obstacle to this project in 1986 with the Water Resources Development Act which recognizes values other than flood control and economic development to be the basis for evaluating proposed Corps water projects.¹²⁷ In 1992 the Corps submitted a study to Congress for the restoration of the Kissimmee.¹²⁸ Total cost of the restoration effort is estimated to be over \$400 million. The original project cost about \$30 million.

Restoration Through Project Modification

The Bureau of Reclamation started a process in 1987 of redefining its mission. Initially created in 1902 to build dams in the western states to provide water for irrigation of lands otherwise unable to grow crops, Reclamation is making a transition out of its historic role as a "construction" agency to a "water management" agency. Among other things this transition apparently means that Reclamation will focus much more of its attention on ways to manage its impressive array of water storage and delivery facilities to provide increased environmental benefits.

An ongoing study by the Natural Resources Law Center is documenting ways in which Reclamation facilities are being altered in operation to restore fisheries and other ecological values affected by the construction and operation of these facilities in river basins throughout the West.¹²⁹ The following three tables summarize findings from the first phase of the project involving examination of 16 Reclamation projects (see Figure 1

for map showing location of the projects). As shown in Table 2, the primary environmental concern to date is improvement of the fishery downstream of a Reclamation storage facility. Most commonly, as indicated in Table 3, the change of operation centered on the amount and timing of releases of water—sometimes facilitated by installation of a new outlet works in the dam. As seen in Table 4, remarkably few legal issues arose in making these changes, perhaps because the least controversial situations were addressed first. This preliminary work illustrates the many opportunities that exist within the existing water development and use system to provide enhanced environmental benefits without sacrificing traditional project benefits.

Embracing a Watershed Approach

Complementary to the interest in ecological restoration is the growing interest in more comprehensive watershed-based approaches to land and water resource use. Much of this interest arises out of a belief that meaningful water quality improvements are likely to result at this point only from more comprehensive approaches to sources of water quality impairment. The Environmental Protection Agency, in particular, has promoted this approach in recent years.¹³⁰ Congress is considering major amendments to the Clean Water Act that would encourage the use of watershed approaches, particularly in dealing with nonpoint source pollution problems.

Some states are already well along in developing watershed-level programs. North Carolina, for example, initiated a basinwide approach to water quality management in 1990.¹³¹ The state is divided into 17 major river basins. A management plan is under development for each basin. Plans describe the basin and its water quality and ecological condition; identify existing pollutant sources and loads and areas of major water quality concern; set out management goals and strategies; establish recommended total maximum daily loads, wasteload allocations (for point sources), and management actions; and provide implementation, enforcement, and monitoring plans. The renewal dates for point source discharge permits are now scheduled to occur simultaneously within a basin. Basin plans are to be completed prior to the renewal date for the permits and will be revised before the next five-year renewal occurs. Thus federal permitting is used to drive the more comprehensive state management process. The Oregon Legislature enacted House Bill 2215 in 1993 supporting the creation of local watershed councils in that state and directing state agencies to develop watershed-based programs.¹³²

Federal agencies probably need to take a lead role in restoration activities involving federal projects. In general, however, we believe watershed initiatives should be cooperative and as locally directed as possible. Federal water-related programs and responsibilities should be revisited by a cabinet-level working group that would set broad policy objectives and put in place mechanisms for developing cross-agency efforts at

Figure 1. LOCATION OF CASE STUDIES

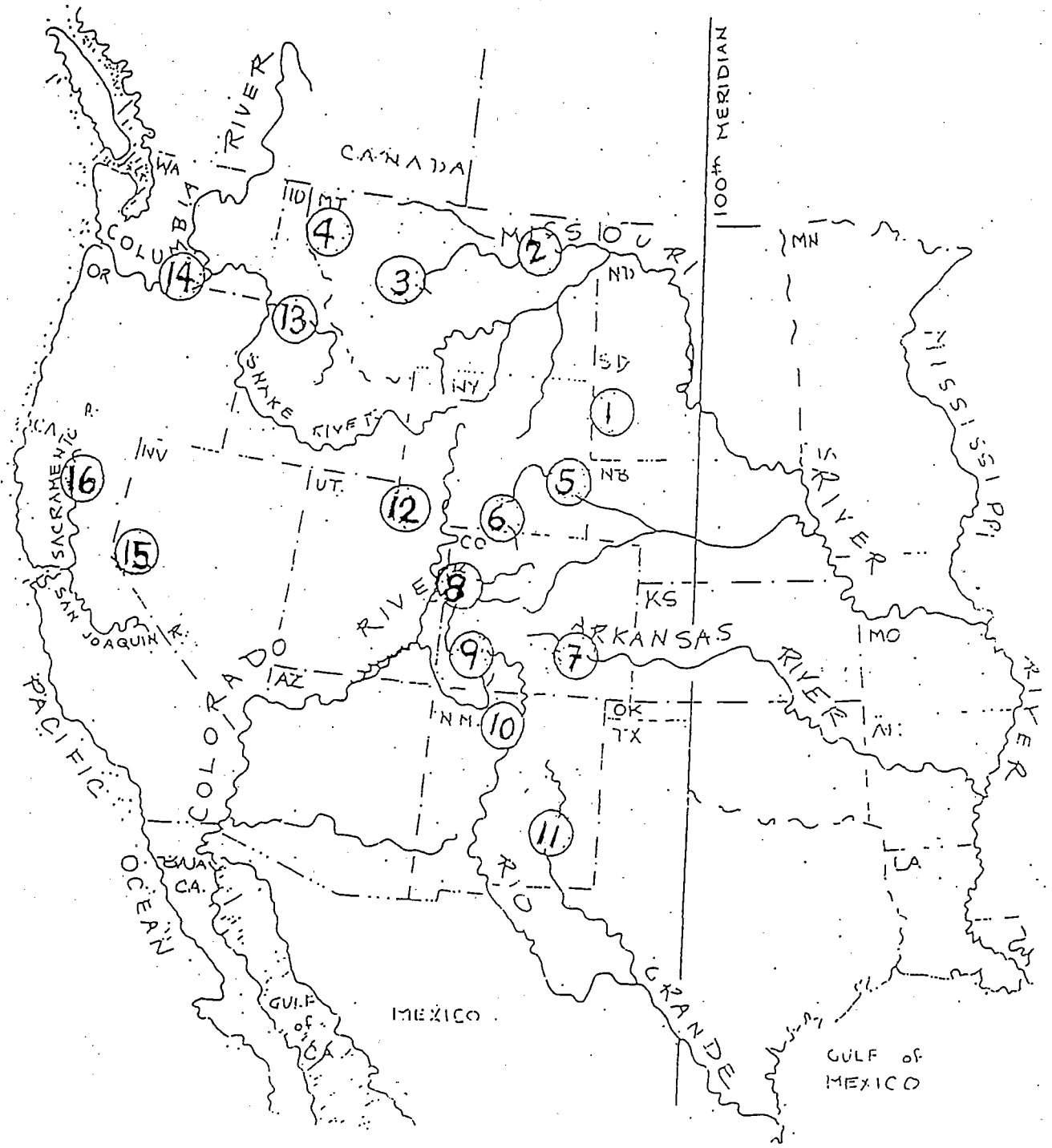


Table 2. Primary Environmental Concerns Associated with Reclamation Facilities Studied

CASE STUDY	ENVIRONMENTAL CONCERN(S)
1. Rapid Valley Unit and Project, Rapid Creek, SD	Instream fishery
2. Nelson Reservoir, Milk River Project, MT	Habitat for nesting endangered bird species
3. Canyon Ferry Dam, Missouri River, MT	In-reservoir and instream fishery
4. Hungry Horse Dam, S. Fork Flathead River, MT	Instream fishery
5. Glendo Dam, N. Platte River, WY	Instream fishery
6. Seminoe Dam to Pathfinder Dam, N. Platte River, WY	Instream fishery
7. Upper Arkansas River, Fryngpan-Arkansas Project, CO	Recreation/instream fishery
8. Grand Valley Project, Colorado River, CO	Endangered fish/water quality
9. Dolores Project, Dolores River, CO	Instream fishery/recreation
10. El Vado Dam, Middle Rio Grande Project, Rio Chama, NM	Instream fishery/recreation
11. Fort Sumner Dam to Brantley Dam, Pecos River, NM	Endangered fish
12. Meeks Cabin Reservoir, Blacks Fork River, Stateline Reservoir, East Fork - Smiths Fork River, Lyman Project, WY-UT	Instream fishery
13. Payette Division, Boise Project, Payette River, ID	Endangered fish/endangered birds/recreation
14. Yakima Project, Yakima River, WA	Endangered fish
15. Newlands Project, Truckee and Carson Rivers, NV	Endangered fish/wetlands/water quality
16. Shasta Dam, Central Valley Project, Sacramento River, CA	Endangered fish

Table 3. Changes to Operation of Reclamation Facilities

CASE STUDY	MAJOR CHANGE(S)
1. Rapid Valley Unit and Project, Rapid Creek, SD	Increased minimum releases/new outlet works allowing minimum winter releases
2. Nelson Reservoir, Milk River Project, MT	Filling storage earlier
3. Canyon Ferry Dam, Missouri River, MT	Coordinated management of reservoir releases
4. Hungry Horse Dam, S. Fork Flathead River, MT	New outlet works allowing temperature control
5. Glendo Dam, N. Platte River, WY	New outlet works allowing minimum winter releases
6. Seminoe Dam to Pathfinder Dam, N. Platte River, WY	Alteration of hydropower releases from Kortes Dam
7. Upper Arkansas River, Fryingpan-Arkansas Project, CO	Maintenance of rafting level flows through summer
8. Grand Valley Project, Colorado River, CO	Proposed upgrading of canal and laterals to reduce diversions
9. Dolores Project, Dolores River, CO	Enhancement of minimum release flow regime
10. El Vado Dam, Middle Rio Grande Project, Rio Chama, NM	Management of reservoir releases for rafting and fishery benefits
11. Fort Sumner Dam to Brantley Dam, Pecos River, NM	Proposed change to reservoir release scheme
12. Meeks Cabin Reservoir, Blacks Fork River, Stateline Reservoir, East Fork - Smiths Fork River, Lyman Project, WY-UT	Changes in winter minimum release schedule
13. Payette Division, Boise Project, Payette River, ID	Allocation of unallocated storage to in-reservoir recreation/possible releases for downstream salmon
14. Yakima Project, Yakima River, WA	"Flip-flopping" reservoir usage to help endangered fishes (system mgmt.)
15. Newlands Project, Truckee and Carson Rivers, NV	System improvements to reduce diversions
16. Shasta Dam, Central Valley Project, Sacramento River, CA	Bypassing hydropower generators to control water temperature

Table 4. Primary Issues Encountered in Making Project Changes

CASE STUDY	MAJOR ISSUE(S)
1. Rapid Valley Unit and Project, Rapid Creek, SD	Allocating water to fish
2. Nelson Reservoir, Milk River Project, MT	Protection for upstream irrigators
3. Canyon Ferry Dam, Missouri River, MT	In-reservoir vs. instream values
4. Hungry Horse Dam, S. Fork Flathead River, MT	Drought management/status of Upper Missouri River Water Advisory Council
5. Glendo Dam, N. Platte River, WY	Water for fish/risk to irrigators/loss of hydropower/cost of outlet works
6. Seminoe Dam to Pathfinder Dam, N. Platte River, WY	Loss of power generation at Kortez Dam
7. Upper Arkansas River, Fryingpan-Arkansas Project, CO	Impacts on brown trout fishery (conflicting instream values)
8. Grand Valley Project, Colorado River, CO	Legal rights to saved water/institutional issues
9. Dolores Project, Dolores River, CO	Creation and management of fish release pool
10. El Vado Dam, Middle Rio Grande Project, Rio Chama, NM	Coordinating interests/formalizing management
11. Fort Sumner Dam to Brantley Dam, Pecos River, NM	Accommodating needs of irrigators and fish
12. Meeks Cabin Reservoir, Blacks Fork River, Stateline Reservoir, East Fork - Smiths Fork River, Lyman Project, WY-UT	Paying for study
13. Payette Division, Boise Project, Payette River, ID	In-reservoir benefits vs. downstream fishery needs
14. Yakima Project, Yakima River, WA	Court-ordered requirements
15. Newlands Project, Truckee and Carson Rivers, NV	Not achieving expected efficiency results/water rights
16. Shasta Dam, Central Valley Project, Sacramento River, CA	Loss of hydropower benefits/federal-state conflicts

watershed-level actions to accomplish the objectives. Considerable thought needs to be given to ways to integrate federal objectives within such partnership-oriented undertakings.

Summary and Conclusion

The federal role in the development, regulation, and protection of water continues to evolve and change with shifting national interests and priorities. A growing sense of the need to restore balance to water systems heavily manipulated to produce economic benefits drives much of present-day federal water policy. Sensitivity about federal actions aimed at protecting in-place values of water is especially high in the West where states aggressively protect their traditional dominant role in determining uses of relatively limited water supplies.

In many respects there is a growing convergence among a wide variety of interests regarding the need to provide legal protection for in-place water values. The laws and programs of the western states outlined in this book reflect the growing recognition of these values in this region. Nevertheless, federal and state interests and responsibilities remain different in some important respects, and there will continue to be a need for federal agencies to represent federal interests set out in their statutory mandates. To the degree that states support these federal objectives it will probably be in their interest to facilitate their accomplishment under state law.

Watershed-based approaches to resource decision making offer a problem-focused framework within which federal, state, tribal, and local interests can work cooperatively to achieve their ends. If the problem of concern is in-place uses of water, parties interested in and affected by decisions regarding such in-place uses can participate in a process to make the determination. One of the challenges of any such process is to move beyond questions of whether the resource decision is controlled by federal or state authority and focus instead on what is best for the resource in the context of the watershed. Surely this is the right approach, difficult as its realization might be.

Notes

1. 22 U.S. (9 Wheat.) 1 (1824).
2. NATIONAL WATER COMMISSION, WATER POLICIES FOR THE FUTURE, (Washington, D.C. 1973) at 113.
3. *Id.* at 114.
4. Pennsylvania v. Wheeling & Belmont Bridge Co., U.S. (13 How.) 518 (1851).
5. Gilman v. Philadelphia, 70 U.S. (3 Wall.) 713 (1865).
6. Act of September 19, 1890, § 6 - 10, 26 Stat. 426, 453.
7. This statute is the origin of the present Section 404 of the Clean Water Act requiring a permit for the discharge of any dredge or fill material into any waters of the U.S. 33 U.S.C. § 1344 (1986).
8. United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690 (1899).
9. Act of June 22, 1936, 49 Stat. 1570.
10. Act of December 22, 1944, § 2, 58 Stat. 887, 889; 33 U.S.C. 701a.
11. 43 U.S.C. 390 (1988). Examples in Colorado include the Trinidad Project on the Purgatoire River and John Martin Reservoir on the Arkansas River.
12. Act of December 22, 1944, § 1(b), 58 Stat. 887, 889.
13. President Theodore Roosevelt justified his support for the reclamation program to Congress in 1901 in this way: "It is as right for the National Government to make the streams and rivers of the arid region useful by engineering works for water storage as to make useful the rivers and harbors of the humid regions by engineering works of another kind." H. Doc. No. 1, 57th Cong., 1st sess., pp. XXVIII-XXIX (1901), cited in THE REPORT OF THE PRESIDENT'S WATER RESOURCES POLICY COMMISSION, Vol. 3 *Water Resources Law* (Washington, D.C. 1950) at 183.
14. Pub. L. No. 70-642 (45 Stat. 1057), as amended at 60 Stat. 36 (Mar. 6, 1946) and by the Boulder Canyon Project Adjustment Act of 1940 (54 Stat. 774), codified at 43 U.S.C. § 617.
15. Sen. Doc. No. 325, 60th Cong., 1st sess. (1908).
16. Act of June 10, 1920, 41 Stat. 1063, § 10(a).
17. THE REPORT OF THE PRESIDENT'S WATER RESOURCES POLICY COMMISSION, Vol. 3 *Water Resources Law* (Washington, D.C. 1950) at 383.
18. Act of July 22, 1965, Pub. L. No. 89-80, 79 Stat. 244, 42 U.S.C. § 1962 - 1962d-5.

19. Act of August 11, 1888, § 11, 25 Stat. 400, 425, codified at 33 U.S.C. 608.
20. River and Harbors Act of 1890, *supra* note 6.
21. Ch. 553, 31 Stat. 187 (1900).
22. Ch. 128, 40 Stat. 755 (1918).
23. Solicitor Opinion No. M-36914, Federal Water Rights of the National Park Service, Bureau of Reclamation and Bureau of Land Management, 86 Interior Dec. 553 at 603-4 (1979). As we discuss in the section on public lands, protection of water resources necessary to support such refuges was impliedly made with these reservations.
24. Act of March 10, 1934, Ch. 55, 48 Stat. 401.
25. *Id.* § 3(a), 48 Stat. 401.
26. Act of August 14, 1946, Ch. 965, § 2, 60 Stat. 1080.
27. *Id.* § 3. Wildlife was defined to include "birds, fishes, mammals, and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent." *Id.* Section 8.
28. Act of August 12, 1958, Pub. L. No. 85-624, 72 Stat. 563, codified at 16 U.S.C. § 661 (1985).
29. *Udall v. Federal Power Comm'n.*, 387 U.S. 428 (1967).
30. The Electric Consumer Protection Act, Pub. L. No. 99-495, § 3(a) and (b), 16 U.S.C. § 797(e) and § 803a(j).
31. 18 C.F.R. § 4.41(f)(3)(iii) (1987).
32. *California v. Federal Energy Regulatory Commission*, 495 U.S. 490 (1990). In this case, commonly referred to as the Rock Creek case, the State of California established a water right permit condition requiring a higher level of bypass flow releases for a hydroelectric project than FERC had established in its license. The U.S. Supreme Court ruled unanimously that FERC authority in this area overrode contrary state actions.
33. Information as to licenses up for renewal between 1994 and 2010 provided by Tom Dean, Federal Energy Regulatory Commission (Nov. 16, 1993). Information on the total number of FERC-licensed projects in the U.S. from telephone conversation with Bedula Sarma, Civil Engineer, Office of Hydropower Relicensing, Federal Energy Regulatory Commission (Nov. 23, 1993). Figures for licenses expiring during 1993 from 52 Fed. Reg. 4648 (listing all hydropower licenses expiring 1987 through 2000). Most of those licenses expiring in 1993 were issued effective 1943 for a 50-year term.
34. Information provided by Tom Dean, *supra* note 33. The distribution of projects with impending relicensing is Arizona (0), California (36), Colorado (8), Idaho (15), Montana (4), Nevada (0), New Mexico (0), Oregon (11), Utah (10), Washington (14), and Wyoming (1).

35. Telephone conversation with Tom Dean, Federal Energy Regulatory Commission (Nov. 24, 1993). Mr. Dean estimated that FERC has about 78 applications pending for the 11 western states, including the 14 expiring in 1993, and about 200 applications pending nationwide before adding in the approximately 158 licenses expiring during 1993.
36. In *Confederated Tribes and Bands of the Yakima Indian Nation v. Federal Energy Regulatory Commission*, 746 F.2d 466 (9th Cir. 1984), the court held that, under the Federal Power Act, FERC must consider fisheries issues in relicensing as if it were processing a license for a new project. *Id.* at 470. FERC regulations provide for public involvement in the relicensing process. As with new projects, however, FERC need not incorporate recommendations of fish and wildlife agency recommendations. Indeed, FERC has equated "inconsistency," a finding which may justify not following agency recommendations, with a lack of substantial evidence to support the agency recommendation. See Lydian T. Grimm, Comment, *Fishery Protection and FERC Hydropower Relicensing Under ECPA: Maintaining a Deadly Status Quo*, 20 ENVTL. L. 929, 969 (Winter 1990). Nevertheless, relicensing of these projects provides an occasion to revisit projects built decades ago, and to make environmental improvements. See "Conservation Group Promises Greater Scrutiny of FERC Hydro Relicensings," Utility Environment Report 13 (Jan. 10, 1992).
37. For an excellent summary of the work of the Council see KAI LEE, *COMPASS AND GYROSCOPE* (Island Press, 1993), ch. 2.
38. Act of December 5, 1980, Pub. L. No. 96-501, 94 Stat. 2697, codified at 16 U.S.C. §§ 839 - 839h.
39. Act of August 12, 1955, Ch. 872, § 2, 69 Stat. 719.
40. Act of Aug. 1, 1956, Ch. 809, § 3, 70 Stat. 775.
41. Pub. L. No. 87-874, § 203, 76 Stat. 1173 (1962).
42. Pub. L. No. 102-575, 106 Stat. 4600 (1992).
43. § 303(b) and (c).
44. § 3406 (b)(2).
45. 16 U.S.C. § 1536(a)(2).
46. 16 U.S.C. § 1538(a)(1)(b).
47. *Tennessee Valley Auth. v. Hill*, 437 U.S. 153 (1978).
48. U.S. FISH & WILDLIFE SERVICE, *RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN*, Sept. 27, 1987.
49. Richard Wydoski and John Hamill, *Evolution of a Cooperative Recovery Program for Endangered Fishes in the Upper Colorado River Basin*, in *SWIMMING AGAINST THE CURRENT* (ch. 8).
50. *Sierra Club v. Lujan*, No. Mo-91-CA-069, 1993 U.S. Dist. LEXIS 8361 (W.D. Texas Jan. 30, 1993).
51. *Western States Water*, May 21, 1993, issue no. 992.

52. S.B. 1477, 1993 Tex. Sess. Law Serv., Ch. 626.
53. § 101, Pub. L. No. 92-500, 86 Stat. 816 (1972) (codified at 33 U.S.C. § 1251 et seq.).
54. 33 U.S.C. § 1251(a).
55. In *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985), the U.S. Supreme Court upheld the reach of Section 404 regulating wetlands adjacent to a river and hydrologically connected to that river but not created through inundation of the navigable waters. At 135. "Isolated" wetlands—those lacking any hydrologic connection to a body of navigable water—are not within the scope of Section 404. *Hoffman Homes, Inc. v. Administrator, U.S. Environmental Protection Agency*, 961 F.2d 1310 (7th Cir. 1992).
56. 40 C.F.R. § 230.1(c) & (d) (1992).
57. Final Determination of the U.S. EPA's Assistant Administrator for Water Pursuant to Section 404(c) of the Clean Water Act Concerning the Two Forks Water Supply Impoundments, Jefferson and Douglas Counties, Colorado (Nov. 23, 1990).
58. 33 U.S.C. § 1251(g) (1988).
59. *See, e.g. United States v. Akers*, 785 F. 2d 814 (9th Cir. 1986), *cert. denied Akers v. United States*, 479 U.S. 828 (1986). *See also* Lawrence J. MacDonnell, *Federal Interests in Western Water Resources: Conflict and Accommodation*, 29 NAT. RES. J. 389, 400 - 403 (1989).
60. *Federal "Non-Reserved" Water Rights*, 6 Op. Off. Legal Council 328, 381 (1982).
61. 758 F.2d 508 (10th Cir. 1985).
62. *Id.* at 512.
63. *Id.* at 513.
64. 40 C.F.R. § 131.12 (1992). Waters of a quality exceeding that necessary to support fish, wildlife, and recreation as well as high quality waters in specially protected areas must be protected. In other settings, water quality may be reduced down to the minimum necessary to support designated uses if, following a public review, such reductions are found to necessary "to accommodate important economic or social development" *Id.*
65. 33 U.S.C. § 1329 (1988).
66. S. 1114, The Water Pollution Prevention and Control Act of 1993, 103rd Cong., 1st Sess. (1993).
67. 33 U.S.C. § 1341 (1988).
68. 849 P.2d 646 (Wash. 1993), *cert. granted* 114 S. Ct. 55 (1993).
69. In *Department of Environmental Resources v. City of Harrisburg*, 578 A. 2d 563 (Pa. 1990), however, the Commonwealth of Pennsylvania ruled that the state agency could only consider the effects of discharges of pollutants associated with the proposed hydroelectric facility. The U.S.

Supreme Court has granted certiorari in the Washington case and should provide better guidance on the reach of Section 401 in 1994. Dep't. of Ecology v. PUD No. 1, 114 S. Ct. 55 (1993).

70. DAVID GETCHES ET AL., CONTROLLING WATER USE (1991) at 38.
71. California State Water Resources Control Board, Draft Decision 1630 (concerning water quality of Sacramento & San Joaquin Delta) (1992).
72. Winters v. United States, 207 U.S. 564 (1908).
73. Solicitor Opinion No. M-36914, Federal Water Rights of the National Park Service, Bureau of Reclamation and Bureau of Land Management, 86 Interior Dec. 553 (1979).
74. United States v. New Mexico, 438 U.S. 696 (1978).
75. Cappaert v. United States, 426 U.S. 128 (1976).
76. 43 U.S.C. § 666 (1988).
77. 426 U.S. 128 (1976).
78. 438 U.S. 696 (1978).
79. In re Application of the United States for Reserved Water Rights in the Platte River, Case No. W-8439-76, Colo. Dist. Ct., Water Div. 1 (Feb. 12, 1993).
80. Sierra Club v. Block, 622 F. Supp. 842 (D. Colo. 1985), *modified*, Sierra Club v. Lyng, 661 F. Supp. 1490 (D. Colo. 1987), *rev'd sub nom.*, Sierra Club v. Yeutter, 911 F.2d 1405 (10th Cir. 1990).
81. Sierra Club v. Yeatter, 911 F.2d 1405 1418 (10th Cir. 1990). The court differentiated the Forest Service inaction from final agency action declaring the issue unripe for review. However the court acknowledged the possibility of Federal reserved water rights under the Wilderness Act while declaring that the "Forest Service is not obligated to assert those rights in the absence of a threat to the [area's] wilderness characteristics" — i.e., where agency conduct conflicts with the Wilderness Act's mandate to preserve the wilderness characteristics of a wilderness area.
82. Pub. L. No. 101-628, section 101(g), 104 Stat. at 4469, 4473. Congress may also explicitly choose to forgo any claims to water in creating a reservation. For example, in establishing the Hells Canyon National Recreation Area in 1975 Congress stipulated: "no flow requirements of any kind may be imposed on the waters of the Snake River below Hells Canyon dam under the provisions of the Wild and Scenic Rivers Act." Pub. L. No. 94-199, section 6(b), 89 Stat. 1117 (1975).
83. 16 U.S.C. § 1271 (1988).
84. A. Dan Tarlock, *Protection of Water Flows for National Parks* 22 LAND & WATER L. REV. 29 (1986). The language reads: "Designation of any stream or portion thereof as a national wild, scenic or recreational river area shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this chapter, or in quantities greater than necessary to accomplish these purposes." 16 U.S.C. § 1284(c) (1985).

85. Peter M. K. Frost, *Protecting and Enhancing Wild & Scenic Rivers in the West*, 29 IDAHO L. REV., 313, 314 (1992-93). See 16 U.S.C.A. § 1274 (1985 and 1993 supplement).
86. *Arizona v. California*, 373 U.S. 546 (1963).
87. 647 F.2d 42 (9th Cir. 1981), *reh'g denied* 752 F. 2d 397 (9th Cir. 1985), *cert. denied* 475 U.S. 1010 (1986).
88. *Id.* at 48.
89. *United States v. Adair*, 723 F. 2d 1394, 1410 (9th Cir. 1983).
90. *Id.* at 1411.
91. Michael C. Blumm, *Unconventional Waters: the Quiet Revolution in Federal and Tribal Minimum Streamflows*, 19 ECOLOGY L. Q. 445, 473 (1992).
92. *Arizona v. California*, 439 U.S. 419, 422 (1979) (per curiam); *United States v. Anderson*, 736 F.2d 1358, 1365 (9th Cir. 1984).
93. *In re Big Horn Sys.*, 835 P.2d 273 (Wyo. 1992).
94. Fort Hall Indian Water Rights Act of 1990, Pub. L. No. 101-602, 104 Stat. 3059.
95. 16 U.S.C. §§ 1600-14 (1988 & Supp. III 1991).
96. 16 U.S.C. §§ 473-481 (current version at 16 U.S.C. §§ 471-544 p (1988 & Supp. III 1991)).
97. 16 U.S.C. §§ 1 & 2-4 (current version at 16 U.S.C. §§ 1-460 ggg (1988 & Supp. III 1991)).
98. 43 U.S.C. §§ 1701-84 (1988 & Supp. III 1991).
99. 42 U.S.C. §§ 4321-4370.
100. 43 U.S.C. § 1765(a)(1988); 36 C.F.R. § 251.56(1991); Forest Service Special Uses Handbook § 2709.11 (1991).
101. 16 U.S.C. § 1604 (1988 and Supp. III 1991).
102. 792 F.2d 981 (10th Cir. 1986). The court stated: "The stream flow requirements were clearly mandated by the Forest Service's own environmental impact statement, which states that the easement's stream flow levels are the minimum necessary to mitigate damage to wildlife habitat." *Id.* at 986.
103. *In re Application of the United States for Reserved Water Rights in the Platte River*, Case no. W-8439-76, Colo. Dist. Ct., Water Div. 1 (Feb. 12, 1993) at 9.
104. As their special use permits expire, several front range municipalities are facing the imposition of bypass or minimum flow conditions on their new permits. Generally, the cities are contesting the Forest Service's authority to impose these types of conditions, arguing that neither FLPMA nor other federal laws confer such authority and that, even if there is authority, the conditions

constitute a taking of a vested property right that must be compensated. See Memorandum to [Senator] Hank Brown from Bennett Raley regarding USFS Authority to Require Instream Flows as a Condition of a Special Use Permit (Aug. 13, 1992).

105. 16 U.S.C. §§ 791-828, 797(e) (1988 and Supp. III 1991).
106. 16 U.S.C. § 797(e)(Supp. 1992); *Escondido Mutual Water Co. v. La Jolla Band of Mission Indians*, 466 U.S. 765 (1984) (conditions must be necessary for the protection and use of the reservation and its resources, and probably cannot effectively veto the hydropower project).
107. 966 F. 2d 1541 (9th Cir. 1992).
108. Energy Policy Act of 1992, Pub. L. No. 102-486, § 2401, 106 Stat. 2776 (1992).
109. Explicit statutory authority to establish water rights under state law exists for the Forest Service (16 U.S.C. § 526 (1985)) and the National Park Service (16 U.S.C. § 17j-2(g)(1988)). Similar authority on behalf of the Fish and Wildlife Service may be inferred from 16 U.S.C. § 742f(a)(4) (1988). There is also specific language authorizing the purchase of water rights by each of these agencies. Donation of "property," presumably including water rights, may be accepted by the Park Service (16 U.S.C. § 6 (1988)), the Fish and Wildlife Service (16 U.S.C. § 742f(b)(1) (1988)), and the Forest Service and the Bureau of Land Management (43 U.S.C. § 1715(a)(1988)).
110. General federal condemnation authority is found in 40 U.S.C. §257 (1986). It is to be used to "procure real estate for the erection of a public building or for other public uses,...." The use of this authority to condemn land for public land purposes, such as parks, has been upheld. See, e.g. *Shoemaker v. United States*, 147 U.S. 282 (1893); *United States v. Southerly Portion of Bodie Island*, 114 F. Supp. 427 (E.D.N.C. 1953). The Federal Land Management and Policy Act limits the eminent domain authority of the Secretary of the Interior to lands required for access. We found no cases involving the use of eminent domain to obtain water rights for public land management purposes. While the general authority may exist, in all likelihood the specific purpose for which the water right is being taken would have to be closely linked to specifically authorized land management activities.
111. National Environmental Policy Act, 42 U.S.C. §§ 4321-4370.
112. 766 P.2d 263 (Nev. 1988).
113. Permit No. 36480, Nevada Department of Conservation and Natural Resources (1991).
114. Herb Dishlip, *Instream Flow Water Rights: Arizona's Approach*, in this book at chapter 9. Under Arizona law, beneficial uses include fish and wildlife, stockwatering and recreational uses. Therefore, all instream flow water rights must fall within one or more of these uses. See ARIZ. REV. STAT. § 45-151(A)(1987).
115. Mary Lu Harle and Christopher C. Estes, *An Assessment of Instream Flow Protection in Alaska*, in this book at Chapter 8.
116. *In re Water of Hallett Creek System*, 44 Cal. 3d 448, 749 P.2d 324 (1988), cert. denied, 109 S. Ct. 71 (1988).

117. *Id.* at 472, 749 P.2d at 337 (1988).
118. See Brief of the United States, Bureau of Land Management objecting to Master's Report, In the Adjudication of the Boulder River Tributary of the Jefferson River Drainage Area, Case No. 41E-14 (filed June 1991).
119. Matter of Dearborn Drainage Area, 776 P.2d 228 (Mont. 1988).
120. ALASKA STAT. § 46.15.145 (1987); COLO. REV. STAT. § 37-92-102 (Supp. 1988); IDAHO CODE § 42-1504 (Supp. 1988); MONT. CODE ANN. § 85-2-316 (1987).
121. COLO. REV. STAT. § 37-92-102 (3) (Supp. 1990).
122. See the discussion accompanying note 60 *supra*.
123. *America's Waters: A New Era of Sustainability* (a report of the Long's Peak Working Group on National Water Policy, Dec. 1992).
124. Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, 106 Stat. 3173 (1992).
125. Kent Loftin, *Restoring the Kissimmee River*, GEOTIMES (Dec. 1991) at 15-17.
126. Mike Toner, *Fixing a Broken River*, NAT'L WILDLIFE, April 1, 1991, vol. 29 #3, at 19.
127. The Water Resources Development Act of 1986, Pub. L. 99-662, 100 Stat. 4082; 33 U.S.C. § 2283.
128. Kissimmee River Restoration Study, Communication from the Assistant Secretary of the Army (Civil Works), House Document 102-286, April 7, 1992.
129. Lawrence J. MacDonnell, "Environmental Enhancement of Water Projects," in Proceedings of USCID/Bureau of Reclamation Seminar on Environmental Enhancement of Water Projects (forthcoming 1994).
130. See, e.g., ENVIRONMENTAL PROTECTION AGENCY, THE WATERSHED PROTECTION APPROACH: AN OVERVIEW, December 1991. In 1993 EPA produced a report summarizing existing federal programs in all agencies providing watershed protection. ENVIRONMENTAL PROTECTION AGENCY, WATERSHED PROTECTION: CATALOG OF FEDERAL PROGRAMS, March 1993.
131. NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES, NORTH CAROLINA'S BASINWIDE APPROACH TO WATER QUALITY MANAGEMENT: PROGRAM DESCRIPTION, (Report No. 91-08, Second Printing, May 1992).
132. House Bill 2215, 67th Oregon Legislative Assembly, 1993 Regular Session.

Benefits, Costs And Water Acquisition Strategies: Economic Considerations In Instream Flow Protection

Bonnie G. Colby

Policy makers' and the public's interest in streamflow protection has been stimulated by a number of forces over the last decade. First, the population of many western states is growing rapidly and increased populations demand increased boating, fishing and other outdoor recreation opportunities that rely on adequate stream and lake levels. Second, as diversions of water for off-stream irrigation, industrial and residential deliveries have increased, flow levels on many stream systems have decreased to the detriment of streams, riparian areas and wetlands. In Arizona, decades of water development for farms and cities have severely reduced streamflows from their historical levels and twenty-five of the state's thirty native fish species are federally listed as threatened or endangered.¹ Finally, many residents of the West and visitors to the region have an increased appreciation of the intrinsic and aesthetic value of free-flowing water and of its economic value in enhancing recreation, wildlife habitat and the outdoor-oriented tourism sector.

Readers who are accustomed to thinking of instream flows primarily from a legal or biological perspective may wonder "Why a chapter on economics?" This chapter addresses two key economic issues that arise in instream flow protection: measuring the costs and benefits of assuring specific flow levels and acquiring water supplies to support streamflows. A benefit-cost approach often is essential to build support for a particular stream protection program and to identify adverse impacts, if any, on consumptive water users. Public decision makers find an assessment of the economic benefits of stream protection helpful in obtaining budgetary appropriations and in choosing which stream reaches to focus on first.

The first section of this chapter reviews economic concepts essential in measuring benefits and costs associated with streamflows. Then recent studies that estimate the benefits and costs of instream flows for recreation, wildlife and fisheries restoration, water quality and local economic development are summarized. The next section discusses obtaining water for instream flows through voluntary market transactions and through litigation and changes in laws and policies that govern water allocation. The chapter concludes with recommendations for policies that enhance the economic contributions of free-flowing waters.

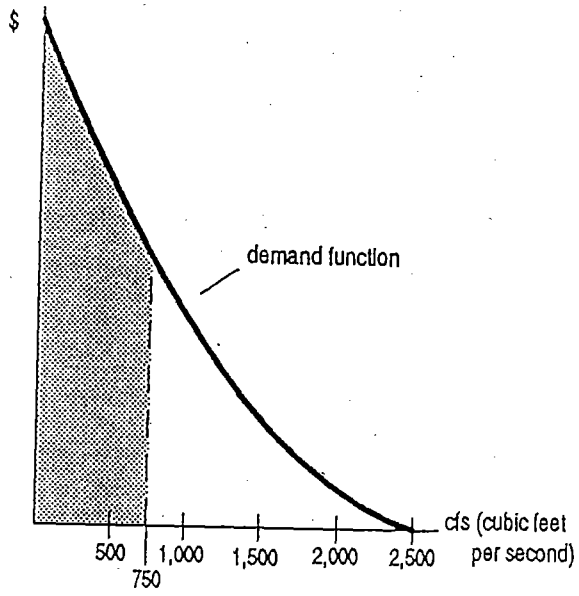
Measuring Economic Impacts Of Instream Flow Protection

Water-based recreation is an important part of many westerners' leisure activities, and water-related recreation opportunities draw visitors and tourism dollars to the western United States. Instream flows are vital for preserving fish and wildlife habitat, including riparian corridors and wetlands, in the arid West and for endangered species restoration. Since there is limited direct market evidence on willingness to pay for streamflows for recreational opportunities, wildlife preservation, water quality maintenance and environmental enhancement, a variety of valuation approaches have been applied to estimate the value of water for these purposes.² A few representative studies are summarized here.

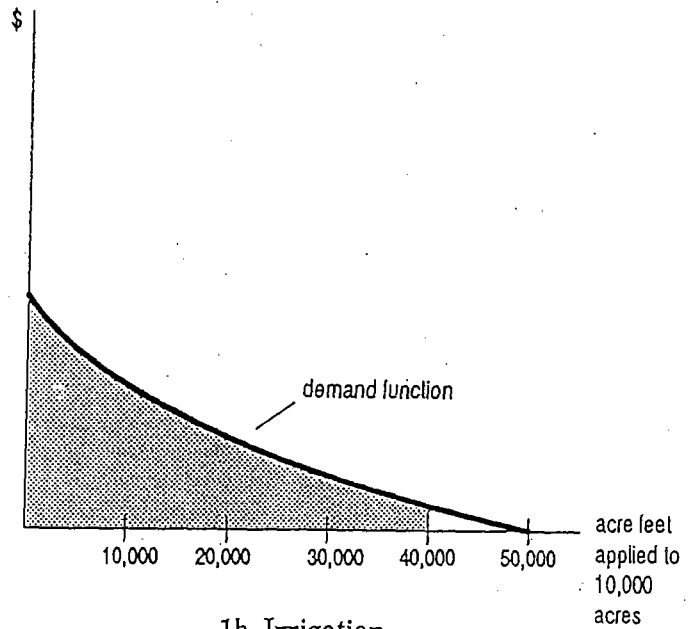
Policy makers can make more informed decisions about streamflow protection and water allocation if they know the economic benefits provided by a stream system for various uses, such as angling, whitewater rafting or riparian area restoration. Information on the effects of specific changes in flow levels also is desirable, along with estimates of the economic impacts on consumptive water users when diversions are curtailed to assure instream flows.

Economists use demand functions, also called marginal benefit or willingness-to-pay functions, in assessing economic impacts of different flow levels. A hypothetical recreation demand function for instream flows is shown in Figure 1a, along with a demand function for water on 10,000 acres of irrigated farmland (Figure 1b). The demand functions show, for various flow levels, the marginal (additional) benefit of adding another cfs (cubic foot per second) of flow, or of applying another acre foot of irrigation water. Both functions have a downward slope, reflecting the fact that as water availability increases (moving down and to the right along the functions), the benefits of adding another increment of flow, or another acre foot of irrigation water, decrease. The area under the recreation demand function for a particular flow level shows the total recreation benefits generated at that flow level. Thus, the shaded area in Figure 1a shows the recreation benefits generated by the stream at 750 cfs. The shaded area in Figure 1b shows the benefits to irrigators of applying 40,000 acre feet of water to 10,000 acres of farmland.

Agricultural water demand functions, like the one shown in Figure 1b, can be constructed using data on crop production costs, irrigation practices and crop revenues. Marginal benefit functions for recreation can be estimated using information on recreationists' expenditures to travel to and enjoy a water-based recreation site using the travel cost method (TCM). Alternatively, data can be elicited from recreationists regarding their willingness to pay for recreational use of a river at differing flow levels using the contingent valuation method (CVM). The TCM has been used for decades to infer the value that visitors to a recreation area place on the site. The CVM has been refined and applied widely during the past decade to estimate benefits associated with site use and changes in site quality, including changes in flow levels. CVM also is used to



1a. River Recreation.



1b. Irrigation.

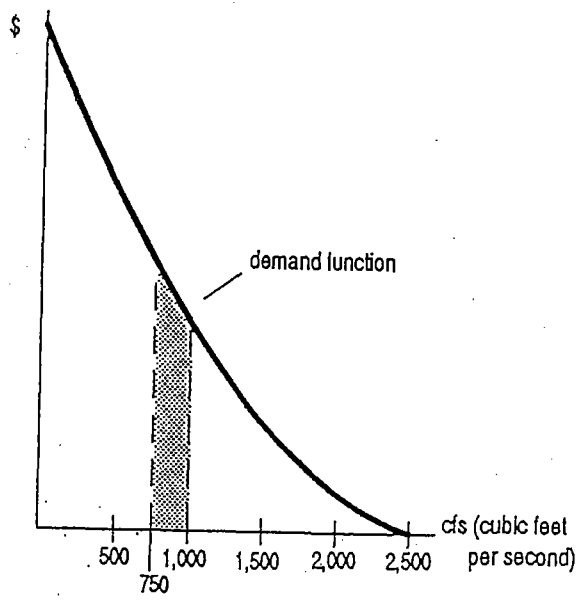
Figure 1. Demand (Marginal Benefit) Functions.

measure willingness to pay for preservation that is not associated with actual use of an area. These nonuse values (discussed below) arise when people experience benefits from preserving a site or a species that are not associated with a visit to the site or with viewing the species. Nonuse values also that are relevant in measuring damages to species and natural areas, such as those caused by an oil spill. Individuals experience losses due to resource degradation that are not directly related to use of the resources that have been damaged, and these nonuse values now are considered in assessing financial liability for oil and hazardous substance spills.

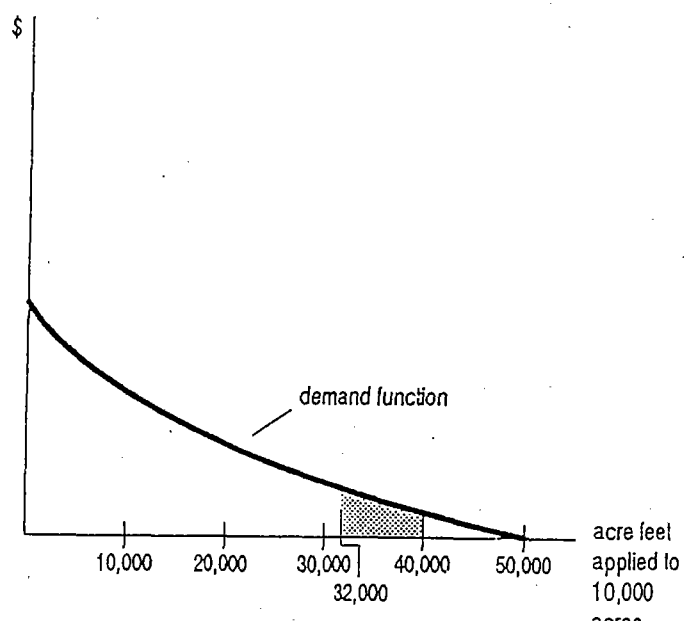
The CVM came under intense scrutiny when it was used to estimate damages associated with oil and hazardous material spills, particularly the oil spill in Prince William Sound. In 1992, the National Oceanic and Atmospheric Administration (NOAA) (responsible for issuing regulations to govern assessment of oil spill damages) appointed a blue ribbon panel that included several Nobel laureate economists to thoroughly review the CVM. The panel concluded that carefully designed studies are reliable and provide valid information to courts in determining compensable damages and financial liability associated with environmental disasters. The panel concluded that nonuse values are a legitimate component of the economic impacts associated with spills and other changes in environmental quality and that these nonuse values can be measured by a well designed CVM study.³ CVM is being used in other important policy arenas as well. The methodology is being used to assess the nonuse impacts of managing Glen Canyon Dam, given the impacts that flow fluctuations for hydropower generation have on resources in the Grand Canyon. The CVM studies will be used to provide the Secretary of the Interior with information on the costs and benefits of various dam operating regimes.⁴

Using the hypothetical demand functions shown in Figure 2, one can examine the economic impacts of reducing water diversions for 10,000 acres of irrigated land from 40,000 acre feet per year to 32,000 acre feet per year, and of making this water available to increase streamflows from 750 cfs to 1000 cfs during the summer whitewater season. On an actual stream, careful analysis of cropping patterns, irrigation practices and watershed hydrology would be necessary to identify the changes in flows that would result from decreased agricultural diversions. In the hypothetical example, the economic losses to irrigators are represented by the shaded area in Figure 2b and the economic gains to recreationists are represented by the shaded area in Figure 2a. In this hypothetical example, the gains to recreationists outweigh the losses in agriculture and so the reallocation in water use appears to yield positive net benefits. If money could be collected from those who benefit from enhanced recreational opportunities and used to buy or lease senior irrigation rights, then the increase in streamflows could be accomplished through voluntary transactions. Examples of actual transactions are provided later in this chapter.

In a benefit-cost framework, the losses to irrigators and other losses associated with removing water from agriculture are compared to the economic benefits to recreationists and other benefits of increased streamflows. Other benefits and costs not



2a. Benefits in River Recreation.



2b. Losses in Irrigation.

Figure 2. Economic Impacts of Water Reallocation.

reflected in Figure 2 may include reduced sales for farm equipment and farm supply businesses if the water transfer causes less land to be irrigated, and increased business activity in lodging, restaurants and other recreation-linked businesses. There may be environmental, social and cultural impacts as well, associated with reduced irrigated acreage and increased river recreation.

Notice in Figure 2b that, as some water is removed from agricultural use, the value per acre foot of the water remaining in agriculture is higher. This is because farmers cut back on their least profitable water uses when the 8,000 acre feet depicted in Figure 2 is removed from agriculture. If they had to cut back another 8,000 acre feet, the losses in agriculture would be much larger. The marginal value of increases or decreases in water availability changes significantly, depending on the baseline from which changes are measured. This underscores the need to precisely identify the initial streamflow conditions and initial water supply conditions for off-stream uses in order to correctly measure the benefits and costs of transferring water to environmental enhancement.

Economic studies which are to be useful to policy makers must identify carefully the range of flows relevant to policy decisions and measure marginal values over this range. For instance, if policy makers are deliberating the leasing of water to augment flows in dry years, an economic study would use a dry-year flow level as its baseline for comparison and measure the benefits of incremental improvements in flows from that baseline. Conversely, if a new municipal diversion is contemplated that will reduce flows along a stream reach, then typical pre-diversion flows should be used as a baseline from which to assess impacts of reduced flows over the range anticipated. Selecting the appropriate baseline and range of flow variation to be examined is central to a sound assessment. Ideally, an economic study also will consider the cumulative impacts as an addition or reduction in flow levels affects instream and consumptive water users located downstream along the reaches where flow variations are experienced. However, most studies have focused on one or two of the most important water-dependent activities at just a few locations in a basin, due to time and budget limits.

In examining the economic impacts of increased streamflows, estimates of the economic benefits foregone in consumptive uses (the opportunity costs of reallocating water to instream purposes) are important. Colby summarizes economic methods for measuring the value of water in consumptive uses.⁵ One example of the many studies which have measured water values in offstream uses is that authored by Brown, Harding and Peyton.⁶ They used a model of the Colorado Basin to examine the marginal value of increased streamflows in the Upper Basin created by timber harvests. The study focused on agricultural, municipal, industrial and hydropower uses, as well as considering salinity impacts on consumptive uses. They found that the value of an additional acre foot was \$39 - \$46 under the hydrologic and institutional scenarios investigated. Since a portion of these benefits is generated by water instream (salinity dilution and

hydropower), only part of the \$39 - \$46 in value would be sacrificed if water availability for consumptive uses was constrained to support streamflows.

The next sections discuss five kinds of economic benefits generated by instream flows—recreation, non-use, local economic development, water quality, and fish and wildlife—and summarize selected studies that measure these benefits.

Recreation Benefits

Outdoor recreation in the West concentrates around lakes, rivers and streams. Adequate streamflows are essential to boating and fishing and also are important to hunting, bird watching, and other wildlife-related recreation, as much wildlife habitat depends on streamflows in the arid West.

A study⁷ commissioned by the Department of the Interior as a part of the Glen Canyon Environmental Studies (a multi-agency study effort which provides information on the impacts of Glen Canyon Dam operations) indicates that benefits generated by whitewater rafting and angling are significantly influenced by river flow levels. The study used the CVM and found that benefits per angling day reach their peak at a constant flow level of around 10,000 cfs and that fluctuations in flows (which occur when peaking hydropower is generated) cause a decrease in angling benefits. Fluctuations in flow levels also have a negative impact on benefits experienced by whitewater rafters, with relatively high steady flows (around 30,000 cfs) generating maximum benefits for whitewater boaters.

Duffield, Neher and Brown⁸ used the CVM to examine recreation values on two Montana rivers. They found that the marginal value of streamflows for recreation and hydropower generation exceeds the marginal value in either irrigation or hydropower alone for a wide range of flow levels on the Big Hole River, nationally renowned for high quality trout fishing. On the Bitterroot River, the instream marginal value exceeded the irrigation marginal value for flow levels below 1,250 cfs.

Loomis and Cooper⁹ developed a travel cost model that includes fish catch rates, which are linked to river flows, to predict the impact on angling benefits of changing flow levels on California's Feather River. Consistent with the hypothetical recreation demand function illustrated in Figure 1, they note that the marginal value of an additional increment of flow decreases as flow is increased more and more. They found that the marginal value of increased flows above the seasonal average base flow rate of 101 cfs is \$73 per cfs for the first 20 cfs increase, \$57 per cfs for a 100 cfs increase and \$46 per cfs for a 200 cfs increase.

Hansen and Hallam¹⁰ estimated the recreational fishing benefits of streams in regions throughout the United States and found that marginal values are highest in the

Southwest where flow depletions are most significant. They noted the importance of examining the cumulative benefits of making additional flows available in the upper reaches of a river basin, where additional upstream flows improve recreation quality as they move downstream. While they found that the marginal value of an additional acre foot made available for instream flows is less than \$10 in most regions of the U.S., they also learned that marginal instream values exceed marginal irrigation values in over 80 percent of the regions studied. The authors noted that most studies underestimate the actual value of additional flows because they consider benefits of only a few recreation activities at selected sites and do not include other recreation activities, benefits downstream and nonuse values.

Loomis and Creel¹¹ measure recreation benefits of enhanced flows on rivers in California's San Joaquin Valley, focusing on the timing of increased flows. They find that the value of additional flows are highest in August, when an additional acre foot available instream on the San Joaquin River generates \$116 in additional recreation benefits. This marginal value exceeds the marginal net farm income generated by an acre foot of irrigation water in this region.

Olsen, Richards and Scott¹² estimated the benefits of doubling specific runs of salmon and steelhead in the Columbia River Basin. They found that nonuse and recreational benefits associated with doubling fish runs varied significantly by location in the basin, but averaged approximately \$68 per fish. About one third of these benefits are attributable to nonuse values and two thirds to sport fishing values. This study measured values per fishing day and per fish, rather than per unit of flow made available to support increased fish runs.

Sanders, Walsh and McKean¹³ applied CVM and TCM and compared the resulting recreation benefit estimates for eleven rivers in Colorado. They found that the two methods produced consistent estimates, indicating benefits of \$21 to \$24 per river recreation day at typical flow levels.

Johnson and Adams¹⁴ combined a steelhead fishery production model with CVM to estimate the marginal value of streamflows to anglers. They found that increased summer flows to enhance fishing have a marginal value of \$2.40 per acre foot for recreational steelhead fishing. The authors note that this value is only one part of an overall cost benefit assessment, as there are instream benefits for other fish species, for other types of river recreation and for improved water quality and stream-side wildlife habitat. They note that additional streamflows likely would require decreased consumptive use by agriculture and that a careful hydrologic analysis would be needed to identify the decreased agricultural use necessary to obtain a specific increase in streamflows.

Daubert and Young¹⁵ examined the contribution of streamflows to recreation benefits on Colorado's Cache la Poudre River. They found the value of an additional

acre foot of flow during low flow periods to be \$21 for fishing and \$15 for shoreline recreation. Values for an additional unit of flow dropped to zero at higher flow levels suggesting that what is of value to recreationists is minimum flow maintenance rather than additional increments of flow to already adequate flow levels. Walsh et al.¹⁶ investigated flow values at nine sites along Colorado mountain streams and found that flow levels of 35 percent of maximum streamflow were optimal for recreation. The value of an additional acre foot of flow beyond the 35 percent flow level was estimated to be \$21 per acre foot for fishing, \$5 for kayaking and \$4 for rafting.

Walsh, Auckerman and Milton¹⁷ estimated that leaving water in high mountain Colorado reservoirs for an additional two weeks in August is worth \$48 per acre foot in additional recreation benefits during that peak recreation period. Amirfathi et al.,¹⁸ analyzing recreation on a river in northern Utah, found that the value of additional flows was zero until flows dropped to 50 percent of peak levels and that the value of additional flows reached a maximum of \$80 per acre foot when flows were 20-25 percent of peak levels.

Ward¹⁹ examined the relationship between streamflow levels, recreation use levels and travel costs incurred by recreationists on New Mexico's Rio Chama to infer a value of \$16 to \$27 per acre foot of reservoir releases in the summer recreation season, assuming optimal augmentation of streamflows during low flow periods. Consistent with other studies, Ward found that the marginal value of augmenting flows decreases in high flow periods. His results suggest a significant economic payoff to augmenting streamflows in low flow years, even though augmentation would reduce water availability for other uses.

Loomis²⁰ and Brown²¹ provided an overview of the various methods that have been applied to measure the economic value of instream flows, citing studies relying on the travel cost method and on contingent valuation. Brown reviewed nine studies on the recreation value of instream flows and found that the value of an additional acre foot made available on a specific stream reach for a particular activity varies from one dollar to twenty-five dollars. He noted that the benefits generated by different recreational activities, such as rafting and angling, are additive and that the benefits of additional flows are cumulative as the flows move downstream to other locations where recreation occurs. Brown and Loomis argue convincingly, based on the studies cited, that economic benefits generated by instream flows can be measured so as to be comparable to the value of water in off-stream uses such as irrigation. They also note that many economic studies demonstrate higher marginal values for water instream than for water in irrigation, particularly on streams where flow levels are depleted during the summer recreation season.

Non-Use Values

Non-use values reflect benefits not directly related to the use of streamflows for recreation or water consumption. Non-use values are held both by those who do use a site (distinct from their use values) and by those who have not visited and do not intend to use a site. These values can apply to a wide range of water-dependent resources, including streams, riparian areas, wetlands and specific wildlife species.

Non-use values arise from several motivations. Willingness to pay for preservation so that future generations can enjoy the resource is termed "bequest value", and benefits generated by assuring that a unique site will continue to exist are termed "existence values". Benefits associated with preserving a stream or riparian area so that one has the option to enjoy it in the future are termed "option values". Option values are relevant when choices must be made between an irreversible alternative (or one that is costly to reverse), such as drying up a stream environment or flooding a canyon, and the alternative of leaving the river system in its current state. This latter decision is reversible since new diversions or water development later can be approved. Large option values suggest that irreversible decisions be delayed until it is clear that the benefits of irreversibly altering a stream outweigh the benefits of preservation.

Non-user benefits are relevant in valuing instream flows where there are wildlife species whose survival is dependent upon streamflows and where there are unique sites with characteristics dependent on free-flowing water. The contingent valuation method is used to estimate these values. Recent studies indicate that non-user values can be significant, especially for unique recreation sites and for endangered species. Existence, bequest and option values ranging from \$40-\$80 per year per non-user household have been documented for stream systems in Wyoming, Colorado and Alaska.²²

Sanders, Walsh and Loomis²³ estimated demand functions for protecting rivers in the Rocky Mountains of Colorado, using the CVM to examine both use and non-use values. They found that annual benefits per household for preserving the three "most valuable" rivers were \$40, with 80 percent of that value due to non-use preservation values. The authors developed a present value of total benefits function that arrays values for specific rivers from most to least valuable so that incremental choices to preserve flows in some rivers and not in others can be evaluated.

Brown²⁴ summarized three studies that estimated both use and non-use values for streams. The studies, which used CVM and involved streams in Colorado, Montana and Alabama, found an average household annual benefits for stream preservation of \$15 to \$95 per year. In each case, non-use values accounted for over two-thirds of the annual willingness to pay. Olsen et al.²⁵ found that about one-third of the benefits of doubling specific Columbia Basin fish runs were non-use values.

Local Economic Development

Visitor dollars spent on boating, fishing and other water-related activities support recreation-related businesses and stimulate local and tribal economies. Many small towns and Indian reservations rely on water-dependent tourism as a significant source of livelihood for local residents. Along with the direct increase in local business activity stimulated by visitor spending, tourism dollars provide additional earnings for local people. Some of these additional earnings are spent within the local economy and induce further local economic activity. Lewis²⁶ provides a simple explanation of these multiplier effects and their importance in revitalizing local economies.

A few studies have estimated the dollars flowing into local economies from water-based recreation. Crandall, Leones and Colby²⁷ surveyed visitors to several stream-side nature preserves in rural southern Arizona in 1992 to evaluate the impact of nature-based tourism in that rural economy. One of the preserves studied is an internationally known birding site managed by The Nature Conservancy. The other site is a riverside area recently acquired by the Bureau of Land Management as a Riparian National Conservation Area. The 38,000 visitors to the two sites in 1992 spent an average of \$53 per day in the adjacent rural communities and stimulated about \$3 million per year in increased sales in these communities. The visitors, many of whom are attracted to the area for birding, are near retirement age, well educated and have an average annual household income of over \$50,000. Thus, water-dependent natural areas not only may attract tourists who spend money during their visit, they also may attract permanent residents looking for a retirement location.

Another study²⁸ indicates that whitewater rafting on the Rio Grande near Taos, New Mexico attracts large numbers of visitors from outside the local area and generates significant local business activity. Flow levels in the Rio Grande drop so low during the last half of the summer, partially due to diversions for irrigation in southern Colorado, that popular whitewater reaches become unrunnable. The study indicates that agreements that would decrease agricultural diversions and leave more water in the river during July and August for recreational and environmental purposes would generate net benefits and stimulate economic activity in some of the poorest areas of the Southwest. Colby²⁹ found that a significant portion of visitors and visitor spending in Fremont County, Wyoming are attributable to water-based recreation on the Wind River Indian Reservation. Maintenance of streamflows for fisheries restoration and recreation has been a point of intense conflict and years of litigation between the Wind River tribal government, the State of Wyoming and irrigators in the basin.

Boyle and Bishop³⁰ found that boaters on a 20-mile stretch of the Wisconsin River generate over \$800,000 of sales by local businesses during the summer boating season. Half of this money remains in the local economy as income to local households and the other half goes to pay for supplies and services purchased from other areas by local businesses. These figures underestimate total recreation-linked economic activity in

towns along the river since they do not include spending by summer hunters, fishermen, and hikers and by fall, winter and spring recreationists who visit the river.

Tribes, towns and counties have a substantial economic interest in preserving free-flowing streams upon which local tourism depends. Consequently, they have an incentive to monitor and enforce streamflow levels they are able to protect under state law or, in the case of tribal governments, under the federal reserved rights doctrine, tribal water codes and other legal avenues available to tribes.

Water Quality Benefits

Streamflows affect dissolved oxygen levels and other water quality parameters. As streamflows become depleted, pollutant loads become concentrated and water quality standards are more likely to be violated. A stream's dilution capacity provides economic benefits related to the costs of treatment that otherwise would be incurred by dischargers and by downstream water users.³¹ Where streamflow levels are low, municipal sewage treatment plants and industrial dischargers have to incur additional expenses to assure compliance with water quality standards. Higher streamflows and improved water quality also benefit off-stream industrial and agricultural water users who have higher operating and maintenance costs and lower crop yields when water quality deteriorates. Recreation benefits are affected by water quality. Greenley, Walsh and Young's studies indicated substantial benefits to recreationists from maintaining and improving surface water quality in Colorado's South Platte River basin along the populated Front Range.³²

Water quality issues motivate market acquisitions of water and these transactions can provide an indicator of the value of water quality improvements. During the late 1980s, cities and towns in Colorado, Washington, Wyoming, Oregon and Kansas purchased additional water rights after their existing sources became contaminated. Along the Snake River in Idaho, a lumber mill acquired water in storage, to be released in order to dilute the impact of the mill's effluent on the river. In order to accommodate its needs for higher quality water, the Salt Lake Water Conservancy District exchanged some of its lower quality water sources for rights to use high quality flows from the Provo River, rights which were owned by an irrigation district.³³

Fish and Wildlife Benefits

The wildlife valuation literature recognizes many different values associated with wildlife and fish species. These include "use" values for recreational and commercial hunting and fishing, wildlife sightings (bird watching, for instance) and photography, and non-use values—including option, existence and bequest values related to a particular species.³⁴ Values may be measured for a particular species or for a habitat, such as a riparian area or wetland, and the multiple species it supports.

A few studies have estimated the economic value of improved streamflows for fish and wildlife habitat as distinct from recreation benefits. One study places the average value of streamflow in California's Trinity River at \$31 per acre foot for fish hatchery operations.³⁵ Water to facilitate salmon spawning in California's Trinity River has been valued at \$53 per acre foot.³⁶

Studies on non-use values for wildlife habitat and specific species suggest that non-user values can be large, especially for endangered species.³⁷ Loomis³⁸ found that individuals' willingness to pay to preserve the level of California's Mono Lake, while based partly on the enjoyment stemming from an actual site visit, was largely based on the satisfaction of knowing the lake would be preserved (existence value), assuring the opportunity for future visits (option value) and guaranteeing site availability for the next generation (bequest value). These non-use values accounted for over 80 percent of total willingness to pay. Kirchoff and Colby found that non-use values for riparian areas in southern Arizona and for streamflows in New Mexico's Upper Rio Grande accounted for over half of total willingness to pay to preserve these areas.³⁹

Why Measure Economic Benefits Of Instream Flows?

Economic cost and benefit estimates provide important information to policy makers who must decide on the degree of protection to be awarded to specific streams and the extent to which taxpayers and consumptive water users should bear costs of protecting streamflows. The economic value of instream flows can be measured so as to be comparable to the value of water in off-stream uses such as irrigation. Marginal instream values are greater than marginal values in some consumptive uses, especially where important recreation and wildlife areas depend on streamflows.

Failure to incorporate instream flow values into water management decisions can result in water use patterns that do not maximize the economic benefits potentially available from regional water resources. Daubert and Young's research⁴⁰ on instream values in northern Colorado suggested that benefits generated by local streams can be enhanced by altering the timing of water storage and releases from area reservoirs to increase instream flows during the fall recreation season. In normal years, recreational benefits associated with instream flows can be increased without decreasing water availability for irrigation, implying that payments to persuade irrigation right holders to alter water management practices in favor of recreation need not be large in this particular study area.

Loomis estimated total visitor and non-visitor benefits from preservation of Mono Lake levels to be about \$40 per California household.⁴¹ This is well above the cost of \$.22 per household to preserve lake levels by replacing Los Angeles diversions from streams feeding the lake with water from other sources. These figures suggest that the benefits of preservation outweigh the costs. The viewpoint that the costs associated with

reduced water availability for consumptive uses are justified by benefits of environmental restoration is reflected in new federal legislation which reallocates substantial amounts of federal project water from irrigators to the environment in California.⁴²

Attention to the benefits generated by instream flows around the West will help to identify economically beneficial alterations in reservoir releases and diversions for off-stream uses. Economic evaluations can be useful in determining how much to spend on acquiring water for instream flow protection. Without information on instream values, water policy decisions will continue to emphasize off-stream diversions for uses with more easily documented values, such as irrigation, mining, energy development, manufacturing and urban growth. Recent evidence on the economic value of water instream suggests that economic development in the western states can be enhanced by more attention to instream flow protection for recreation and wildlife.

Recognizing that significant but hard-to-measure non-user values are associated with water in lakes, wetlands, and streams, measurable values for water in recreation uses and for water quality enhancement should be regarded as a "lower bound" or a minimum estimate of the actual values generated by maintaining instream flows and lake levels.

Acquiring Water For Instream Flow Protection— Litigation, Regulation And Markets

When it becomes evident that additional water supplies are desirable for a particular river reach or wetland and that interested parties are willing to undertake efforts to obtain water for environmental purposes, alternative approaches to water acquisition need to be identified and evaluated. Impetus for acquisitions may arise from regulatory requirements (Clean Water Act compliance, endangered species mitigation, and so on) and from recognizing that there are economic benefits to be gained from environmental restoration.

Two broad approaches are used to acquire water to support instream flows. Litigation based on the Endangered Species Act, the Clean Water Act, federal reserved rights and the public trust doctrine has successfully forced reallocation of water for streamflows, sometimes by curtailing diversions for consumptive uses. Water also has been reallocated to environmental purposes through voluntary market transactions. Voluntary transfers acknowledge the existing property rights structure and fully compensate water right holders for selling or leasing their water. Costs of providing water for rivers and streams are borne by organizations and agencies advocating instream values. In contrast, the "involuntary" approach seeks to change the distribution of rights to use water and is more threatening to established water right holders. The costs of reallocating water in this manner are spread among the parties to the conflicts that ensue as changes in water allocations and policies are advocated and established water users lobby and litigate to protect their interests.

While the voluntary and involuntary strategies differ, they often work in a complementary manner. There is no incentive quite so effective in stimulating voluntary negotiations and transfers as the threat of a protracted and costly court battle. Examples of market transactions, litigation and new legislation that have reallocated water to streamflow protection are provided below.

Market Transactions in Western Water

A "water market" consists of the voluntary interactions of buyers and sellers of rights to use water resources either for a limited period of time or into perpetuity.⁴³ Negotiated transactions generate prices and conditions of sale and lease. The term "market" generally refers to a set of transactions taking place continuously over a period of time. When relatively few transactions take place the market is considered "thin", and a key market function—the establishment of a "going" price—may be lacking.

Market transfers are only one of many processes by which water is reallocated in the western United States. Other reallocative processes include at-cost administrative transfers (in which water is leased for a rate that covers costs associated with the transfer but does not confer economic gain on the lessor); forfeiture and abandonment proceedings under state law; public agency exercise of eminent domain powers; litigation challenging existing water allocations; legislative settlements of conflicting claims; and water project redesign to alter initial project allocations among alternative water uses.⁴⁴

The following characteristics distinguish market transfers from other water transfer processes and from transfers of other property rights:

- The value of the right to use water is recognized as distinct from the value of land and improvements. The water right is bought and sold for its own sake, not merely as an incidental part of a land transfer.
- Buyers and sellers agree to transfer rights to use water voluntarily, believing it is in their own best interest given the alternative opportunities available to them.
- Price and other terms of transfer are negotiable by the buyer and the seller and are not constrained to be "not for profit" or "at cost."

The motivating force behind water markets is mutual perception by potential buyers and sellers that economic gains may be captured by transferring water to a place or purpose of use in which it generates higher net returns than under the existing use patterns. Economic returns to buyers must be large enough (or be perceived as large enough) to outweigh the costs of obtaining water through the market process.

Even if the net benefits to prospective buyers of transferring water are positive, a second criterion must be satisfied for a market transfer to occur. A market transaction must be attractive relative to other processes by which buyers could achieve their water supply objectives. The costs of a market acquisition, including political and legal costs of obtaining approval for the new water use, must be less than the costs of alternative means of obtaining water—such as hooking up to an existing water utility or lobbying Congress for an allocation from a federal project.

Laws and policies affect the cost of market transactions and the attractiveness of market transfers relative to other means of transferring water. The legal and political setting determines the transactions costs associated with market transfers. Transactions costs are incurred in identifying legal and hydrologic characteristics of water rights (priority date, return flow obligations, etc.); in negotiating price, financing, and other terms of transfer; and in satisfying state laws and transfer approval procedures. State laws impose transactions costs on market participants in the form of approval requirements for changing the purpose and place of use of a water right. These may include court hearings, title searches, consumptive use studies, and other hydrologic studies to determine transfer impacts. Several studies have examined transaction costs and their influence on market transfers in the southwestern states.⁴⁵ Ambiguities in state law can increase transaction costs by creating uncertainty regarding how much water can be transferred and for what purposes.

Transactions costs influence the profitability of water transfers. Environmental interests have a powerful voice in western water policy today because, as a result of laws enacted beginning in the 1960s, they can impose transactions costs on those who wish to transfer water. Where environmental concerns have legal standing to protest (or object to) proposed changes in water use, they have bargaining power because they can delay approval of the proposed change and persuade the state to require costly mitigation measures.

Market Acquisitions for Instream Flows

Groups interested in protecting instream flows may seek to purchase senior appropriative rights rather than acquire a junior right through a new appropriation. In many areas of the West, new appropriations will not be sufficient to guarantee flow levels adequate for recreation, fish and wildlife, where there are extensive senior rights to divert water for consumptive uses. On heavily appropriated stream systems, acquisition of senior rights to support instream flows may be the only option for assuring minimum flows. In states where water rights may be held for instream purposes, market transfers are becoming an important means of accomplishing instream flow protection.

Public agencies, non-profit organizations and private businesses have been involved in transactions to provide water for environmental purposes. While water

typically has been acquired from the agricultural sector and from unallocated storage water, voluntary arrangements have included an innovative variety of purchases, leases, exchanges, conservation improvements and option arrangements. Some of the market acquisitions which have been negotiated during the past six years are described here, to give readers a feel for the diversity of transactions occurring.

In 1993, the Middle Rio Grande Conservancy District (a large irrigation district which diverts water from the Rio Grande in New Mexico) leased 20,000 acre feet of the City of Albuquerque's San Juan Chama Project water to maintain a minimum streamflow of 250 cfs in the river throughout the irrigation season.⁴⁶ In most years, river flows drop quite low during times of intensive irrigation.

In 1991, Bonneville Power Administration and Southern California Edison negotiated a seasonal energy exchange to improve the timing of Columbia River flows for downstream salmon migration and to improve air quality in southern California.⁴⁷ Under the experimental agreement, Southern California Edison will reduce fossil fuel generation during the summer when air quality is poor and Bonneville will release more water during the summer salmon migration, selling the additional power to Southern California Edison.

A private fishing club in central Colorado leased shares of canal company stock (representing about 18 acre feet) in 1989 in order to offset evaporative losses from its ponds at the order of the state engineer at \$25 per acre foot for a one time use of the water. Acquisition of senior rights is being explored as a permanent solution to the state engineer's requirement.⁴⁸

Transactions Involving Nonprofit Organizations and Donations

The transactions described here illustrate cooperative arrangements between the non-profit sector, the private sector and foundations—which support non-profit groups, and the public sector, to which The Nature Conservancy frequently transfers acquired land and water. While The Nature Conservancy has led the way in purchasing water to protect wildlife habitat, other non-profit organizations have been involved in transactions and have actively been promoting policy changes at the federal and state levels to facilitate protection of rivers and streamside habitat.

The Nature Conservancy has received donations of water rights which they intend to use for fish and wildlife enhancement on the Gunnison River and other rivers in Colorado and on Aravaipa Creek in southeastern Arizona.⁴⁹ In those states which allow non-governmental organizations to acquire rights for instream flow maintenance, such donations could become an important means of accomplishing instream flow protection.⁵⁰ In those states where only governmental agencies can hold rights for instream flow maintenance, non-profit organizations still can be instrumental in water

acquisitions, by financing the acquisition of water rights and donating them to the appropriate agency to be managed for environmental enhancement. Only a few of the many transactions involving non-profit organizations are summarized here.

The Arizona Nature Conservancy acquired 305 acres of land and 600 acre feet of water rights from a farmer in Arizona's San Pedro River Basin in 1992.⁵¹ The property was transferred at cost to the Bureau of Land Management to increase the size of the San Pedro National Conservation Area established by Congress in 1988. A similar transaction involving a Conservancy purchase and transfer to the BLM for this conservation area occurred earlier in 1992.⁵² The Conservancy has made other land and water acquisitions for stream and riparian protection in Arizona, including a 1989 acquisition to maintain fish species in Aravaipa Creek⁵³, also located in southern Arizona, and a land acquisition and instream flow appropriation for a preserve located on the Hassayampa River in central Arizona.

In 1991, the California Nature Conservancy acquired land and water rights along the Consumnes River for a preserve that provides riparian habitat for several endangered species and for migratory waterfowl.⁵⁴ Also in 1991, in partnership with federal and state agencies, the California Conservancy acquired land and water rights to preserve 14,000 acres of critical riparian habitat along the Sacramento River.⁵⁵ The \$13.7 million acquisition from a large agricultural landowner had been under negotiation for several years. Eleven million dollars came from public sector funds and the remainder of the acquisition cost, along with funds to operate and maintain the preserve, was raised by the California Conservancy, the National Fish and Wildlife Foundation and a contribution from the North American Wetlands Council (NAWC)—one of the first projects funded under the NAWC Act.

In 1991, The Nature Conservancy also made land and water acquisitions in Wyoming and Nebraska. The Conservancy purchased about 9,000 acres with water rights in two locations in Wyoming to create preserves that provide habitat for rare species, including the endangered Wyoming Toad.⁵⁶ The Conservancy noted that raising money for toad habitat was more difficult than fund raising for species viewed as more "charismatic" by the public. In Nebraska, the Nebraska Nature Conservancy negotiated land and water acquisitions with thirteen farmers to obtain 302 acres with water rights along the North Platte River.⁵⁷ The Conservancy then, as prearranged, sold the property to the Nebraska Game and Parks Commission at cost for a state wildlife area. A similar transaction in 1990 involved Nature Conservancy acquisition of 160 acres of Nebraska wetlands which were resold to the state.

In Nevada, The Nature Conservancy has been active in acquiring agricultural water rights to enhance flows to the Stillwater National Wildlife Refuge in the Carson River Basin.⁵⁸ Water rights also are being acquired from farmers by the State of Nevada, federal agencies and other environmental organizations. Voluntary transactions to remove water from agricultural use in order to benefit the wildlife refuge began in the

late 1980s. The Truckee and Carson River Basins have been the subject of intense conflict over water management and water rights for decades as the Pyramid Lake Paiute Tribe has litigated and negotiated for Truckee River flows adequate to restore fisheries and Pyramid Lake levels essential to the tribe's culture and economy.⁵⁹

In 1989, The Nature Conservancy made an emergency water purchase and release from Idaho's Upper Snake River Water Bank to break up ice that prevented a flock of trumpeter swans (representing 25 percent of the north American population of this species) from feeding.⁶⁰ In addition to the 3,200 acre feet of water purchased, irrigators donated 10,000 acre feet.

In 1988 and 1989, The Nature Conservancy negotiated an arrangement with a Colorado irrigation district and other water right holders to enhance flows for trout fisheries in Phantom Canyon.⁶¹

Acquisitions By the Public Sector

Government agencies use tax revenues and other public funds to acquire water for instream flows. The public sector has become active in protecting instream flow amenities, as the following arrangements demonstrate. Only a few of the many public sector acquisitions for environmental purposes are summarized here.

In 1993, the Colorado Division of Wildlife exercised its option to use ditch company shares for Arkansas River water to provide a fishery pool in a southeastern Colorado reservoir. The Division had paid \$100,000 for the option to use about 1,750 acre feet, and pays \$43 per share (a share yields an acre foot in a typical year) when the option is exercised. The Division must provide notice by March 1 of each year to exercise its option.⁶²

The Montana Department of Fish, Wildlife and Parks negotiated a ten year lease of 65 cfs in the Yellowstone River Basin to address summer flow needs of trout.⁶³ The lease commenced in 1993 and will cost the state \$12,750 per year. The irrigators who own the water rights are able to make the water available for instream needs without reducing their productive acreage due to increases in their delivery system efficiency through a recently completed pipeline. In 1987, the Montana Fish, Wildlife and Parks Department purchased 10,000 acre feet of water to be released from a reservoir on the Bitterroot River in the western part of the state. Concern over the survival of trout fisheries during the unusually dry summer prompted the one-time purchase of rights to summer reservoir releases for \$2 per acre foot.⁶⁴

Four organizations (irrigation districts and canal companies), which receive water from the Bureau of Reclamation's Central Valley Project under exchange agreements, agreed to make an additional 10,000 acre feet available for wildlife refuges in the

summer of 1992.⁶⁵ As compensation, the four entities received increased water supplies in the last few months of 1992 and Bureau endorsement of the concept of transfers outside the entities' service areas. With the Bureau's approval, these exchange contractors now may transfer water for use by others outside their service areas. The terms were negotiated pursuant to the federal Reclamation States Emergency Drought Relief Act of 1991.

In 1992, the California Department of Fish and Game leased 20,000 acre feet of water from the state water bank (created in response to the drought) for \$50 to \$90 per acre foot and also leased water supplies and storage capacity from private parties to provide drought relief for wetlands and other wildlife habitat.⁶⁶ In addition, 10,000 acre feet of permanent water rights were purchased. The acquisitions were funded by California's Emergency Drought Relief and Assistance Program, enacted in 1991. Under that program, the Department of Fish and Game spent \$1.8 million on water acquisitions for environmental protection in 1991.

The Bureau of Reclamation in 1990 agreed to provide 10,000 acre feet per year from Reudi Reservoir (a Bureau facility) to enhance streamflows for endangered fisheries on the upper Colorado River.⁶⁷ The 40 year contract is between the Bureau and the Colorado Water Conservation Board. The contract allows reductions in the water provided for instream flows should oil shale development or other factors significantly increase the other demands for Reudi Reservoir water. The agreement also protects hydropower use of streamflows at the Grand Valley Power Plant.

In 1990, the state of Wyoming purchased water stored in Palisades Reservoir, located in Idaho, in order to enhance flows for fish in the Snake River.⁶⁸ The Palisades Reservoir water will make it possible for Wyoming to comply with its 1949 Snake River Compact obligations while managing releases from Wyoming's Jackson Reservoir for streamflow maintenance in the Snake River through Grand Teton National Park. The acquisition cost the state of Wyoming \$567,270 as its share of repayment obligations for the 1950 construction of Palisades Reservoir, plus annual operations and maintenance costs of about \$3,300.

In 1989, the California Water Resources Control Board approved an emergency transfer of 30,000 acre feet to fish and wildlife habitat in the San Joaquin River Basin.⁶⁹ The water was acquired from the East Bay Municipal Utility District as part of an effort to replace wetland habitat lost due to selenium contamination and to provide spring flows for salmon migration. Also in 1989, the California Department of Fish and Game entered a 25-year contract with a municipal water district to lease effluent for wetlands and riparian areas, and to irrigate wildlife feed.⁷⁰

In 1987, the Bureau of Reclamation announced it was altering Shasta Reservoir releases into the Sacramento River in northern California in order to enhance the Chinook salmon fishery, at the expense of over \$1 million in foregone hydropower

revenues.⁷¹ Also in 1987, Lander County, Nevada purchased 3,000 acre feet of senior irrigation rights for \$217 per acre foot in order to maintain a stable shoreline for fishing and boating on a new county reservoir.⁷²

While tribal governments, to the author's knowledge, have not purchased water rights for environmental purposes, they have directed water supplies to environmental needs. For instance, the Wind River Arapaho and Shoshone dedicated a portion of their senior surface water rights (recognized in Big Horn I,⁷³ to maintain flows in the Wind River, though this instream flow dedication was struck down by the Wyoming Supreme Court.⁷⁴ Instream flow maintenance was a key goal of the Shoshone-Bannock Tribes in negotiating the Fort Hall water settlement, which expressly authorizes tribal water to be used for environmental purposes.⁷⁵

Further evidence of public sector involvement can be found in other chapters in this book describing federal and state efforts in support of instream flows.

Why Not More Market Transactions?

Where instream flow values are high enough to compete with off-stream water uses, why don't we see more market acquisition of water rights to maintain instream flows? Instream flow values are not well represented in western water markets for several reasons. First, those wishing to protect streamflow levels do not have legal access to water rights on the same terms as farmers, cities and industry. A few western states—New Mexico, for instance—still have not established legal avenues to appropriate or purchase water rights for instream flow maintenance. Only a few of the western states (Alaska and Arizona were the first) allow a non-governmental entity to hold a water right for the purpose of maintaining instream flows. Markets could better incorporate instream flow values if state laws permitted appropriation, purchase and seasonal leasing of water rights for instream flow maintenance by public, non-profit and private sector organizations.

A second reason why there have not been more market acquisitions is that the transactions costs for instream flow acquisition are likely to be higher than for water rights purchased for off-stream uses. Organizations wishing to use water rights to maintain streamflows often face opposition by neighboring water users who fear the flexibility of their own rights will be constrained. Thus, high costs are incurred in overcoming objections to the proposed new instream use of the water rights. Further, many state agencies have limited experience in handling applications for a change in use of a water right to instream flow maintenance. New procedures and criteria often have to be developed, creating delays, uncertainty and additional costs for the instream use applicant.

Even if procedural obstacles to the acquisition of water rights for maintaining flow levels were abolished, instream flows have "public good" characteristics which make it difficult to translate the economic benefits provided by streamflows into money which can be used to bid for water rights in the market place. The term "public good" is used by economists to refer to resources characterized by non-rivalry in consumption, meaning the resource can simultaneously provide benefits to many individuals. Public good resources also are characterized by non-excludability, meaning it is difficult to exclude those who do not pay from enjoying the benefits of the resource. Many individuals who do place a positive value on a public good may be "free riders", enjoying the resource but making no payments to preserve the resource. The aesthetic, environmental and recreational amenities provided by rivers, lakes and reservoirs are non-rival in the sense that they can simultaneously provide different kinds of benefits to many different individuals. These benefits may be nonexcludable where it is expensive, impractical or impolitic to restrict access to waterways and charge an admission or user fee. While some private landowners successfully operate fee fishing areas on their lands, there are costs associated with this practice and this approach may not be acceptable on streams flowing through public lands.

Those who benefit from free-flowing waters are a large, but largely unorganized, constituency. There is no organization that represents and collects donations from all of the diverse groups that benefit from streamflows. Even when donations are made to purchase water rights for instream flow maintenance, the donations do not represent total willingness to pay by all potential beneficiaries due to the free ridership phenomenon. The difficulty of collecting voluntary contributions from all who will benefit and the lack of an incentive to voluntarily contribute (since those who do not contribute cannot easily be prevented from enjoying the resource) implied that public sector acquisitions are essential to obtaining adequate water for instream flow protection. The public sector frequently is given the responsibility to provide goods characterized by non-rivalry and non-excludability, as evidenced by public provision of schools, fire and police protection, roads and parks.

In some states, policies may not have become more responsive to instream flow needs because those water right holders who hope to market their rights may object to instream flow protection. Active and profitable water markets can make instream flow protection more controversial since instream flow rights make transfers among consumptive uses more complicated and costly to implement. Shupe notes that, since instream flow rights typically are year-round rather than seasonal and often extend along a stretch of a stream rather than being diverted at a single point, they can be particularly constraining for new water development and for water transfers along the stream system.⁷⁶

Litigation And Policy Changes: Involuntary Reallocations For Environmental Purposes

A wide array of involuntary reallocations from consumptive uses to environmental purposes have occurred over the past fifteen years. In 1980, in response to litigation based on the Endangered Species Act, the Department of the Interior reallocated the storage capacity of Stampede Reservoir, on Nevada's Truckee River, from storage for consumptive uses to maintaining river flows and temperature for fisheries.⁷⁷ In 1983, the California Supreme Court, in the Mono Lake case, ordered the City of Los Angeles to modify its diversions from the Mono Lake area, diversions based on senior water rights.⁷⁸

The Grand Canyon Protection Act⁷⁹, passed by Congress in late 1992, limits daily fluctuations in flows passing through Glen Canyon Dam in order to protect environmental and recreational resources downstream in the Grand Canyon. This effectively reallocates some water from hydropower generation to environmental restoration.

The Central Valley Project Improvement Act,⁸⁰ passed by Congress in 1992, provides for significant reallocations of project water from the agricultural sector, which historically has been the primary beneficiary of the federal project, to restoring wetlands, other wildlife habitat and fisheries. More specifically, 800,000 acre feet per year of the yield of the Central Valley Project now must go to fish, wildlife and habitat restoration purposes. While the rules to implement this legislation will take several years to promulgate, this legislation represents a large reallocation from consumptive uses to the environment. Not only will consumptive users of project water have less water to divide among themselves, they will pay significantly more per acre foot under the provisions of this act.

Ongoing litigation involving the Wind River Basin in Wyoming has focused on instream flow issues as a key part of the Wind River Tribes plans to use their senior water rights. In 1992, the Wyoming Supreme Court rejected the tribe's dedication of a portion of its reserved rights for instream flow protection. However, the court was highly divided on the issues, with five separate opinions submitted, and the implications for others tribes and basins are unclear.⁸¹

A federal district court in Texas ruled early in 1993 that pumping in the Edwards Aquifer (the sole water source for the City of San Antonio and an essential supply for other municipalities and for irrigators) must be controlled in order to protect endangered species which depend on the flows of springs affected by groundwater withdrawals.⁸² The court set interim minimum flow standards for the springs and ordered studies to set permanent standards. The Texas Water Commission was given a short deadline for presenting a plan to control groundwater pumping so as to protect spring flows.

In early 1993, the U.S. Fish and Wildlife Service issued a proposed designation of over 2,000 miles of the Colorado River and its tributaries as critical habitat for four endangered fish species. While the proposed designation must go through an extensive review and comment process, such a designation may affect future diversions from the designated reaches.⁸³

While voluntary transactions for environmental purposes have increased markedly over the past five years, litigation and changes in administrative policies continue to be important strategies.

Policies To Enhance The Economic Benefits Provided By Instream Flows

Water market transactions are becoming common in many parts of the West and can present opportunities for instream flow protection in states where public and private entities can acquire water rights for such purposes. Instream flow values are high enough to compete with off-stream uses in the market for water rights, though the beneficiaries of free-flowing water may not contribute to purchase of rights at levels consistent with benefits received, due to free rider problems.

Public policies that facilitate public, non-profit and private sector acquisitions of water rights for instream flows can greatly enhance the economic contributions generated by free-flowing waters. State-level instream flow policies should allow nongovernmental entities to appropriate, lease and purchase water rights for the purpose of maintaining instream flows. This gives those concerned with instream flows an "equal opportunity" to compete for scarce water resources with municipal, industrial and agricultural interests.

State agencies and local governments concerned with recreation, wildlife and tourism should have authority and funding to acquire senior water rights for instream flow maintenance. Public sector involvement is necessary because acquisition of instream flows by the private sector is handicapped by the "public good" nature of instream flows. Active participation by federal, state and local governments will help to ensure that instream flows are protected at adequate levels and in desirable locations.

Policies that encourage active participation by county, municipal and tribal governments take advantage of the fact that these entities have a strong incentive to identify streams deserving protection, to commit funds to protect flow levels and to monitor and enforce flow standards. Their incentive stems from the fact that local areas experience the tourism, recreation, and aesthetic benefits generated by adequate local stream levels and suffer the losses when nearby streams are depleted.

Another way in which western states could enhance public and private efforts to protect free-flowing water is to clarify the criteria that must be satisfied to change the

purpose and place of use of a water right from a consumptive use to instream flow maintenance. In addition, states need to clarify and further define the conditions under which those parties concerned with instream flows may object to a change in water use which they believe impairs established flow rights or riparian areas and streams not yet protected by flow rights. More clearly defined criteria and procedures would reduce transactions costs and uncertainties for both instream and off-stream water users.

Currently, water rights for instream flow maintenance are few in number relative to rights for consumptive uses, and most instream flow rights are recent appropriations with low priority relative to other water rights. Eventually, as public interest and public trust concerns play a greater role in water policy, instream flow impacts may be considered routinely in approving transfers between consumptive users. Well-defined and enforced criteria for evaluating the impact of changes in place and purpose of use of diversion rights on streamflows could make such water transfers among consumptive users more complicated and expensive. Consequently, establishment and enforcement of instream flow rights will continue to generate controversy.

As environmental values make their way into the western water arena, transactions costs are bound to rise. Litigation to establish the legal standing of environmental interests often is initiated to force traditional water rights holders to acknowledge and accommodate new values and to change public policies to reflect these values. Public procedures to evaluate proposed transfers will become more complex as environmental concerns are considered. Water polices must balance the need to keep the costs of transferring water low in order to encourage desirable transfers with the need to carefully weigh potential environmental effects of proposed transfers. The National Academy of Science provides a thoughtful discussion of these policy tradeoffs in its 1992 report on water transfers in the West.⁸⁴

Opportunities to enhance streamflows arise when municipal and industrial water users acquire water rights historically used for irrigation and convert them to non-agricultural uses. Where the irrigation water was diverted upstream of the new point of diversion, additional streamflows occur along the stretch between the old and new diversion points. Riparian habitat and recreation opportunities may be enhanced and, in some regions, once ephemeral streams may now have year-round flows. Organizations participating in transfers involving a movement of a diversion point from upstream to downstream should consider how they can manage and protect the new instream flow patterns so as to maximize water quality, environmental and recreational benefits.

While voluntary transactions to provide water for the environment have become much more common over the last five years, litigation will continue to be an important strategy as well. Voluntary agreements often are preceded by years of litigation to establish the legal status of particular interests and issues. For instance, in the Truckee and Carson Basins of Nevada, the many voluntary transactions that have transferred water from irrigation to wetlands restoration were prefaced by a series of court rulings

and policy changes that established the bargaining power of tribal and environmental interests. Court rulings and policy changes put irrigators on notice that water allocation in the basins would change and that they could cooperate through voluntary transactions or wait for changes to be imposed. The Mono Lake ruling⁸⁵ described earlier stimulated several voluntary arrangements between southern California urban water providers and irrigators to replace the urban supplies lost through the Mono Lake decision. The much publicized agreements between the Metropolitan Water District of Southern California and the Imperial Irrigation District were strongly motivated by a threat from the California Water Resources Control Board to involuntarily diminish the irrigation district's supplies by making a finding of "wasteful use".

Litigation gives parties an incentive to negotiate voluntary agreements in order to avoid the delays, costs and uncertainties associated with court rulings. There is an important complementarity between changes brought about by the courts and through administrative rulings and those effected through voluntary market transactions. Involuntary changes threaten status quo water users and make them more amenable to voluntary solutions, paving the way for markets. While litigation and changes in administrative rules are often cast as the opposite of voluntary transactions, in fact they may be closely related.

Conclusions

Substantial progress has been made in assessing the economic contributions of instream flows for recreation. However, measurable recreation values are only a small portion of the total economic benefits generated by instream flows. Other real but hard-to-measure values stem from contributions of recreation-linked spending to local economies, the role of instream flows in maintaining fish and wildlife habitat, the aesthetic appeal of free-flowing water, water quality enhancement, water treatment costs avoided due to dilution of pollutants, and non-user values held by individuals who derive satisfaction from knowing free-flowing streams will be maintained. Instream values can be higher than the benefits generated by off-stream uses, particularly field-crop irrigation, where unique recreation areas, fish and wildlife are dependent upon streamflows. Amenities generated by instream flows will be more and more highly valued as growing populations demand outdoor recreation opportunities, high quality water supplies and preservation of fish and wildlife habitat.

Information on the economic benefits generated by water instream assists policy makers in incorporating instream values into water allocation decisions which traditionally have focused on agricultural, urban and industrial uses. Economic assessments suggest that regional economic development can be facilitated by cooperative public and private

efforts to maintain flows on critical stream systems. There are sound economic arguments for assuring flow levels that enhance recreation and wildlife habitat, while preserving the strong aesthetic and intrinsic appeal that free-flowing water has in the arid West.

Notes

1. Personal communication with W.L. Minckley, zoologist, Arizona State University, Tempe (1992).
2. Water Resources Research published a collection of papers on valuing water-based recreation in its May 1987 issue (Vol.23, No. 5, pp. 931-67) and these papers provide a current overview of valuation approaches.
3. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, REPORT OF THE NOAA PANEL ON CONTINGENT VALUATION (Jan. 1993).
4. U. S. DEPARTMENT OF INTERIOR, GLEN CANYON ENVIRONMENTAL STUDIES TECHNICAL REPORT, (1988).
5. Bonnie G. Colby, *Southwestern Water Values and Market Activity*, 59 APPRAISAL J. 488-500, (1991); *Alternative Approaches to Valuing Water Rights*, 57 APPRAISAL J. 180-196 (1989).
6. T. Brown, B. Harding & R. Peyton, *Marginal Value of Stream Flow: A Case Study For the Colorado River Basin*, 26 WATER RESOURCES RES. 2845-2859 (1990).
7. U. S. DEPARTMENT OF INTERIOR, GLEN CANYON ENVIRONMENTAL STUDIES TECHNICAL REPORT, (1988).
8. John W. Duffield, et al., *Recreation Benefits of Instream Flow: Application To Montana's Big Hole and Bitterroot Rivers*, 28 WATER RESOURCES RES. 2169-81 (1992).
9. John Loomis & Joseph Cooper, *Economic Benefits of Instream Flow to Fisheries*, 1 RIVERS 23-30 (1990).
10. L.H. Hansen, & A.H. Hallam, *National Estimates of the Recreational Value of Stream Flow*, 27 WATER RESOURCES RES. 167-75 (1991).
11. John Loomis & M. Creel, *Recreational Benefits of Increased Flows in California's San Joaquin and Stanislaus Rivers*, 3 RIVERS 1-13 (1992).
12. D. Olsen, J. Richards & R.D. Scott, *Existence and Sport Values for Doubling the Size of Salmon and Steelhead Runs*, 2 RIVERS 44-56 (1991).
13. L.D. Sanders, R. Walsh & J. McKean, *Comparable Estimates of the Recreational Value of Rivers*, 27 WATER RESOURCES RES. 1387-94 (1991).
14. R. Adams & R. Johnson, *Benefits of Increased Stream Flow: The Case Of The John Day River Steelhead Fishery*, 24 WATER RESOURCES RES. 1839-46 (1988).
15. J. Daubert & R. Young, *Economic Benefits From Instream Flow in a Colorado Mountain Stream (Colorado Water Resources Research Institute Completion Report No. 91, Colorado State University, June 1979).*

16. R. Walsh, R. Ericson, D. Arosteguy & M. Hansen, *An Empirical Application of a Model for Estimating the Recreation Value of Instream Flow* (Colorado Water Resources Research Institute Completion Report No. 101, Colorado State University, October, 1980).
17. R. Walsh, R. Auckerman & R. Milton, *Measuring Benefits and the Economic Value of Water in Recreation on High Country Reservoirs* (Colorado Water Resources Research Institute Completion Report No. 101, Colorado State University, September, 1980).
18. Amirfathi, Narayann, Bishop & Larson, *A Methodology for Estimating Instream Flow Uses for Recreation* (Water Research Laboratory at Utah State University, 1984).
19. Ward, *Economics of Water Allocation to Instream Uses in a Fully Appropriated River Basin: Evidence from a New Mexico Wild River*, 23 WATER RESOURCES RES. 381 (1987).
20. Jan Loomis, *The Economic Value of Instream Flow: Methodology and Benefit Estimates for Optimum Flows*, 24 J. ENV'T'L. MGMT. 169 (1987).
21. Thomas Brown, *Water For Wilderness Areas: Instream Flow Needs, Protection and Existence Value*, 2 RIVERS 311-325 (1991).
22. D. GREENLEY, R. WALSH & R. YOUNG, *ECONOMIC BENEFITS OF IMPROVED WATER QUALITY* (1982).
23. L.D. Sanders, R. Walsh & J. Loomis, *Toward Empirical Estimation of the Total Value of Protecting Rivers* 26 WATER RESOURCES RES. 1345-57 (1990).
24. Thomas Brown, *Water For Wilderness Areas: Instream Flow Needs, Protection and Existence Value*, 2 RIVERS 311-25 (1991).
25. D. Olsen, J. Richards & R.D. Scott, *Existence and Sport Values for Doubling the Size of Salmon and Steelhead Runs*, 2 RIVERS 44-56 (1991).
26. Gene Lewis et al., *Economic Multipliers: Can A Rural Community Use Them?* (Western Rural Development Center, Oregon State University, Corvallis Oregon, 1979).
27. K.C. Crandall, et al., *Nature-Based Tourism and the Economy of Southeastern Arizona* (Report issued by the Department of Agricultural and Resource Economics, University of Arizona, Tucson, 1992).
28. B. Colby, J. Leones & L. Ryan, *The Economic Impacts of Visitor Spending associated With River Running on the Upper Rio Grande* (Department of Agricultural and Resource Economics, University of Arizona, 1993).
29. B. Colby, *Instream Flows and Economic Development on the Wind River Indian Reservation*, (Report to the Joint Business Council of the Wind River Reservation, Fort Washakie, Wyo. 1991).
30. K. Boyle & R. Bishop, *Lower Wisconsin River Recreation: Economic Impacts and Scenic Values* (University of Wisconsin Agricultural Economics Staff Paper Series No. 216, January 1984).

31. Very few studies have estimated the monetary benefits of dilution capacity. However, R. Young & S. Gray, *Economic Value of Water: Concepts and Empirical Estimates* (U.S. National Water Commission Technical Report PB210356, 1972), did contain estimated values for assimilating biological oxygen demand.
32. D. GREENLEY, R. WALSH & R. YOUNG, *supra* note 22.
33. WESTERN NETWORK, *WATER MARKET UPDATE*, Jan. 1989, at 8, (S. Shupe & J. Folk-Williams, eds.) [hereinafter *WATER MARKET UPDATE*]; *Id.*, Dec. 1989, at 9.
34. The different concepts of value that serve as a basis for valuing wildlife and natural environments are discussed in more detail by Madariago & McConnell, *Exploring Existence Value*, 23 *WATER RESOURCES RES.* 936 (1987).
35. Bush, *Is the Trinity River Dying?*, 2 *INSTREAM FLOW NEEDS* 12 (American Fisheries Society, 1976).
36. Bollman, *A Simple Comparison of Values: Salmon and Low Value Irrigation Crops* at 12 (Paper from the Association of California Water Agencies, 1979).
37. Walsh, Loomis, & Gilman, *Valuing Option, Existence and Bequest Demands for Wilderness*, 60 *LAND ECON.* 14 (1984).
38. J. Loomis, *Economic Evaluation of Public Trust Resources of Mono Lake* (Institute of Ecology Report No. 30, University of California, Davis, 1987).
39. S. Kirchoff and B.G. Colby, "Use and Non Use Values for Water-Dependent Resources" (Report available from the Department of Agricultural and Resource Economics, University of Arizona, Tucson, 1993).
40. J. Daubert & R. Young, *supra* note 15.
41. J. Loomis, *supra* note 38.
42. Grand Canyon Protection Act, Pub. L. No. 102-575, tit. 34 (1992).
43. Water market activity in six western states is described in B. COLBY SALIBA & D. BUSH, *WATER MARKETS IN THEORY AND PRACTICE: MARKET TRANSFERS, WATER VALUES AND PUBLIC POLICY* (1987).
44. *See id.* at 1-3 for examples of these other transfer processes.
45. Bonnie G. Colby, *Transactions Costs and Efficiency in Western Water Allocation*, 72 *AM. J. AGRIC. ECON.*: 1184 -1192, (1990); Lawrence J. MacDonnell, *The Water Transfer Process As A Management Option for Meeting Changing Water Demands*, (Natural Resources Law Center, University of Colorado, 1990).
46. *WATER INTELLIGENCE MONTHLY*, Jan., 1993 at 7. (Published by Stratecon, Inc., Claremont, California, Rodney Smith, ed.) [hereinafter *WATER INTELLIGENCE MONTHLY*].
47. *ARIZ. DEPT. COM. POL. UPDATE*, Mar. 1991.

48. WESTERN NETWORK, WATER MARKET UPDATE, May, 1989, at 6.
49. *Id.*, Vol.1, No.3, at 9-10 (Mar. 1987).
50. In Colorado, a private organization wishing to use water rights for instream flow maintenance must transfer ownership of those rights to the Colorado Water Conservation Board, as private entities may not hold water rights for instream flow purposes under Colorado law.
51. WATER INTELLIGENCE MONTHLY, Dec. 1992, at 2.
52. *Id.*, Feb. 1992, at 3.
53. WATER MARKET UPDATE, Dec. 1989, at 5.
54. WATER INTELLIGENCE MONTHLY, June 1991, at 4.
55. *Id.*, May 1991, at 5.
56. *Id.*, May 1991, at 8.
57. *Id.*, Nov. 1991, at 4.
58. *Id.*, Jan. 1990, at 4.
59. Bonnie G. Colby, M. McGinnis & K. Rait, *Mitigating Environmental Externalities Through Voluntary and Involuntary Water Allocation: Nevada's Truckee Carson River Basin*, 31 NAT. RESOURCES J.: 757-83 (1991).
60. WATER MARKET UPDATE, March 1989, at 3.
61. *Id.*, Sept. 1989, at 6.
62. WATER INTELLIGENCE MONTHLY, April 1993, at 4.
63. *Id.*, Mar. 1993, at 5.
64. *Id.*, Aug. 1987 at 3.
65. *Id.*, July/Aug. 1992, at 2.
66. *Id.*, Dec. 1992, at 2.
67. WATER INTELLIGENCE MONTHLY, Mar. 1990, at 3.
68. U. S. WATER NEWS, April 1991, p. 1.
69. WATER MARKET UPDATE, Oct. 1989, at 9.
70. *Id.*, Dec. 1989, at 5.
71. *Id.*, Sept. 1987 at 9-10.

72. *Id.*, May 1987 at 3.
73. *In re Rights to Use Water in the Big Horn River*, 753 P. 2d 76 (Wyo. 1988).
74. *In re Rights to Use Water in the Big Horn River*, 835 P. 2d. 273 (Wyo. 1992).
75. Fort Hall Indian Water Rights Act of 1990, Public L. No. 101-602, 104 Stat. 3059.
76. S. Shupe, *Emerging Forces in Western Water Law*, 2 RESOURCE LAW NOTES (Newsletter, Natural Resources Law Center, University of Colorado, 1986).
77. Bonnie G. Colby, M. McGinnis & K. Rait, 35 NAT. RESOURCES J.: 757-83, (1991).
78. *National Audubon Society v. Superior Court*, 658 P.2d 709 (1983).
79. Grand Canyon Protection Act, Pub. L. No. 102-575, tit. 34, (1992).
80. *Id.*
81. *In re Rights to Use Water in the Big Horn River*, 753 P. 2d 76 (Wyo. 1992)
82. WATER INTELLIGENCE MONTHLY, Feb. 1993, at 10.
83. *Id.*, Apr. 1993, at 7.
84. NATIONAL ACADEMY OF SCIENCE, WATER TRANSFERS IN THE WEST: EQUITY, EFFICIENCY AND THE ENVIRONMENT (National Academy Press, 1992).
85. *National Audubon Society v. Superior Court*, 658 P.2d 709 (1983).

Quantifying Instream Flows: Matching Policy and Technology

Berton L. Lamb

Every water management decision that includes instream flow protection offers a unique challenge. Instream flow water management decisions may include a federal permit or license, operating schedule for a water storage project, state instream flow water right, or an element in a state water management plan. No matter which of these decisions must be addressed, each requires understanding a number of factors before an appropriate instream flow assessment technique can be chosen.

Special considerations guiding the choice of technology for instream flow assessments include statutory authority, history of water use, technical orientation, available fiscal resources, and time allowed to complete studies. Overlaying all of these variables is an ongoing debate regarding the relative scientific merits of competing instream flow assessment technologies.¹ These factors combine to heighten the challenge of selecting the right technology to guide establishment of streamflow protection.²

Choosing the Appropriate Assessment Technology

When choosing a technology, the analyst's concentration is often given first to the plethora of procedures concerning measurement of stream transects or operation of computer models. Typically, the professional biologists and engineers who conduct assessments quickly recognize that cutting through the often bewildering technical considerations requires the answers to harder policy questions. Analysts ultimately decide to use a technique as much because it fits the political and environmental problems they face as because the technology meets a certain scientific standard.³

These political and environmental problems can be conveniently divided into two categories: long-range planning and project bargaining. Although negotiation is an integral part of all decision making on instream flow issues, this dichotomy focuses on the objectives of the decision process. In a long-range planning problem, the analyst is called on to recommend an instream flow requirement that is to serve as a guideline for future project decisions. This might be referred to as preliminary planning. A project bargaining problem refers to a high-intensity, high-stakes negotiation over a specific development project. This type of problem begs the question: what happens to the variables of interest when the flow changes?

Rather than a clear dichotomy, it may be best to picture these two types of problems as antipodes on a continuum ranging from the setting of noncontroversial

standards for overall planning to conflict over establishing incremental differences in a number of variables affected by flow. No matter where on the continuum a problem falls, there is an additional question: how many variables are important? The answer to this question may be as simple as saying the problem is one species of fish or one type of recreation. The answer may also be expressed as a flow regime that meets the needs of a number of decision variables. For example, a flow regime may be established to satisfy the channel maintenance, fish habitat, and recreation uses of water. Although it is most common for project bargaining problems to present themselves as multi-purpose questions, it is not uncommon for long-range planning questions to require answers for more than one decision variable.

Whether a problem falls under the category of long-range planning or project bargaining is not a question of scientific credibility. Defensible scientific analysis is required; answers to both types of questions must be trustworthy. Moreover, expert judgment is always required. Judgment comes into play in reaching conclusions based on the technology that is chosen, as well as in choosing the best method.

Different technical solutions are appropriate for each of the two poles on this continuum. On the one hand, inexpensive, straightforward, rule-of-thumb solutions are best suited to long-range planning tasks. For these tasks, the considerations are (1) certainty that the planning objectives will be met and (2) that the recommendations will be easily communicated to policy makers. On the other hand, project bargaining problems are likely to require in-depth knowledge of the flow requirements of fish and wildlife, recreation, water quality, and other instream uses, as well as the ability to integrate these concerns into optional operating plans for a specific project.

Much of the controversy that surrounds instream flow technology is not about the approaches best suited to these antipodes but the best technologies for problems that fall somewhere near the middle. In this mid-range, solutions may have long time-horizons while still leading to an identifiable project or the analyst may face an immediate project for which there are too few resources to allow an extensive study.

The choice of an instream flow technique for mid-range cases is often constrained by the need for low cost and speed in making the first recommendation. That first recommendation precedes a period of wrangling over project benefits and then negotiation of more in-depth studies. Finally, these discussions lead to an expensive technical analysis and hard bargaining over the professional judgments of those making and challenging the never-quite-final recommendations. Other scenarios can be found that would also illustrate this middle ground between long-range planning and project negotiations. Ultimately, the choice of initial and follow-up technologies requires professional judgment.

That judgment is manifested in building the link between the first simple technology chosen and the study design for the ultimate project negotiation. How well

this linkage can be effected depends on a number of factors, including statutory authority, fiscal resources, training of personnel, and management support for the investigations. Most of all, success in moving from planning studies to hard bargaining depends on whether the analysts guessed correctly about what would happen to their first recommendations.⁴ The range of instream flow assessment techniques can best be illustrated with the example of methods that address fishery problems.

Long-Range Planning Techniques

A number of techniques are available for the long-range planning of instream flows for fisheries. In this type of low-intensity scenario, not much detail is required because the questions are fairly straightforward. This means that a quick, reconnaissance-level and office-type approach may be used.

Most long-range planning occurs in the context of statutory state instream flow protection programs.⁵ As one analyst observed, "[i]n most statutes, it is difficult to either ascertain legislative intent or determine whether or not a proposed instream flow regime would satisfy the legislative purpose."⁶ An instream flow standard should include the following elements: (1) the goal (e.g., non-degradation), (2) resources (e.g., fish species), (3) unit of measurement (e.g., flows in cfs or habitat in weighted useable area (WUA)), (4) benchmark time period (e.g., a 10-year period of record), and (5) a protection statistic (e.g., the median WUA for July).⁷

Of the many techniques available for long-range planning related to fisheries, the easiest to use require data from the hydrologic records of a stream. The use of such stream gage records assumes that measured flows support aquatic resources at present and acceptable levels.⁸ It is safe to make this assumption only where streams are virtually undeveloped or where the pattern of development has been stable for a long period.

Whereas a number of eastern states face planning problems associated with undeveloped streams, most western states have streams already encumbered with sophisticated development projects. In situations where streamflow is depleted or regulated, gage records can be modified by accounting for water diversions and stream modifications to reconstruct the natural flow regime.⁹ This approach is satisfactory only if the analyst has information on the condition of the fishery before development.

Even when pre-development data are available, it is difficult to predict future impacts on the fishery. On some developed streams, channel structure and fish populations have adjusted to the new flow regime. Such water developments may have enhanced the fishing by dampening out chronic low- or high-flow events. Developing a knowledge of post-project conditions will require field investigations. In any case, selecting flows from historical records in the presence of existing development is a limited

long-range planning technique.

Where it is possible to use historical records, a number of questions arise. For example: is it best to recommend a flow based on the natural or the altered conditions? What percentage of the historical streamflow should be recommended?¹⁰ One solution is the use of the "aquatic base flow."¹¹ This technique pegs the median flow for the lowest flow month (typically August or September) as adequate throughout the year, unless additional flow releases are required to meet spawning and incubation needs. Another planning scheme involves the use of median monthly flows.¹² The monthly flow level is used as a surrogate for the natural pattern of streamflows because it provides a flow for each month that is typical of the historical record.

The most renowned of the long-range planning tools for fisheries is that recommended by Tennant.¹³ In its original form, the Tennant Method displays flow levels for seasonal periods based on percentages of the mean annual flow. Tennant used 10 years of personal observations to categorize streams into varying quality trout habitat based on recorded flow.

Tennant also recommended that periodic high flows be provided to remove silt, sediment, and other bed load material. The U.S. Forest Service has argued that an annual high flow event is needed to protect the channel structure in alluvial streams.¹⁴ Because Tennant originally had in mind more of a scouring purpose, his approach was not based on these morphological considerations.

Table 1 shows Tennant's recommendations for trout habitat. Some states recognize that they cannot apply Tennant's recommendations to their own streams without first making adjustments. In these instances, modifications are made for the species of interest and the types of streams in a particular state.

Table 1. Instream Flow Recommendations for Fish Habitat Based on the Tennant Method.¹⁵

Health of Habitat	Percent of mean annual flow	
	Oct.-Mar.	Apr.-Sept.
Flushing or maximum	200	200
Optimum	60-100	60-100
Outstanding	40	60
Excellent	30	50
Good	20	40
Fair	10	30
Poor	10	10
Severe degradation	<10	<10

The Tennant Method and other table-top tools anticipate that hydrologic records are available; when they are not, instream flows can still be recommended on the basis of a surrogate indicator. Drainage area is such an indicator for managed streams. For one drainage area technique, a minimum instream flow value of 0.5 cubic feet per second per square mile of drainage area is recommended for the summer months. Higher flows in fall and spring are used to accommodate the spawning and incubation of anadromous species.¹⁶ The use of this technique for non-anadromous species would, of course, require a different set of rules.

These simple, rule-of-thumb techniques are very useful in the development of long-range planning recommendations. A more difficult question arises when a problem is presented as long-range planning but is clearly destined to become an intense negotiation. This change sometimes develops because decision makers do not understand instream flow analysis but believe that a simple one-time answer will accommodate a complex project. In other situations, policy requires a level of analytic effort commensurate with some larger public purpose. Colorado, Wyoming, and Montana are states that seem to mandate a fairly high standard in quantifying instream flow water rights. In these and most other western states, streams are extensively

developed. Any newly recommended flow will probably result in immediate challenge and negotiation. At the same time that the call goes out for a speedy recommendation, the expectation is for a sophisticated answer.

Mid-Range Techniques

Modified Tennant Technique

At the lower end of streamflow quantification problems for fisheries, where the controversy is not intense but time is nevertheless a constraint, a specially tailored Tennant approach might be applied. This approach calls for the repetition of all of the Tennant steps. The analyst would begin by observing key habitats and studying the stream during flows approximating various percentages of the mean annual flow. After collecting data on cross-sectional width, depth, and velocity of the stream at each flow, a set of recommendations could be made to resemble the set shown in Table 1. The difference would be that the new table would reflect the empirical observations of the analyst--instead of those of Tennant--and would address the specific species and stream of interest.

Wetted Perimeter Technique

The wetted perimeter technique¹⁷ is another method frequently used with some success. In this hydraulic approach, a desired low-flow value is estimated from a habitat index that incorporates stream channel characteristics.¹⁸ The term wetted perimeter refers to the narrowest wetted bottom of the stream cross section that is estimated to minimally protect all habitat needs. It is measured as the distance along the streambed that is in contact with the water. The relation of wetted perimeter to cross section is shown in Figure 1.

The usual procedure is to choose the break or "inflection" point in the wetted perimeter of the stream as a surrogate for minimally acceptable habitat. The analyst selects a critical area (typically a riffle) that can stand as an index of habitat for the rest of the stream. When a riffle is used as the indicator area, the assumption is that minimum flow satisfies the need for food production, fish passage, spawning and every other life requirement of the target species. Once this level of flow is estimated, other habitat areas, such as pools and runs, are also assumed to be satisfactorily protected. Because the shape of the channel can influence the results of the analysis, this technique is usually applied to streams with cross sections that are wide, shallow, and rectangular.

Wetted Perimeter Method

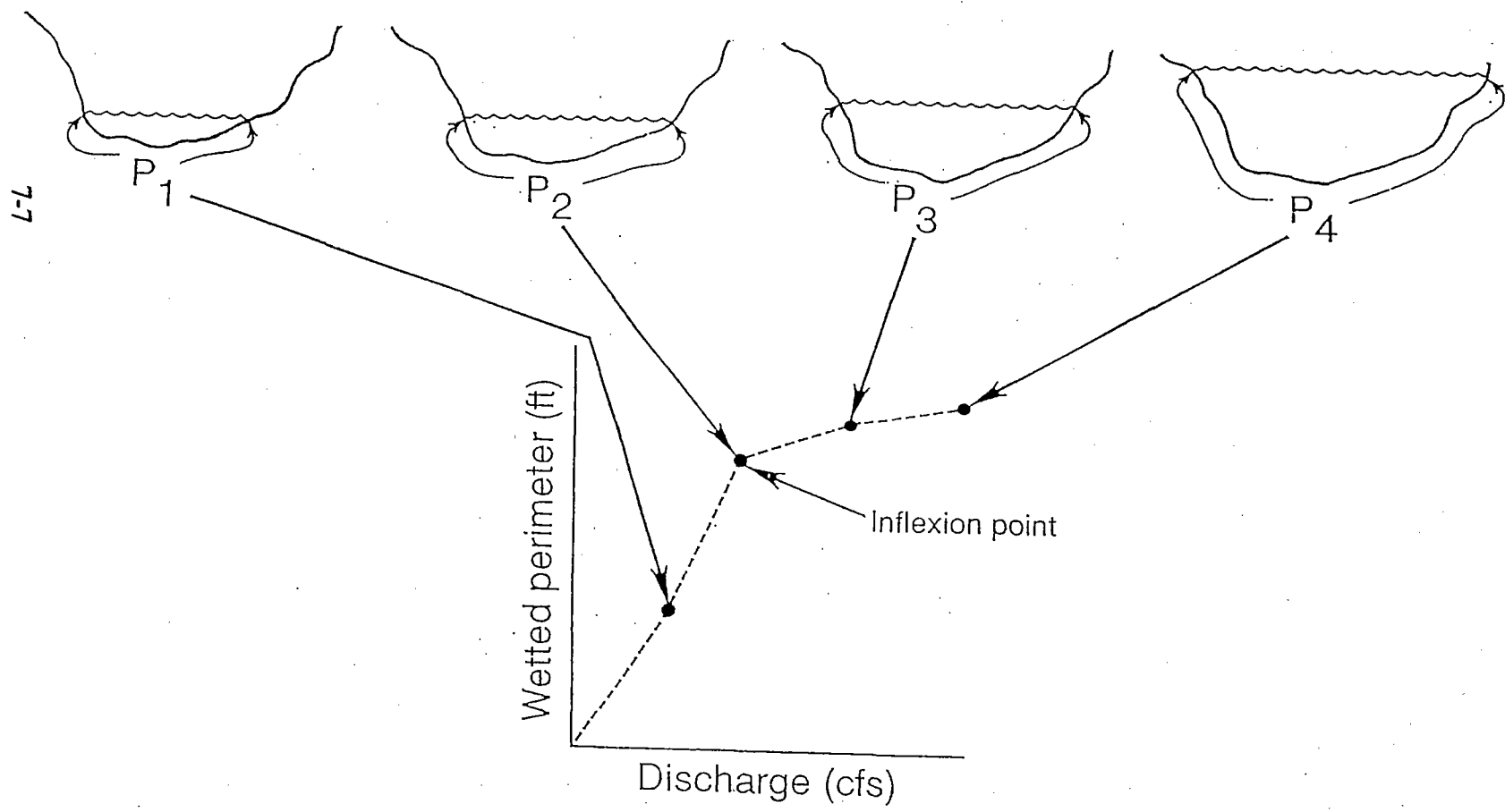


Figure 1

Other fisheries-related mid-range techniques include the Arkansas Method, Hoppe Method, and Texas Method.¹⁹ Additional methods are described by Wesche and Rechard.²⁰

Mid-Range Techniques that Examine Multiple Values

All of the methods previously discussed result in a single streamflow value, recommended for a defined period in individual streams. The results of methods of this type are often expressed by the term "minimum flow." These methods have been labeled "standard-setting" because they set a limit below which water cannot be diverted.²¹ Such recommendations are hard to use in negotiation because too little information is available to allow informed compromise. Much more must be done to answer hard questions in negotiation.

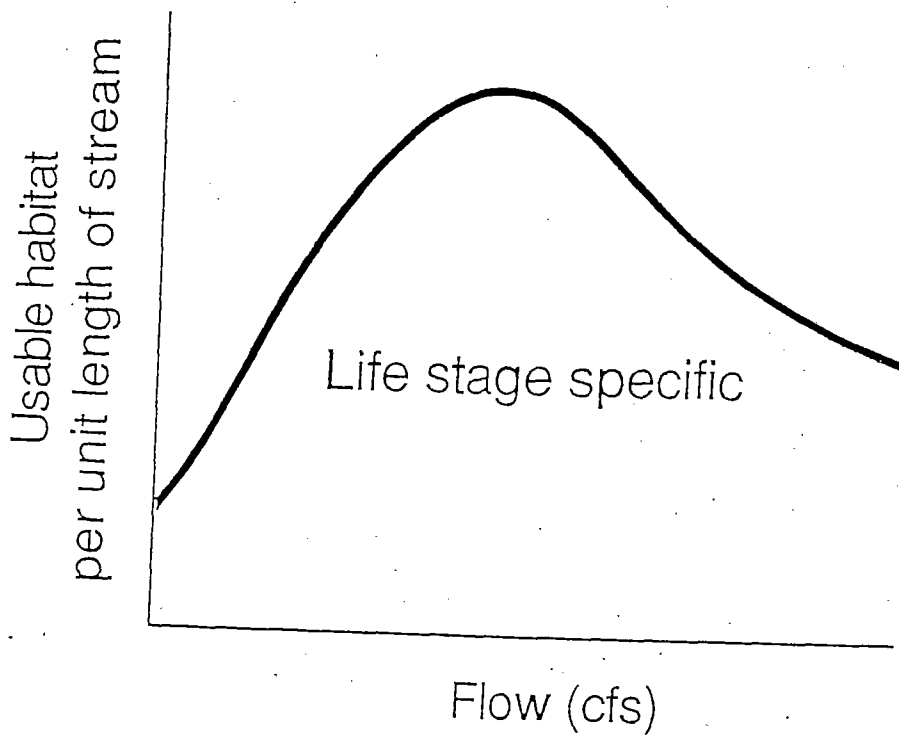
The tools that can be used to achieve this result fall into two categories. The first includes approaches in which statistical analysis is used to correlate environmental features of a stream with fish population size. An example of this type of analysis is Wyoming's Habitat Quality Index (HQI), described by Binns.²² This procedure is stream specific and the recommendations are tied to critical low flows. The second category comprises the approaches that link open channel hydraulics with known elements of fish behavior. Examples are habitat mapping suggested by Collings and his colleagues,²³ and the Physical Habitat Simulation System (PHABSIM), as first presented by Bovee and Milhous²⁴ and discussed again by Bovee.²⁵ An important explicit element of both PHABSIM and HQI is an analysis of water supply. But a water supply analysis should accompany any instream flow assessment technique to answer the question: what is the likelihood that water will be available to meet the standard?

Use of PHABSIM requires the collection of field data on stream cross-section and habitat features and hydraulic simulation to evaluate habitat variables at different flows—based on species suitability information. The result is a presentation of habitat at different flows. Depending on the complexity of the proposed project and the stream under study, the collection of field data may range from inexpensive and cursory to costly and time consuming.

The results of PHABSIM enable the investigator to inform decision makers about effects on fishery habitat of different flow levels for different life stages. Attention is typically given to the life stages of fish species that are of special concern for management or that are deemed to be most sensitive to change. The resulting relation between flow and habitat, generated by linking species criteria with flow-dependent stream channel characteristics (Figure 2), aids in the negotiation process by clearly depicting the effect that less-than-optimum flow will have on habitat.²⁶

Figure 2

Output of Microhabitat Model (reach specific, life-stage specific)



Even the best of mid-range techniques leave the analyst open to criticism. There are two frequently challenged features of PHABSIM. The first is the requirement for species suitability criteria—estimated species responses to stream variables, normalized onto a curve. These criteria may be established by any number of routines ranging from solicitation of expert opinion to site-specific collection and verification of field data.²⁷ The second is the requirement to analyze habitat on a species-by-species basis, which may not account for habitat selection affected by inter-species competition.²⁸ The quality of habitat suitability data—along with the significance of PHABSIM's driving variables of depth, velocity, substrate, and cover—forms the basis for most criticisms of this technique.²⁹ To satisfy such criticisms, more in-depth analysis is needed than is usually undertaken in simple PHABSIM or HQI studies. PHABSIM predicts changes in habitat resulting from changes in flow, but it focuses only on a few variables affecting fish behavior and ignores the dynamics of habitat through time.

Project Bargaining Techniques

The mid-range techniques essentially provide temporal snapshots of stream resources. When the imperatives of negotiation or court proceedings require a more dynamic look at the instream flow question, other techniques are needed. These project bargaining problems have been labeled "incremental" because a deep knowledge must be developed to prepare for negotiations that involve a sequence of project operating designs and the resulting effects.³⁰

These incremental problems often create a labyrinth of choices for the analyst, who tries to anticipate questions and design streamflow research to accommodate the probable needs. A simple PHABSIM or HQI analysis will not be sufficient in this setting. New steps, however, can sometimes be added to mid-range processes to help them fit more demanding scenarios. More often, some comprehensive approach must be chosen.³¹

Although the decision variable remains fish habitat, when these more complex tools are used, the analysis alone may require as long as two years to complete. Each study is preceded by negotiations covering study design and is followed by negotiations debating results. The total elapsed time for study design, data collection, and analysis may be more than three years. Replicate habitat sampling, biological sampling to develop species habitat suitability criteria, and sediment and water routing studies—as well as physical habitat, temperature, and water quality simulations—may be necessary to accurately depict the effects of project operations.³² These steps go far beyond what might be accomplished with a technique such as PHABSIM.

The Instream Flow Incremental Methodology (IFIM) was designed to accomplish this sort of intricate research. Trihey and Stalnaker³³ pointed out that processes like the

IFIM should be properly referred to as methodologies rather than as methods. Whereas "method" connotes a single tool or concept, "methodology" implies linking steps—perhaps from a number of disciplines—to characterize a multi-faceted problem. Many different techniques make up these complex methodologies.

The result of an analysis using the IFIM is a habitat time series (Figure 3). The habitat time series displays the availability of suitable habitat over a period of record. For example, if the period of record is ten years, the habitat time series would display available habitat over that entire period. The period can be expressed in hours, days, weeks, or months. Figure 4 shows three alternative habitat time series (i.e., baseline, proposed project, and proposed mitigation) for one month. Based on the habitat time series, the analyst can answer questions for every project alternative, such as: what amount of habitat is available 90 percent of the time? What is the median habitat value? What would happen to the available habitat if the flow were reduced by 20 percent in high flow months? Using this approach, it is possible to analyze the effects of changes in flow on each life stage of every species for which habitat suitability data are available.

In the IFIM, habitat suitability data come in two forms, macrohabitat and microhabitat. Macrohabitat suitability refers to variables that are distributed longitudinally down the stream, such as water quality, channel morphology, and temperature. Microhabitat suitability refers to the same variables used in PHABSIM analysis—depth, velocity, substrate, and cover—at specific points in the stream. The IFIM uses computer software to integrate these two measures of habitat suitability into habitat units, which are then related to flow over time to create the habitat time series.

With a complex technique such as the IFIM, an analyst must rigorously document the scientific acceptance of all the technologies used and must be able to extrapolate from the data collected. Especially in intense negotiations, the assumptions of each method should be well understood, and careful planning should anticipate what special studies or modifications to a methodology are needed. The result should be the ability to predict changes in habitat over time, to make recommendations for water supplies or management scenarios, and to demonstrate habitat duration phenomena (i.e., the frequency with which a habitat event should be expected to occur over the period of record) similar to the flow duration concept in hydrology.³⁴

Another extension of these incremental, project-bargaining methodologies leads to predicting population responses to habitat change.³⁵ In an approach such as the IFIM, this prediction will typically include hydrologic analyses, habitat models, sediment transport, water quality, and temperature analyses, as well as trophic level studies, validation of species criteria, studies of biomass, and population dynamics.³⁶

Figure 3

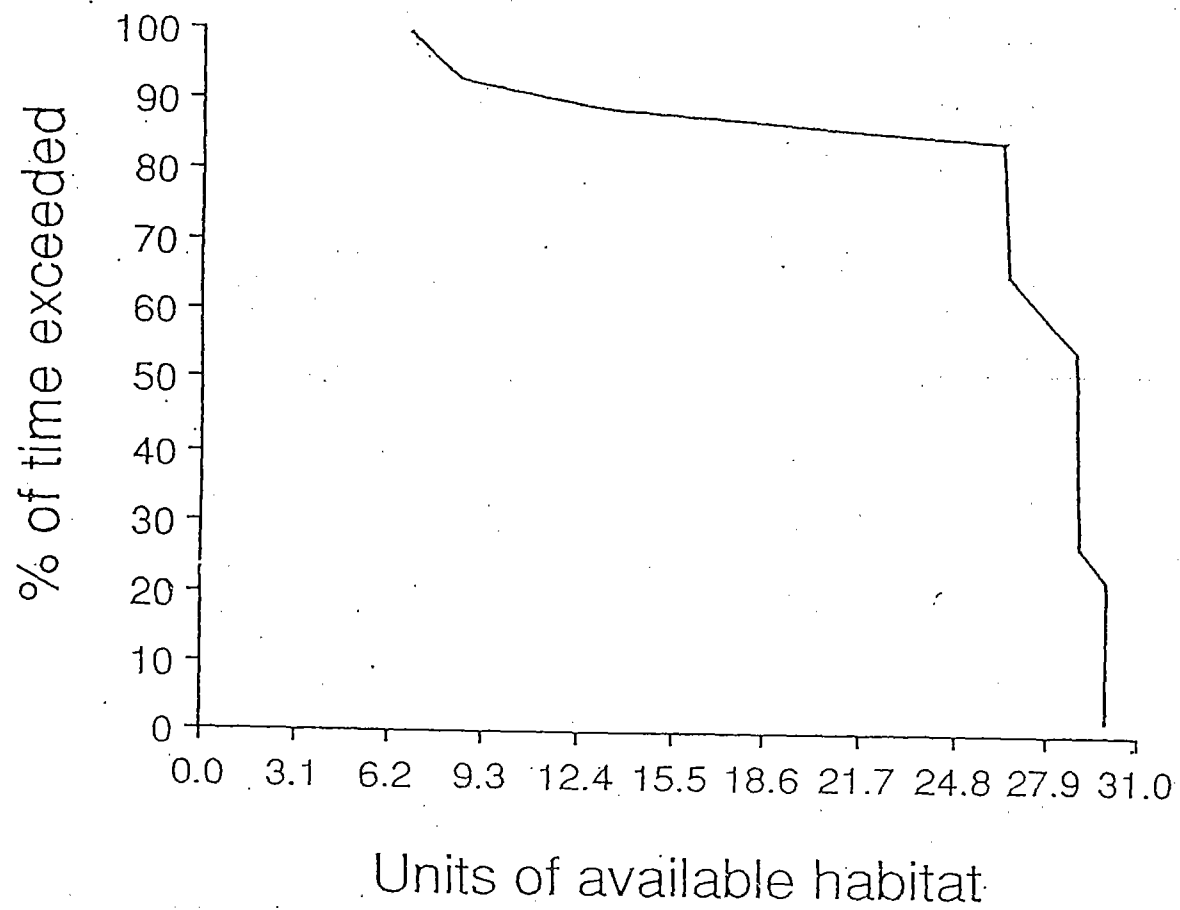
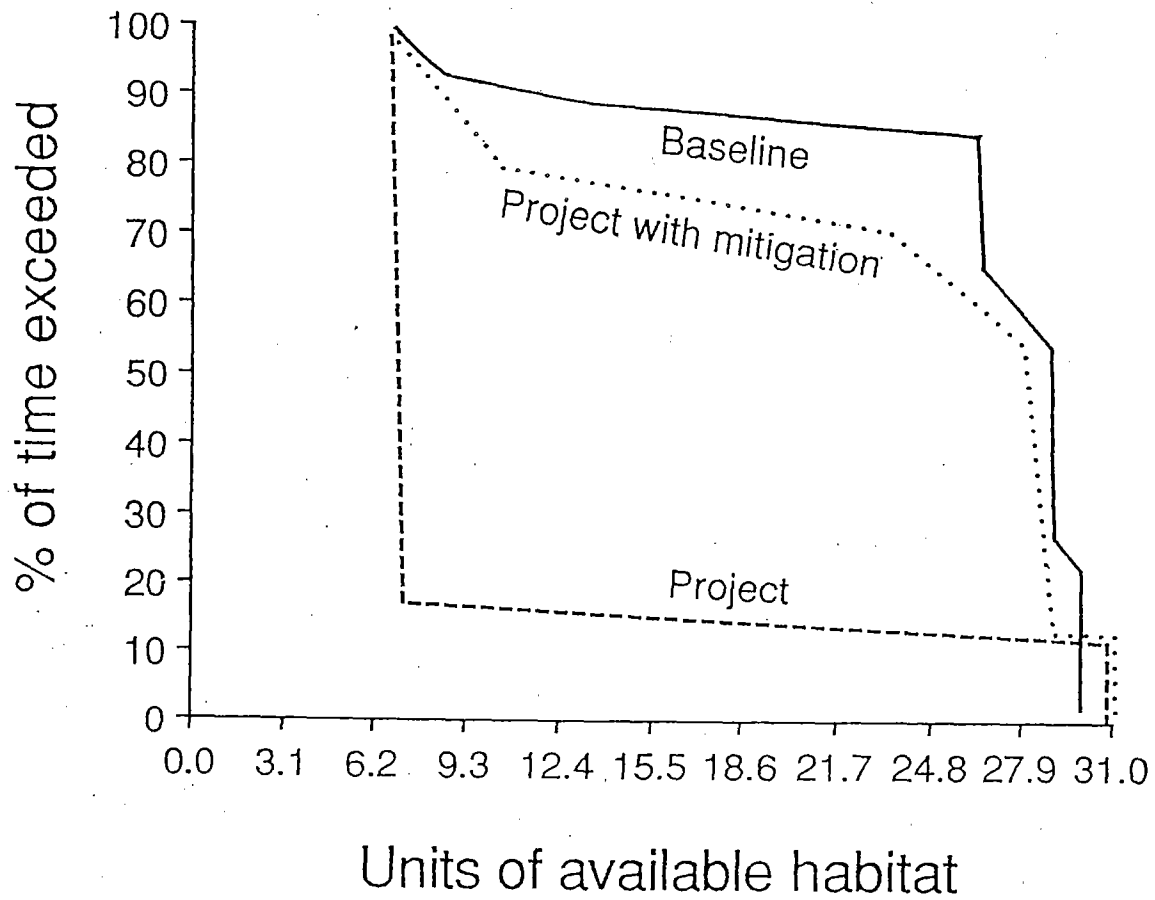


Figure 4



An alternative to combining these models into one predictive methodology would be long-term observations of fish behavior. Such studies would document population responses to carefully controlled changes in flow over perhaps 20 years. Recent research on the South Platte River, Colorado by Bovee demonstrated the rigorous analysis required to show the relation between flow and fish population.³⁷ Bovee's work highlights the fact that these relationships can be established in theoretically sound, intuitively satisfying directions. Figure 5 shows the form that these population responses to changes in flow over time are likely to take.

Moving Beyond Methods for Fish

As has recently been observed, "instream flows—they're not just for fish anymore".³⁸ For example, Brown et al. identified 11 techniques for analyzing instream flow needs for recreation.³⁹ The methods developed for assessment of the effects of flow on the riparian zone are another illustration of the complexity that can be introduced in decision making.

Long-Range Planning Techniques for Riparian Vegetation

Over the past five years, concern for the riparian zone has increased markedly. Along with this concern has been a movement to develop techniques to establish flow regimes aimed specifically at maintenance of riparian vegetation.

In some situations, concern for riparian vegetation is being addressed in a standard setting mode by requiring maintenance of a fraction of natural flow.⁴⁰ In contrast to the use of this approach for fish, attention has not been strongly focused on minimum flows. Rather, attempts are being made to protect a fraction of the entire range of flows, including the high flows important in many riparian vegetation processes.

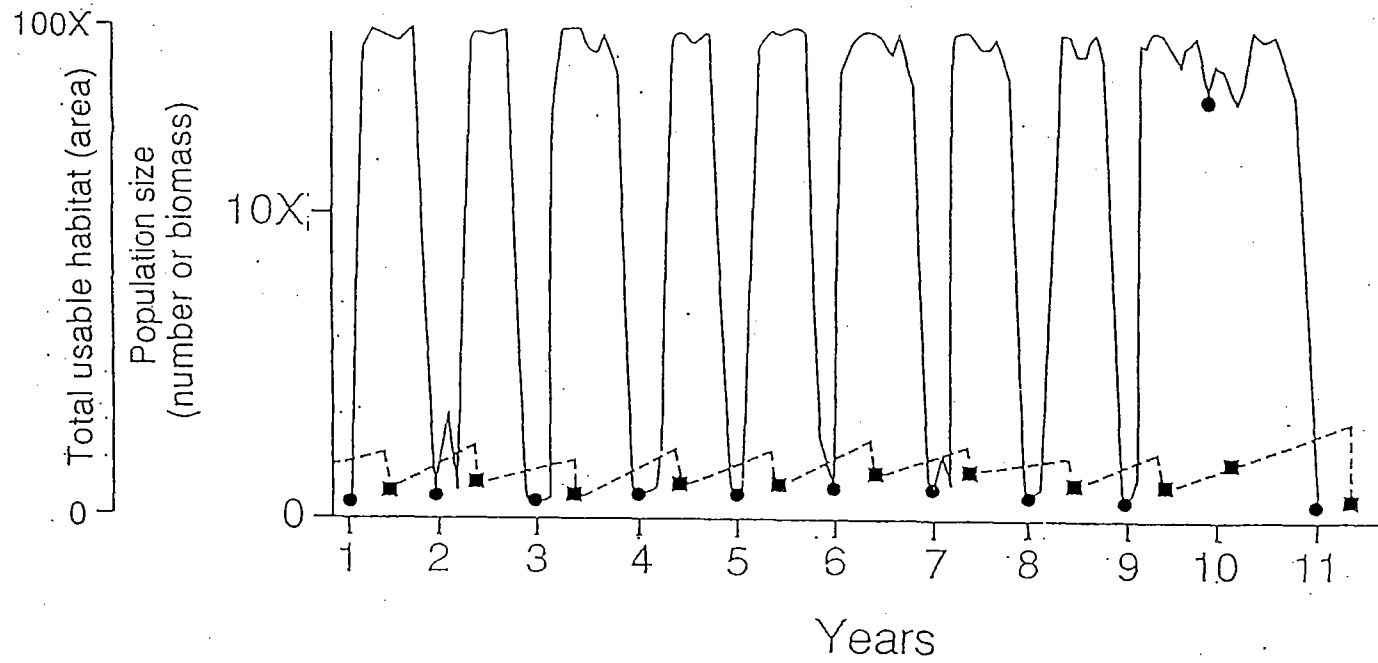
Mid-Range Techniques for Riparian Vegetation

Several approaches have been used to establish functional relations between streamflow and riparian vegetation. Bovee et al. and O'Keefe and Davies estimated evapotranspiration from phreatophytic riparian vegetation to include the "consumptive use" of water in a multiple-use evaluation of potential instream flow components.⁴¹ Although evapotranspiration calculations are incremental relations, they more naturally estimate the water required by different areas and types of vegetation than they estimate the change in vegetation produced by an incremental change in flow.

Other methods describe the responses of vegetation to changes in streamflow. One group of methods uses regression techniques to quantify empirical relations between

Time Series of Population and Habitat Data

- Limiting habitat event
- - -■ Population size or growth



7-15

Figure 5

streamflow and various attributes of riparian vegetation. At the regional level, Stromberg related characteristics of the riparian vegetation community (e.g., width of the vegetated zone) to flow characteristics (e.g., annual discharge) across a number of rivers.⁴² These regression equations can be used to estimate the expected value of the characteristic that might be associated with some alternative streamflow. At a site-specific level, Stromberg and Patten developed regression equations relating streamflow to the radial increment of cottonwood trees.⁴³ These flow-based growth equations were then used to simulate growth over time in response to a flow sequence and to establish a flow standard necessary to attain a specified growth rate.

Species-specific establishment or maintenance criteria have also been used to assess impacts of hydrologic alterations. Rood and Mahoney suggested that the decline of western plains cottonwood forests downstream of dams was partially a result of altered flows less frequently meeting establishment requirements of cottonwoods.⁴⁴ Milhous examined hydrologic records of the Rio Grande in New Mexico with several indices representing the suitability of a year for cottonwood establishment.⁴⁵ Johnson developed flow-based models explaining patterns of cottonwood seedling establishment and mortality observed in multiple-year monitoring of plots along the Platte River in Nebraska.⁴⁶

The strong sorting of riparian vegetation on elevational and hydrologic gradients has led to several methods using direct gradient analysis. Harris et al. used hydraulic simulation models of PHABSIM to evaluate plant species distributions along belt transects orthogonal (at right angles) to the stream channel.⁴⁷ Franz and Bazzaz used species positions along an inundation gradient to assess impacts on vegetation in a reservoir backwater.⁴⁸ Auble et al. used the present distribution of vegetation on a gradient of inundation duration, as determined from an historic flow-duration curve, to estimate the future vegetation that would be associated with a new flow duration curve.⁴⁹

Project Bargaining Techniques for Riparian Vegetation

Another group of models simulates vegetative composition over time in response to an input sequence of flows. These vegetation simulations are a subset of vegetation succession models, modified so that hydrologic conditions determine rates of vegetation change. These models have been formulated at the level of cover types or communities of plants and at the level of individuals of competing species. Johnson applied a compartmental simulation model of riparian cover types to project changes resulting from water development along the Missouri River.⁵⁰ Pearlstine et al. used an individual-based simulation to assess changes in woody riparian vegetation associated with hydrologic modification in the Santee and Cooper river system in South Carolina.⁵¹ Such dynamic simulation models are desirable because they are the most mechanistic and potentially detailed representation of the complex interactions of vegetation, hydrology, and geomorphology. Drawbacks of these more sophisticated models include difficulty in

obtaining accurate data for some variables and the need to synthesize data into complex displays of time series.

Conclusion

Various states are now making use of these instream flow quantification procedures. The Tennant Method is widely used in the early stages of planning throughout the country, and the wetted perimeter technique is used in Montana and has seen a number of applications in the West. The wetted perimeter and conceptually similar approaches concentrating on passage for upstream migrating salmon are important first-cut analytical tools. The PHABSIM method is commonly used as a way to look at hydroelectric power projects,⁵² to set standards for controversial streams,⁵³ and to develop conditions on federal permits and licenses.⁵⁴ The PHABSIM method is sometimes used in very complex problems, but care must be taken to consider a number of intervening variables. The Instream Flow Incremental Methodology is appropriate for the most controversial project assessments involving fish.

Moving beyond instream flows for fish, it is sometimes necessary to conduct studies using any one of a number of other techniques. These techniques can be used to assess flow requirements for recreation, riparian vegetation, channel maintenance, and other purposes. Some of these techniques are suitable only for long-range planning and standard setting. Others can be applied to project bargaining problems.

Naturally, all of this experience with instream flow technology has led to a literature of evaluation and criticism. In particular, useful insights into choosing and employing instream flow assessment technologies have been provided by a number of scientists.⁵⁵ Experience and the critical literature teach that there simply is no one best way. The choice of method or methodology depends on the circumstances. Some reviewers have identified dozens of approaches, models, and tools. Each of these was developed to satisfy a specific need. To establish the quantity of necessary flow, the analyst must know the history and purpose of these techniques and must use this knowledge to make an informed choice.

Acknowledgments

I thank Mary G. Cavendish, whose earlier summary of these technologies formed the basis for the first edition of this chapter, and the following colleagues, who reviewed the manuscript for the first edition and made many helpful suggestions: Carl Armour, Jay Bagley, Aaron Douglas, Christopher Estes, Kara Lamb, Robert Milhous, and Michael White. I thank Gregor Auble, Robert Milhous, and Ken Bovee for helpful comments on the manuscript for the second edition. The editorial comments of Teresa Rice were particularly helpful.

Notes

1. S. Granholm, et al., *Warning: Use the IFIM and HEP with Caution*, HYDRO REVIEW, (Winter 1985) 22-28; Mathur, et al., *A Critique of the Instream Flow Incremental Methodology*, CANADIAN JOURNAL OF FISHERIES AND AQUATIC SCIENCES 42 no 4 (1985): 825-831; Christopher C. Estes, and John F. Orsborn, *Review and Analysis of Methods for Quantifying Instream Flow Requirements*, WATER RESOURCES BULLETIN 22 no. 3 (1986): 389-398.
2. The work of Almond and Verba (1963) showed how policy is influenced by cultural factors. Lamb (1984) described some of the cultural influences that seem to affect the ways states approach instream flow problems.
3. Berton L. Lamb, *Meeting the Challenge of Policy-Relevant Science: Lessons from a Water Resource Project*, WATER RESOURCES BULLETIN 22 no. 5 (1986): 811-815.
4. Stewart W. Olive, and Berton L. Lamb, *Conducting a FERC Environmental Assessment: A Case Study and Recommendations from the Terror Lake Project*, (U.S. Fish and Wildl. Serv. 1984), FWS/OBS-84/08.
5. Berton L. Lamb, and H.R. Doerksen, *Instream Water Use in the United States--Water Laws and Methods for Determining Flow Requirements*, in U.S. GEOLOGICAL SURVEY WATER SUPPLY PAPER 2350, NATIONAL WATER SUMMARY 1987—HYDROLOGIC EVENTS AND WATER SUPPLY AND USE 109-116 (E.B. Chase, et al., eds., 1990).
6. Hal Beecher, *Standards for Instream Flows*, RIVERS 1 no. 2 (1990): 97-109 at 99.
7. *Id.*
8. Thomas A. Wesche, and Paul A. Rechard, *A Summary of Instream Flow Methods for Fisheries and Related Research Needs*, EISENHOWER CONSORTIUM BULLETIN NO. 9, (Fort Collins, CO: Eisenhower Consortium for Western Environmental Forestry Research, 1980).
9. Bayha, K. 1978. Fish and Wildlife. In 1976 National Water Assessment, U.S. Department of the Interior, Washington, DC.
10. A hydrologic technique that is inappropriate for establishing instream flows for fish is the seven-day-ten-year low flow (expressed as 7Q10). This statistic is not appropriate for fisheries because it was developed to ensure that water treatment plants did not violate water quality standards. As such, it establishes a very low flow that must not be diminished in quality if treated water is discharged into it. Thus, it works to require a high level of sewage treatment but does not address the flow requirements of fish.
11. H. N. Larson, *New England Flow Policy*, Memorandum, Interim Regional Policy for New England Stream Flow Recommendations, U.S. Fish and Wild. Service, Region 5, Boston, MA. (February 1981); Brandon H. Kulik, *A Method to Refine the New England Aquatic Base Flow Policy*, RIVERS 1 no.1 (1990): 8-22.

12. Ken D. Bovee, A Guide to Stream Habitat Analysis Using the Instream Flow Incremental Methodology. (U.S. Fish and Wildlife Service, 1982), Instream Flow Information Paper No. 12, FWS/OBS-82/26.
13. Donald Tennant, *Instream Flow Regiments for Fish, Wildlife, Recreation and Related Environmental Resources*, FISHERIES 1 no.4 (1976): 6-10.
14. U.S. Forest Service. Water Information Management System Handbook, FSH 2509.17 (1984), Chapter 30: Procedure for Quantifying Channel Maintenance Flows.
15. Tennant, *supra* note 13.
16. Larson, *supra* note 11; Kulik, *supra* note 11.
17. F. A. Nelson, *Evaluation of Selected Instream Flow Methods in Montana*, Proceedings of the Annual Conference of the Western Association of Fish and Wildlife Agencies, 1980: 412-432.
18. E.W. Trihey, and C.B. Stalnaker, *Evolution and Application of Instream Flow Methodologies to Small Hydropower Development: An Overview of the Issues*, in THE AMERICAN FISHERIES SOCIETY, PROCEEDINGS OF THE SYMPOSIUM ON SMALL HYDROPOWER AND FISHERIES, 176-183 (F.W. Olson, et al., eds. 1985).
19. R.A. Hoppe, *Minimum Streamflows for Fish*, Paper distributed at Soils Hydrology Workshop, Montana State University. Bozeman, MT (1975); S. Filipek, et al., *The Status of the Instream Flow Issue in Arkansas*, Proceedings of the Arkansas Academy of Science 41 no.1 (1987): 43-48; Raymond C. Mathews, *The Texas Method of Preliminary Instream Flow Assessment*, RIVERS 2 no.4 (1991): 295-310.
20. Wesche and Rechard, *supra* note 8.
21. Trihey and Stalnaker, *supra* note 18.
22. Niles A. Binns, *Habitat Quality Index Procedures Manual* (Cheyenne, WY: Wyoming Game and Fish Dept., 1982).
23. M. R. Collings, et. al., *The Hydrology of Four Streams in Western Washington as Related to Several Pacific Salmon Species*. (Washington, DC: USGS, 1972), Water Supply Paper 1968.
24. Ken D. Bovee, and Robert T. Milhous, *Hydraulic Simulation in Instream Flow Studies: Theory and Techniques* (U.S. Fish & Wildlife Service, 1978), Instream Flow Information Paper No. 5, FWS/OBS-78/33. 130 pp.
25. Bovee, *supra* note 12; Morhardt showed how habitat mapping can be used with PHABSIM, E. Morhardt, *Instream Flow Analysis: Increased Accuracy Using Habitat Mapping*, in PROCEEDINGS OF WATERPOWER '83, Vol. 3. (Knoxville: Tennessee Valley Authority, 1983) 1294-1304; *see also* Robert T. Milhous, et al., *Users Guide to the Physical Habitat Simulation System (PHABSIM)* (U.S. Fish & Wildlife Service, 1984), Instream Flow Information Paper No. 11, FWS/OBS-81/13 (revised).

26. W.H. Geer, *Evaluation of Five Instream Flow Needs Methodologies and Water Quality Needs of Three Utah Trout Streams* (Utah Division of Wildlife Resources, 1980), Publication No. 80-20. 227 pp.
27. Ken D. Bovee, *Development and Evaluation of Habitat Suitability Criteria for Use in the Instream Flow Incremental Methodology* (U.S. Fish & Wildlife Service, 1986), Instream Flow Information Paper No. 21, Biological Report 86(7); T. Modde, and T. B. Hardy, *Influence of Different Microhabitat Criteria on Salmonid Habitat Simulation*, RIVERS 3 no.1 (1992): 37-44; Ken D. Bovee, and J.A. Thomas, *Application and Testing of Procedures to Evaluate Transferability of Habitat Suitability Criteria*, REGULATED RIVERS: RESEARCH AND MANAGEMENT, 8 no.2 (1993): 285-294.
28. S.T. Ross, *Resource Partitioning in Fish Assemblages: A Review of Field Studies*, COPEIA 2(1986): 352-388; H.E. Hearn, H. E., *Interspecific Competition and Habitat Segregation Among Stream-Dwelling Trout and Salmon: A Review*, FISHERIES 12 no.5 (1987): 441-451; T. Modde, et al., *Use of a Habitat Based Stream classification System for Categorizing Trout Biomass*, NORTH AMERICAN JOURNAL OF FISHERIES MANAGEMENT, 11 no.3 (1991): 305-311.
29. J.E. MORHARDT, *INSTREAM FLOW METHODOLOGIES*, (Palo Alto: Electric Power Research Institute, 1986), v.p.
30. Trihey, and Stalnaker, *supra* note 18.
31. Olive and Lamb, *supra* note 4.
32. M.J. Sale, *Aquatic Ecosystem Response to Flow Modification: An Overview of the Issues*, in F.W. Olson et al., eds., *Proceedings of the Symposium on Small Hydropower and Fisheries*, (Bethesda: The American Fisheries Society, 1985) 22-31.
33. Trihey and Stalnaker, *supra* note 18.
34. E.W. Trihey, *Using Time Series Streamflow Data to Determine Project Effects on Physical Habitat for Spawning and Incubating Pink Salmon*, in *Acquisition and Utilization of Aquatic Habitat Inventory Information*, *Proceedings of a Symposium*, (Portland: Western Division of the American Fisheries Society, 1981), 232-240.
35. See for example, Edward F. Cheslak, and Alice S. Jacobson, *Integrating the Instream Flow Incremental Methodology with a Population Response Model*, RIVERS. 1 no.4 (1990): 264-289.
36. Bovee, *supra* note 12.
37. Ken D. Bovee, *Use of the Instream Flow Incremental Methodology to Evaluate Influences of Microhabitat Variability on Trout Populations in Four Colorado Streams*, in *Proceedings of the Western Division, American Fisheries Society*, (Albuquerque, NM 1988), in press.
38. Rinda Just, *Recreational Instream Flows in Idaho: Instream Flows: They're Not Just for Fish Anymore*, RIVERS 1 no.4 (1990): 307-312.
39. Thomas C. Brown, et al., *Assessing the Direct Effects of Streamflow on Recreation: A Literature Review*, WATER RESOURCES BULLETIN. 27 no.6 (1991): 979-989.

40. Berton L. Lamb and Eric Lord, *Legal Mechanisms for Protecting Riparian Resource Values*, WATER RESOURCES RESEARCH 28, no.4 (1992): 965-977.
41. Ken D. Bovee, et al., *Field Testing and Adaptation of a Methodology to Measure "In-stream" Values in the Tongue River, Northern Great Plains Region (NPG)*, executive summary, (Denver: United States Environmental Protection Agency, 1978) EPA-908/4-78-004B; J. O'Keefe, *Conservation and Management of the Rivers of the Kruger National Park: Suggested Methods for Calculating Instream Flow Needs*, AQUATIC CONSERVATION: MARINE AND FRESHWATER ECOSYSTEMS 1 (1991): 55-71.
42. Julie C. Stromberg, *Instream Flow Models for Mixed Deciduous Riparian Vegetation Within a Semiarid Region*, REGULATED RIVERS (1993) (publication pending 1993).
43. Julie C. Stromberg, and Duncan T. Patten, *Riparian Vegetation Instream Flow Requirements: A Case Study from a Diverted Stream in the Eastern Sierra Nevada, California*, ENVIRONMENTAL MANAGEMENT 14 (1990): 185-194; Julie C. Stromberg, and D. T. Patten, *Instream Flow Requirements for Cottonwoods at Bishop Creek, Inyo County, California*, RIVERS 2 (1991): 1-11.
44. Stewart B. Rood, and John M. Mahoney, *Collapse of Riparian Poplar Forests Downstream from Dams in Western Prairies: Probable Causes and Prospects for Mitigation*, ENVIRONMENTAL MANAGEMENT 14 (1990): 451-464.
45. R. T. Milhous, *A Note on Sediment, Hydrology, and Cottonwood in the Middle Rio Grande Valley, New Mexico*, in Proceedings of Colorado Water and Engineering Conference (Colorado State University, Fort Collins, 1992).
46. W.C. Johnson, *Woodland Expansion in the Platte River, Nebraska: Patterns and Causes*, ECOLOGICAL APPLICATIONS (1993), in press.
47. R.R. Harris, et al., *A Method for Evaluating Streamflow Discharge—Plant Species Occurrence Patterns on Headwater Streams*, in R. R. Johnson, et al., eds. *Riparian Ecosystems and Their Management: Reconciling Conflicting Uses* (United States Department of Agriculture, 1985), Forest Service. General Technical Report RM-120: 87-90.
48. E.H. Franz, and F. A. Bazzaz, *Simulation of Vegetation Response to Modified Hydrologic Regimes: a probabilistic model based on niche differentiation in a floodplain forest*, ECOLOGY 58 (1977): 176-183.
49. G.T. Auble, et al., *Relating Riparian Vegetation to Present and Future Streamflows*, ECOLOGICAL APPLICATIONS (1993), in press.
50. W.C. Johnson, *Dams and Riparian Forests; Case Study from the Upper Missouri River*, RIVERS 3 (1992): 229-242.
51. Leonard Pearlstine, et al., *Modelling the Impacts of a River Diversion on Bottomland Forest Communities in the Santee River Floodplain, South Carolina*, ECOLOGICAL MODELLING 29 (1985): 283-302.
52. K.D. Bovee, *Evaluation of the Effects of Hydropeaking on Aquatic Macroinvertebrates Using PHABSIM*, in F.W. Olson, et. al., eds. *Proceedings of the Symposium on Small Hydropower and Fisheries*. (Bethesda: The Society, 1985), 236-242.

53. WASHINGTON DEPARTMENT OF ECOLOGY, PREFERRED ALTERNATIVE INSTREAM RESOURCE AND WATER ALLOCATION PROGRAM, (Division of Water Resources, Olympia, WA: 1987).
54. M.G. Cavendish, and M.I. Duncan, *Use of the Instream Flow Incremental Methodology: A Tool for Negotiation*, ENVTL. IMPACT ASSESSMENT REV. 6 (1986): 347-363.
55. Wesche, and Rechar, *supra* note 8; M.D. Bain, et al., *An Evaluation of Methodologies for Assessing the Effects of Flow Fluctuations on Stream Fish*, (U.S. Fish Wildl. Serv. 1982) FWS/OBS-82/63; D.J. Orth, and O.E. Maughn (with response by D. Mathur et al.), *In Defense of the Instream Flow Incremental Methodology*, CANADIAN JOURNAL OF FISHERIES AND AQUATIC SCIENCES 43 no.5 (1986): 1093-1094; J.M. LOAR, ED., APPLICATION OF HABITAT EVALUATION MODELS IN SOUTHERN APPALACHIAN TROUT STREAMS, (Oak Ridge, TN., Oak Ridge National Laboratory, Environmental Sciences Division, 1985), Publication No. 2383. ORNL/TM-9323; J.E. MORHARDT, INSTREAM FLOW METHODOLOGIES, (Palo Alto, CA: Electric Power Research Institute, 1986); J.A. Gore, and J.M. Nestler, *Instream Flow Studies in Perspective*, REGULATED RIVERS: RESEARCH AND MANAGEMENT 2 no.1 (1988): 93-101.

Future Issues In Instream Flow Protection In The West

A. Dan Tarlock

Introduction: From Non-Recognition To Parity And Beyond?

Instream flow protection is a legitimate use of water in the West. The protection of instream flows has passed through two stages and is now in the third and most difficult phase.¹ The stages can be characterized as denial, recognition, and implementation and accommodation with historic water uses. During the settlement and development of the West, instream flow protection was either considered an illegitimate use of water or a marginal one at best.² The recognition of the values of free-flowing water can be traced to the early twentieth century statutes withdrawing small, especially scenic streams and springs from appropriation.³ But the idea of preserving entire river reaches from development did not take root until the 1950s as a result of national campaigns to prevent the construction of multiple-purpose reservoirs in scenic areas. In 1968 the federal government recognized the power of the opposition to multiple-purpose development by passing the Wild and Scenic Rivers Act.⁴ For a while the western states continued to resist the idea that instream flow protection could co-exist with the appropriation system, but by the 1970s the West began to debate the legitimacy of instream flow preservation.⁵ That debate is now largely over. Instream flow protection will be a permanent, if fragile, part of the western legal landscape.

Two major issues now drive the politics of western water allocation: the reallocation of existing supplies and the protection of environmental values. There is a widespread consensus that more water must be reallocated from marginal agricultural production to higher valued urban and environmental uses.⁶ Reallocation can occur by the reassignment of unallocated reservoir blocks, agricultural and urban demand management-conservation, judicial, administrative or legislative modification of existing water rights, or the voluntary transfer of existing entitlements-water marketing. Water marketing is the current preferred strategy because it has the potential to shift more water to cities and instream uses consistent with the fair treatment of existing users. There have been some agricultural to instream transfers, but the long term success of this strategy has not yet been demonstrated.⁷ Thus, in most states, water marketing is likely to be only one prong of a multi-option approach to instream flow protection.

Instream flow protection rests on the triple bases of public acceptance, economic rationality, and science. Environmentalism reflects a deep public demand for higher amenity levels and seems to have become a permanent part of the political landscape.⁸ Increasingly, the benefit-cost analyses of instream flow protection suggest that the highest valued use of many stream segments is to support non-consumptive uses such as white water rafting, pollution dilution and fish and wildlife maintenance.⁹ Ultimately, instream

flow protection is a belated recognition that after negligently rearranging parts of the West to suit our convenience,¹⁰ the "land itself, its exaggerated weather and topography, its yawning distances that seem to swallow sound and time, its lingering dangers, its feel of great forces that will not be tamed, its beauty that can clutch your stomach and make you cry . . . as much as the steely eyed frontiersman, is the hero."¹¹

Instream flow protection has increasingly taken on a "hard" scientific rationale in addition to the traditional aesthetic and economic ones. Broadly put, instream flow maintenance is an important component of emerging biodiversity protection strategies. Environmental protection encompasses two broad objectives: pollution, especially toxic prevention and biodiversity protection. Biodiversity protection encompasses the preservation of genetic species and ecosystem diversity.¹² Flow maintenance regimes on both the few natural stream segments remaining in America and on regulated rivers are important components of ecosystem diversity protection. We have long recognized the importance of flow conditions for fish habitat maintenance,¹³ but we now recognize that river flows play a central role in regional wildlife habitat maintenance.¹⁴ River corridor protection strategy design is a major objective of the newly emerging applied science of conservation biology.¹⁵

The recognition stage is now complete, although the rate of recognition varies and there will be a spirited debate at the margin about the desirability of preserving specific flows. The net result is that instream flow preservation is a use of equal dignity to the traditional consumptive ones and every western state, with the possible exception of New Mexico, has some form of formal or informal¹⁶ instream flow protection program. In some states such as Idaho,¹⁷ Montana,¹⁸ Oregon¹⁹ and Washington²⁰ instream flow protection is the driving or at least a major driving force behind the states' water management policy. In others, such as Utah, it remains a marginal element.²¹ A recent legislative fight in Idaho illustrates the inconsistent but powerful pace of instream flow preservation. A coalition of irrigation, hydropower and conservation interests succeeded in blocking legislation, similar to that enacted for the Payette basin, to ban hydropower development on 146 miles of streams in Henry's Fork of the Snake River Basin by a 44 to 40 vote. However, in the closing days of the session, the legislature passed a bill which provided interim protection for many of these streams.²²

The Implementation Era: What Are The Issues?

Western states have now moved from recognition to the implementation and accommodation era. A number of direct and indirect state flow preservation mechanisms are in place and the federal government has a number of parallel, although uncoordinated and disjointed, instream flow protection programs.²³ Instream flow protection mechanisms can either be understood as the addition of a new form of exclusive appropriative rights or as the creation of public rights in new commons. In any case, this new balance of private and public rights is a broader reflection of the need to

reassess the entire history of the consequences of the disposition of the public domain, which allowed grabs to be elevated to exclusive property rights.

This final chapter in Part I looks to the future and speculates about the instream flow issues that the states and the federal government will face in the implementation stage. We first attempt to categorize and to evaluate the current status of instream flow protection programs along with some of the immediate emerging issues. We then examine some of the broader issues raised by existing approaches that must be addressed in the future if instream flow protection is to achieve its potential to improve our management of the region's much celebrated water resources and to promote the more efficient allocation of these resources.

Six major questions loom for the future: (1) how should instream flows be assessed and measured; (2) how will instream flow protection be integrated into all water management decision making; (3) how will federal and state strategies be meshed; (4) how will protected instream flows stand up to stresses such as drought and demands for new urban, industrial and agricultural supplies; (5) how will the instream flow protection agenda be shared between government agencies and private citizens?; (6) will the takings doctrine be a major constraint on the use of federal regulatory water rights to protect instream flows?

Current Instream Protection Strategies

Instream Appropriations

Water may be appropriated to preserve instream flows. Instream appropriations have been upheld against the argument that a physical diversion is necessary, that the use is non-beneficial and that such appropriations violate the constitutional guarantee of the right to divert.²⁴ These appropriations are junior appropriations, and they have not been fully tested in the crucible of prolonged drought. The main function of these rights is to give the holder and, perhaps, third parties standing to challenge changes in senior diversions, and in Colorado changes have been conditioned on the protection of junior instream flow rights.²⁵

If severe drought persists, the question of whether a state's appropriation rights can be administratively revoked or reduced will become pressing. A water right has historically been considered a property right, a "usufruct" that cannot be reduced or eliminated without a taking.²⁶ The state may curtail its own right, of course, without a taking, but to place the instream right on an equal basis with other uses, state rights should not be curtailed without compensation. Most statutes do not specifically address this issue. Wyoming requires condemnation of rescinded streamflow rights, but eminent domain is permitted only for municipal water purposes.²⁷ Nebraska permits

administrative modification of instream rights, but makes no provision to ensure that public rights receive a reciprocal benefit through, for example, purchase of existing water rights.²⁸

During the recent severe, prolonged drought in much of the West, states began to take steps to integrate instream flow protection into their drought management programs. In the summer of 1992, Idaho reduced junior diversions in the Snake River system to protect a 1976 instream flow right measured before the river enters Hells Canyon.²⁹ Montana tried to prevent the dewatering of the state's trout streams through a water leasing program. Legislation enacted in 1989 (and modestly extended in 1992) established a pilot leasing program. The Department of Fish and Wildlife may lease the amount of water historically consumed on selected streams, but threats of monopoly pricing and resistance from agricultural users rendered the program ineffective.³⁰ The California State Water Bank was a source of water for environmental values during the dry summers of 1991 and 1992, and state environmental agencies played a major role in reviewing the impacts of sales to the Bank on fish and wildlife habitats.³¹

Instream Reservations And Protected Flows

Some states have chosen to protect instream flows through reservations rather than appropriations.³² A reservation withdraws a quantity of water sufficient to support fish and wildlife from further appropriation. Entire streams or stream segments may be reserved. Since the waters of the western states belong to the public,³³ only the state can withhold water from appropriation. The effect of a reservation is similar to an appropriation, but is not limited by appropriation doctrines such as beneficial use. Both give to wildlife and other instream users a quantity of water with a priority as of the date of the reservation or appropriation. Reservations have the advantage of keeping state water appropriation statutes intact.³⁴ Instream appropriations ensure a permanent legal property right for wildlife to use the water, while reservations are subject to administrative decisions to "unwithdraw" the reserved water and appropriate it for consumptive uses. Thus, reservations are perhaps more subject to legislative and administrative modification since no vested property rights have been created.

The reservation statutes in Kansas, Montana, Hawaii, Washington, Utah, and Oregon illustrate that the procedure used to withdraw water from appropriation may influence the extent of reservations. Oregon reserves water administratively,³⁵ but the withdrawals are frequently codified.³⁶ In Washington, the Department of Ecology reserves waters by administrative rule.³⁷ Instream flows became very controversial in Washington in the late 1980s and the state's strategies were reevaluated. The process produced a charter of accommodation among major users, and 1991 legislation creating a state trust program involving the voluntary transfer to the state of water, including water saved by the implementation of conservation measures. The program began with 1989 legislation limited to the Yakima basin; in 1991 it was expanded to two other basins as

well as water resource inventory areas designated by the Department of Ecology.³⁸ In Montana, the state or any political subdivision or agency thereof may apply to the Department of Natural Resources for an instream flow reservation.³⁹ In Hawaii, the Commission on Water Resource Management has authority to establish instream flow standards, and individuals with proper standing may petition the Commission to adopt an instream flow standard.⁴⁰ Kansas' statute contains the most unusual procedure; reservations may only be made by statute.⁴¹ In Utah, the marginal status of the concept of instream flows among the descendants of the Mormon pioneers is reflected in the requirement that the reservation be made by gubernatorial proclamation.⁴²

Flow Release Conditions

The major problems in western water law stem not from an absolute shortage of water, but from the feast-or-famine timing of available supplies. During heavy rains or spring run-off, flooding is common, while the dry, hot summers cause many streams to dry up regularly, even without human use to accentuate this problem. The network of federal reservoirs was designed to moderate these extremes on a regional scale, but smaller state and private retention structures can similarly capture waters otherwise lost to the state and store them for release later to provide added stream flow to benefit fish and wildlife.

Reservoir releases are an important potential source of instream flows. Both state and federal agencies have long conditioned new appropriations and approvals on minimum flow release conditions, and an important recent California case holds that the legislature may require existing water licenses to comply with flow release conditions;⁴³ but the integration of reservoir operations, especially at the federal level, with instream flow protection programs is still incomplete and will be a major source of future conflicts. Some states that want to continue to impound and divert their water resources see reservoir flow releases as a significant instream flow protection strategy because it will be less disruptive of existing uses. But this solution has several potential problems. First, assuming a storage diversion for instream flows is considered a beneficial use,⁴⁴ the protected release of the waters may not be.⁴⁵ A watershed detention structure creating a pond or small lake may, by itself, provide wildlife and recreation benefits, but it cannot help preserve the riverine ecology.

Technical problems aside, the cost of reservoir releases may be prohibitive. The applicant must pay not only the administrative costs of obtaining a permit, but must also incur the costs of purchasing the lands and building the retention structure, usually totalling tens or hundreds of thousands of dollars.⁴⁶ The state or one of its subdivisions are the only entities likely to afford such structures on a scale to make a noticeable difference in instream flows, but the cost is so high that even the state will probably construct few of these structures for flow release purposes alone. In addition, no state is

likely to undertake these projects without specific statutory protection for flows released from storage.

Finally, the storage of water often has adverse environmental consequences. Water retention structures are built with heavy earth-moving equipment, causing significant erosion of exposed soil. Diversion of water into these structures also alters the river ecosystem which instream flow laws are designed to protect. In addition, the systematic retention of floodwaters will eventually reduce available flows downstream for fish and wildlife.⁴⁷ Despite these limitations, Colorado, Montana, and Wyoming specifically authorize by statute the construction of impoundments with protected releases for fish and game.⁴⁸ While the number of these structures actually built is unknown, the answer is probably few because of state budgetary limits. Other alternatives, including the purchase of existing rights, may be more cost-effective.⁴⁹

Ad Hoc Withdrawals

State water administrators may also utilize several methods to effect ad hoc instream flow withdrawals. In most states, a permit to appropriate may be denied if it would contravene the public interest.⁵⁰ Historically, this power was seldom used. Traditional appropriation law long followed the unwritten rule that any person meeting specified statutory conditions was entitled to a permit.⁵¹ Only isolated cases have upheld the state engineer's ability to deny egregious examples of applications not in the public interest.⁵² This dormant power may be used with greater frequency in the future. Laws such as little-NEPAs and the public trust doctrine require, or more strongly support, the exercise of this power. Courts are increasingly deferential to the state engineer's decision to deny permits or to condition them to require environmental mitigation, and the concept of the public interest has been expanded to include fish and wildlife considerations.⁵³

While effective where no statutory flow protection exists, this approach is far more limiting as a tool for protecting instream flows than the statutes discussed above. The case-by-case procedure provides no advance warning to potential applicants of likely application denials until the permit is filed. Second, this approach sets policy on an ad hoc basis which may vary as personnel change. Finally, instream flow preservation is a public policy issue that should be addressed on a systematic basis.⁵⁴

Wild And Scenic Rivers

At least four western states protect the free-flowing character of streams for recreation and wildlife through wild and scenic rivers acts⁵⁵ which restrict dams, impoundments, and other obstructions. California, Oklahoma, Oregon, and South Dakota require the consideration of fish and wildlife in designating these rivers,⁵⁶ and

all four prohibit detrimental obstructions.⁵⁷ The state acts are patterned after the National Wild and Scenic Rivers Act,⁵⁸ which similarly seeks to preserve unique streams in free-flowing condition.⁵⁹ Unlike the state versions, however, the federal act authorizes appropriation of funds for shoreland acquisition to maintain the natural character of the rivers.⁶⁰ Another limitation of the state statutes is that the federal act asserts federal reserved water rights to ensure a minimum stream flow,⁶¹ while no state has recognized a parallel concept except perhaps California through the public trust doctrine.

It is difficult to evaluate the effectiveness of current state strategies aimed at protecting instream flows. Little scientific data has been compiled to gauge the success of instream flow statutes, or to assess the extent of minimum flow appropriations and reservations.⁶² Since most of the preservation flow statutes were passed since 1980, several more years may elapse before any accurate assessment can be made. A systematic analysis of the use of the public interest to deny applications on fish and wildlife bases may never be done because the information is not readily accessible.⁶³

Indirect State Strategies

A limitation of all of the minimum flow statutes is their inability to affect severely over-appropriated streams. Despite recognition that fish and wildlife must be protected and that changes in the appropriation doctrine are needed, the West remains governed by the rule of "first in time, first in right," and water earmarked for wildlife generally comes into the system with a very late junior priority. State statutes uniformly permit dedication of streamwater to instream flows only if unappropriated water is available. The recovery of streams already over-appropriated must be left to other mechanisms. For this reason, states have begun resorting to other indirect methods of managing scarce water resources and reclaiming streams. These strategies include proposals to redefine beneficial use as the efficient use of water and to build technology-forcing standards into the definition of efficiency, the imposition of mandatory conservation duties on new and existing rights, and the creation of water marketing incentives, especially for water saved by conservation efforts.⁶⁴

Environmentalists have embraced conservation and water-marketing as a way to curb water development subsidies and thus to protect more rivers from development. There is no guarantee that conservation and marketing will produce greater instream flows; indirect methods alone cannot contribute to an instream flow protection strategy. They must be viewed as a component of a large water management program that includes the full range of regulatory protection mechanisms.

Water may also be picked up for instream flows by the purchase or acquisition of existing rights. Only the Colorado and Wyoming statutes specifically authorize the state to purchase or otherwise reacquire existing water rights for instream flow protection.⁶⁵ California appears to permit condemnation of rights.⁶⁶ Other states do not explicitly

address sale or purchase of rights, whether by individuals or by the state. Many states do allow sales between individuals, and many may permit the state to purchase rights. But the frequency and conditions under which these sales take place is not readily accessible because decisions are made internally and often informally, and state water agencies themselves may not systematically collect the information.⁶⁷

The acquisition of existing rights has potential drawbacks. Colorado and Wyoming specifically prohibit acquisition through condemnation,⁶⁸ prompted by local agricultural users' concerns about state control and interference in matters traditionally viewed as a matter of private property rights. Kansas has sought a partial resolution of this tension by authorizing local groundwater management districts to purchase or condemn water rights,⁶⁹ an option more politically palatable because these districts are governed by local water users.⁷⁰ Other states allow purchase and condemnation of water rights by local water districts.⁷¹ More states will likely address this issue in the future and enact statutes explicitly permitting the purchase or other acquisition of water rights for instream flows. Transfers of existing water rights may also have localized environmental impacts because they reduce return flows to canals and artificial wetlands which have become wildlife habitats. No water right holder or interested third party may have standing to contest the transfer, although states are liberalizing the standards for transfer protests.⁷²

There has been limited condemnation of instream flow rights. The resistance to condemnation and to purchase probably stems from another underlying factor seldom discussed. Water users and state water officials staunchly defend the appropriation doctrine, and rely on technical solutions and future regulation to address perceived shortcomings. Reacquisition is not a popular topic with either group because it is viewed as an admission that the doctrine has failed and that the state erred in issuing the right. Despite the cost and political resistance, this issue is likely to become increasingly important in the years to come as more and more streams go dry, and as states reluctantly realize that their water rights systems leave them with little alternative to rehabilitate over-appropriated streams. The State of Montana, for example, has purchased 10,000 acre-feet of existing flow rights from private right holders to preserve fish populations, and water management districts in western Kansas are investigating the possibility of purchasing alluvial ground water rights to rehabilitate streamflows. These examples may become the rule rather than the exception in the years to come.

Two important agricultural to instream flow transfer precedents have been set in the past few years. The most important transfers are occurring in the Truckee-Carson Irrigation District (TCID) in western Nevada. These transfers are part of a large-scale settlement of a long standing water dispute among urban areas, Indian tribes, irrigation districts and environmentalists over the use of the Truckee and Carson rivers. The TCID is squeezed between the Pyramid Lake Reservation, which has federal regulatory water rights under the Endangered Species Act to maintain endangered species and trust rights against the District, and the Stillwater National Wildlife Refuge, a world heritage site.

Irrigation return flows, upon which the refuge depends, are polluted and shrinking as the District has been forced to institute conservation practices to benefit the Tribe. In 1990, the Nevada State Engineer approved a 400 acre foot transfer of senior irrigation rights to The Nature Conservancy for the benefit of the refuge. Congress has appropriated substantial sums for the acquisition of TCID rights.⁷³

After years of preferring supply augmentation to reallocation, in spite the strong economic case for trimming agricultural use, reallocation has been forced on the state's prime agricultural area. In 1992, Congress authorized the transfers of Central Valley Project (CVP) water in California to urban and environmental uses outside of the project service area. The Reclamation Projects Authorization Act of 1992⁷⁴ authorizes the transfer of the four classes of water service contracts held by beneficiaries of the California Central Valley Project to "any other California water user or water agency, State or Federal Agency, Indian tribe or private non-profit organization."⁷⁵ The transfers are subject to the standard Bureau of Reclamation transfer conditions as well as a number of standard and CVP-specific conditions. In addition, the Act designates a pool of 800,000 acre feet of CVP water for endangered species protection, but substantial questions remain about the source and use of this paper water.

Questions For The Future

What Are The Standards For Instream Flow Protection?

As are all environmental problems, this issue is a technical one with philosophical roots. Berton L. Lamb's summary of the pioneering quantification work done at the National Ecology Research Center in Fort Collins, Colorado illustrates this. Instream flow quantification methodologies are driven by specific regulatory objectives. Important scientific work has been done to establish the cause and effect relationships between different flow regimes and species population. Many state statutes such as those of Colorado and Wyoming are premised on the assumption that the calculation of a minimum flow is a technical one.⁷⁶

The view that the adverse impacts of the application of science and technology can be cured by the application of better science and, in some cases, technology is the product of the idea of progress developed during the enlightenment era and applied to resource management during the progressive conservation era. The idea of "rational" instream flows is particularly appealing because it suggests that existing water use expectations can best be respected and future consumptive water use can continue by the establishment of minimum flows. This approach has considerable legitimacy, but it does not fully comport with the ecological vision of natural areas. This vision was originally given a theological spin by John Muir,⁷⁷ but it has not played a dominant role in resource management.⁷⁸

It is perhaps too late to abandon our attempts at a rational balance between preservation and development. However, the competing ecological model of instream flow preservation can play an important role in the development of streamflow standards. It reminds courts, legislatures and administrative agencies that the establishment of minimum flows is not wholly a technical problem and that the objective of a minimum flow program is to preserve or restore some measure of natural stability in a stream system. One way to strike the balance is to incorporate the toxic water pollution control concept of "margin of safety." Both Congress and the courts have realized that toxic pollutant standards cannot calibrate precisely the relationship between discharge and harm and thus the standard setters must be allowed to err on the side of extra protection. The Nebraska Department of Water Resources recognized a modest margin of safety in the proceeding approving the state's first instream appropriation. Under the state's instream appropriation statute, only the minimum amount necessary for the use may be claimed. An irrigation district protesting an instream appropriation on the state's best cold water trout stream argued that minimum meant absolute minimum amount, but the Department ruled that it was scientifically impossible to meet this standard and that the legislation was only directed against unnecessarily large claims.⁷⁹

How Will Instream Flow Protection Be Integrated Into All Water Management Decisionmaking?

Although instream flows have been widely recognized as legitimate throughout the West, in many states they remain precarious and marginal to water resources allocation. Even when these uses are recognized as appropriations, they have a very low priority. For example, it is unlikely that the holders of instream flow appropriations can make calls on senior appropriators. As we have previously said, the real value of an instream flow appropriation is that it gives the holder of the right standing to object to changes in the use or point of diversion of senior uses that may adversely affect the instream flow appropriation. The problem, of course, is that the last rights are the first to go in times of scarcity. In the early stages of the most recent great western drought cycle, which ended in 1992-1993, instream flows did not receive high priority. For example, an October, 1988 Corps of Engineer's conference on drought management failed to include instream flows on its agenda,⁸⁰ although a subsequent study on the confused and complicated state of drought management gave more weight to environmental values.⁸¹

Another future test for instream flows is the frequent interaction between groundwater and surface water. Although several states legally recognize the relationship,⁸² only a handful provide a procedure for assigning priority to existing rights when the interaction results in diminished streamflows due to a lowered water table by senior water appropriations.⁸³ The interaction frequently takes years to manifest itself, and often-complicated geohydrology makes pinpointing the source and degree of the problem difficult and expensive. Unfortunately, instream flows are the first casualty when this phenomenon occurs.

One long-term development, however, that holds some promise to increase the stability of flow protection strategies is the more aggressive and substantive water planning that many states are undertaking. If states incorporate instream flow protection into state plans, as Kansas and Montana have done, these plans have the potential to deter future developments that would otherwise jeopardize instream flows.⁸⁴

How Will Federal And State Strategies Be Meshed?

The federal government has important direct and indirect roles to play in instream flow protection. Federal land management agencies may claim proprietary reserved water rights to carry out a water-related land management mission. Protected instream flows may also arise from the application of federal environmental statutes to water projects and the Federal Power Act. These statutes may require flow releases from existing or proposed federal and private projects or prohibit new projects, and their net effect is to create regulatory property rights. In addition, Congress and the courts alter the rights between states through congressional and equitable apportionment.

The federal government can assert proprietary reserved rights, and there is more debate about the federal government's power to claim non-reserved rights.⁸⁵ Non-reserved rights would allow federal agencies to file for unappropriated waters for instream flow, regardless of state laws on the subject.⁸⁶ Although some continue to doubt their legality, the Supreme Court has firmly grounded proprietary reserved rights in the Property and Commerce powers.⁸⁷ However, the disruptive potential of reserved rights influences the scope of these rights. After initially supporting the power of federal agencies to claim such rights by implication, the Court limited severely the discretion of federal agencies in *United States v. New Mexico*.⁸⁸ Justice Rehnquist announced a strict test for the implication of reserved rights: the right must relate to the original purpose of the reservation; it must be necessary to prevent the frustration of the original purpose; and it must be for the primary, not the secondary, purpose of the reservation.

The federal government has continued to push new theories of reserved rights but this movement seems to have reached a legal dead end. An important Colorado federal case holds that reserved rights may be claimed in wilderness areas,⁸⁹ and the state supreme court has accepted the Forest Service's reading of the *New Mexico* decision that reserved rights may be claimed to protect the hydrologic balance of streams in the national forests.⁹⁰ However, the success of the hydrologic balance strategy was dealt a setback in *In re Application of the United States for Reserved Water Rights in the Platte River*.⁹¹ The water judge conceded that channel integrity was consistent with the water-related purposes for which forests were reserved, but he then balanced the need for reserved rights with the potential disruption on state-created rights and alternative flow maintenance possibilities. Unless this decision is reversed, it is unlikely the federal government will continue to pursue this theory. The California Supreme Court also allowed the federal government to claim instream flow rights as a riparian land owner

under the state's dual system of water rights.⁹² However, the major source of federal leverage comes from the assertion of federal regulatory water rights.

As previously discussed, the ability of state water agencies to condition the construction of new reservoirs, or to control the timing of releases from federal reservoirs, has long been controversial⁹³ and an important source of the law of federal-state relations in water law. Environmental statutes add a new dimension to this federalism issue. The management of these reservoir releases can also bring into play other federal statutes, including the Clean Water Act,⁹⁴ the Endangered Species Act,⁹⁵ and the Fish and Wildlife Coordination Act.⁹⁶ The Endangered Species Act and the Clean Water Act are the most important because they contain substantive mandates. Most other environmental statutes mandate open-ended planning processes which often lead to new management initiatives, but little substantive limitations on agency authority.

Federalism issues have become much more acute as the reach of federal power has been confirmed by federal EPA and judicial decisions. Controversies in California, Colorado and the Pacific Northwest illustrate the power of the Clean Water Act and the Endangered Species Act to preempt state water development and allocation. In the Sacramento-San Joaquin Delta controversy, more flows at critical periods are necessary to maintain the salinity balance and to preserve endangered species. A major intermediate appellate court opinion ordered the state to limit Bay Delta diversions, but for obvious reasons the state has been reluctant to identify the winners and losers, since they encompass water users from the north Central Valley to San Diego. The state is now moving toward a diversion reduction plan as a result of EPA's rejection of the state's water quality plans for the Delta and the listing of the Delta smelt as threatened. Concern about the adverse environmental impacts downstream on the Platte River played a major role in EPA's veto of the Two Forks dam near Denver.

A federal district court decision in 1992 confirmed the worst fears of the western water community. The ESA requires that federal water projects be operated to protect listed species, but Section 9 prohibits the unauthorized taking of a species by private as well as public parties. Congress may have originally thought of takings as authorized hunting, but the courts have extended the definition of taking to habitat destruction. In *United States v. Glenn-Colusa Irrigation District*,⁹⁷ the court originally threatened to enjoin the use of 300,000 acre feet of water in the peak irrigation season during the recent California drought, because an improperly screened diversion intake was killing a listed species. In 1993, a federal district judge in Texas ruled that unrestricted pumping of groundwater from the Edwards Aquifer which threatened listed species had to be curtailed, even though Texas adheres to the rule of capture for groundwater.⁹⁸

Endangered Species Act-driven water allocation controversies present great challenges for all interested parties. Species preservation controversies involve both the prevention of future harm and the remediation of past allocations. Most land-based

controversies involving birds concern the former and seek to achieve this objective by preserving a network of island and corridor habitats. In contrast, many water controversies require the remediation of a past allocation regime, a combination of diversions and dams. The difference between the two types of controversies lies in the practicality and scope of available options. All things considered, it is easier to protect a species from the threat of future extinction by setting aside habitat than "reconfiguring" an entire river allocation and power generation regime and expectations and entitlements that have been created by this regime. Future protection is also more difficult when water habitats are involved because the costs of foregoing a new water resources project are likely to be high, at least in terms of equity as opposed to efficiency.

How Will The Instream Flow Protection Agenda Be Shared Between Government Agencies And Private Citizens?

Individuals and groups in many states have expressed dissatisfaction with the steps taken by state agencies and legislatures, and by the slow process of consensus-building that must precede legislative and administrative initiatives. The amendment of state statutes to permit citizen suits has been proposed to give members of the public regular access to water allocation decisions.⁹⁹ To date, no state has adopted such a provision. Individuals, however, have utilized at least two other mechanisms to force the acceleration of state planning and protection efforts.

The first is the public trust doctrine.¹⁰⁰ An expanded reading of this traditional navigation protection doctrine allows individuals to claim that government officials have a duty to preserve certain resources because these resources are held in trust by the state. North Dakota first extended the doctrine to water allocation.¹⁰¹ California then extended the doctrine further to permit state cancellation or modification of existing water rights.¹⁰² Other states have adopted the California theory of the public trust but have only applied it to protect more traditional public navigation rights.¹⁰³ However, the new California doctrine is much in the air.¹⁰⁴ The role that the trust will play in the protection of instream flows is still the subject of great debate, as Professor Dunning's excellent survey of the possible scenarios illustrates.¹⁰⁵

Individuals can also attempt to file for an instream water right. The ability of private individuals to file water rights for fish and wildlife has received considerable attention. Some argue that instream rights should be privatized,¹⁰⁶ while others stress that, since the benefits of preservation flow rights redound to the general public, only the state should be allowed to obtain those rights.¹⁰⁷ Neither of these viewpoints address whether individuals may file for a stream flow appropriation on behalf of the state.

Most states have resolved this issue by statute, permitting only specified state officials to apply for these rights.¹⁰⁸ Only Alaska's statute clearly allows individuals to hold instream flow rights,¹⁰⁹ but no rights have been granted for reasons of cost and the

lack of pressure for such rights in the state.¹¹⁰ Arizona's preservation flow statute, however, authorizes "any person" to appropriate water for, *inter alia*, fish and wildlife uses.¹¹¹ Several groups and individuals have filed for instream flow rights. Most have not yet been granted¹¹² but the language of the statute would appear to allow private instream flow appropriations.¹¹³ Even if private rights are not granted, the statute gives private groups a more direct influence over the instream flow protection process compared to most other states where private groups must either lobby or intervene in water rights appropriation and transfer proceedings.¹¹⁴ A related issue that apparently has not yet been addressed is whether individuals or groups can purchase existing rights for instream flow preservation.

Will The Takings Doctrine Undermine Instream Flow Protection?

State instream flow protection strategies generally operate within state water law. Instream flow rights are created either as junior water rights or by the withdrawal of unappropriated water from consumptive use. Neither of these strategies raise Fifth Amendment takings issues. Either vested property rights are protected or they never existed. Federal regulatory rights and state assertions of the public trust stand on a different footing. These reallocations are more vulnerable to constitutional challenges. Western water lawyers are ready to use takings challenges, as they have historically done, to stop federal instream flow protection efforts such as ESA mandated flows, reserved rights and other federal initiatives. A leading Colorado water law lawyer has recently raised the specter of latent riparianism: "[E]cological integrity' and 'bio-diversity,' when applied to water law, are thinly disguised surrogates for riparian water law."¹¹⁵

The Supreme Court's confusing 1992 opinion in *Lucas v. South Carolina Coastal Commission*¹¹⁶ will be the centerpiece of the constitutional attack. *Lucas* held that a land use regulation which deprives an owner of all economic use is a taking unless the regulation can be justified by background principles of the state's common law of property or nuisance. In short, there can be no taking if the common law never recognized the claimed property right in the first place. Justice Scalia's opinion has already been analyzed extensively by the takings community. Developers have emphasized its potential to invalidate most federal environmental biodiversity regulation. Environmentalists have emphasized its narrow holding, although Professor Sax reads it as a preemptive strike against the imposition of biodiversity maintenance duties on property owners.¹¹⁷ *Lucas* has fewer implications for instream flow protection than it does for land use regulation. The boundaries of water rights have always been much more indeterminate compared to land rights because water rights are inherently correlative. The beneficial use doctrine, for example, has always subjected private water rights to a social utility standard and subjected rights holders to the risk that present use levels will not be fully protected. And, the public trust doctrine, as least as applied in the Mono Lake litigation, is a complete state "background" defense to takings challenges.

Conclusion

The integration of instream flow considerations into state western water allocation practice in the past decade is impressive when one considers the deep-seated hostility to the idea that prevailed until the 1970s. However, as the experience of the State of Washington indicates, the issues in the recognition era were easier than those of the implementation era. All areas of state and federal water allocation are potentially affected by the full protection of instream flow values, and the integration of instream protection presents a formidable challenge for all concerned with water policy. State water administrators, water users and the environmental community are still deeply divided over the amount of water that should be dedicated to this use. The 1990s will be a critical decade in the history of western water allocation, and instream protection will seldom be absent from the coming water reallocation debates.

Notes

1. This thesis has been questioned in light of the continuing opposition of agricultural users to instream flow appropriations. Tom Annear, *Building Consensus for Implementation*, a review of *Proceedings of the Western Regional Instream Flow Conference*, Suzanne Von Gytenbeck ed. 1990, 2 RIVERS 167 (1991).
2. A. DAN TARLOCK, *New Commons in Western Waters*, in WATER AND THE AMERICAN WEST: ESSAYS IN HONOR OF RAPHAEL J. MOSES 69, 73 (David Getches, ed. 1988).
3. Steven J. Shupe, *Keeping the Waters Flowing: Streamflow Protection Programs, Strategies, and Issues in the West*, INSTREAM FLOW PROTECTION IN THE WEST, (Lawrence J. MacDonnell, et al. eds., 1989).
4. 16 U.S.C. §§ 1271-1287 (1988 & Supp. III 1991).
5. See A. Dan Tarlock, *Appropriation for Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211 (1978).
6. See NATIONAL RESEARCH COUNCIL, WATER SCIENCE AND TECHNOLOGY BOARD, COMMITTEE ON WESTERN WATER MANAGEMENT, WATER TRANSFERS IN THE WEST: EQUITY, EFFICIENCY AND THE ENVIRONMENT (1992).
- 7.. See Paul R. Williams and Stephen J. McHugh, *Water Marketing and Instream Flows: The Next Step in Protecting California's Instream Values*, 9 STAN. ENV. L.J. 132 (1990).
8. SAMUEL P. HAYES, BEAUTY, HEALTH AND PERMANENCE: ENVIRONMENTAL POLITICS IN THE UNITED STATES 1955-1985 (N.Y.: Cambridge Univ. Press, 1987). RODMAN WILSON PAUL, THE FAR WEST AND THE GREAT PLAINS IN TRANSITION 1859-1900, at 220-51 (N.Y.: Harper & Row, 1988) is an excellent account of the development of irrigated agriculture in the West.
9. Bonnie G. Colby, *Benefits, Costs, and Water Acquisition Strategies: Economic Considerations in Instream Flow Protection* in this book at Chapter 6, is a complete review of the growing literature on instream flow valuation. Examples of recent valuation research literature include John Loomis and Michael Creel, *Recreation Benefits of Increased Flows in California's San Joaquin and Stanislaus Rivers*, 3 RIVERS 1 (1992).
10. For a revisionist, quasi-Marxist criticism of the watering of the West see DONALD WORSTER, RIVERS OF EMPIRE: WATER ARIDITY AND THE GROWTH OF THE AMERICAN WEST (N.Y.: Pantheon Books, 1985). Charles F. Wilkinson has explored the continued domination of the West by the "lords of yesterday" in his new book, CROSSING THE NEXT MERIDIAN (Wash.: Island Press, 1992).
11. ROBERT G. ATHEARN, THE MYTHIC WEST IN TWENTIETH-CENTURY AMERICA 273 (Univ. Press of Kansas 1986).
12. JEFFREY A. McNELLY ET AL., CONSERVING THE WORLD'S BIOLOGICAL DIVERSITY, (Gland.: Switzerland International Union for Conservation of Nature and Natural Resources et al. 1990). EDMUND O. WILSON, THE DIVERSITY OF LIFE (Cambridge: Harvard University Press 1992).

13. See, e.g., Jon H. Jourdonnais et al., *Structure and Calibration Strategy for a Water Temperature Model of the Lower Madison River, Montana*, 3 RIVERS 153 (1992).
14. W. Carter Johnson, *Dams and Riparian Forests: Case Study From the Upper Missouri River*, 3 RIVERS 229 (1992).
15. Joseph M. Schaefer and Mark T. Brown, *Designing and Protecting River Corridors for Wildlife*, 3 RIVERS 14 (1992).
16. See note 21, *infra* and Brian E. Gray, *A Reconsideration of Instream Appropriative Water Rights in California*, in this book at Chapter 11.
17. See Josephine P. Beeman, *Instream Flows in Idaho*, in this book at Chapter 13, for a discussion of the importance of instream flow protection in the state.
18. See Matthew J. McKinney, *Instream Flow Policy in Montana: A History and Blueprint for the Future*, in this book at Chapter 15, and J. Thorsen, A. Koven, D. Tarlock & G. Weatherford, *Montana and the Missouri: Montana's Strategy for Missouri River Apportionment and Management* 219-234 (Final Report to the Department of Natural Resources and Conservation and Office of the Attorney General of the State of Montana, Aug. 1988).
19. See Michael J. Mattick, *Instream Flow Protection in Oregon*, in this book at Chapter 18.
20. See *Infra* note 25.
21. For example, Utah limits instream appropriations to rights acquired by the Division of Wildlife through transfers for fish habitat maintenance in natural channels. However, the State Engineer has brokered reservoir release agreements incorporated into permits and the Bureau of Reclamation and the Central Utah Water Conservancy District have agreed to preserve trout fishery flows in the Provo River below the Jordanelle Dam built through the Central Utah Project. Ray J. Davis, *Utah Instream Flow Protection*, 2 RIVERS 154 (1991).
22. *Idaho River Basin Denied Protection*, HIGH COUNTRY NEWS, May 4, 1992, p. 4, col. 2.
23. See A. DAN TARLOCK, ET AL., WATER RESOURCE MANAGEMENT 771-948 (Mineola: Fountain Press, 4th ed. Id. 1993).
24. The leading case is Idaho Dept. of Parks v. Idaho Dept. of Water Administration, 530 P.2d 924 (1974). Another case upholding instream appropriations without a physical diversion is State v. Morros, 766 P.2d 263 (1988).
25. See Lori Potter, *People Preserving Rivers: The Public and its Changing Role in Protecting Instream Flows*, in this book at Chapter 3.
26. Enterprise Irrigation Dist. v. Willis, 284 N.W. 326 (Neb. 1939).
27. WYO. STAT. § 41-3-1013 (Supp. 1992).
28. NEB. REV. STAT. 117 § 46-2 (1988).

29. R. Keith Higginson, *Managing Water Resources in Continuing Drought*, (The 11th Annual Water Law Conference, ABA-SONREL, 4 San Diego California, February 11-12, 1993).
30. Brian Morris, *When Rivers Run Dry Under a Big Sky: Balancing Agricultural and Recreational Claims to Scarce Water Resources in Montana and the American West*, 11 STAN. ENV. L.J. 259 (1992).
31. Richard Howitt, Nancy Moore & Rodney Smith, *A Retrospective on California's 1991 Emergency Drought Water Banks*, a report prepared for the California Department of Water Resources (March 1992).
32. The terms reservations and withdrawals are used synonymously in this chapter.
33. See, e.g., KAN. STAT. ANN. § 82a-702 (1989): ("All water within the state of Kansas is hereby dedicated to the use of the people of the state... ."; NEV. REV. STAT. ANN. §533.025 (1986 & Supp. 1991) (Water ... of the state belong[s] to the public).
34. Kansas, for example, chose instream reservations over an instream appropriations approach because state water officials expressed concern that the elimination of the physical diversion and "appurtenant to" requirements would require extensive amendments to the Kansas Water Appropriation Act, and further, that such changes might inadvertently change fundamental aspects of the Act, with uncertain results.
35. OR. REV. STAT. § 536.410 (1988).
36. *Id.* at §§ 538.110 - .450.
37. WASH. REV. CODE ANN. § 90.54.050 (1992).
38. *Id.* § 90.42 005-900. The controversy started in 1986 when the Department of Ecology proposed to increase the level of protected flows. The possible effect of this decision on future water development triggered a great water controversy in the state. In response, the Department prepared a programmatic EIS with a full menu of preservation options. See Kenneth O. Slattery and Robert F. Barwin, *Protecting Instream Resources in Washington State*, in this book at Chapter 20.
39. MONT. CODE ANN. § 85-2-316(1) (1991 & Ann. 1992).
40. HAW. REV. STAT. § 174C-71(1),(2) (Supp. 1992).
41. KAN. STAT. ANN. § 82a-703a (1989).
42. UTAH CODE ANN. § 73-6-1 (1989).
43. *California Trout, Inc. v. State Water Resources Control Bd.*, 201 Cal. App. 3d 552 (1988) (order vacated and rehearing granted).
44. At least four states define beneficial use to include fish and wildlife purposes. ARIZ. REV. STAT. ANN. § 45-151 (A) (1987 & Supps. 1991 & 1993); OR. REV. STAT. § 536.300 (defined as a beneficial use in the state water plan section); S.D. CODE ANN. § 46A-1-8 (1987) (defined as a beneficial use in the state water planning statutes); TEX. WATER CODE ANN. § 11.023 (a) (1988)

(to benefit wildlife resources in public parks and game preserves). Three states, Colorado, Montana, and Wyoming, specifically designate impoundments as a beneficial use. COLO. REV. STAT. § 37-92-103 (4) (1990 & Supp. 1992); MONT. CODE ANN. § 85-2-316 (5) (1991 & Ann. 1992); WYO. STAT. § 41-3-1004 (Supp. 1992). Other states define beneficial use loosely enough that these impoundments might be considered a beneficial use, if state water officials construed recreational uses to include fish and wildlife. *See, e.g.,* UTAH CODE ANN. § 73-3-1 (appropriation for "some useful and beneficial purpose"). The Nevada Supreme Court recently held that wildlife watering is included within the definition of recreation as a beneficial use of water, NEV. REV. STAT. ANN. § 533.030 (1986 & Supp. 1991), *Nevada v. Morros*, 766 P.2d 263 (Nev. 1988).

45. The general rule is that, once the diverted water has been returned to the stream, it becomes available to other appropriators. *See, e.g.,* *Fuss v. Franks*, 610 P.2d 17 (Wyo. 1980); *Farmers Highline Canal & Reservoir Co. v. City of Golden*, 272 P.2d 629 (Colo. 1954); WELLS H. HUTCHINS, *SELECTED LEGAL PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST*, 331 (Wash: U.S. Dept. of Agriculture, 1942).
46. In Kansas, for example, the state partially funds smaller watershed structures. The average cost, including planning, has exceeded \$100,000 per structure. *See Nagel, Mechanisms for Financing the Kansas Water Plan* 65-66 (Kansas Water Office, 1984). The USDA/SCS also cost-shares larger structures through the so-called P.L. 566 program, for which the average cost exceeds \$300,000.
47. *See, e.g.,* Harold E. Thomas, *Hydrology v. Water Allocation in the Eastern United States*, in *THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES* 165, 173 (D. Haber & S. Bergen eds. 1958).
48. COLO. REV. STAT. § 37-92-103 (4) (1990 & Supp. 1992) (Within instream flow statute, beneficial use includes "the impoundment of water for recreational purposes, including fishery or wildlife."); MONT. CODE ANN. § 85-2-316 (5) (1991 & Ann. 1992) (State may construct storage facilities to create water for instream reservations); WYO. STAT. ANN. § 41-3-1006 (Supp. 1992) (State must perform feasibility studies for meeting minimum streamflows from existing or new storage).
49. Existing water rights are expensive, but not quite so expensive when compared with the enormous costs of impoundment structures. Yet faith in engineering solutions such as dams seems to provide comfort to western landowners, whereas purchasing existing water rights is tantamount to admitting the present system is fundamentally flawed. Also, there is a political pork barrelling dimension to be considered. The purchase of individual water rights here and there may have little immediate effect and brings home less tangible bacon to the local voters than a water project. Finally, detention structures may still be built because dams are viewed as good things because they prevent water that otherwise would run out of the state from leaving, whereas purchases of rights not only curtail economic (translation: truly beneficial) use of the water, but allow even more water to escape out of the state unutilized.
50. *See, e.g.* ALASKA STAT. § 46.15.080 (a)(4)-(b) (1991); IDAHO CODE § 42-203 (5) (1990); KAN. STAT. ANN. § 82a-711 (1989 & Supp. 1992); WASH. REV. CODE ANN. § 90.54.020 (2) (1992).
51. *Cf. Tanner v. Bacon*, 136 P.2d 957 (Utah 1943).
52. *See, e.g.,* *Young & Norton v. Hinderlider*, 110 P. 1045 (N.M. 1910); *Kirk v. State Bd. of Irrigation*, 134 N.W. 167 (Neb. 1912); *Big Horn Power Co. v. State*, 148 P. 1110 (Wyo. 1915).

53. See, e.g., *Bank of America, Nat'l Trust & Sav. Ass'n v. State Water Resources Control Bd.*, 116 Cal. Rptr. 770 (Ct. App. 1974) (state may condition permits to enhance fish and wildlife; remanded in this case because record insufficient to support Board's conditions); *Shokal v. Dunn*, 109 707 P.2d 441 (Idaho 1985) (public interest includes environmental values); ALASKA STAT. § 46.15.080(b) (1991) ("In determining the public interest, the commissioner shall consider...(3) the effect on fish and game resources and on public recreational opportunities..."); NEV. REV. STAT. ANN. § 533.367 (1986 & Supps. 1991 & 1993) ("Before a person may obtain a right to the use of water...he must ensure that wildlife which customarily uses the water will have access to it."); *id.* at § 533.370(3) (State engineer may reject application if detrimental to the public interest.) See also Robie, *Some Reflections on Environmental Considerations in Water Rights Administration*, 3 ECOL. L.Q. 695 (1972); Grant, *Public Interest Review of Water Right Allocation and Transfer in the West: Recognition of Public Values*, 1987 ARIZ. ST. L.J. 681.

The public trust doctrine has also been used in North Dakota to deny applications. See *United Plainsmen Ass'n v. North Dakota State Water Conservation Comm'n*, 247 N.W. 2d 457 (N.D. 1976). The public trust doctrine and this case are discussed more fully, *infra* notes 79 to 84.

54. See Robie, *Modernizing State Water Rights Laws: Some Suggestions for New Directions*, 1974 UTAH L. REV. 760, 770 (1974).
55. CAL. PUB. RES. CODE §§ 5093.50 - .69 (West Supp. 1993); OKLA. STAT. ANN. tit. 82 §§ 1451 - .71 (West 1990 & Supp. 1993); Or. Rev. Stat. §§ 390.805 - .940 (1987 & Supp. 1993); S.D. CODIFIED LAWS ANN. §§ 46a-1-9 to 16 (1987).
56. CAL. PUB. RES. CODE § 5093.50 (West 1984); OKLA. STAT. ANN. tit. 82, § 1452 (1990); OR. REV. STAT. § 390.835 (1) (Supp. 1992); S.D. CODIFIED LAWS ANN. § 46a-1-16 (1987).
57. CAL. PUB. RES. CODE § 5093.55 (West 1984 & Supp. 1993); OKLA. STAT. ANN. tit. 82, § 1453 (1990); OR. REV. STAT. § 390.835(1) (Supp. 1992); S.D. CODIFIED LAWS ANN. § 46a-1-15 (1987) (no detrimental "development").
58. 16 U.S.C. §§ 1271-1287 (1985).
59. Compare 16 U.S.C. § 1271 (1985) with OKLA. STAT. ANN. tit. 82, § 1452 (1990) and S.D. CODIFIED LAWS ANN. § 46A-1-16 (1987) (statements of purpose *in haec verba*).
60. 16 U.S.C. § 1277 (1985 & Supp. 1988). See Carolyn Raffensperger and A. Dan Tarlock, *The Wild and Scenic Rivers Act at 25: The Need for a New Focus*, RIVERS, (forthcoming 1994).
61. 16 U.S.C. § 1283(c) (Supp. 1988); see also Federal Water Rights of the National Park Serv., Fish and Wildlife Serv., Bureau of Reclamation, and the Bureau of Land Management, 88 INTERIOR DEC 553 (1979) (Wild and Scenic Rivers designation reserves water sufficient to protect purposes for which river was designated).
62. A number of withdrawals in Oregon have been codified, OR. REV. STAT. §§ 538.110 - .450 (1988 & Supp. 1992), although how many is unclear from the statutes. Kansas has steadily added minimum streamflow requirements since 1984. KAN. STAT. ANN. § 82a-703c (1989). Colorado officials apparently have filed instream appropriations on most of the remaining unappropriated streams and tributaries. See Comment, *Wyoming's New Instream Flow Act: An Administrative Quagmire*, 21 LAND & WATER L. REV. 455, 482 (1986). Wyoming is processing instream flow applications with considerable deliberation, in part reflecting the extensive study and review

procedures in its law. See Gordon W. Fassett, *Wyoming's Instream Flow Law*, in this book at Chapter 21.

63. Many denials of applications are made by unpublished administrative order, or rejected even more informally. Because of the potential widespread impact, water reservations are almost certainly tabulated and listed in the state's appropriation records system. Further, in Kansas, and frequently in Oregon, the withdrawals are codified. Instream appropriations, by their very nature, are maintained as an integral part of the appropriation records system.
64. See A. Dan Tarlock, *The Changing Meaning of Water Conservation in the West*, 66 NEB. L. REV. 145 (1987).
65. WYO. STAT. § 41-3-1007(a) (Supp. 1992); COLO. REV. STAT. § 37-92-102(3) (1990); Kansas debated H.B. 2036 in 1987, which would have allowed purchase of rights on a cost-share basis, but the bill did not pass.
66. CAL. WATER CODE §§ 11580 (West 1992). Cf. *City of Los Angeles v. Aitken*, 10 Cal. App. 2d 460, 52 P.2d 585 (1935).
67. Kansas, for example, has permitted the sale of some water rights, even though its appropriation statutes do not explicitly provide for this. Any such decisions are made by unpublished administrative order.
68. WYO. STAT. § 41-3-1009 (Supp. 1992); COLO. REV. STAT. § 37-92-102(3) (1990 & Supp. 1992).
69. KAN. STAT. ANN. § 82a-1028 (1989).
70. *Id.* § 82a-1020 - 1026 (1992 & Supp. 1991).
71. See, e.g., Or. Rev. Stat. §§ 552.305 -310 (1988).
72. *Bonham v. Morgan*, 788 P.2d 497 (Utah 1989). *Hardy v. Higginson*, 849 P.2d 946 (Idaho 1993) upheld the power of the State Engineer to impose conditions on the diversions to protect the critical habitat of an endangered species.
73. Bonnie Colby, Mark A. McGinnis and Ken A. Rait, *Mitigating Environmental Externalities Through Voluntary and Involuntary Water Reallocation: Nevada's Truckee-Carson River Basin*, 31 NATURAL RESOURCES J. 757 (1991).
74. Reclamation Projects Authorization & Adjustment Act of 1992, Pub. L. No. 102-575, 106 Stat. 4600, (October 3, 1992).
75. *Id.* § 3405.
76. Gordon W. Fassett, *Wyoming's Instream Flow Law*, in this book at Chapter 21, reports that the Wyoming law, which limits instream flows to fishery protection and has stringent protections for existing users, "provides some assurance to other appropriators that the amounts flowing in these streams during times of regulation should be the minimum amount necessary to protect fishery and not a subjective or idealized flow requirement."

77. See MICHAEL P. COHEN, *THE PATHLESS WAY: JOHN MUIR AND AMERICAN WILDERNESS* (Madison: Univ. of Wisconsin Press, 1984).
78. A recent Office of Technology Assessment study of biological diversity observes that "[f]ew programs are designed specifically to maintain biological diversity, even though some programs may indirectly have this as one of their objectives." OFFICE OF TECHNOLOGY ASSESSMENT, *TECHNOLOGIES TO MAINTAIN BIOLOGICAL DIVERSITY* 225 (1987).
79. J. David Aiken, *First Nebraska Instream Appropriation Granted*, 1 RIVERS 231 (1990).
80. See *Proceedings of 1988 Conference on Drought Management*, U.S. Army Corps of Engineers.
81. U.S. Army Corps of Engineers, *The National Study of Water Management During Drought: Report on the First Year of Study* (1991).
82. See, e.g., WYO. STAT. § 41-3-901(a)(ii) (1977 & Supp. 1992); WASH. REV. CODE ANN. § 90.44.030 (1992); IDAHO CODE § 42-226 (1990); COLO. REV. STAT. § 37-90-102 (1990); *Hudson v. Dailey*, 105 P. 748 (Cal. 1909); *Mountain Lake Mining Co. v. Midway Irrigation Co.*, 149 P. 929 (Utah 1915); *City of Albuquerque v. Reynolds*, 428, 379 P.2d 73 (N.M. 1963).
83. See COLO. REV. STAT. § 37-90-137(9)(a), § 37-90-103(10.5) (1990 & Supp. 1992); NEB. REV. STAT. § 6-636 - 637 (1988). For a state-by-state analysis of how the appropriation states are addressing this increasingly important issue, see Peck & Nagel, *Legal Aspects of the Impact of Stream-Aquifer Interaction on Water Rights in the State of Kansas*, (Kansas Water Resources Research Institute Bulletin No. 261, March 1987).
84. See David H. Getches, *Water Planning: Untapped Opportunity for the Western States*, 9 J. ENERGY L. & POL'Y 1 (1988).
85. Charles F. Wilkinson & H. Michael Anderson, *Land and Resource Planning in the National Forests*, 64 OR. L. REV. 1 (1985), citing U.S. Dept. of Justice, Office of Legal Counsel, *Federal Non-Reserved Rights* (June 16, 1982).
86. See GEORGE C. COGGINS & CHARLES F. WILKINSON, *FEDERAL PUBLIC LAND AND NATURAL RESOURCES LAW* 405-09 (Mineola: Foundation Press, 2d ed. 1987).
87. *Cappaert v. United States*, 426 U.S. 128 (1976).
88. *United States v. New Mexico*, 438 U.S. 696 (1978).
89. *Sierra Club v. Block*, 622 F.Supp. 842 (D. Colo. 1985).
90. *United States v. Jesse*, 744 P.2d 491 (Colo. 1987).
91. District Court Colorado, Case No. W-8439-76, decided Feb. 12, 1993. See Teresa A. Rice, *Colorado Water Court Denies Reserved Rights Claims for Channel Maintenance Flows*, 4 RIVERS 146 (1993).
92. *State Water Resources Control Board v. United States*, 749 P.2d 324 (Cal. 1988), *cert. denied*, 488 U.S. 824 (1988).

93. See, e.g., *California v. United States*, 438 U.S. 645 (1978); *County of Trinity v. Andrus*, 438 F. Supp. 1368 (E.D. Cal. 1977). See generally Coggins & Wilkinson, *supra* note 85, at 409-12.
94. 33 U.S.C. §§ 1251-1376 (1988 & Supp. 1991). Under the Clean Water Act, minimum streamflows could become a component of receiving water quality standards, but how this would interface with state water rights is unclear. In addition, under § 404, the Corp of Engineers can impose streamflow conditions to obtain a 404 permit, required for any channel alteration, obstruction, diversion, or even dredging. See A. Dan Tarlock, *The Endangered Species Act and Western Water Rights*, 20 LAND & WATER L. REV. 1, 12-13 (1985).
95. 16 U.S.C. §§ 1531-1543 (1988 & Supp. 1991). This statute may require reservoir releases for endangered or threatened species. See *Carson-Truckee Water Conservancy Dist. v. Watt*, 549 F.Supp. 704 (D. Nev. 1982), *aff'd* 741 F.2d 257 (9th Cir. 1984). The ESA can impact state projects as well. See *Nebraska v. REA*, 12 Env'tl. Rep. Cas. (BNA) 1156 (D. Neb. 1978) (North Platte River project delayed until utilities financing project released flows for whooping crane), noted in Tarlock, *supra* note 92, at 20.
96. 16 U.S.C. §§ 661-666c (1988 & Supp. 1991). See Tarlock, *supra* note 92, at 56-57 (potential impact on federal water projects by forcing streamflow releases and other wildlife mitigation measures via NEPA).
97. *United States v. Glenn-Colusa Irrigation District*, 788 F. Supp. 1126 (E.D. Cal. 1992). See Gregory S. Weber, *The Endangered Species Act: New Weapon Enters Sixty-year Fish Fight*, 3 RIVERS 3, No. 4 (1992): 276.
98. *Sierra Club v. Lujan*, No. MO-91-CA-069, 1993 U.S. Dist. LEXIS 3361 (W.D. Texas Jan. 30, 1993).
99. See Lori Potter, *People Preserving Rivers: The Public and its Changing Role in Protecting Instream Flows*, in this book at Chapter 3.
100. *Illinois Central R.R. v. Illinois*, 146 U.S. 387 (1892).
101. *United Plainsmen Ass'n v. North Dakota State Water Conservation Comm'n*, 247 N.W.2d 457 (N.D. 1976).
102. *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983), *cert. denied*, 464 U.S. 977 (1983).
103. *Kootenai Env'tl. Alliance, Inc. v. Panhandle Yacht Club, Inc.*, 671 P.2d 1085 (Idaho 1983); *Montana Coalition for Stream Access, Inc. v. Hildreth*, 684 P.2d 1088 (Mont. 1984); *Montana Coalition for Stream Access, Inc. v. Curran*, 682 P.2d 163 (Mont. 1984).
104. See *Caminiti v. Boyle*, 732 P.2d 989 (Wash. 1987) and *Robinson v. Ariyoshi*, 658 P.2d 287 (Haw. 1982).
105. Harrison C. Dunning, *Instream Flows and the Public Trust*, in this book at Chapter 4. See also Dunning, *The Public Trust Doctrine and Western Water Law: Discord or Harmony*, 30 ROCKY MTN. MIN. LAW INST. 17-1 (1984); Roderick E. Walston, *The Public Trust Doctrine in the Water Rights Context: The Wrong Environmental Remedy*, 22 SANTA CLARA L. REV. 63 (1982).

106. See James Huffman, *Instream Water Use, Public and Private Alternatives*, in WATER RIGHTS: SCARCE RESOURCE ALLOCATION, BUREAUCRACY, AND THE ENVIRONMENT 299 (T. Anderson ed. 1983).
107. See A. Dan Tarlock, *The Recognition of Instream Flow Rights: New Public Western Water Rights*, 25 ROCKY MTN. MIN. L. INST. 24-1, 24-27 to 24-29 (1979).
108. See, e.g., COLO. REV. STAT. § 37-92-102(3) (1990) (Colorado water conservation board); IDAHO CODE § 67-4301 - 4311 (1989) (the governor and Parks and Recreation Board); NEB. REV. STAT. § 46-2,110 (1988) (Nebraska natural resources districts and Game and Parks Commission); N.D. CENT. CODE § 61-02-30 (1985) (North Dakota Water Commission); OR. REV. STAT. § 536.410 (Supp. 1992) (Oregon Water Resources Commission).
109. ALASKA STAT. § 46.15.145 (1991).
110. See Mary Lu Harle, and Christopher C. Estes, *An Assessment of Instream Flows in Alaska*, in this book at Chapter 9.
111. A. Any person or the state of Arizona or a political subdivision thereof may appropriate unappropriated water for domestic, municipal, irrigation, stock watering, water power, recreation, wildlife, including fish. ... The person or the state of Arizona or a political subdivision thereof first appropriating the water shall have the better right.

ARIZ. REV. STAT. ANN. § 45-151 (1987 & Supps. 1991 & 1993).
112. See Herb Dishlip, *Instream Flow Water Rights: Arizona's Approach*, in this book at Chapter 10.
113. See Tom Scribner, *Arizona Water Law: The Problem of Instream Appropriation for Environmental Use by Private Appropriators*, 21 ARIZ. L. REV. 1095, 1121 (1979).
114. Potter, *supra* note 99.
115. Gregory J. Hobbs, Jr., *Water Rights Takings in the Post-Lucas Era*, (Eleventh Annual ABA Water Law Conference, San Diego, California, February 11-12, 1993).
116. Lucas v. South Carolina Coastal Council, 112 S.Ct. 2886 (1992).
117. Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council*, STAN. L. REV. (forthcoming 1993).

PART II:

State Programs

An Assessment of Instream Flow Protection in Alaska

Mary Lu Harle
Christopher C. Estes

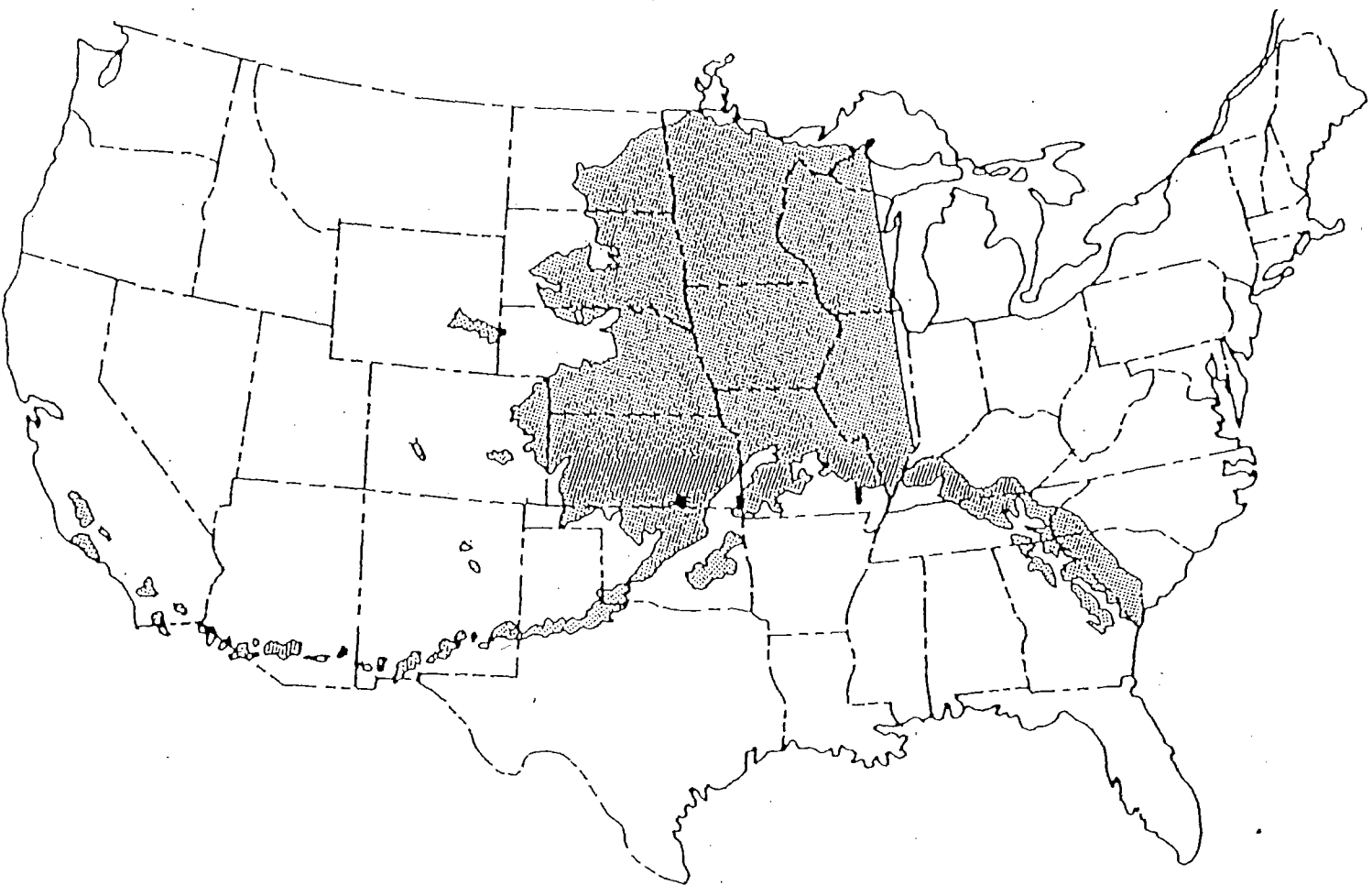
Introduction

Alaska is the largest state in the nation. Its 586,000 square miles are equivalent in area to 20 percent of the 48 contiguous states (Figure 1). Alaska's abundance of rivers, lakes, wetlands, snowfields, and glaciers contribute an estimated 40 percent of the Nation's surface waters.¹ Three rivers, the Yukon, the Kuskokwim, and the Copper, are among the ten largest rivers in the United States. Alaska has more than 3 million lakes ranging from pond size to 1,000 square miles. Water quality, for the most part, is excellent throughout the state.

Despite Alaska's apparent wealth of water, its water resources are not distributed uniformly either geographically or seasonally. Precipitation ranges from an average of five inches on the Arctic Slope to an average of 300 inches per year in the maritime rain forests of Southeast Alaska. Glaciers and icefields cover about five percent of Alaska and affect the timing and quantity of runoff.² Many of Alaska's rivers are laden with glacial flour during the open water season. Others are affected by ice-jam flooding during spring breakup; and, many are ice covered much of the year. Permafrost limits the occurrence and availability of groundwater in some areas of northern and interior Alaska. Alaska's size, geology, climate, limited surface transportation network, and the variability of water availability throughout the state all serve as challenges to water users and managers.

Instream uses of Alaska's water are important to support the state's people and economy. Instream flows in Alaska sustain many of North America's most productive fish and wildlife populations. Alaskan Natives depend upon subsistence use of fish and wildlife for their livelihood and preservation of their culture. Following the oil industry and government sector, commercial and sport fishing are the next largest sources of income to the state. Tourism is the fourth largest industry in Alaska and is based in part on water related recreational opportunities such as fishing and hunting, canoeing, kayaking, rafting, hiking, camping, and sightseeing.³ Larger rivers function as important transportation corridors for boats and barges to move goods and people. Small planes access remote areas by using lakes and rivers to land and take off. Frozen rivers and lakes also serve as important winter transportation corridors.

Figure 1. Comparison of Alaska with the "48" contiguous states.



With the majority of Alaska's water resources currently unappropriated, the stage of water resources development in Alaska is similar to that of the western United States 150 years ago. As with other states, however, population growth accompanied by increased urbanization and resource development is beginning to cause water use conflicts. Water required for mining processes and resulting changes to water quality can compete and conflict with recreational boating, fishing, and community water supply systems. Hydroelectric development is sometimes incompatible with fishery needs. At times, water availability can be insufficient to both rear fish in hatcheries and to sustain instream flows needed by indigenous fish. Public water supply needs can also conflict with instream uses of water. Offstream recreational based water uses, such as artificial snow making for ski areas, occasionally compete with instream flow dependent recreation uses.

In addition to these use conflicts caused by population growth, a new program recently initiated by the State of Alaska to promote the sale and export of Alaska's water to other states and countries may further expedite the development and allocation of Alaska's water resources. The continued viability of the State's commercial, sport and subsistence fisheries; petroleum, mining, recreation and tourism industries; and public and domestic water supplies are all dependent on wise water quantity and quality resource management.

Alaska Water Law

Alaska's Constitution

When Alaska was admitted to the Union in 1959, the framers of the constitution recognized the importance of Alaska's water resources in both its constitution and statutory law. Alaska's Constitution provides that the state's resources are to be managed as a public trust, and that water will be allocated under the doctrine of prior appropriation.⁴ The Alaska Constitution, Article VIII, Section 3 states that "Wherever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use." Section 13 expands the concept by reserving all surface and subsurface waters to the people for common use, makes them subject to appropriation, and provides that prior appropriation gives prior right. Public water supply is the only constitutionally recognized preferred use. The constitution also states that appropriations are subject to preferences established by law and to the general reservation of fish and wildlife. The general reservation clause, at a minimum, enables the Alaska Legislature to enact laws to reserve water to protect fish and wildlife habitat. Read most broadly, it is a mandate to reserve waters for fish and wildlife habitat. At present, there has been no court determination as to whether the constitution enables or requires the Alaska Legislature to authorize such reservations.

The Alaska Water Use Act

The Alaska Water Use Act was enacted in 1966.⁵ The statute established procedures to maintain existing rights and obtain new rights to divert, impound, or withdraw surface and ground waters in the state. Under this act, the Alaska Department of Natural Resources (DNR), through its Division of Water, is assigned the authority to administer the act. The statutory procedure to obtain water rights requires filing an application for water rights with DNR. After public notice, a permit to appropriate may be issued to the applicant, granting the right to develop a water source and establish beneficial water use. Once the water is beneficially used and the permit conditions have been met, a certificate of appropriation is issued. Water rights may be sold, leased, or transferred with the permission of DNR.

Although specific provisions for reserving instream flows were not included in the original act, several aspects relating to instream protection were included. The act included sanitary, fish and wildlife, and recreational uses of water among the beneficial uses. The act also allowed for limited protection of instream uses by requiring the DNR commissioner to evaluate public interest criteria when adjudicating water rights. This includes consideration of the potential effect of water uses on fish and game resources, recreation, and public health. These criteria, as set forth in Alaska Statute 46.15.080, follow below:

- (a) The commissioner shall issue a permit if he/she finds that:
 - (1) the rights of a prior appropriator will not be unduly affected;
 - (2) the proposed means of diversion or construction are adequate;
 - (3) the proposed use of water is beneficial; and
 - (4) the proposed appropriation is in the public interest.

- (b) In determining the public interest, the commissioner shall consider:
 - (1) the benefit to the applicant resulting from the proposed appropriation;
 - (2) the effect of the economic activity resulting from the proposed appropriation;
 - (3) the effect on fish and game resources and on public recreational opportunities;
 - (4) the effect on public health;
 - (5) the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation;
 - (6) harm to other persons resulting from the proposed appropriation;
 - (7) the intent and ability of the applicant to complete the appropriation; and

(8) the effect upon access to navigable or public waters.

Based upon the evaluation of these criteria, a permit may be issued, subject to conditions necessary to protect the rights of others and the public interest; or, the permit may be denied.

Prior to passage of instream flow legislation in 1980, DNR used this authority as its primary tool for instream flow protection by conditioning permits to maintain streamflows for fish and wildlife. The procedure is of limited value as a management tool because permit conditions do not protect unallocated water from future appropriation. In addition, instream flow conditions on early water use permits were not always taken into account when junior permits were granted on a stream. A clearer procedure therefore was needed to legally establish and maintain instream flows, especially in water bodies where little or no competition for water presently existed.

In 1976, DNR contracted with Professor Frank J. Trelease to evaluate Alaska's water resources planning and administration of water rights. Among his recommendations was one to amend the Water Use Act to authorize state agencies to apply to DNR for reservations of flows for fish and wildlife, recreation, and water quality purposes.⁶ His report also contained a proposed bill to accomplish this recommendation. This bill was introduced in the Alaska Legislature in 1977 but failed to pass.

Alaska's 1980 Instream Flow Law

Instream flow amendments to the Water Use Act were eventually enacted in 1980 following several years of debate. The 1980 instream flow law amended the Water Use Act in three important ways. First, a reservation of water for instream use was defined as an appropriation. Second, navigation, transportation, and maintenance of water quality were added as beneficial uses. Third, a new section, AS 46.15.145, was added detailing the process of reserving water for instream uses.⁷

The instream flow statute allows any local, state, or federal government agency or any private person or organization to apply for a reservation of water for one of the recognized instream uses. A reservation of water is a water right to maintain a specified instream flow or level of water at a specific point or part of a stream or water body throughout the year or for specified times. The Alaska instream flow statute is among the few state instream flow statutes that allow private citizens and organizations to apply for an instream or lake level reservation. Alaska's law therefore allows direct private sector participation to select, apply for, and maintain instream flows.

Four instream uses are recognized for protection under Alaskan law:

- protection of fish and wildlife habitat, migration, and propagation;

- recreation and park purposes, which by regulation include contact and secondary recreation and park purposes including scenic, natural, historic, or cultural values;
- navigation and transportation purposes, which by regulation include boats or float planes and tracked or wheeled vehicles during the winter; and
- sanitary and water quality purposes.

The statute also provides for quantification of water required to sustain instream water uses, establishment of a priority date, and issuance of a certificate of reservation under the state's existing water rights system.

Procedure For Establishing An Instream Flow

Regulations implementing the instream flow statute were adopted in 1983 and were amended in 1990. Regulation 11 AAC 93.142 specifies the information that must be included in an application. Applications must include the purpose of the proposed reservation, the location of the proposed reservation, the need for the reservation, the quantity proposed to be reserved, the method used to quantify the requested flow or lake level, data substantiating the request, and an application fee. The regulations do not require that any one method be selected to quantify an instream flow reservation request. However, applications must identify and include a description of the method used. The fee for instream flow applications is presently \$500 per application.⁸ State agencies are the only entities that are exempt from the application fee.

A new \$50 annual administrative service fee was adopted by regulation in April, 1993. Domestic water use of less than 1500 gallons of water per day, state agencies, and reservations of water for a public benefit are exempt from this fee.⁹ The term "reservation of water for a public benefit" has been described as a reservation that is granted to an individual, group, or agency when the reservation of water is for the public good and does not generate revenues for profit. Reservations for the protection of fish and wildlife and non-commercial recreation would therefore be exempt from paying the annual administrative fee.¹⁰

The date and time that an application is judged complete and is accepted by DNR establishes the priority date for the application. Regulations effective in 1990 allow applicants the opportunity to file instream flow applications and receive priority dates by filing estimated quantities. The regulations allow applicants up to three years, with an additional two year possible extension, to complete data collection and analysis and to fully quantify the proposed reservation. This is a significant new change that allows instream flow applicants to receive priority dates in advance of complete quantification of instream flows. After the final instream quantity is determined, an applicant may amend the original application to a different flow if the analysis does not support the quantity of water originally requested. The application can then be adjudicated.

Notice of the proposed reservation must be given by DNR, but is paid for by the applicant. Public notice is required once in a newspaper of general distribution in the vicinity of the proposed reservation of water. In addition, individual notice must be served on prior appropriators who might be affected, the Alaska Departments of Fish and Game (ADF&G) and Environmental Conservation, any federal, state, or local government in whose jurisdiction the proposed reservation would occur, and any others who may have requested notice.

Hearings on a proposed reservation of water may be held if DNR determines they are necessary. Finally, the commissioner must issue a certificate of reservation if four criteria are met. These criteria are:

- the rights of prior appropriators will not be affected by the reservation;
- the applicant demonstrates a need for the reservation of water;
- there is unappropriated water in the stream or water body sufficient for the reservation; and
- the proposed reservation is in the public interest.

The public interest criteria for out-of-stream water uses is applied to evaluate instream uses of water. DNR's decision and rationale for granting, conditionally granting, or denying an application for an instream reservation of water must be in writing.

Certificates of reservation are, by regulation, issued to the applicant by DNR and may be subject to conditions. The applicant is responsible for compliance with the conditions. Once a reservation of water for instream use is granted, the instream quantity reserved is withdrawn from out-of-stream appropriation unless the reservation is formally reduced at a later date as part of a mandatory instream flow reservation review process.

Review of Instream Flow Reservations

Reservations of water for instream uses must be reviewed at least once every 10 years, and can be reviewed any time within the 10 year period if it is deemed necessary. The review determines if the purpose and need for the reservation still apply, if the reservation affects prior appropriators or the public interest, if new information about the reservation is available, if the quantity or level of water reserved is adequate for the purposes of the reservation, and if additional data collection or analysis is needed to review the reservation.

Public and agency notice of the review is given to gather information that may assist in the review. At the conclusion of the review by DNR, findings are written and the certificate of reservation can be continued, amended, or revoked. A similar review is not required for out-of-stream appropriations.

Recent Instream Flow Legislative Proposals

Overview of General Concerns

Since 1989, a number of bills have been introduced in the Alaska Legislature to amend the instream flow provisions of the Water Use Act. Some legislators, agency personnel, and members of the public questioned whether the 1980 instream flow provisions in the Water Use Act were adequate. They questioned whether the existing law complies with the intent of the general reservation of fish and wildlife language in Article VIII, Section 13 of the Alaska Constitution. They also questioned whether the public interest criteria in the law require that effects of proposed water appropriations on fish and wildlife simply be considered, or whether these provisions guarantee instream flow protection for fish and wildlife. A third area of concern was the level of protection provided by certificates of reservation granted by DNR, given that they must be reviewed every 10 years and can be periodically modified or revoked. A fourth area of concern was based on the experience that only eleven instream flow reservations have been granted since the state's instream flow law was enacted in 1980.

Advocates for strengthening instream flow protection increased their efforts to influence legislation in 1991 in response to actions initiated by Governor Walter J. Hickel's administration to investigate opportunities to market and export Alaskan water to drought-stricken western states and other countries. As a follow up to their investigation, the Administration introduced legislation in 1992 to enable the state to better manage the sale of Alaska's water and also gain financial benefit. These instream flow and water marketing legislative proposals are described below.

House Bill 210

In 1989, House Bill 210 was introduced in the Alaska Legislature by Representative Cliff Davidson, Chairman of the House Resources Committee, to guarantee a reservation of instream flows for fish in all fish-bearing waters in the state.¹¹ The bill required that, upon receipt of an application to appropriate water from a river or lake that is important for the spawning, incubation, rearing, or migration of fish, DNR must first reserve an instream flow to maintain existing fish habitat. The amount of water to be reserved was set at 60 percent of the mean annual flow for April through October and 30 percent of the mean annual flow for November through March. The percentages were based on the Tennant Method of estimating instream flow needs.¹² This method was chosen because only mean annual flows are required; and, mean annual flows can be estimated for the many areas of Alaska with only sparse hydrologic data. If there were an insufficient quantity of unappropriated water in a stream or river to satisfy the full amount of the instream flow reservation requirement, the remaining unappropriated water available would have been reserved to the State. The priority date

for these instream flow reservations was to be the date of the act's passage and therefore existing appropriators would not be affected. A junior applicant who wished to appropriate water that had been reserved under this proposal could do so by showing that additional water withdrawals would not harm fish habitat.

House Bill 210 proved to be very controversial. Supporters believed that existing instream flow protection was inadequate to protect instream flow uses for future generations of Alaskans when competition for water increased. In addition, they felt the authority to condition permits was arbitrary and could be misused. Opponents argued that fisheries habitat is not threatened by out-of-stream appropriations in Alaska. They also believed that the 1980 instream flow law and the authority of DNR to condition permits and certificates to protect instream flows provide ample protection for fish habitat.

A second area of contention was that the Tennant Method of determining instream flows could not be uniformly applied state wide, due to the variety of climatic zones and stream characteristics across the state. In addition, all parties agreed the small number of stream gaging stations throughout the state limited the accuracy of estimating streamflows. Amendments to the bill attempted to address these technical issues by requiring DNR to adopt regulations within 18 months to specify the proportion of mean annual or mean monthly flow that would be reserved within each of the six major U.S. Geological Survey (USGS) hydrologic subregions in Alaska (Figure 2). During the 18 month interim period, Tennant's 60 and 30 percent flow regime would be reserved.

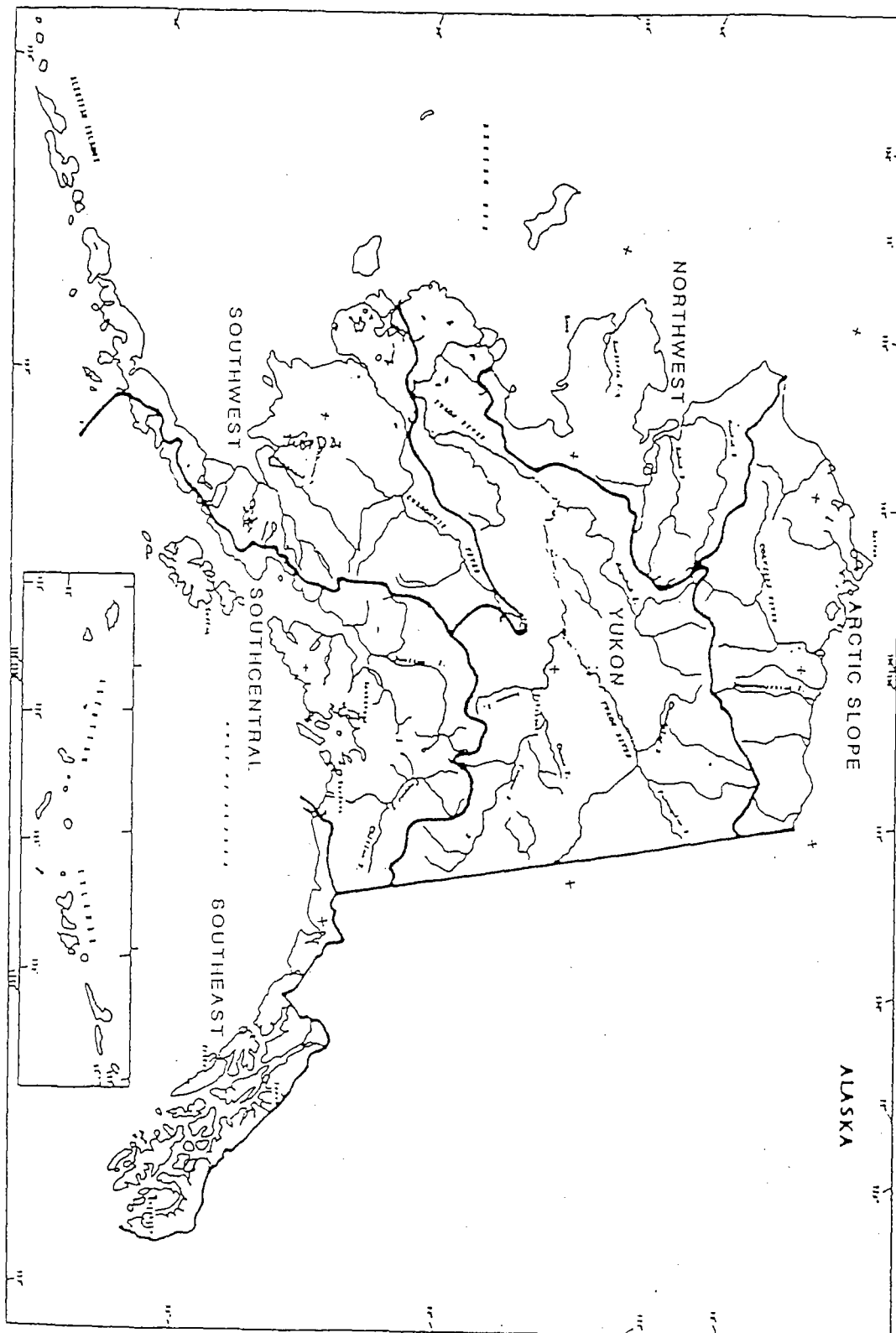
A third area of debate focused on whether House Bill 210 was unconstitutional because it would place instream flow protection ahead of public water supply. Concerns were also raised that domestic uses in rural areas would be harmed. To ensure that the legislation would not adversely affect either domestic water uses or public water supplies, both uses were exempted from the bill.

As a result of the debate and controversy, the bill failed to pass on a floor vote in the House of Representatives, and was not considered in the Senate.¹³

The 1991-1992 Legislature

Based upon experiences gained with House Bill 210, House Bills 353, 354, and 355, were introduced in the 1991 Legislature by Representative Cliff Davidson, Chair of the House Resources Committee, to improve instream flow protection and water management in Alaska.¹⁴ In addition, Senate Bill 442 was introduced by Governor Walter J. Hickel in 1992 to enable the state to market and sell water.¹⁵ All four bills failed to pass. However, in a special session immediately following the adjournment of

Figure 2. United States Geological Survey hydrologic subregions (units) for Alaska.



the 1992 regular session, House Bill 596, an omnibus license and user fee bill that also contained water related provisions, was introduced and passed by the Legislature and signed by the Governor.¹⁶ It became law in July, 1992.

House Bill 353 was a bill to fund the completion of DNR's automated water rights data base to enable storage and retrieval of stream reach data for instream flow reservations. It would also have improved management of other water rights. House Bill 354 would have provided funding to evaluate Alaska's network of surface water stream gaging sites. It would have also funded several new stream gage sites. Both of these bills failed to pass.

House Bill 355 was another proposal to guarantee instream flow reservations for fish, and had many similarities to the 1989 instream flow bill. However, unlike HB 210, HB 355 did not specify a formula or procedure for quantifying the amount of water that would be reserved. It exempted public water supplies, single family domestic uses of water, non-consumptive uses of water and, in most instances, ground water appropriations of 5000 gallons per day or less. Before it was amended and died, HB 355 also included a provision to guarantee instream flow protection for wildlife.

In 1992, House Bill 596 was enacted and included amendments to the Alaska Water Use Act pertaining to water exports and sales.¹⁷ The potential to earn state revenues through large-scale exports of Alaskan freshwater to drought-plagued "Lower 48" states and to Mexico served as an incentive to pass the water related components of this law. DNR, through its Division of Water, is actively investigating the economic feasibility of transporting water, identifying water sources, and conducting discussions with potential buyers of Alaska's water.¹⁸

House Bill 596 prohibits the removal of water from its hydrologic unit of origin to any other place, either inside or outside the state, unless DNR first determines that the water is surplus to instream needs for fish and to the water needs of industry and the public within the hydrologic unit. This instream flow requirement was included to secure passage of the water export provisions. Hydrologic units are defined in the law as the six major hydrologic subregions delineated by USGS (Figure 2). The law also grants DNR the authority to assess a conservation fee for all water exports from these units and further stipulates that sales of water appropriated to the state must be based on fair market value. The protection of instream flows is weakened somewhat by other provisions that allow DNR to adjust instream flow reservations after public notice and consultation with the Alaska Department of Fish and Game.

The requirement to protect instream flows prior to diversion or export from a hydrologic unit is a partial implementation of the general reservation of water for fish and wildlife contained in the Alaska Constitution. However, the new law does not include instream flow protection for wildlife. The large size of the hydrologic units likely means the new law will have little or no impact on diversions of water within the state, or

on the majority of water rights. It will, however, be important in protecting instream flows in streams and lakes that may become sources for water export. Regulations presently being drafted will help define the effectiveness of this law.¹⁹

Alaska's Experience Protecting Instream Flows

State Agency Instream Flow Applications

The ADF&G is the only state agency that has submitted applications for instream flow reservations. It began an instream flow program in 1986 and has filed 53 applications to protect fisheries habitat (Figure 3). Of these applications, ten have been granted and six are currently being adjudicated. Two reservations have been granted based on the Instream Flow Incremental Methodology, while the remaining ADF&G applications are based on the Tennant Method. One application to reserve a flushing flow to maintain channel characteristics in a reach of the Chena River has been filed but has not yet been acted upon. Another application to reserve a lake level for Buskin Lake has also been submitted, but not yet adjudicated. No ADF&G applications have been acted upon by DNR since 1991.²⁰

In May of 1988, the Alaska Legislature enacted a law establishing six recreational rivers in Southcentral Alaska. The law requires that instream flows be reserved on these rivers for recreational purposes.²¹ A cooperative effort between the DNR, ADF&G, and the National Park Service (NPS) was begun to file for instream flow protection for the six river systems. A recreational user survey was completed by the NPS and a draft report prepared on flows needed to protect recreational boating. Some hydrology data collection and analysis has also been completed. However, the majority of analyses required to file for instream flows for ungaged stream segments have not yet been completed due to shortage of funds. To date, recreational instream flows required by the 1988 law have not been reserved.

Federal Agency Instream Flow Applications

The Bureau of Land Management (BLM) is the only federal agency that has filed an application for a state water right for instream flows in Alaska. Instream flows were granted by the DNR in 1989 for Beaver Creek National Wild River (Figure 3) to protect flows for fish and wildlife habitat and for public recreation. The BLM reservation is significant because it is the first instream flow application submitted by a federal agency under state law, and it is also the first federal instream flow application to be granted by the State. BLM is collecting data and plans to file applications for instream flows for the Gulkana River, the Forty Mile River, Birch Creek, Unalakleet River and the Delta River, all of which are designated as National Wild and Scenic Rivers.²²

The U.S. Fish and Wildlife Service (FWS) has adopted a water rights policy that states that the Service will obtain sufficient quantities of water and the legal rights to use that water to manage the refuges, protect endangered species, and to maintain instream flows on FWS refuges. Whenever possible, water rights necessary for FWS facilities and programs will be secured under state law, unless it is determined that state law would provide inadequate protection. However, federal reserved water rights will also be asserted when necessary to protect federal interests in water.²³

Region 7 of the Fish and Wildlife Service, which encompasses the State of Alaska, established a formal water rights program in Fiscal Year 1993. One of the primary goals of the new program is to secure instream water rights to protect habitat for fish and wildlife identified by the Alaska National Interest Lands Act on refuges in Alaska. During Fiscal Year 1994 applications will be prepared for selected rivers and lakes in the 1002 area of the Arctic National Wildlife Refuge.²⁴ Hydrologic data collection began in the summer of 1993 on the Yukon Flats National Wildlife Refuge to support future instream flow applications there. An analysis is also being conducted to identify threats to refuge water resources and to prioritize watersheds and refuges for subsequent hydrologic data collection and preparation of instream flow applications.

Private Sector Instream Flow Applications

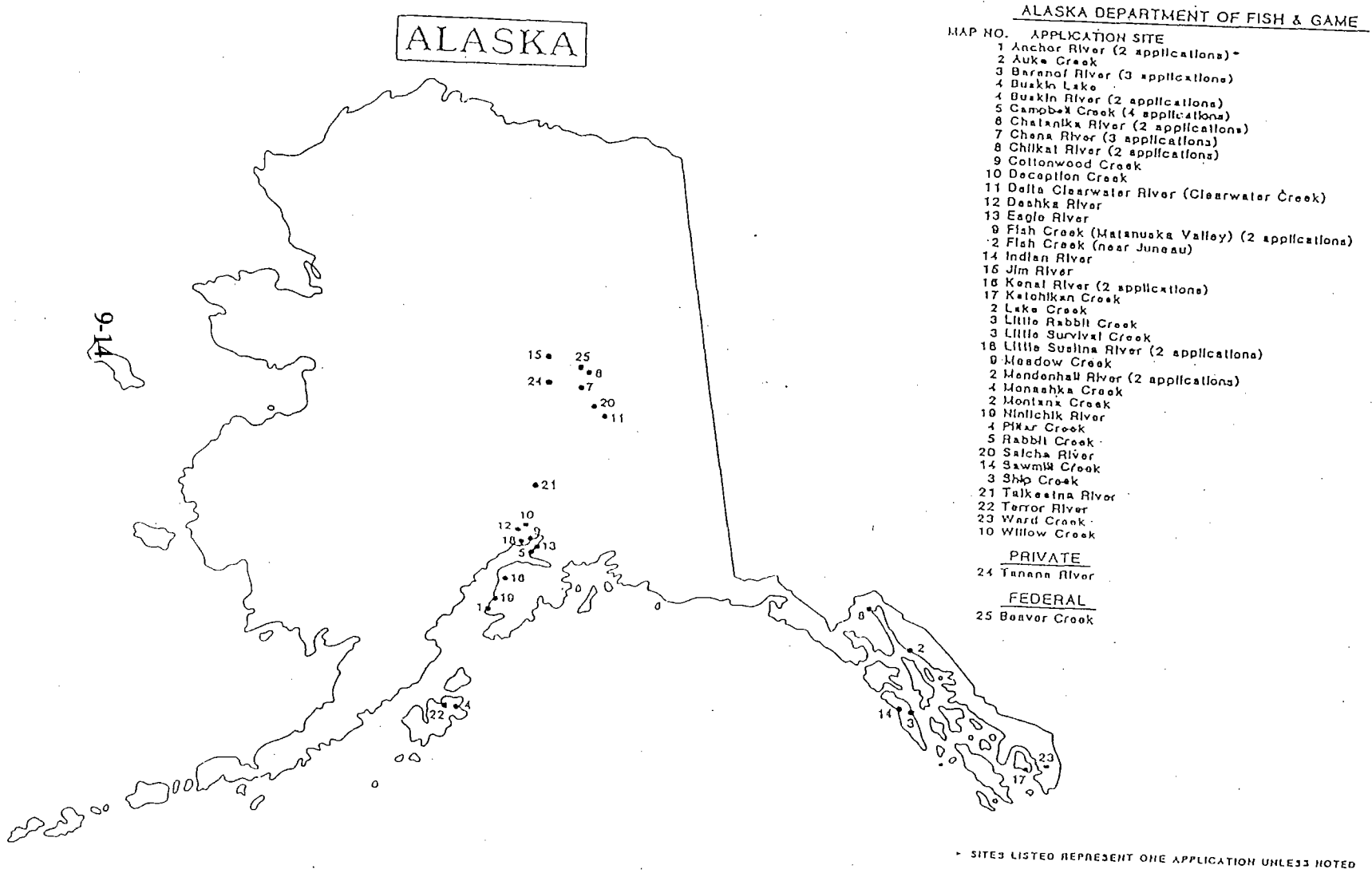
Seven applications have been filed by the private sector since passage of the instream flow law in 1980. Four applications were submitted to DNR in 1983 by the Anchorage Audubon Society to protect fish habitat. Two additional applications were filed in 1983 by private individuals, one for water quality and one to establish a lake level. All of these applications were rejected by DNR. Two of the applications were submitted before the adoption of regulations to implement the 1980 instream flow law, while the others had insufficient information to process the applications.²⁵

In 1992, students at the University of Alaska Fairbanks belonging to the Arctic Unit of the Alaska Chapter of the American Fisheries Society submitted an instream flow application to DNR to protect fisheries habitat in the Tanana River (Figure 3). This application has been accepted by DNR and it is the first instream flow application prepared by a private organization to be accepted. It has not yet been acted upon.

Evaluation of Instream Flow Protection In Alaska

How effective is instream flow protection in Alaska? In the 13 years since Alaska's instream flow law was enacted, portions of only 11 rivers and streams have been granted legal protection by certificates of reservation. A total of 55 applications have been filed by only three organizations. While Alaska's instream flow law is a progressive

Figure 3. Locations of instream flow applications sites (•) in Alaska.



law among the western states, it has fallen short of protecting instream flows on a wide scale basis.

A number of factors limit instream flow protection in Alaska. These include insufficient hydrologic data, costly and lengthy studies and administrative processes, and expensive application fees. Additional discussion of these limitations is provided in the 1992 "Annual Summary of Alaska Department of Fish and Game Instream Flow Reservation Applications".²⁶

The lack of hydrologic data in Alaska is perhaps the most limiting factor in applying for instream flow reservations. Over 99 percent of the rivers and streams in Alaska are ungaged. Altogether, less than 400 USGS stream gaging sites have been established in Alaska since 1908. On the average, no more than 25 percent of these gages are active in any one year due to funding restrictions. This equates to an average of one stream gage per 7,000 square miles in Alaska as compared to the "Lower 48" average of one gage site per 400 square miles. Although the USGS recommends a 10-year record as the minimum data base required to support a statistically reliable regional flow analysis, less than half of the Alaskan gage sites can meet this standard.²⁷

The DNR Division of Water, along with other state and federal agencies such as the FWS and BLM, also collect hydrologic data; however, such data collection is very expensive in most regions of Alaska. Road systems are limited. Travel and field logistics in remote areas, extremes in weather and field conditions, and difficulties such as loss of equipment to bears and other wildlife, make data collection difficult and expensive. In the Arctic and other remote regions of the state, stream gages can only be maintained during the ice-free months without large expenditures of resources. In addition to being difficult and expensive to obtain, data are also spread throughout the various agencies that collect them. Consequently, locating existing data can be a challenge.

Quantifying instream flow requirements for ungaged stream reaches in Alaska requires the use of regional hydrologic models to estimate flow characteristics. Flow and precipitation data collected at a network of index sites throughout the state are among the variables used to develop these models. The limited number and uneven geographic distribution of index sites in Alaska affects the types, precision, and accuracy of model outputs. Whereas mean annual and monthly flows can be estimated for many of the watersheds in Southeast and Southcentral Alaska, insufficient data limits estimates for most basins in the remainder of the state to mean annual flows.

In addition to sparse hydrologic data, accompanying data to support both the need for instream reservations and the quantity of water requested for instream flow reservations is also sparse. These data include biologic data on the location of species during their life stages, recreation user data, and water quality data. These data are also time-consuming and expensive to collect.

The administrative process also serves as a deterrent to potential instream flow applicants. Collecting, analyzing, and completing an application is a significant project. In addition, the mandatory 10-year review of certificates of reservation requires that records be maintained and that more data collection, analysis, and a defense of the reservation may be required in future years. At present, the State does not have a fixed schedule to process instream flow applications. No instream flow reservations have been granted since 1991, and the backlog of applications is developing.

Finally, the \$500 application fee may serve as a deterrent to some applicants. State agencies are exempt from this fee; however, this is a substantial fee for other agencies and private organizations or individuals, especially if more than one application is filed.

Conclusion

Alaska's law to protect instream uses of water is a forward looking law. It allows private persons and organizations, as well as local, state, and federal agencies, to participate in the process of reserving instream flows and lake levels. To date, there is little competition for water and most water bodies remain available for appropriation. This provides a sense of security that the current system is working. However, experience shows that private applications are difficult to bring to fruition and the 10-year mandatory review places instream flow reservations at a comparative disadvantage to out-of-stream appropriations. Accordingly, the debate continues as to whether existing laws and regulations are adequate to prevent over-appropriation and subsequent litigation that other western states are experiencing.

There are several recommendations for ensuring that instream flows will be protected for future generations. First, a statewide network evaluation of stream gage and precipitation monitoring sites is needed, followed by establishment of necessary stream and precipitation index stations, so that estimates of discharge for ungaged streams can be determined for all regions of the state with a reasonable level of accuracy and minimal expenditure of resources.

Second, methods used to determine instream flow requests, such as the Tennant method for water bodies with little or no data, need to be systematically evaluated and refined to calibrate them for use in regions such as the Arctic, where they have not yet been applied. Whenever these methods prove unusable for instream flow determinations in systems facing high levels of competition for water sources, other Alaska-specific methods need to be developed that provide more definitive quantitative instream flow determinations.

Third, the statute requiring 10-year mandatory review of instream flow reservations should be eliminated. This provision places holders of instream flow reservations on uneven footing with out-of-stream appropriations.

Finally, a broad baseline approach, similar to the approaches outlined in House Bills 210 and 355, is required to protect instream values on a statewide or regional basis. In addition, analysis and reservation of instream flows for specific water bodies is needed for high priority rivers, lakes, and wetlands.

Acknowledgments

The authors appreciate editorial suggestions received from: Robert Anderson, Native American Rights Fund; Keith Bayha, U.S. Fish and Wildlife Service; William Beck, Marine Solution Services, Inc; Heather Bradner, former staff to Representative Cliff Davidson, Alaska Legislature; Susan C. Klein, Anchorage Municipal Libraries; Steve Lyons, U.S. Fish and Wildlife Service; Devony Lehner, U.S. Soil Conservation Service; Bunny Sterin, U.S. Bureau of Land Management; Sandra Sonnichsen, Alaska Department of Fish and Game; and John Trawicki, U.S. Fish and Wildlife Service. Appreciation is also extended to Carol Hepler, Alaska Department of Fish and Game for cartographic support and to the Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777-777K) for partial funding.

Notes

1. U.S. GEOLOGICAL SURVEY (USGS), NATIONAL WATER SUMMARY 1987 – HYDROLOGIC EVENTS AND WATER SUPPLY AND USE, USGS WATER-SUPPLY PAPER 2350, 149 (1990).
2. *Id.*
3. INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH (ISER), UNIV. OF ALASKA EXECUTIVE SUMMARY: ALASKA SEAFOOD INDUSTRY SECTOR REPORT, (1992).
4. GORDON HARRISON, UNIVERSITY OF ALASKA, ISER, A CITIZEN'S GUIDE TO THE CONSTITUTION OF THE STATE OF ALASKA, (1982).
5. ALASKA STAT. § 46.15 (1992).
6. FRANK TRELEASE, UNIV. OF WYOMING, COLLEGE OF LAW, RECOMMENDATIONS FOR WATER RESOURCES PLANNING AND ADMINISTRATION - A REPORT TO THE STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES, (1977).
7. ALASKA STAT. § 46.15.145 (1992).
8. ALASKA ADMIN. CODE tit. 11, § 05.010(a)(8)(viii)(B) (1993).
9. ALASKA ADMIN. CODE tit. 11 § 05.010(a)(8)(M) (1993).
10. Letter from Ric Davidge, Director of Water, Alaska Department of Natural Resources, to Mary Lu Harle, Anchorage, Alaska (February 26, 1993).
11. H.R. Res. 210. 16th Legis. 1st Sess. (Alaska 1989).
12. Donald L. Tennant, *Instream flow regimens for fish, wildlife, recreation, and related environmental resources*, 1 FISHERIES (1976) 6-10.
13. Robert T. Anderson, *Alaska legislature considers innovative instream flow law*, 2 RIVERS 255-61 (1991).
14. H.B. 353, 354, 355. 17th Legis. 1st Sess. (Alaska 1991).
15. S.B. 442. 17th Legis. 2nd Sess. (Alaska 1992).
16. 1992 ALASKA SESS. LAWS, 1st Spec. Sess. Ch. 2 (H.B. 596).
17. *Id.*
18. RIC DAVIDGE, DIV. OF WATER, ALASKA DEPARTMENT OF NATURAL RESOURCES, WATER EXPORTS AND SALES. (March 1993 edition).
19. Christopher C. Estes, DIVISION OF SPORT FISH, ALASKA DEPARTMENT OF FISH AND GAME, *Annual Summary of Alaska Department of Fish and Game Instream Flow Reservation Applications*, FISHERY DATA SERIES No. 92-45. (1992).

20. *Id.*
21. ALASKA STAT. § 41.23.420(b) (1992).
22. Personal communication with Bunny Sterin, U.S. Department of the Interior, Bureau of Land Management. Anchorage, Alaska. (1993).
23. Fish and Wildlife Service Manual, 403 FW 1.3, U.S. Department of the Interior, Fish and Wildlife Service (1993), U.S. Department of the Interior, Fish and Wildlife Service.
24. *See* Alaska National Interest Lands Conservation Act (ANILCA), 16 U.S.C.A. § 1002 (1980).
25. Mary Lu Harle, *Private Appropriation of Instream Flows in Alaska*, in *INSTREAM FLOW PROTECTION IN THE WEST*, 157-71, (Lawrence J. MacDonnell et al., eds., 1st ed. 1989).
26. Estes, *supra* note 19.
27. *Id.*

Instream Flow Water Rights: Arizona's Approach

Herb Dishlip

State Water Allocation Laws

The Arizona Legislature enacted the surface water code in 1919. The code specifies the basic procedures for obtaining rights to surface flows primarily through direct diversion of water from a stream or with storage in a reservoir. Central to the code is the requirement that the water must be put to beneficial use on land owned by the appropriator. The code has been modified only slightly in the past 74 years. Although almost all the dependable surface flows were appropriated by 1919, and in many cases their rights adjudicated by court decrees, the Arizona State Land Department (now the Arizona Department of Water Resources (ADWR)) has issued nearly 6,600 surface water rights under the code. There are still 2,300 applications for water rights currently pending before ADWR.

The surface water law states that:

Any person or the state of Arizona or a political subdivision thereof may appropriate unappropriated water for domestic, municipal, irrigation, stock watering, water power, recreation, wildlife, including fish, artificial groundwater recharge, or mining uses, for his personal use or for delivery to consumers. The person or the state of Arizona or a political subdivision thereof first appropriating the water shall have the better right.¹

The application to appropriate requires the applicant to identify several facts associated with the appropriation including the source of the water supply and the nature and amount of the proposed use. For recreation or wildlife purposes, the location and character of the area to be used and the specific purposes for which such area will be used is also required. In determining whether to grant an application ADWR considers several factors, such as whether the proposed use conflicts with vested rights, is a menace to public safety, or is against the interests and welfare of the public. ADWR cannot approve an application for more water than may be put to beneficial use.

Over the years, ADWR has developed rules and procedures to administer the statutes. For example, to decide if a proposed new water use conflicts with senior vested rights, a procedure was developed that allows affected right holders to file a protest with ADWR. Based on information provided by a protestant, a hearing could be required at which the applicant must show that vested rights would not be impacted. The hearing may establish that the protest is unfounded and thus subject to dismissal, or, if the

protest is found to be valid, the application could be rejected. Either way, a permit cannot be issued while protests are pending against the application.

Traditionally, in determining the appropriate volume of water to achieve the desired beneficial use, ADWR uses a value such as an irrigation water duty or a gallons-per-head-per-day requirement (for stockwatering). These values are then compared with the amount of water requested to ensure that appropriations are not permitted for excessive amounts of water.

Early Instream Flow Applications

Established appropriation procedures worked satisfactorily for most conventional applications where water was diverted from the stream and consumed at another location. However, in 1979 ADWR was faced with two applications that did not meet these conventional standards. The Nature Conservancy applied for appropriative rights for recreation and wildlife purposes, not involving storage in a reservoir or the diversion of water, but rather instream uses. These new instream flow applications placed ADWR in the position of having to consider all the regular factors required in granting a new permit, but the context was entirely different.

Since the applications raised many legal issues, ADWR decided to hold a hearing on an application to help determine exactly what Arizona law would allow. The application by The Nature Conservancy for instream flows on Ramsey Creek and O'Donnell Creek was selected as the example case. The application was protested by other water users in the area. The primary issue, whether a diversion was required to obtain an appropriative right, was discussed at length. Other key issues were whether wildlife habitat preservation and retention of aesthetic values are beneficial uses for which instream flows may be appropriated and whether private parties and federal agencies, as well as state agencies, may file applications for such appropriations.

In April, 1983 ADWR issued its decision and order approving the permit to appropriate by concluding that Arizona law allows the appropriation of water for instream uses for wildlife and recreational purposes. Arizona statutes neither expressly authorize nor expressly exclude instream appropriations. However, the Arizona Court of Appeals had provided ADWR with guidance. In 1976 the court stated that waters could be appropriated for *in situ* use—without a diversion—for recreation and fishing purposes.²

While this statement was dictum, the *McClellan* court's reasoning was persuasive. The court conceded that "originally, the concept of 'appropriation of waters' consisted of the diversion of that water with the intent to appropriate it and put it to beneficial use."³ That concept, however, evolved. Before 1941 the requirement of a diversion was

consistent with the purposes for which an appropriation was made, namely, domestic, municipal, irrigation, stock watering, water power and mining uses. With the addition of "wildlife, including fish" in 1941 and "recreation" in 1962 as permissible uses that "could be enjoyed without a diversion"—the idea of an *in situ* appropriation was introduced. The *McClellen* court reasoned that, by authorizing beneficial uses that could be realized without a diversion, the legislature implicitly approved those types of appropriations. Similarly, it could be argued that often an instream appropriation is necessary to effect a particular wildlife or recreational use.

Instream Flow Permit Conditions

After concluding that the statutes allow for instream appropriations, ADWR went on to note that both instream flow applications and conventional diversionary rights were similar under most aspects of administration. This means that if any person or the federal government could apply for a diversion-related right, then they also could apply for an instream right. Likewise, beneficial use must be proven to obtain such a right, the right could be assigned to another person if property was sold, and the right could be subject to the change of use or the sever and transfer provisions of the surface code.

Because of these latter considerations, several conditions were placed on the permit issued to The Nature Conservancy. The conditions that were agreed to at the hearing by The Nature Conservancy provided some certainty to the protestants that their senior rights would be protected from a change of use sometime in the future. The conditions, which have been included in all subsequent instream appropriations, were:

- There shall be no impoundments of public waters other than by the existing dams.
- There shall be no interference with the natural flow of the creek other than by the existing dams.
- There shall be no consumptive use of public waters other than as caused by the natural habitat.
- There shall be no change in water quality because of the Permittee's use of these public waters other than as caused by the natural habitat.

The permit also made it clear that the new appropriation is subject to existing vested water rights. A final provision required The Nature Conservancy to prove beneficial use by maintaining records of stream flows of Ramsey Creek and O'Donnell Creek and submit those records to ADWR as proof of appropriation. ADWR reasoned that, for instream uses, streamflow is both the measure and the nature of the use. Therefore, requiring the applicant to measure streamflow for a period of time constituted proof that the appropriation was being put to beneficial use.

Following ADWR's decision to issue instream flow permits for Ramsey and O'Donnell Creeks, The Nature Conservancy declined the permit for O'Donnell Creek after determining that they had underestimated available streamflow and water requirements and that the permitted amount would be insufficient to maintain the stream resources. The application was resubmitted at a higher flow volume and an assessment is presently being conducted by The Nature Conservancy to justify the revised amount. The permit for Ramsey Creek was accepted by The Nature Conservancy and on November 14, 1990, TNC was granted a Certificate of Water Right, the first instream flow water right to be issued in Arizona.

Current Instream Flow Activity

As of February 1993, ADWR had 68 active instream flow applications on file. Table 1 lists these applications. Of these applications, two have been granted Certificates of Water Rights (CWR), nine have advanced to permit status, and the remaining 57 are in various stages of assessment. All the instream flow rights issued in Arizona to date have been granted in the name of only three entities: The Arizona Nature Conservancy, the Bureau of Land Management (BLM), and the Tonto National Forest.

Development of Criteria to Substantiate Instream Flow Applications

During the early 1980's ADWR received much interest regarding potential applications for instream flow rights, but most of the applicants hesitated to file applications because of the costly and time consuming process of collecting data to support the applications. However, some applicants indicated that they would be prepared to commit the resources to make the filings if ADWR would publish criteria for evaluating the applications and standards of proof for supporting claims. They offered the expertise and assistance of their agencies in helping ADWR develop those criteria.

Before proceeding with a rulemaking process, ADWR attempted to get a clearer understanding of the objectives that needed to be achieved. A review of all applications was made to determine the kinds of information provided and the nature of the protests. All applications for instream flows were based on fish and wildlife or recreation uses. For the most part, the fish and wildlife uses were related to riparian habitat maintenance and fishery habitat. Recreational uses were geared much more to aesthetic values such as hiking or camping by a live stream, rather than more quantifiable uses such as rafting, floating, or swimming. The length of stream reaches was generally short and varied from less than a mile in several cases to more than 20 miles for the San Pedro River and Verde River. For the longer reaches, only a few of the applications requested a different flow rate for different stream sections based on gains or losses to streamflow. Most applications were for a constant year-round minimum flow although several asked for seasonal or monthly variations.

Most of the applications provided information on the fish and wildlife habitat the instream flow is intended to preserve. One application, the BLM's Burro Creek application, provided extensive technical and scientific information that evaluated instream flow requirements. Nearly all applications were based on historic flows recorded at nearby USGS gaging stations rather than an in-depth evaluation of habitat needs.

Adoption of Interagency Task Force Approach

To move ahead effectively on instream flow applications, ADWR needed to take steps toward resolving remaining policy, legal, and technical considerations and develop rules. Six options were considered:

- Sign an interagency memorandum of understanding with the Arizona Game and Fish Department for consultation;
- Organize an interagency task force to work on the issues - the task force would be open to both governmental and nongovernmental entities;
- Hire an independent consultant to prepare a report and make recommendations on the issues;
- Perform any technical analyses in-house using planning and hydrology staffs;
- Approach the legislature with a bill that would specifically deal with instream flow appropriations; or
- Do nothing as comprehensive rules, but rather let the issues sort themselves out on a case-by-case basis using the hearing process.

Considering the amount of support received from the applicants and their desire to help in the formulation of rules, ADWR decided to use the interagency task force approach.

The task force was organized in December, 1986. Individuals from both federal and state governments, the universities, and the private sector were invited to participate. Two subcommittees were established to deal with technical issues. The Biological Subcommittee was charged with the investigation of various methodologies in use for evaluating flow requirements for wildlife habitat and to make a recommendation on the techniques that would be most useful in Arizona. The Hydrologic Subcommittee was asked to investigate methods for estimating historical flows for streams where no gage records exist. This historical flow information is intended to be used in conjunction with the biological information to determine if the flow rates requested in the application are reasonable.

The quality of the input which ADWR received from the Task Force was outstanding and extremely valuable. The Biological Subcommittee developed a report on the techniques and methods that could be used for wildlife habitat assessment. Their

analysis included consideration of the costs, manpower requirements, and pitfalls inherent in each method. Their report also recognized that, in many areas where there are no competing water users, a less rigorous method of analysis may be acceptable. The Hydrologic Subcommittee completed a report containing hydrologic criteria for instream flow assessments. The report focused on correlative techniques and on the need and methods used to measure flows for a period of time after a permit is issued. In addition to the subcommittees' efforts in the preparation of technical materials, most of the participants of the Task Force responded to a request that they provide their opinions on several legal and policy issues.

Adopted ADWR Procedures

Because of the efforts of the Instream Flow Task Force, in December, 1991 ADWR issued a Guide to Filing Applications For Instream Flow Water Rights in Arizona. By publishing the Guide, ADWR formalized the procedures for applying for an instream flow right and provided the guidance desired by the regulated community before committing the resources necessary to acquire such rights. The Guide provides instruction regarding the instream flow appropriation process, including minimum administrative and technical requirements for substantiating the proposed appropriation. Methodologies available for quantification of instream flow requirements of fish, wildlife, and recreation are discussed in detail. In addition, the guide describes acceptable methodologies for characterizing the streamflow regime and quantifying the available streamflow. A comprehensive reference list is included in the Guide to help direct potential applicants to additional sources of information and publications dealing with various aspects of instream flows.

The process of appropriating an instream flow for a stated beneficial purpose is as follows:

STEP 1. Pre-Application Conference with Arizona Department of Water Resources

The applicant is to contact the Surface Water Rights Section Manager, Operations Division to meet with ADWR technical and administrative staff to discuss the proposed instream flow appropriation. The purpose of the meeting is to make the applicant aware of ADWR's requirements for appropriating public water for this type of beneficial use, to answer any questions, and to avoid potential problems during the application process. The applicant also may be able to determine how other applicants in similar circumstances designed their data collection and analysis programs.

The meeting preferably should occur before any data collection, but must occur before analysis of the minimum of one year of streamflow measurement data required to obtain a permit. There are several methodologies available for assessing the need for an instream flow and the availability of the water supply. Meeting with ADWR's staff early

in the appropriation process provides the applicant with direction regarding which assessment method would adequately determine streamflow requirements and availability.

STEP 2. Begin or continue data collection

The collection of streamflow measurements should be one of the first steps of the assessment process because nearly all methods of assessing instream flow requirements are dependent upon measured streamflow data. This data also provides the applicant and ADWR with information regarding the availability of the water supply during a given time period. In addition, the measure of any permitted beneficial use will be stated in terms of the rate of flow.

STEP 3. File the appropriation application

The Application for Permit to Appropriate Public Water must be filed with ADWR's Operations Division in Phoenix. The application must be submitted on a form provided by ADWR.

The submitted application is subject to review for acceptance. Therefore, all questions on the form must be answered as completely as possible. If a submitted application is in error or deficient, the applicant will be required to correct the application, or the application may be subject to rejection. Additional time may be granted if for good cause and if requested in writing.

The filing date of the application is the priority date of the appropriation. If an application is found to be deficient and the applicant fails to resubmit the correct application within 60 days of notice of the error or omission, ADWR will void the original priority date.

Monthly or seasonal streamflow rates originally claimed on an application to appropriate may be amended based on the results of the study described in Step 4. This is not considered a deficiency in the original application and can be accomplished without the loss of the priority date.

STEP 4. Conduct data analysis and submit report

Before this step, the applicant should have met with ADWR's staff to formulate a proposed method of study to determine instream flow requirements for the proposed beneficial use and the availability of the water supply to meet those requirements.

A minimum of one year of streamflow measurement data is required to be submitted by the applicant before a permit to appropriate the water will be issued. In addition, the applicant is required to submit a report of the results and conclusions of the study based on the methodology developed in the prior meeting with the ADWR's staff.

The study should be submitted at the time of filing of the appropriation application, but must be submitted within two years after the filing date. If the required report is not submitted by the specified deadline, the application will be rejected.

The submitted report must, at a minimum, include:

- ✓ A description of both the streamflow data-collection method used in the study and method of assessment of streamflow requirements for the proposed appropriation.
- ✓ A description of the beneficial use intended for the instream appropriation. At a minimum, this description must describe the relationship between the required streamflow and the benefits received by fish, wildlife or recreation activities.
- ✓ The analysis and raw data of actual streamflow measurements of the proposed source of water collected for a minimum of one year, with at least one on-site measurement taken each month of claimed beneficial use or at least three random on-site measurements taken during each primary flow season (e.g., during spring runoff, prior to onset of monsoonal rains) of claimed beneficial use. Separate flow rates must be requested for each month or each flow season.
- ✓ A description of the streamflow and the resources associated with the instream flow. This includes fish and wildlife species, riparian vegetation, and stream channel and flow characteristics.
- ✓ An assessment of the quantity of water historically available at the location of the proposed instream appropriation.

STEP 5. Public notice of application and opportunity for protest

Once ADWR judges an application to be complete and correct and has received an instream flow report that substantiates claimed flows, it will issue an official public notice of the proposed appropriation. The proposed appropriation is subject to protest during the 60 day period from the date the public notice is issued. The proposed appropriation may be protested on the grounds that the proposed use would impact a prior-vested water right, that the appropriation is not in the best interest of the public, or that the appropriation presents a hazard to public safety.

If a protest is submitted against the proposed appropriation, the applicant should attempt resolution with the protestant. If a protest is not resolved within a reasonable amount of time, ADWR will review the application and the submitted protest. ADWR may then conduct a public hearing on the matter, dismiss the protest, or reject the application.

The process of resolution of any submitted protests may consume substantial amounts of time, and delay any eventual issuance of a permit. It is therefore advantageous to the

applicant to have determined valid and supportable flow-rate requests. Strict control and attention to detail in conducting streamflow measurements may prevent unnecessary delays in the administrative procedure.

STEP 6. Issuance of a Permit to Appropriate Public Water

When the analysis of the submitted report and data by ADWR's staff concludes that the minimum requirements have been satisfied, a permit is issued to the applicant. In addition to ADWR review, technical review and comment on the report may be requested from the Arizona Game and Fish Department. The permit may contain conditions or other stipulations concerning the perfecting of the instream appropriation.

STEP 7. Issuance of a Certificate of Water Right

The permit holder is required to prove that the instream flow water right is being used in a manner consistent with terms of the issued permit. A minimum of four years of streamflow measurement data is required before ADWR may consider the proposed appropriation perfected. Prior to the permit becoming a candidate for certification the applicant must submit to ADWR:

- ✓ Proof of Appropriation
- ✓ Affidavit of Appropriator
- ✓ Minimum of four years of streamflow data
- ✓ Analysis of streamflow data.

If a total of four years of data was already available at the time the permit was issued, it is possible to move to the certificate stage promptly. When an analysis of the submitted Proof and supporting evidence concludes that the appropriation has been perfected, ADWR may then issue the certificate.

While an instream flow water right holder is not required to submit streamflow information to ADWR following certification, continued streamflow measurement is strongly advised. Lack of adequate data may result in the inability of a right holder to prove infringement on an instream flow right.

Pending Issues and Policy Decisions

Since instream flow water rights are somewhat new in Arizona, there are important issues that need to be resolved before addressing many of the instream flow applications. ADWR is presently developing rules that will specifically address instream flow water rights. The new surface water rules would replace and expand upon existing rules and provide regulatory guidelines for assessing instream flow applications. Some instream flow policy decisions have been developed as a result of issues addressed during the review of pending applications. These issues include the following:

- eligibility of applicants;
- appropriation of flood flows;
- sever and transfer of an existing diversion right to convert it to an instream flow right;
- issuing instream flow rights on streams that are partly supplied by effluent;
- instream flow rights on interstate streams that are not administered under an interstate compact;
- streams regulated by dams; and
- impacts of groundwater withdrawals on streamflow.

Summary

Arizona's Department of Water Resources was compelled to address the issue of instream flow water rights in 1979 when applications were filed to appropriate surface water for recreation and wildlife purposes. Hearings were held to define what Arizona law would allow regarding the issuance of instream flow water rights. Based on the hearing ADWR issued a decision and order in 1983 approving the permits for recreation and wildlife purposes. Since 1983 ADWR has issued 11 instream flow permits, and two have advanced to Certificate of Water Rights.

ADWR organized an interagency task force to assist in resolving policy, legal, and technical considerations and to develop criteria for substantiation of instream flow applications. As a result of these efforts ADWR issued A Guide for Filing Instream Flow Water Right Applications in Arizona in 1991. The Guide formalized the procedures and requirements for obtaining instream flow rights and provided assurance to the state land and wildlife resource management agencies in programming their efforts. Arizona has recognized the importance of instream flow rights through development of a viable regulatory program and continues to address important policy issues to improve upon this program.

Table 1
Instream Flow Applications
(As of February 1993)

<i>Application No.</i>	<i>Applicant</i>	<i>Stream Name</i>	<i>Flow Amount (Ac-Ft/Yr)</i>	<i>Status</i>
33-90253	BLM Safford Dist.	Apache Creek	500.00	Protested
33-87114	BLM Phoenix Dist.	Aravaipa Creek	10,839.00	Permit 3/17/89
33-95488	AZ Nature Conservancy	Aravaipa Creek	13,336.00	Permit 5/29/92
33-95489	AZ Nature Conservancy	Aravaipa Creek	13,578.00	Permit 5/29/92
33-95490	AZ Nature Conservancy	Aravaipa Creek	11,224.00	Permit 5/29/92
33-95771	AZ Nature Conservancy	Aravaipa Creek	10,277.00	Permit 3/9/93
33-96235	Tonto National Forest	Arnett Creek	1,086.00	In Progress
33-95487	BLM Safford Dist.	Babocomari River	3,267.10	In Progress
33-96167	BLM Safford Dist.	Babocomari River	6,952.00	In Progress
33-94371	BLM Safford Dist.	Bass Canyon Lake	2,172.00	In Progress
33-94843	BLM AZ Strip Dist.	Beaver Dam Wash	1,176.50	Protested
33-94245	BLM Phoenix Dist.	Bill Williams River	25,548.00	In Progress
33-90311	Navajo Co. Parks & Rec.	Billy Creek	724.00	In Progress
33-94847	Walker, Duane & Barbara	Billy Creek	6,322.00	Protested
33-94848	Rowley, Kenneth L.	Billy Creek	6,322.00	Protested
33-94850	Stoecklein, A. & Pat	Billy Creek	6,322.00	Protested
33-94851	Watkins, Dennis & Kathy	Billy Creek	6,392.92	Protested
33-94853	Cartier, David & Patricia	Billy Creek	6,322.00	Protested
33-94863	Schildmacher, William F.	Billy Creek	64.00	Protested
33-90250	BLM Safford Dist.	Bonita Creek	3,613.00	Protested
33-90249	AZ State Land Dept.	Buehman Canyon	723.00	Protested
33-89090	Pima Co. Flood Cont. Dist.	Cienega Creek	1,375.90	Permit Candidate
33-90107	Coconino Natl. Forest	East Clear Creek	72.40	Protested
33-90310	USFS Tonto Natl. Forest	East Verde River	2,896.00	Protested
33-95370	Coconino Natl. Forest	Foster Creek	72.40	In Progress
33-89119	BLM Stafford Dist.	Francis/Burro Creek	5,430.00	Protested
33-94379	BLM Safford Dist.	Gila River	317,836.00	Protested
33-92304	AZ Nature Conservancy	Hassayampa River	3,527.00	Permit 4/19/90
33-94372	BLM Safford Dist.	Hot Springs Canyon	2,056.30	Permit 10/18/92

Table 1, Cont'd.

<i>Application No.</i>	<i>Applicant</i>	<i>Stream Name</i>	<i>Flow Amount (Ac-Ft/Yr)</i>	<i>Status</i>
33-95371	Coconino Natl. Forest	Jones Creek	108.60	In Progress
33-96176	US Fish & Wildlife Service	Leslie Creek	420.00	Permit Candidate
33-90252	BLM Safford Dist.	Mescal Creek	1,445.00	Protested
33-95366	USFS Coronado Natl. Forest	Miller Canyon Creek	510.00	In Progress
33-78421	AZ Nature Conservancy	O'Donnell Creek	547.18	Permit Declined
33-90106	Coconino Natl. Forest	Oak Creek	4,344.00	Protested
33-90410	BLM Phoenix Dist.	Peoples Canyon Creek	72.40	Permit 4/19/90
33-89109	USFS Tonto Natl. Forest	Pinto Creek	1,236.60	Permit 10/18/92
33-92298	Boyce Thompson Arboretum	Queen Creek	533.97	Protested
33-78419	AZ Nature Conservancy	Ramsey Creek	719.80	CWR 11/14/90
33-90109	Coconino Natl. Forest	Red Tank Draw	72.40	Protested
33-94369	BLM Safford Dist.	Redfield Canyon	5,140.00	Protested
33-93232	Sierra Club/Coronado Forest	Sabino Creek	10,881.72	Protested
33-90251	BLM Safford Dist.	San Francisco River	7,227.00	Protested
33-90103	BLM Safford Dist.	San Pedro River	11,028.00	CWR 4/3/92
33-95780	BLM Safford Dist.	San Pedro River	3,674.00	Protested
33-95789	BLM AZ State Office	San Pedro River	18,200.00	In Progress
33-96126	Hughes, Jack K.	San Pedro River	10,341.44	In Progress
33-96127	AZ Nature Conservancy	San Pedro River	8,239.05	In Progress
33-90111	Coconino Natl. Forest	Sheepshead Creek	144.80	Protested
33-78420	AZ Nature Conservancy	Sonoita Creek	403.30	Protested
33-93287	ASLD	Sonoita Creek	1,200.00	Protested
33-90114	Coconino Natl. Forest	Spring Creek	2,172.00	Protested
33-94370	BLM Safford Dist.	Swamp Springs Canyon	5,068.00	Protested
33-90113	Coconino Natl. Forest	Sycamore Creek	2,389.20	Protested
33-78418	AZ Nature Conservancy	Thomas Wash	56.50	In Progress
33-90309	USFS Tonto Natl. Forest	Verde River	72,400.00	Protested
33-94374	USFS Prescott Natl. Forest	Verde River	43,440.00	Protested
33-94819	BLM AZ Strip Dist.	Virgin River	164,580.00	Protested
33-94865	BLM AZ Strip Dist.	Virgin River	166,566.00	Protested

Table I, Cont'd.

<i>Application No.</i>	<i>Applicant</i>	<i>Stream Name</i>	<i>Flow Amount (Ac-Ft/Yr)</i>	<i>Status</i>
33-94866	BLM AZ Strip Dist.	Virgin River	151,366.00	Protested
33-96133	BLM AZ Strip Dist.	Virgin River	166,919.00	Protested
33-96134	BLM AZ Strip Dist.	Virgin River	166,919.00	Protested
33-90108	Coconino Natl. Forest	Walker Creek	362.00	Protested
33-90110	Coconino Natl. Forest	West Clear Creek	8,688.00	Protested
33-96178	Ploe, Barbara	West Clear Creek	724.00	In Progress
33-90112	Coconino Natl. Forest	Wet Beaver Creek	3,909.60	Protested
33-95454	BLM Safford Dist.	Wildcat Canyon	452.50	In Progress
33-96159	BLM AZ Strip Dist.	Virgin River	151,366.00	Protested

Notes

1. ARIZ. REV. STAT. ANN. § 45-151.A (1987).
2. *McClellan v. Jantzen*, 547 P.2d 454 (1976).
3. *Id.* at 496.

A Reconsideration of Instream Appropriative Water Rights in California

Brian E. Gray

Introduction

In 1979, two California courts of appeal ruled that the state's water rights system does not recognize the appropriation of water for the purpose of maintaining minimum instream flows. *Fullerton v. State Water Resources Control Board*¹ held that the California Department of Fish and Game had no authority to appropriate water for instream flows to protect the state's beneficial interest in its fisheries. Similarly, *California Trout, Inc. v. State Water Resources Control Board*² decided that private parties may not appropriate water for instream uses.³ Justice Cruz Reynoso, then a member of the court of appeal for the third district in Sacramento, dissented.⁴ According to Justice Reynoso, "neither diversion, possession, or physical control is an essential element of a valid appropriation right,"⁵ and a private, nonprofit organization such as California Trout "may appropriate water for the public use" and "may assert the public trust contained within the fish and wildlife resources of the states [sic]."⁶

I was still a law student in 1979 and paid no attention to these decisions or to the broader debate over the wisdom of recognizing instream appropriations of water in California.⁷ Like many Californians, I knew little more about water than that it was always there when I turned on the tap. Three years later, however, Justice Reynoso had been appointed to the California Supreme Court, and I had become a water lawyer. With a majority of the court receptive to the recognition of public rights in the state's water resources,⁸ I planned to bring a new instream appropriation case with the hope of persuading the state supreme court to overturn *Fullerton* and *California Trout* and to recognize the appropriation of water for the protection of instream flows. Indeed, I

¹ This chapter derives from a lecture that I delivered in June 1987 at the Eighth Annual Summer Program on Water Resources Law sponsored by the Natural Resources Law Center of the University of Colorado. I would like to thank Dr. Lawrence J. MacDonnell, Director of the Center, for inviting me to speak at the conference. I also extend my gratitude to Professor Joseph Sax for reviewing the manuscript and for raising several of the questions addressed in Part V, and to Marika Bergsund for her editorial assistance. The original version of this chapter appeared in the *Ecology Law Quarterly*, Volume 16, No. 3, page 667 (1989). That article has been updated, but not revised, for publication in this volume. The Postscript is new.

envisioned that based on his dissent in *California Trout* the opinion of the court would be authored by Justice Reynoso.

Unfortunately, I became preoccupied with other water resources issues, entered academia, and never brought the instream appropriation case. Today, I fear, the time for judicial reevaluation of *Fullerton* and *California Trout* has passed. Justice Reynoso is no longer a member of the supreme court, and the present court is unlikely to find authority in the California Water Code instream appropriations. Thus, instead of a lawsuit, I offer this essay with the hope that it will persuade the Legislature or a future supreme court to recognize instream appropriative water rights.⁹

Are Instream Water Rights Necessary?

In recent years, the California Legislature, courts, State Water Resources Control Board (Board),¹⁰ and other state agencies have sought to protect instream water uses and to preserve minimum streamflows as required to serve such instream uses. These terms embrace a variety of *in situ* uses of water. The instream uses most commonly discussed are protection of fisheries and wildlife, recreational uses, and preservation of aesthetic values associated with the water resources of the state.¹¹ Indeed, the Legislature has declared that "[t]he use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water."¹²

These instream uses depend on a complex set of hydrological relationships. For example, California's fisheries need enough water to support an adequate food supply, to maintain the temperature of the river, and to provide suitable water quality and flows for migration and spawning.¹³ Fish populations also may be affected by pollutants discharged into the water and by variations in the flow of the river caused by impoundments and diversions upstream.¹⁴ Commercial navigation and recreational boating are highly dependent on the depth and flow of the river.¹⁵ Riparian vegetation supports hundreds of species of birds and other animals.¹⁶ And, after serving these uses, instreamflows remain available for downstream consumptive and nonconsumptive uses, including the supply of fresh water to the bays and estuaries of the state.¹⁷

The objective of instream appropriative water rights is to ensure the protection of these instream uses. There is substantial uncertainty, however, whether such rights are necessary to accomplish this purpose. For even without instream water rights, California has one of the most diverse and sophisticated systems in the United States for the protection of streamflows and instream uses.¹⁸ The Board has broad authority to protect instream uses both through its grants of water rights permits and through its regulation of existing water rights.¹⁹ Moreover, alone among the western states, California has consolidated its regulation of water rights with its administration of federal and state water pollution control laws, which enables the Board to protect more effectively

instream uses that are threatened by deterioration of water quality.²⁰ The judiciary has authority to protect instream flows through its powers to enforce the prohibition against wasteful, unreasonable, or nonbeneficial uses of water set forth in the California Constitution, and pursuant to its powers to enforce the public trust doctrine.²¹ Finally, the Legislature has withdrawn certain rivers from further development by including them in the California Wild and Scenic Rivers System.²²

In view of this broad regulatory system, private appropriative rights may not seem necessary, or even desirable, for the protection of instream uses. Indeed, in 1978 after an extensive study of the question, the Governor's Commission to Review California Water Rights Law concluded that "permanent instream appropriations not involving physical control [should] be prohibited except for stockwatering purposes."²³ The Commission recommended instead that the State Water Resources Control Board establish comprehensive instream flow standards on a stream-by-stream basis, believing that such a procedure would allow for better consideration of the public interest than would the granting of permits for instream appropriations.²⁴

Although there is considerable merit to this view, I have become convinced both that the present methods of preserving instream flows in California are inadequate and that instream appropriations would be the most effective means of protecting instream uses. As the demand for water increases,²⁵ the competition between consumptive uses and instream uses also will increase. This competition will be particularly acute in the summer and fall months and during sustained periods of drought. For instream uses to compete effectively under these circumstances, they must have the same legal status as consumptive uses. This will occur only if instream flows are recognized as water rights.

To evaluate this thesis I will first explore the various ways that California law currently protects instream flows. Next, I will show how the existing laws undervalue instream uses and threaten to diminish the amount of water reserved for *in situ* values over time. A solution to the bias against instream flows is then proposed—recognition of instream uses as water rights. Finally, I address a series of questions that challenge the efficacy of instream appropriative rights.

Protection of Instream Uses Under Existing Law

California has one of the most comprehensive systems for protecting instream flows in the United States. This system may be divided into four categories: administrative protection through water rights management, administrative protection through water quality management, direct legislative protection, and direct judicial protection. Of the four, the administrative system affords the most thorough and diverse benefits for instream uses.

Administration of Water Rights

The primary mechanism for protecting instream flows in California is the State Water Resources Control Board's administration of the state's water rights system. The Board has direct jurisdiction over all appropriative rights acquired since December 19, 1914 and over all water rights based on prescriptive uses.²⁶ Thus, all surface water rights obtained since that date, except for riparian rights,²⁷ must be based on a permit or license issued by the Board.²⁸

The Board is authorized to protect instream uses of water in three phases of regulation within its direct jurisdiction: (1) the granting of permits and licenses; (2) the regulation of permittees and licensees; and (3) the consideration of petitions to change the terms of an existing permit. In addition, the Board may regulate water rights over which it has no direct jurisdiction for the purpose of preventing undue harm to instream uses.²⁹

Direct Jurisdiction: Granting Permits

The Board's authority to protect instream uses includes the power both to deny a permit application, if it concludes that the proposed appropriation would unreasonably impair instream flows, and to place conditions on permits it decides to grant, to ensure that the new appropriation is compatible with instream uses above or below the point of diversion.

Before the Board may grant a permit, it must perform three tasks.³⁰ First, it must notify the California Department of Fish and Game of the permit application and consider the Department's recommendation of "the amounts of water, if any, required for the preservation and enhancement of fish and wildlife resources."³¹ Second, the Board must determine how much water is available for appropriation, "tak[ing] into account, whenever it is in the public interest, the amounts of water required for recreation and the preservation and enhancement of fish and wildlife resources,"³² as well as "the amounts of water needed to remain in the source for protection of . . . any uses specified to be protected in any relevant water quality control plan."³³ Third, the Board must weigh the relative benefits of the proposed appropriation against the benefits of alternative uses of the water, including the "preservation and enhancement of fish and wildlife, recreational [uses] . . . and any uses specified to be protected in any relevant water quality control plan."³⁴ If the application is to appropriate water from rivers for which the Department of Fish and Game has established streamflow standards,³⁵ the Board also must "consider" those standards.³⁶

If the Board decides to grant an application to appropriate water, it may issue a permit "under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated."³⁷ In accordance

with this directive, the Board commonly includes in its permits terms and conditions designed to protect streamflows and instream uses. Typical terms require the applicant to do the following: (1) bypass water under specified flow conditions for the protection of fish and wildlife, (2) release water to augment natural streamflows downriver of the project, and (3) release relatively large quantities of water, usually during periods of high water supply, to cleanse the riverbed of accumulated sediment.³⁸ The Board also has the authority to require that the point of diversion for a new appropriation of water be moved downstream from the location originally proposed to protect instream flows in the river between the proposed point of diversion and the downstream location.³⁹

Direct Jurisdiction: Regulating Permittees

Once the Board issues a permit, it retains significant jurisdiction over the actual appropriation of the water, which it may exercise to protect instream flows. The Board has continuing authority to modify the terms and conditions of any permit if further investigation indicates that additional water is needed to protect public trust uses, to prevent waste or unreasonable use of water, or to meet water quality objectives set forth in the applicable water quality control plan.⁴⁰ Pursuant to this reserved jurisdiction, the Board may amend the permit to alter the protection of instream uses by changing terms such as the season of diversion, the quantities that may be diverted, and the minimum release requirements.⁴¹ The Board also occasionally requires the permittee to conduct studies, in conjunction with the California Department of Fish and Game and the United States Fish and Wildlife Service, to determine what additional flows may be necessary to support fish, wildlife, recreation, and other instream uses.⁴²

Independent of its reserved powers, the Board also may modify the terms of a permit "to prevent waste or unreasonable use or methods of diversion of water."⁴³ This authority, which is derived from the California Constitution,⁴⁴ allows the Board to balance the permittee's use of the water against competing "statewide considerations."⁴⁵ The competing considerations are not limited to other water rights, but embrace other potential *uses* of the water as well. These uses include the achievement and maintenance of ambient water quality standards,⁴⁶ protection of the public trust,⁴⁷ and supply of instream beneficial uses.⁴⁸ If, on balance, the Board determines that more water is needed for instream uses, it may modify the permit accordingly.⁴⁹

Direct Jurisdiction: Water Transfers and Other Changes in Permits and Licenses

The Board's authority to protect instream uses is also triggered whenever a permittee or licensee requests permission to change its existing practices in a way that could adversely affect streamflows. Before an appropriator may sell water to users outside its service area, transfer water rights, or change its point of diversion, point of return flow, place of use, or purpose of use, the appropriator must obtain the Board's

approval.⁵⁰ The Board may grant permission only if it "finds that the change may be made without injuring any legal user of the water and without unreasonably affecting fish, wildlife, or other instream beneficial uses."⁵¹

Indirect Jurisdiction: Reasonable and Beneficial Use and the Public Trust Doctrine

Along with the direct authority over its permittees and licensees, the Board has considerable indirect jurisdiction over all water users—including riparians and pre-1914 appropriators—which it may employ for the purpose of protecting streamflows and other instream uses. Although riparian and pre-1914 rights are not based on permits issued by the Board, the exercise of such rights must conform to the constitutional and statutory mandate of reasonable and beneficial use⁵² and to the public trust doctrine.⁵³ Furthermore, the California Legislature has directed the Board "to take all appropriate proceedings or actions . . . to prevent waste, unreasonable use, unreasonable methods of use, or unreasonable methods of diversion of water."⁵⁴ Based on these authorities, California courts of appeal have held that the Board has the power both to impose conditions on the exercise of riparian and pre-1914 appropriative rights for the purpose of preventing waste or unreasonable use,⁵⁵ and to declare, following an adjudication, that a particular use of water pursuant to such rights is unreasonable.⁵⁶

The Board may use its indirect jurisdiction over all water rights to protect instream uses. If the Board finds that the exercise of a water right is unreasonable because of its adverse effects on an instream use, it may place conditions on the water right to augment streamflows or to reallocate water from the consumptive use to the instream use.⁵⁷

As the California Supreme Court recognized in *National Audubon Society v. Superior Court*,⁵⁸ the Board has similar authority under the public trust doctrine.⁵⁹ According to the court, the Board must consider the public trust "in the planning and allocation of water resources."⁶⁰ This directive does not alter significantly the Board's responsibility to protect instream uses when it grants new permits to appropriate water. "[F]or 'at least the past 25 years' the board, pursuant to its constitutional mandate and its statutory public interest authority, 'has considered values that also are protected by the public trust.'"⁶¹ *Audubon* substantially expands, however, the Board's authority over older water rights, including licensed appropriators, pre-1914 appropriators, and riparians.⁶² "Once the state has approved an appropriation," the court held, "the public trust imposes a duty of continuing supervision over the taking and use of the appropriated water."⁶³ It concluded that the state "accordingly has the power to reconsider allocation decisions even though those decisions were made after due consideration of their effect on the public trust. . . . No vested rights bar such reconsideration."⁶⁴

Administration of Water Quality

In addition to its direct and indirect jurisdiction over water rights, the Board may protect instream uses through its administration of the federal and state water pollution control laws.

The California Legislature has designated the Board as "the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act."⁶⁵ Acting either directly or through the Regional Water Quality Control Boards under its jurisdiction,⁶⁶ the State Board is empowered to establish regional water quality control plans and, based on the standards set forth in the plans, to regulate point and nonpoint sources that contribute to water pollution.⁶⁷ The Board must formulate the water quality control plans "to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."⁶⁸ As in the water rights area,⁶⁹ the California Legislature has defined the beneficial uses that the Board must protect to include "recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources."⁷⁰

This consolidation of water rights and water quality administration in a single state agency has two important consequences. First, the Board has the authority to protect instream uses from the effects of both water diversions and water pollution. Second, it has the power to regulate water rights for the protection of water quality and to regulate point and nonpoint sources of pollutants to protect both water rights and instream beneficial uses.

Application of the Board's water quality jurisdiction to protect instream uses is best illustrated by the hearings to establish water quality standards for the San Francisco Bay and the Sacramento-San Joaquin Delta Estuary, which have occupied the Board since 1987.⁷¹ These hearings are an extension of the Board's Water Quality Control Plan for the Sacramento-San Joaquin Delta and Suisun Marsh⁷² and Water Right Decision 1485,⁷³ in which the Board exercised its reserved jurisdiction to place operating conditions on the Central Valley Project⁷⁴ and the State Water Project⁷⁵ for the purpose of maintaining water quality in the Delta. The stated goal of the Bay-Delta hearings is to protect instream and consumptive beneficial uses of water in the Delta, and the Bay-Delta Estuary itself, from (1) the adverse effects of water diversions upstream of the Delta, which damage water quality by diminishing the amount of freshwater that flows into the Delta, and (2) point and nonpoint sources of pollutants located in and upstream of the Delta.⁷⁶ To accomplish this purpose, the Board may place additional conditions on the water rights of the major appropriators from the Bay-Delta system and may limit the amounts of pollutants that can be discharged into the system.⁷⁷

Although the scope of the Board's authority to employ its water quality jurisdiction to protect instream uses will become clearer after the Bay-Delta hearings are completed,

the potential uses of this jurisdiction is apparent in *United States v. State Water Resources Control Board (Delta Water Cases)*,⁷⁸ in which the California court of appeal reviewed the Board's Water Quality Control Plan for the Delta and Water Rights Decision 1485.⁷⁹ The court first observed that "[i]n its *water quality* role of setting the level of water quality protection, the Board's task is not to protect water rights, but to protect 'beneficial uses.'⁸⁰ Thus, if beneficial uses—including instream uses such as recreation, fisheries, and wildlife—require more water than needed by riparians and senior appropriators in the Delta, the Board must order upstream water rights holders to release flows sufficient to provide reasonable protection for the beneficial uses.⁸¹ As a corollary to this holding, however, the court emphasized that beneficial uses for water quality purposes do not trump competing beneficial uses upstream of the Delta that are based on water rights. According to the court, the Board has broad discretion to establish reasonable water quality standards for the protection of beneficial "*considering all demands being made and to be made on those waters* and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."⁸²

The court next addressed the question of how the water rights of the various parties to the Bay-Delta hearings could be modified if necessary to protect water quality in the Delta. In Decision 1485, the Board reviewed only the water rights permits of the United States Bureau of Reclamation for the Central Valley Project and of the California Department of Water Resources for the State Water Project.⁸³ The court approved the Board's authority to impose conditions that required the two projects to release water from storage and to time their diversions from the Delta so as to maintain levels of water quality that would be present if the projects did not exist.⁸⁴ Consistent with its earlier ruling,⁸⁵ the court concluded that "[u]nder its reserved jurisdiction to modify the permits, the Board was authorized to impose upon the projects water quality standards at whatever level of protection the Board found reasonable, whether 'without project' or greater."⁸⁶ The court also held that under the reasonable use and public trust doctrines the Board could compel other water users—permittees, licensees, riparians, and pre-1914 appropriators—to contribute to the maintenance of reasonable water quality in the Delta.⁸⁷ Moreover, along with regulating the diversion of water, the court ruled that the Board must consider the effects of the discharge of pollutants into tributaries of the Delta on water quality-based beneficial uses within the Delta.⁸⁸

Thus, in fulfillment of its statutory duty of establishing and maintaining water quality standards adequate to protect all beneficial uses of water in the San Francisco Bay-Delta Estuary, the Board has extensive authority over all sources of pollution, all water rights, and all water users in the Sacramento-San Joaquin River system. By integrating pollution control and water rights jurisdiction in one state agency, California has significantly enhanced the Board's ability to protect instream uses (along with the other beneficial uses recognized by the water quality laws) from pollutants, upstream diversions, and alterations in streamflows.

Judicial Protection

In California, the courts share in the broad regulatory and adjudicatory powers of the Board. The California Supreme Court has held that the courts have concurrent jurisdiction with the Board to adjudicate claims of waste and unreasonable use⁸⁹ and to decide whether a consumptive use of water violates the public trust doctrine.⁹⁰ Private litigants may seek judicial protection of instream uses directly, without having to rely on a state agency such as the Board or the Department of Water Resources.⁹¹ In these cases, if the court determines that a challenged use of water is unreasonable in view of its deleterious effects on instream uses or impairment of the public trust, the court may adjust the water rights of the consumptive user as necessary reasonably to protect instream values.⁹²

Legislative Protection

Finally, the California Legislature has protected instream uses by establishing the California Wild and Scenic Rivers System.⁹³ The Wild and Scenic Rivers Act states that "[i]t is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values shall be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state."⁹⁴ As of this writing, the Legislature has designated seven rivers or river segments as "wild and scenic." They are the American River (its north fork and the lower stretch of the main river from Nimbus Dam to its confluence with the Sacramento River), the four North Coast rivers--the Smith, Klamath, Eel, and Trinity Rivers--and many of their tributaries, the West Walker River, and the East Fork of the Carson River.⁹⁵

To implement the policies of the Act, the Legislature generally has prohibited the construction of dams and other water impoundment and diversion facilities on wild and scenic rivers.⁹⁶ It also has directed that no state agency or department may assist, "whether by loan, grant, license, or otherwise," any federal, state, or local governmental entity "in the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character" of a protected river.⁹⁷ Under this provision, the Board would be prohibited from granting a permit for any water development project that is located upstream or downstream of a river or river segment included in the wild and scenic rivers system and that would submerge or unreasonably diminish the flow of the river.⁹⁸

In addition to these restrictions on water development, the Legislature has declared that the inclusion of a river in the wild and scenic rivers system "is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution."⁹⁹ With this declaration, the Legislature apparently intended to ensure that protection of wild and

scenic river values would take precedence over conflicting uses in a dispute over the right to divert water from a designated river.¹⁰⁰

These provisions of the California Wild and Scenic Rivers Act contain strong protections for instream uses on those rivers included in the system. Because the state grants all water rights permits and regulates all surface water use, the legislative mandate to preserve the natural, free-flowing character of component rivers is applicable in practice to all water users. Thus, the effect of the Act is to prohibit—or at least to create a strong presumption against—water development projects that potentially threaten instream flows and instream uses in the state's wild and scenic rivers.

How the Existing System Fails to Protect Instream Uses

The California scheme has many positive attributes. All three branches of government play a part in protecting instream uses: the administrative agencies, pursuant to their regulation of water rights, fish and wildlife, and other public resources; the courts, through their jurisdiction to prevent waste and unreasonable use of water and to promote the public trust; and the Legislature, by designating wild and scenic rivers. Again, the question arises: why should the state provide the additional protection of instream appropriative rights?

The answer to this question depends on an understanding of the inadequacies of the existing means by which the three branches of government actually exercise their authority to protect instream uses. As this analysis will show, the deficiencies in the current regulatory scheme are the product of two factors: (1) lack of clarity in the statutory and public trust directives to protect instream values; and (2) the lesser status accorded to instream flow rights in relation to riparian and appropriative rights.

The Board's Discretionary Protection of Instream Uses

The most striking feature of the laws discussed in the preceding section is the absence of a categorical directive to the Board from either the Legislature or the courts to protect instream uses. Rather, at all stages of its jurisdiction, the Board needs only to "consider" instream values in relation to the competing consumptive use.

The Regulatory Process

The protection of instream uses under the California water rights and water quality laws is entirely dependent on the discretion of the Board. For example, when deciding whether to grant a permit for a new appropriation, the Board must "take into

account" the amount of water that should remain in the river for instream uses.¹⁰¹ In making this determination and in placing appropriate conditions on the permits that it does grant, the Board is required to act "in the public interest."¹⁰² Although the California court of appeal has declared that the public interest is "the primary statutory standard guiding the Water Rights Board in acting upon applications to appropriate water,"¹⁰³ neither the Legislature nor the Board has attempted to define the term with any degree of precision.¹⁰⁴

Similarly, when the Board establishes water quality standards for the various river basins of the state, it is directed "to attain the highest water quality which is reasonable."¹⁰⁵ To determine what level of protection for instream beneficial uses is reasonable, the Board must consider all present and future demands on the water resource, as well as the "total values involved, beneficial and detrimental, economic and social, tangible and intangible."¹⁰⁶ As the court of Appeal observed in the *Delta Water Cases*, "in carrying out its water quality planning function, the Board possesses broad powers and responsibilities."¹⁰⁷

Thus, neither the water rights system nor the water quality laws require the Board to provide any certain protection of instream uses. Rather, "the Legislature has conferred broad discretion upon the Board to impose terms and conditions upon appropriation permits which *in its judgment* will best develop, conserve, and utilize in the public interest the water . . . appropriated."¹⁰⁸

The Public Trust

The decision of the California Supreme Court in *National Audubon Society v. Superior Court*¹⁰⁹ indicates that the public trust doctrine also fails to require any particular level of protection for instream uses. Although the public trust has enhanced the Board's authority to promote instream values, especially vis-à-vis appropriative rights and uses of water that are not subject to the Board's direct jurisdiction,¹¹⁰ it does not limit significantly the Board's discretion to balance instream and consumptive needs.

The supreme court's strongest directive regarding the Board's responsibilities was its declaration that "[t]he state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses *whenever feasible*."¹¹¹ Standing alone, this language suggests that the Board must give great weight to instream values in determining whether to allow a new appropriation and in deciding what conditions should be placed on the appropriator. Indeed, this directive can be read to require the Board to resolve all streamflow, water quantity, and water quality questions in favor of providing maximum protection for public trust uses.

Elsewhere in its opinion, however, the court emphasizes that the public trust does not take precedence over other competing uses. Recognizing that the "population and

economy of this state depend upon the appropriation of vast quantities of water for uses unrelated to in-stream trust values,"¹¹² the court held that the Board has the authority to grant permits that enable an appropriator "to take water from flowing streams and use that water in a distant part of the state, even though this taking does not promote, and may unavoidably harm, the trust uses at the source stream."¹¹³ When the Board or other state authority chooses to allocate water for purposes that impair the public trust, the court ruled, the agency "must bear in mind its duty as trustee to consider the effect of the taking on the public trust . . . and to preserve, *so far as consistent with the public interest*, the uses protected by the trust."¹¹⁴

The court gives the public trust even less weight later in the opinion. Discussing Los Angeles' entitlement to appropriate the waters of Mono Basin, the court suggested that the interests of the respective parties should be balanced. It noted that neither the Board nor any other state authority had ever "determined that the needs of Los Angeles outweigh the needs of the Mono Basin, that the benefit gained is worth the price."¹¹⁵ The court concluded that the public trust doctrine "imposes a continuing duty on the state to take [trust] uses into account in allocating water resources."¹¹⁶ Perhaps to underscore that the public trust is simply one factor among the many that must be considered in allocating water among competing uses, the court declared that "[a]ll uses of water, including public trust uses, must now conform to the standard of reasonable use."¹¹⁷

These disparate standards give the Board wide-ranging discretion to prefer public trust values over consumptive uses or vice versa. Regardless of how the question is phrased,¹¹⁸ the ultimate determination of how to apply the public trust doctrine will be left to the judgment of the Board. Thus, the Board's responsibilities under the public trust doctrine do not appear to differ significantly from its statutory authority to protect instream uses in its administration of the water rights and water quality laws.¹¹⁹

The California Wild and Scenic Rivers Act

The legislative designation of a river as wild and scenic¹²⁰ would seem to offer an alternative to the uncertain protections afforded by the administrative process and the judicially created public trust doctrine. The California Wild and Scenic Rivers Act contains clear directives that the "free-flowing" character of component rivers be preserved for the protection of their "extraordinary scenic, recreational, fishery, [and] wildlife values."¹²¹ Unfortunately, the Board has not interpreted the Act to provide such increased protections.

The only application of the Wild and Scenic Rivers Act to a claim that an appropriation of water would impair the instream uses protected by the statute came in the Board's decision as court-appointed referee in litigation between the Environmental Defense Fund and several other plaintiffs and the East Bay Municipal Utility District

(EBMUD) regarding the Lower American River.¹²² The plaintiffs sought to require EBMUD—a contractor with the United States Bureau of Reclamation—to divert water below the confluence of the Lower American and Sacramento Rivers. EBMUD had proposed to divert its water from the Bureau of Reclamation's Folsom-South Canal Project, which is located on the American River just above the wild and scenic "lower" segment.¹²³ One of the many questions addressed by the Board was the effect of the Lower American River's status as a California Wild and Scenic River on EBMUD's proposed upstream point of diversion.

The Board concluded that the Legislature's designation of the Lower American River as a Wild and Scenic River "does not preclude the Bureau from entering into additional contracts for the delivery of water via the Folsom South Canal so long as the recreational and anadromous fishery values for which the lower American River was designated are not unreasonably diminished."¹²⁴ While acknowledging the Legislature's declaration of state policy that designated rivers be preserved in their free-flowing state,¹²⁵ the Board concluded that "[r]ead closely, the Act appears to promise more protection than is actually delivered."¹²⁶ The Board based this conclusion on its interpretation of the Act as "prohibit[ing] neither the construction nor operation of water diversion . . . facilities upstream of designated streams"¹²⁷ and on its assessment that the Legislature did not intend "to assure any particular quantity of water in a designated stream."¹²⁸ The Board also noted that its reading of the statute "is reinforced by the 1982 amendments to the Act."¹²⁹ As originally enacted in 1972, section 5093.55 of the Act prohibited the construction of any facility "on or directly affecting" a component river.¹³⁰ In the 1982 amendments, the Legislature deleted the words "or directly affecting."¹³¹ The Board concluded that, by this change, "the Legislature appears to have intended to circumscribe the application of the Act."¹³²

The Board's narrow reading of the Act in the Lower American River case indicates that the designation of a river as wild and scenic does not give instream uses any greater protection from competing consumptive uses than does either the administrative system or the public trust doctrine.¹³³ The Act does prohibit the construction of dams—and severely restricts the construction of "run-of-the-river" diversion works—on designated rivers.¹³⁴ According to the Board's interpretation, however, the statute does not significantly affect its evaluation of whether to permit an upstream appropriation that could be harmful to instream uses in the designated portion of the river below.¹³⁵

The Inherent Bias Against Instream Uses

As the foregoing analysis shows, state water rights and water quality laws, the public trust doctrine, and the California Wild and Scenic Rivers Act all vest the Board with extensive discretion to decide, on a case-by-case basis, what level of protection of instream uses is reasonable under the circumstances. In general, this discretion is both

inevitable and appropriate because allocation of the state's water resources among the competing domestic, agricultural, industrial, instream, and other uses must be the product of policy choices that cannot be made by simple adherence to a preordained set of legal priorities.¹³⁶

For this allocation process to work effectively, however, all beneficial uses must be able to compete on an equal footing. Unfortunately, existing law does not treat instream uses on a par with competing consumptive uses because only the latter are entitled to the security of the water rights system. Without the ability to claim instream flows based on a water right equal to the rights of consumptive users the advocates of instream uses are at a perennial disadvantage in water allocation proceedings. It is for this reason that the state must recognize instream appropriative water rights.

A review of how the Board evaluates an application to appropriate water illustrates the disparity between the legal status of senior water rights and instream uses.

Disparity in the Permit Process

In considering an application to appropriate water, the Board makes two determinations. The Board must decide preliminarily that there is unappropriated water available to supply the applicant.¹³⁷ To make this finding, the Board examines the existing riparian and appropriative rights¹³⁸ and makes an initial assessment of the requirements of instream uses.¹³⁹

If it concludes that there is unappropriated water available, the Board then reviews the application on the merits to determine whether and under what conditions to issue the permit.¹⁴⁰ Before it may grant a permit, the Board must decide that the appropriation would be in the "public interest."¹⁴¹ The public interest test essentially requires the Board to consider an array of factors, including the effects of the proposed appropriation on instream uses and on water quality standards established pursuant to state and federal pollution control statutes.¹⁴² If the Board chooses to issue a permit, it does so "under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated."¹⁴³

At both of these stages—when the Board decides whether there is unappropriated water available, and when it evaluates the public interest—the Board distinguishes between the protection of existing water rights and the protection of instream uses.

Protection of Senior Water Rights

To determine how much water is available in a river, the Board initially reviews the permits and licenses issued to prior appropriators and evaluates the existing needs of

riparians and pre-1914 appropriators. Depending on its evaluation, the Board then may deny or permit the appropriation outright,¹⁴⁴ limit the amount of water the appropriator can divert during certain months,¹⁴⁵ grant the appropriator a lesser amount of water than requested in the application,¹⁴⁶ or order a "physical solution" to any conflict.¹⁴⁷ In assessing the needs of senior water rights holders, the Board measures the existing uses of water made pursuant to the senior rights. The Board ordinarily does not evaluate, however, the reasonableness of these existing uses in light of the proposed appropriation.

At the public interest stage of its review, the Board does not even consider the water rights of senior users. Rather, the focus of the analysis is on the applicant¹⁴⁸ and on alternative uses for the water.¹⁴⁹ During this phase, it is presumed that following the appropriation the senior water rights will be unimpaired.¹⁵⁰

Protection of Instream Uses

In contrast, no such presumption protects instream uses: when the Board evaluates an application for a new appropriation in light of instream uses of the water resources, the Board weighs the reasonableness of the proposed appropriation against the reasonableness of maintaining a certain level of instream flow protection. Thus, the Board decides on a case-by-case basis how best to accommodate the competing consumptive and instream uses. With each application, the Board must decide anew the same questions related to instream uses: (1) Should streamflows that have been reserved to protect fish, wildlife, and recreational uses¹⁵¹ be reduced in order to facilitate the new appropriation? (2) In view of the new consumptive use, what constitutes "reasonable protection" of instream beneficial uses?¹⁵² (3) Considering the current needs of the state, what balance should be struck between consumptive and public trust uses of the available water? (4) What is the "relative benefit to be derived from . . . all beneficial uses of the water concerned"?¹⁵³

This system of continual reevaluation of the reasonableness of instream uses with each new proposal for a competing consumptive use is inherently prejudicial to the protection of instream flows. Unlike senior consumptive uses, which are insulated from the case-by-case assessment of reasonable use, instream uses are continuously subject to reevaluation. Indeed, instream uses are particularly vulnerable to this reassessment during periods of shortage when the Board must reallocate among existing uses to meet increasing water demand.

The Inevitable Diminution of Instream Flow Protection

Well into the foreseeable future, the statewide demand for water will increase. Most of this increase will occur in the municipal and industrial sectors.¹⁵⁴ Population growth continues unabated in many regions of California, and history shows that

wherever people locate, provisions for a water supply will follow.¹⁵⁵ Thus, as population increases, the Board is likely to grant many applications for new appropriations.

If a new appropriation for urban and industrial use potentially would interfere with existing uses of the available water, it is likely that the Board would seek to facilitate the new use by reallocating some water from those existing uses to the new use. The reason for this is twofold. First, political pressures make it difficult for the Board to deny urban and suburban populations water that they need for domestic purposes and commercial development.¹⁵⁶ Second, the Legislature has directed the Board to give preference to domestic consumers by requiring that, in acting on applications to appropriate water, the Board be "guided by the policy that domestic use is the highest use of water"¹⁵⁷ and "consider the state goal of providing a decent home and suitable living environment to every Californian."¹⁵⁸ Although these directives coexist with the requirement that the Board also protect instream and public trust uses, the Board's ultimate duty is to devise an allocation that best serves the statewide public interest in light of the *relative* benefits of the various possible uses of the water.¹⁵⁹

As demands exceed available supplies, existing allocations should be reconsidered and, if appropriate, altered to accommodate changes in societal values and priorities.¹⁶⁰ This reconsideration must be conducted, however, in a manner that fairly evaluates all of the competing uses. Over time, the current allocation system will tend to diminish unduly the level of instream flow protection vis-à-vis consumptive uses. Because the Board reevaluates the reasonableness of existing instream uses with each new appropriation, but does not similarly reconsider the reasonableness of senior water rights, it will tend to reallocate water from instream uses rather than from consumptive uses based on the senior water rights. Except in rare cases, a reordering of water use that places the burden predominantly, if not exclusively, on instream uses will neither represent the most socially valuable allocation of water nor accomplish the paramount state policies embodied in Article X, Section 2 of the California Constitution,¹⁶¹ the state Water Code,¹⁶² and the public trust doctrine.¹⁶³

Even if the Board were to evaluate the reasonableness of senior water rights as part of the public interest determination, the process would remain biased against instream flow protection. As long as senior water rights have a superior status to instream uses, the former will enjoy an inherent and decisive advantage. When an applicant for a new appropriation seeks to divert water from existing instream uses to fulfill its needs, the appropriator must demonstrate that, on balance, its proposed use of water would be more socially valuable than would maintenance of current streamflow levels and, accordingly, that it would be reasonable to encroach on the instream uses to serve the new appropriation.¹⁶⁴

In contrast, if the applicant were to request the Board to reallocate water from senior water rights holders to the new appropriation, the applicant would have to demonstrate not only that its use of the water, all factors considered, would be

reasonable and socially valuable, but also that the competing uses made pursuant to the senior water rights are unreasonable.¹⁶⁵ Proof that an existing water right is being exercised in an unreasonable manner is, to say the least, exceedingly difficult.¹⁶⁶ Thus, it is unlikely that, in any but the most egregious cases of waste, water would be reallocated from existing water rights to support new appropriations. Instead, the burden will continue to fall inordinately upon instream flows.

The systemic bias against instream uses raises serious concerns because it illustrates the risk that instream flow protection, and hence the quality of instream uses, may be eroded over time. The solution to this problem is to afford instream uses the same legal protections granted to the consumptive water rights with which they compete. To confer equal status on instream uses, it is necessary to recognize instream appropriative rights.

The Need for Instream Appropriative Rights

Establishment of instream uses as water rights, rather than simply as factors the Board must consider before it may grant a new appropriation, offers at least four benefits to the administration of California's water resources. First, it would solve the problem caused by the inferior status of instream uses vis-à-vis consumptive uses. Second, public acquisition of water rights to support instream flows would address the concern raised by Justice Reynoso in his dissent in *California Trout Inc. v. State Water Resources Control Board* that under the present system the public is "left in a position of nay saying every private application for appropriation."¹⁶⁷ Third, instream appropriations would be an excellent means of implementing the public trust in the state's water resources. Fourth, recognition of instream appropriative rights would allow for the transfer of water from current consumptive uses to instream uses.

Parity Between Consumptive and Instream Uses

The principal benefit of creating an appropriative right for instream flows would be the establishment of parity between instream uses and consumptive uses, which currently are recognized as water rights. As described in greater detail below, instream appropriative rights would be based on permits issued by the Board, subject to various terms and conditions to ensure that the *in situ* appropriation serves the public interest and is consistent with senior water rights. Both private parties and government agencies such as the California Department of Fish and Game and the United States Park Service could acquire instream appropriative rights.

Under this proposal, on rivers where instream appropriative rights have been granted, the Board would treat instream rights like any other senior water right, following the procedure described above.¹⁶⁸ When reviewing applications for new consumptive

appropriations, the Board initially would decide whether unappropriated water is available. Unlike the present system, the Board would estimate the amount of water necessary to satisfy both existing consumptive uses made pursuant to riparian and appropriative rights and existing *in situ* uses made pursuant to the instream appropriative rights. If unappropriated water were available after these senior rights are satisfied, the Board then would evaluate the proposed appropriation on its merits and decide whether it would be in the public interest to issue a permit.

As under existing law, the analysis of the public interest would include an assessment of the amount of water required to supply instream uses and to comply with the applicable water quality standards. To the extent that instream uses were not already protected by existing instream appropriative rights, the Board would have to decide how much additional water would be needed reasonably to serve these uses in light of the competing demands on the resource. If justified by the evidence, the Board then would issue a permit subject to such terms and conditions as necessary to protect the senior water rights and instream uses not embodied in an instream appropriative right.

The recognition of instream rights as part of the category of senior water rights protected by permit would be a significant change because it would insulate instream appropriative rights from the process of balancing that frequently occurs under the present system. The Board would set aside the amount of water needed to fulfill the senior water rights (consumptive and instream) and allow the new appropriation only to the extent that it would not infringe on these senior rights. Instream uses undertaken pursuant to these senior water rights would receive the same protection presently accorded consumptive uses made pursuant to senior rights. Recognition of instream appropriative rights also would ensure that, in the rare cases in which the Board considered the reasonableness of senior water rights, instream rights and consumptive rights would be treated equally. For a new appropriator to claim water from the allotment of instream appropriators, the applicant would have to prove that the existing instream uses are unreasonable under the circumstances, just as today the applicant must establish that existing senior consumptive water rights are unreasonable in light of the competing alternative uses for the available water.

Recognition of instream appropriative rights therefore would allow members of the public and governmental agencies¹⁶⁹ to acquire water supplies and flow rights for instream uses that are more secure than the instream protections afforded by the existing allocation system. By conferring on certain instream uses the legal status of water rights, the state would ensure that, when reallocations from existing to new uses occur, instream water rights are treated on a par with water rights for consumptive purposes.

The "Nay Say" Problem

The adoption of instream appropriative rights also would redress the "nay say" problem to which Justice Reynoso alluded in his *California Trout* dissent. In its *amicus curiae* brief in that litigation, the Department of Water Resources argued that the case-by-case process for deciding how much water to reserve for instream uses is inadequate because it relies principally on protests filed by the Department of Fish and Game and other interested parties.¹⁷⁰ This protest, or "nay say," procedure is defective for two reasons. First, "[t]he Department of Fish and Game is not adequately staffed or funded for this purpose, which makes continual protesting almost impossible."¹⁷¹ Second, even in those cases where Fish and Game is able to participate, its protests must succeed in every case or lose the desired instream flows:

When Fish and Game protests a particular application . . . if Fish and Game is successful, the . . . Board will require the diverter to by-pass a minimum flow of water past his point of diversion or make releases from a dam. This by-passed water in most cases is subject to appropriation down stream and becomes a target over and over again for would-be appropriators. This [results in] the Department of Fish and Game continually [protesting] each subsequent application and [making] its case anew, hopefully with the same result each time. Fish and Game could be successful nine times out of ten and, on the tenth water [rights] application, lose. Thus, nine out of ten wins could result in the total destruction of a stream's fishery resource.¹⁷²

The same could be said of protests by private individuals and organizations.

If proponents of instream flow protection could acquire a water right, they would be relieved of this Sisyphean task. Rather than having continually to establish the quantities and flows needed to protect instream uses and bearing the complete risk of one adverse decision, instream appropriators would be able to establish a right to a certain flow that, except in cases in which the Board sought to reconsider the reasonableness of existing water rights, would be off-limits to new appropriations.

The Public Trust

Justice Reynoso also argued in his *California Trout* dissent that private parties, as appropriators, "may assert the public trust contained within the fish and wildlife resources of the states."¹⁷³ This statement foreshadowed the California Supreme Court's recognition in *National Audubon Society v. Superior Court* of the public trust doctrine as a constraint on the consumptive use of the state's water resources.¹⁷⁴ Instream appropriations would be an excellent means of implementing the public trust.

Although the court did not address the issue of instream appropriations in *Audubon*,¹⁷⁵ both the purposes of the public trust and the logic of the court's opinion support the acquisition of private instream water rights to accomplish the goals of the public trust doctrine. The court held that members of the public may assert the public trust before both the courts and the Board.¹⁷⁶ The court defined the purposes of the public trust as protection of navigation and fisheries, promotion of recreational uses, and preservation of ecological and aesthetic values.¹⁷⁷ In a water rights setting, the court ruled, these trust uses must be balanced with the need to use the available water to supply consumptive demands, preserving "so far as consistent with the public interest, the uses protected by the trust."¹⁷⁸

Acquisition by private individuals, environmental organizations, and government agencies of instream appropriative rights would further these purposes by enabling the people of California to enforce their common right¹⁷⁹ without having to wait until the public trust is imperiled. Implementation of the public trust through instream appropriations would offer an important advantage over the present system, in which the public trust is considered only when threatened by an existing consumptive use or by a new water rights application. Acting on instream applications, the Board would consider the benefits of setting aside water for public trust uses at an early stage in the development of the water resource, rather than waiting to evaluate the public trust in the context of competing consumptive demands that tend to skew the balancing process.¹⁸⁰ This would enable the Board to establish "ideal" streamflow standards, unencumbered by concern for the pressures of population growth, economic development, and projected water shortages. These standards could be adjusted at a later time, to allow for greater consumptive use of the water as demands increase, as *Audubon* makes clear.¹⁸¹ As described above, however, public trust uses embodied in instream appropriative rights would receive greater protection--and would be treated more fairly--in subsequent reallocation proceedings than are public trust values that do not have the legal status of water rights.

Transfers to Instream Uses

A final benefit of recognizing instream appropriative rights would be to facilitate the voluntary transfer of water from existing uses to instream uses. Transfers occur when water users agree to reallocate water voluntarily from relatively low-value existing uses to new uses that are of greater economic or social value.¹⁸² Many observers view transfers as a way to supply new demands for water without building additional water projects.¹⁸³ Although it is likely that most transfers will occur between consumptive users,¹⁸⁴ instream uses could benefit from this process as well. Indeed, in view of the extensive development of California's water resources, this may be the most important future use of instream appropriations.

Transfers of water from present consumptive uses to instream uses could occur in two ways. First, proponents of greater instream flows could purchase water or water rights from existing users and dedicate the water to flow enhancement. Second, existing users could be encouraged to donate all or a portion of their water rights to instream uses in exchange for the tax benefits applicable to charitable contributions.¹⁸⁵

An example of the latter type of transfer recently occurred in Colorado. In March 1988, the Pittsburgh & Midway Coal Mining Company (P & M Mining) conveyed decreed storage rights¹⁸⁶ to 20,000 acre feet per year and flow rights to 300 cubic feet per second to The Nature Conservancy for the purpose of maintaining instream flows in the Black Canyon of the Gunnison River.¹⁸⁷

Although Colorado recognizes instream appropriative rights, they may be held only by the Colorado Water Conservation Board (CWCB), a state agency.¹⁸⁸ Private parties such as The Nature Conservancy may transfer water rights to the CWCB, however.¹⁸⁹ Thus, in its agreement with P & M Mining, The Nature Conservancy promised to "attempt to obtain, through negotiation and joint action with the Colorado Water Conservation Board, a change of water rights decree for the purpose of maintaining minimum stream flow of 300 cfs" in the Gunnison River as it flows through Black Canyon.¹⁹⁰

This type of transfer would not be possible in California.¹⁹¹ Under current law, water cannot be donated or sold for instream purposes because instream flows cannot be held in the form of a water right by any entity, private or governmental.¹⁹² Rather, the water foregone by the transferor simply would return to the pool of unappropriated water in the river where it would be available for future appropriations authorized by the Board.¹⁹³ Thus, unlike in Colorado, there would be no way to ensure that the water the transferor intended to dedicate to instream uses would actually be put to such a purpose.¹⁹⁴

If California recognized instream appropriative rights, a private organization such as The Nature Conservancy could receive donations of water or water rights from existing users and hold the water in the form of an appropriative right dedicated to instream uses. Alternatively, The Nature Conservancy could broker a transfer of water rights from an existing consumptive user to a state or federal agency, such as the California Department of Fish and Game, the United States Fish and Wildlife Service, or the United States Park Service, which would hold the instream appropriative right.¹⁹⁵ Of course, any such transfer would have to be approved by the Board under the state laws governing water and water rights transfers.

New appropriations for instream purposes would have little effect on the preservation of vital streamflows of many of the state's rivers, which presently are over-appropriated or nearing their capacity to support the demands that will be placed on them in the future. Instream water rights on these rivers would be of little value,

because they would carry relatively late priorities.¹⁹⁷ Accordingly, transfers of existing water rights may hold the key to the implementation of a system of instream appropriation because the transferee's instream use would receive the earlier and more senior priority carried by the transferor's use.

Some Practical Questions

The recognition of instream appropriative rights, used as a supplement to the existing instream flow and water quality laws, would enhance California's present scheme of protecting instream uses. But can instream appropriations be integrated into the existing system of water rights? Or do doctrinal and practical problems associated with the definition and administration of instream appropriative rights render their creation inadvisable?

The thesis that instream appropriations are a necessary component of California instream use law has evoked a number of specific challenges to its efficacy and administrability. What follows is a series of questions that underlie most of these challenges. This dialogue will show that instream appropriations could be administered in harmony with existing California water rights law.

Who should be allowed to apply for a permit to appropriate water for instream uses?

There are two options. California could follow Colorado, as well as most other states that recognize instream appropriative rights, and authorize only designated government agencies to appropriate water for instream purposes.¹⁹⁸ Or, California could adopt the broader approach taken by Arizona and allow any member of the public, along with appropriate government agencies, to claim instream appropriative rights.¹⁹⁹ The choice depends on one's view of the effectiveness of the state in representing the interests of the public and of the desirability of using private rights of action to complement state authority. I previously have expressed my preference for private rights in the field of environmental law²⁰⁰ and adhere to that view in the present context.

Authorization of private parties to appropriate water for instream uses would ensure that diverse interests in protecting streamflows are presented directly to the State Water Resources Control Board. One reason we recognize the private acquisition of water rights, rather than rely exclusively on governmental apportionment of water, is to allow the actual users to initiate claims for water and to define for themselves the purposes for which the water will be used. Individual appropriators are better able than the government to project their future water needs, choose a source of supply, and assess the benefits of allocating water to their chosen uses. Although the Board makes the ultimate determination whether to grant the appropriation, if there is water available for appropriation and the proposed use is reasonable and beneficial, the decision—whether to

use the water to grow almonds or wine grapes, to generate hydroelectric power, or to supply domestic uses—rests with the private appropriator.

Private instream appropriators should be accorded the same right to initiate the application process and to select, subject to approval by the Board, the place and purposes of the instream use. Local fishermen, rafting companies, recreational users, and conservation organizations are likely to be far more aware both of impending threats to a particular river and of the benefits of preserving a certain level of streamflow than would a government agency charged with managing all instream appropriations in the state.

Granting private parties the right to appropriate water for instream uses independent of governmental action also finds support in the public trust doctrine. As described previously, instream appropriative rights represent an important means of implementing the public trust.²⁰¹ Inasmuch as the people of California need not depend on the government to enforce their rights under the trust, neither should they be required to rely on a state agency to effectuate the public trust through instream appropriations.²⁰² As the beneficiaries of the public trust, all members of the public should have the opportunity to protect the trust in the form of a water right, just as they now share with the state the power to assert the trust as a defense to water resources development projects.²⁰³ Accordingly, private parties along with government agencies should be empowered to apply for permits to appropriate water for instream uses.

Does this mean that anyone may acquire an instream appropriative right?

No. Authorizing all members of the public to apply for an instream appropriative right does not mean that the Board must grant a water right to just anybody. As part of its evaluation of the application, the Board must consider the qualifications of the applicant to manage the appropriative right. In making this determination, the Board should review the past commitment of the applicant to the protection of instream uses, satisfy itself that the application is for a *bona fide* instream purpose, and determine that the applicant would use the water both for its own benefit and for the benefit of the public generally.

This process may be illustrated by *California Trout, Inc., v. State Water Resources Control Board*.²⁰⁴ Suppose that, following the recognition of instream appropriative rights, California Trout, Inc. renewed its application for a permit to appropriate water for the purpose of maintaining instream flows in Redwood Creek in Marin County. Before turning to the merits of the application, the Board first should determine whether California Trout is a "suitable" appropriator for instream flow purposes. The Board would learn from California Trout's application that the applicant is a nonprofit corporation that has devoted itself for the last 25 years to the protection of native trout and steelhead habitats.²⁰⁵ California Trout's 3,500 members include conservationists, biologists, and fishing clubs.²⁰⁶ According to the application, many of these members use Redwood Creek for recreation, scientific study, aesthetic enjoyment, and—where

stocks are sufficient—fishing. California Trout seeks to appropriate three cubic feet per second as the "minimum flow needed to maintain suitable fisheries habitat so that juvenile anadromous fish can survive and migrate to the sea."²⁰⁷

This evidence would give the Board ample grounds for concluding that California Trout would be capable of managing the instream water right. Members of the organization regularly use Redwood Creek and therefore would benefit directly from the instream appropriation. The organization has a track record of protecting instream uses on behalf of both its own members and the public generally.²⁰⁸ As an established nonprofit corporation with a large and active membership, California Trout could hold and maintain the appropriative right indefinitely. Accordingly, the Board would be justified in finding California Trout to be a suitable instream appropriator and could proceed to the merits of the application.

In her article, *The Public's Role in the Acquisition and Enforcement of Instream Flows*,²⁰⁹ Lori Potter has compiled a partial catalog of the environmental, fishing, and recreational groups that are interested in preserving instream flows. The list shows the array of organizations that potentially qualify as instream appropriators:²¹⁰ sport fishing groups, such as Trout Unlimited and the Izaak Walton League, which have played a major role in the enactment of state instream flow legislation, as well as local angling associations; commercial fishing companies that operate on rivers or in bays and estuaries and which rely on "inflows of fresh water to maintain the proper salinity and nutrients for the production of fish and shellfish"; conservation organizations — such as the Sierra Club and the Wilderness Society, and wildlife protection groups — such as the National Audubon Society and Defenders of Wildlife — which "favor instream flows both for the recreational and aesthetic enjoyment of their members and for the preservation of wildlife and its essential habitat"; and commercial and nonprofit canoeing, kayaking, and rafting organizations, which depend on instream flows to support their recreational uses.²¹¹

This list focuses on private organizations because they likely would be the primary applicants for instream appropriations. In general, commercial or nonprofit organizations would be better suited to appropriate water for instream uses than would individuals. When the Board considers an application for a new appropriation, it must decide whether the proposed use is justified in light of competing demands for the available water and, in the case of consumptive uses, whether the benefits of diverting water from the river outweigh the harm to instream uses.²¹² An application to appropriate water for a consumptive purpose may be for vast quantities of water—the permits for the Central Valley Project and the State Water Project are examples—or for very small amounts, such as to supply a single house or a small orchard. In the latter case, an individual would be a suitable appropriator, because the amount of water granted in the permit would represent a tiny fraction of the total quantity of water in the river. There would be little doubt that the benefit gained by the individual appropriator, using the water for his or her own purposes, was worth the small cost to the resource. In contrast,

instream appropriations normally would represent a significant percentage of the total flow of the river. If the applicant were an individual, it might be difficult for the Board to assess whether the great amount of water requested would benefit a sufficiently large number of persons to be justified under the circumstances. Thus, to ensure that the benefits of such relatively large appropriations are enjoyed by more than a few, the Board should prefer organizational applicants, representing a multiplicity of users, over individual appropriators.²¹³

Individual applicants should not necessarily be precluded from appropriating water for instream uses, however. On a small coastal or mountain stream, for example, the Board might well conclude that an individual appropriator would benefit sufficiently from the flow rights for fishing, boating, and aesthetic enjoyment to justify creation of a private water right. The Board also could decide that certain individual applicants would be capable of holding an instream water right as a trustee for the public generally.²¹⁴ But these circumstances will be rare. In most cases, fishing groups, commercial rafting companies, environmental organizations, and local associations of citizens will offer the best assurances that the water appropriated for instream purposes will be enjoyed by many and used to benefit the public interest.

Would recognition of instream water rights allow private appropriators to tie up all of the unappropriated water in the river for instream uses?

This common concern is based on a misapprehension of the nature of instream appropriative rights. Instream flow rights would be based on permits issued by the Board, which would ensure that the appropriation is for a beneficial purpose and is a reasonable use of the available water, taking into account the competing demands on the resource. They would be established and regulated in the same manner as other types of appropriative water rights. Thus, before granting an instream right, the Board would have to address two important questions: how much water should be allocated to the instream use, and along what stretch of the river? The answers to both will depend on the nature and extent of the alternative uses of the available water.

In deciding how much water, if any, to allocate to the new instream appropriation, the Board first would make an assessment of the amount of water available in the river and of the flow requirements of the various instream uses set forth in the application. It then would review the existing consumptive uses of the water and determine whether there is unappropriated water available to serve those instream uses.²¹⁵ In most cases, the Board would not encroach upon senior water rights to allow for the new instream appropriation, although it would have the power to do so under the reasonable and beneficial use and public trust doctrines.²¹⁶ The Board also would evaluate any competing applications to appropriate water from the river that would be inconsistent with the proposed instream appropriation and make some assessment of the projected future consumptive demands on the resource.²¹⁷

Taking all of these factors into account, the Board then would decide how much water reasonably should be allocated to the instream uses set forth in the application.²¹⁸ This would not necessarily be all of the water for which the applicant applied. Indeed, as with other water rights applications, the Board might reject certain instream flow applications altogether.

If the Board decided to apportion some water to the applicant, it then would have to determine the stretch of river that would be protected by the instream water right. As with the amount of water granted to the instream appropriation, the definition of the place of use would be left to the judgment of the Board. The Board first should consider whether the uses for which the water is to be appropriated are present along the entire stretch of river described in the application. For example, if the appropriation is for the purpose of supporting rafting and kayaking, the Board should limit the place of use to the stretch of river between the put-in and turn-out points for the boaters. Similarly, if the purpose of the appropriation is to preserve a scenic waterfall, the Board could define the place of use of the instream appropriative right as extending along the river upstream of the waterfall to a point below the falls that is out of view from the vistas of the falls. On the other hand, if the appropriation is for preservation of the fisheries of a river, the Board could designate the entire river, or the segment described in the application, as the place of use of the instream right.

The place of use is an important aspect of the instream appropriative right because it defines the scope of the right vis-à-vis other competing uses. An instream right held by a commercial rafting company, for example, would prevent a subsequent appropriator from constructing water impoundment facilities along the stretch of river described in the instream permit or downstream of the designated segment if the impoundment would back water up into the instream place of use. It also would prohibit a subsequent appropriator from operating diversion and impoundment facilities upstream of the instream place of use in a way that would interfere with the instream appropriator's flow rights.

Not all later appropriations would be incompatible with the instream water right, however. The Board could grant a permit to another instream appropriator, such as a fishing organization, for the use of the same water appropriated by the commercial rafting company. Similarly, the Board could approve a subsequent appropriation for diversion and storage upstream of the place of use of the instream water right, if the new appropriator agreed to release water to satisfy the senior flow rights of the rafting company. Or, if this were not possible, the Board could allow the new consumptive use, but only on the condition that the new appropriator move its point of diversion to a location downstream of the place of use set forth in the instream appropriative right.²¹⁹

As these examples illustrate, the concern that instream appropriators somehow would monopolize the waters of the state is unfounded. Just as it does in reviewing applications to appropriate water for consumptive purposes, the Board would evaluate

the reasonableness of both the quantity of water and the place of use requested in the application.²²⁰ As with other types of water rights, we could rely on the Board to ensure that instream appropriations are socially beneficial and do not claim an inordinate amount of the state's water supplies.

Assuming that the initial allocation to instream appropriators is consistent with the public interest, what happens when things change? Wouldn't the existence of instream appropriations make it impossible to reallocate water to more socially valuable uses?

Recognition of instream water rights would not render it impossible to shift water from instream uses to new consumptive uses if future demands and social values warrant such a change. Pursuant to the California Constitution as well as the public trust doctrine, both the Board and the courts have the power to reallocate water from riparians and prior appropriators to accommodate new demands on the resource.²²¹ This same authority would permit future reallocation of water from instream water rights to new consumptive uses.

Although the extent of the state's power to declare existing uses of water unreasonable is not yet well-defined, two cases are illustrative. In *Joslin v. Marin Municipal Water District*,²²² riparians along Nicasio Creek in Marin County sued the water district in inverse condemnation, claiming that the district's upstream impoundment and diversions for domestic water supply interfered with their water rights. The district's appropriations were authorized by a permit from the State Water Rights Board, the predecessor of the State Water Resources Control Board.²²³ For over ten years the Joslins had relied on the natural flow of the stream to deposit onto their property suspended rock, sand, and gravel, which they sold commercially.²²⁴

The California Supreme Court rejected the Joslins' claim that reduction of the water flow by their land constituted a taking of property, on the ground that the Joslins' use of their riparian rights was unreasonable under the circumstances. Reasoning that "riparian rights attach to no more of the flow of the stream than that which is required for [a reasonable] use,"²²⁵ the court concluded that "since there . . . is no property right in an unreasonable use there has been no taking . . . of property by the deprivation of such use."²²⁶

Joslin established that the state has the power to reallocate water from existing uses to new uses, without paying compensation to the water rights holder from whom the water is divested, if the existing use is unreasonable. On its face, this holding is unremarkable. The principle that all water rights must be exercised in a reasonable manner is set forth explicitly in Article X, Section 2 of the California Constitution and has been applied by both the courts and the Board.²²⁷

The significance of *Joslin* lies in the supreme court's description of the way in which an existing water right may be found unreasonable. The court held that, although

the determination of the reasonableness of a particular use "depends on the circumstances of each case, such an inquiry cannot be resolved *in vacuo* isolated from state-wide considerations of transcendent importance."²²⁸ It saw as "paramount" among these considerations the "ever increasing need for the conservation of water."²²⁹ Thus, *Joslin* seems to empower the Board to reallocate water from existing water rights to new water rights if it determines that the existing use is unreasonable in light of competing demands on the resource that are of greater societal value. This will be particularly true where, as in *Joslin*, the existing use requires an inordinately large portion of the flow of the river.

The California Supreme Court reaffirmed this aspect of *Joslin* in its opinion in *National Audubon Society v. Superior Court*.²³⁰ As described previously,²³¹ the court ruled that an appropriator may not acquire a vested right to use water in a manner that violates the public trust.²³² Although the Board may approve appropriations "despite foreseeable harm to public trust uses,"²³³ the court held that the Board and the courts retain the power at a later date "to reconsider allocation decisions even though those decisions were made after due consideration of their effect on the public trust."²³⁴ Thus, the public trust doctrine complements the Board's authority under its reasonable use powers to reallocate water from existing uses to new, more highly valued uses.

While *Audubon* involved a potential reallocation from a consumptive use to an instream use, the court's analysis is germane to the question under consideration here. The court reiterated that "[a]ll uses of water, including public trust uses, must . . . conform to the standard of reasonable use."²³⁵ Accordingly, just as the Joslins' instream use of their riparian rights was adjusted to allow for a new, more valuable appropriation for domestic water supply, under both Article X, Section 2 and the public trust doctrine an instream appropriative right may be reallocated to a new consumptive use if statewide conditions so warrant.

Although instream appropriations could be required to give way to new consumptive uses as population increases and available water supplies decrease relative to demand, such reallocations should not occur easily. After all, the purpose of recognizing instream appropriative water rights is to make it more difficult for the Board to encroach upon instream flows to accommodate new consumptive demands on the available water.²³⁶

Once water is allocated to instream uses in the form of an instream permit, the Board should have authority to reallocate it to other uses only if five criteria are met. First, the applicant must establish that it has no alternative sources of supply for the new use, including transfers from existing consumptive uses, water conservation, and use of reclaimed waste water.²³⁷ Second, there must be no "physical solution"—such as moving the point of diversion for the new use to a location downstream of the instream use²³⁸—that would allow the new use to occur without impairing the instream appropriative right. Third, the Board must find that it would be more socially valuable to

supply the new consumptive use than to continue the instream use. The Board must determine that, in light of the proposed appropriation, the existing instream appropriation is unreasonable.²³⁹ Fourth, the Board must evaluate other existing water rights and determine whether they too are unreasonable in light of the pending application and should be adjusted to free up water for the new appropriation.²⁴⁰ The Board would be able to reduce the entitlement of the instream appropriator only after concluding that preservation of the senior consumptive uses is more valuable than continuation of the instream use. Fifth, if all of these criteria are satisfied, the Board could reallocate water from instream appropriators to new consumptive uses based on its finding that the reapportionment would be in the public interest.²⁴¹

In sum, while recognition of instream water rights would not render it impossible to reallocate water from instream uses to new uses as social conditions and values change, it should be as difficult to alter an instream appropriative right as it is presently to adjust other types of senior water rights for this purpose. In a system of prior appropriation, senior water rights should be granted substantial (but not absolute) protection from alternative uses that are later in time and therefore junior in priority. The *raison d'être* of instream appropriative rights is to afford those rights the same protections given to the consumptive water rights with which they compete.²⁴²

Would instream appropriative rights be transferable between uses and between users, as are other types of appropriative rights?

This important question raises the issue of whether an instream appropriator should be allowed to profit by putting its water right to a new, and presumably more valuable, consumptive use, or by selling the water right to a consumptive user. Although other types of appropriative rights may be freely transferred in California, instream water rights should not be convertible to consumptive uses or transferable to a consumptive user. Two reasons exist for treating instream water rights differently than other appropriative rights are treated.

The first is to prevent speculation, which could undermine the efficacy of the instream appropriation system. California law encourages the voluntary transfer of appropriative rights²⁴³ on the principle that water can be most efficiently allocated by the free market.²⁴⁴ Whenever a resource may be sold for a profit, however, there is a risk that certain individuals will acquire the resource for the primary purpose of speculating on its market value, rather than putting the resource to a productive use.

With consumptive appropriations, the requirement that the water be put to a reasonable and beneficial use within the time limits set forth in the permit²⁴⁵ represents a powerful check on such speculation. To satisfy this requirement, the appropriator must make a substantial financial investment to use the allotted water by building a dam or investing in crops and irrigation works. The Board then limits the appropriator's entitlement to the amount of water actually used in these facilities.

In contrast, instream appropriations are essentially free. Because the water is left in place, the appropriator need invest little or no capital or labor to perfect its rights. As a consequence, speculators could easily acquire instream water rights and either convert the rights to consumptive uses or sell them to another user at a future date. The speculator presumably would wait to convert the instream use into a consumptive use until the value of its appropriative right was greater than the value of an appropriative right that could be acquired from the Board. This would occur when the priority date of the instream right entitled the existing appropriator to a water supply not available to a new appropriator. By changing the purpose of use of the water right from instream to consumptive, or by selling the right to another user, the speculator would receive a profit—the value of the early priority date—that it would not have earned by investing in facilities to develop the water and by putting the water to a reasonable and beneficial use. Indeed, because an instream appropriator usually would be entitled to a relatively high percentage of the flow of the river,²⁴⁶ the potential windfall available to such a speculator could be quite large.

The second reason for restricting the transfer of instream water rights is to protect the public's enjoyment of the instream flows for which the appropriation was established. As discussed above,²⁴⁷ in many cases an instream appropriation would be established not just to serve the actual appropriator but also for the enjoyment of the public generally as beneficiaries of the public trust. Allowing the appropriator to convert its water rights to a consumptive use not only would deprive the public of instream flows embodied in the right, it also would be inconsistent with the public interest that the private water right represents.

Accordingly, subject to the approval of the Board, instream water rights should be freely transferable from one instream appropriator to another. They should not be transferable to a different kind of use, however, either by the original appropriator or by a transferee.

In view of the extensive development of California's water resources, isn't the proposal to recognize instream appropriative rights too little and too late?

Implicit in this question is the assumption that there is little water left in California to be appropriated for instream uses. The argument follows that adoption of instream appropriative rights at this late date would not be worth the effort. There are two responses to this concern.

First, as with any proposal to reform California's water laws (be it water conservation, transfers, or stricter enforcement of the waste and unreasonable use laws), instream appropriations do not have to offer a panacea. Rather, if they could enhance the protection of instream uses along a few rivers of the state, then the law should be changed to recognize instream water rights. There are a number of coastal streams and many more Sierra Nevada rivers²⁴⁸ along which there exist no present consumptive

water rights or in which unappropriated water remains available. That these rivers may be fully appropriated in their lower reaches is of no consequence. For, unlike other appropriations, instream rights do not diminish the amount of water available to downstream users.²⁴⁹

Second, even on those rivers that have been developed extensively, instream water rights can be of value. As discussed above,²⁵⁰ one of the great benefits of recognizing instream appropriations would be to allow for the transfer of water rights from existing consumptive uses to instream uses. This would be an effective means of enhancing streamflows in areas such as the Sacramento-San Joaquin Delta and its principal tributaries, where instream beneficial uses have suffered from over-appropriation.²⁵¹

Thus, far from being too little, too late, the recognition of instream uses today would aid in the effort to preserve those rivers and streams that retain healthy fisheries, abundant recreational opportunities, and other instream values, and in the effort to restore those rivers in which instream uses have declined.

Conclusion

I began this essay as a tribute to an innovative and courageous judge whose tenure, sadly, was cut short by the California electorate. I would like to end with a tribute to a great writer, whose career tragically was cut short by cancer. As many of his works indicate, throughout his often troubled life Raymond Carver found solace in the sounds, smells, and solitude of flowing water. And, in a very pragmatic way, that is what this essay is about: finding an effective means of preserving the unique resources of our free-flowing rivers, their wetlands and aquatic habitat, their fisheries and whitewater, and their recreational and aesthetic values. Far better than I, Raymond Carver was able to articulate the redemptive qualities of rivers. So I will conclude with a poem that he wrote five years before his death in August 1988:

Where Water Comes Together With Other Water²⁵²

*I love creeks and the music they make.
And rills, in glades and meadows, before
they have a chance to become creeks.
I may even love them best of all
for their secrecy. I almost forgot
to say something about the source!
Can anything be more wonderful than a spring?
But the big streams have my heart too.
And the places streams flow into rivers.
The open mouths of rivers where they join the sea.
The places where water comes together*

*with other water. Those places stand out
in my mind like holy places.
But these coastal rivers!
I love them the way some men love horses
or glamorous women. I have a thing
for this cold swift water.
Just looking at it makes my blood run
and my skin tingle. I could sit
and watch these rivers for hours.
Not one of them like any other.
I'm 45 years old today.
Would anyone believe it if I said
I was once 35?
My heart empty and sere at 35!
Five more years had to pass
before it began to flow again.
I'll take all the time I please this afternoon
before leaving my place alongside this river.
It pleases me, loving rivers.
Loving them all the way back
to their source.
Loving everything that increases me.*

* * * * *

Postscript

In 1991, the California Legislature responded to calls for the recognition of instream water rights by enacting a statute that permits existing water rights holders to dedicate all or a portion of their water rights to instream uses. Section 1707 of the Water Code authorizes any water right holder to petition the State Water Resources Control Board to change its water right "for purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water."²⁵³ The Board may grant the petition only if the change will not increase the amount of water the petitioner is entitled to use, and will not "unreasonably affect any legal user of water."²⁵⁴ The statute applies to riparians and pre-1914 appropriators, as well as to permittees and licensees.²⁵⁵

Although section 1707 does not address these issues, the Board has interpreted the law as permitting a water rights holder to dedicate a portion of its rights to instream uses and has construed the statute as authorizing revocable, time-limited instream

transfers.²⁵⁶ In other words, transfers to instream uses need not be permanent dedications of all of the transferor's water rights.

Section 1707 is direct and concise, but its simplicity is an inelegant one. For the authorization of dedications of existing consumptive water rights to instream uses, limited only by the criteria that the change neither increase the user's rights nor unreasonably harm others, raises a number of questions to which there are no obvious answers.

First, how do instream dedications affect the amount of water that the state has set aside for instream uses pursuant to laws such as Water Code sections 1243 and 1258, the reasonable use and public trust doctrines, water quality statutes, and the Wild and Scenic Rivers Act? Do the *proprietary* instream water rights recognized by section 1707 augment the water reserved for instream uses by the *regulatory* process? Or, does the protection of instream uses by water right simply free-up an equivalent amount of water (previously reserved from consumptive uses) for new appropriations or for the satisfaction of senior rights?

Many of the regulatory protections of instream uses are based on ambient water quality standards and minimum flow requirements. These include restrictions on diversions, release requirements for dams, and limits on the discharge of pollutants that are invoked only under specified water quality or flow conditions. Thus, if instream water rights are not counted as additions to the regulatory protections—if they are instead subsumed within the existing instream protection structure—the dedication of water rights to instream purposes would simply reduce the obligation of those users that are subject to the regulatory requirements to provide water (or to reduce pollutant loading) to meet the ambient standards. There would be no net enhancement of water quality or increase in instream flows from the instream dedication.

Second, section 1707 does not define how the Board should consider instream dedications when it subsequently establishes water quality standards and related flow requirements. Should the Board credit the water provided by instream water rights holders toward the amount required to provide "reasonable" protection for instream uses? Or, must the Board establish the regulatory protections for instream uses without considering the water supplied by instream water right holders? The answer to these questions turns on whether the Legislature intended to recognize instream water rights as additions to the existing regulatory protections or simply as another means of achieving the same level of water quality and instream flows as afforded by the prior law.

Third, who is protected by the proviso that transfers to instream uses shall not "unreasonably affect any legal user of water"? The limitation clearly applies to other water right holders whose own rights would be "unreasonably" diminished by the proposed change. But does it also apply to those who have been relying on the continued existence of surplus water that the petitioner proposes to put to an instream use? In other words, may a downstream user of surplus water, the rights to which are

held by the petitioner, block a change under section 1707 because the dedication of the surplus to instream uses would deprive the downstream user of the surplus supplies? As with a decision of a water rights holder to begin using more of its entitlement, which may take water away from others who have been appropriating the surplus, the answer to these questions presumably would be "no." The Legislature's choice of the terms "any legal user" of the water dedicated to instream uses suggests, however, that the Board might be permitted to deny the petition on the ground that the proposed instream use would unreasonably deprive a downstream appropriator of the use of the petitioner's water.

Fourth, may a water right holder with rights to more water than needed for consumptive uses avoid a forfeiture of a portion of the rights for lack of due diligence by dedicating the surplus water to instream purposes? Inasmuch as section 1243.5 of the Water Code declares that instream uses are "beneficial" within the meaning of Article X, Section 2 of the state constitution, the answer to this question would appear to be "yes." Nonetheless, the Board could deny a petition to change an existing water right under section 1707 on the ground that the water the petitioner proposes to dedicate to instream uses is surplus to the petitioner's needs as set forth in the existing permit or license and therefore is not part of the petitioner's water rights.²⁵⁷

Fifth, in a manner similar to the creation of a conservation easement, may a water right holder permanently dedicate a portion of the right under section 1707 and claim an income tax deduction for a charitable contribution and a reduction in property taxes for the diminished value of the land previously served by the dedicated water? If so, the tax benefits associated with the conservation easement laws could create a powerful incentive to existing users to avail themselves of section 1707.²⁵⁸ Yet, the Legislature did not explain the relationship between section 1707 and the state and federal tax laws that govern charitable contributions and property tax assessments.

Finally, does section 1707 overrule *Fullerton* and *California Trout*? To the extent that the cases decided that no one may *hold* a water right for instream purposes, they obviously are no longer good law. The court of appeals' judgment that new appropriators may not *acquire* a permit for instream uses would seem to survive the enactment of section 1707, however, because the Legislature authorized only the conversion of an existing water right from consumptive to instream uses. Yet, the statutory recognition of instream water rights casts doubt on the courts' determination that the diversion or impoundment of water is the *sine qua non* of the appropriative right and therefore is essential to the acquisition of a new water right in California.²⁵⁹ For the Legislature has now declared that a water right may exist notwithstanding the absence of a diversion of or physical control over the appropriated water.

Although it is unlikely that the Board or the courts will construe section 1707 as implicitly overruling *Fullerton* and *California Trout* for new appropriations, as well as for changes in existing water rights, the Legislature's recognition of instream water rights

renders the decisions incongruous. Subsequent legislation should extend the recognition of instream rights to new appropriations and should address the difficult questions raised in this Postscript. Section 1707 is a salutary, even surprising, development. In its current form, however, it is but a first step toward the full reconsideration of instream water rights in California.

Notes

1. 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979).
2. 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).
3. *Id.* at 820-23, 153 Cal. Rptr. at 675-76.
4. *Id.* at 823, 153 Cal. Rptr. at 676 (Reynoso, J., dissenting).
5. *Id.* at 825, 153 Cal. Rptr. at 677.
6. *Id.* at 824, 153 Cal. Rptr. at 677.
7. See GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, FINAL REPORT 112-19 (1978) [hereinafter GOVERNOR'S COMMISSION REPORT] (recommending against most private or public instream appropriations).
8. See, e.g., *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983), *cert. denied*, 464 U.S. 977 (1983).
9. To my surprise and great pleasure, in 1991 the Legislature enacted a statute that partially recognizes instream water rights. As described in the Postscript, this law authorizes an *existing* appropriator to dedicate all or a portion of its water rights to instream purposes. The statute does not fully adopt the recommendations of this chapter, however, because it does not permit the new appropriation of water for instream uses.
10. Created in 1967, the State Water Resources Control Board (the Board) is the primary state agency charged with managing the water rights system for appropriations of surface water, administering the federal and state water pollution control laws, and ensuring that all uses of California's water resources comply with California's constitutional requirement of reasonable and beneficial use. See Ronald B. Robie, *The Delta Decisions: The Quiet Revolution in California Water Rights*, 19 PAC. L.J. 1111, 1123-25 (1988).
11. See Anne J. Schneider, *Legal Aspects of Instream Water Uses in California 5* (Governor's Comm'n to Review California Water Rights Law Staff Paper No. 6, 1978).
12. CAL. WATER CODE § 1243 (West 1971 & Supp. 1993). The California Constitution requires that all uses of water be reasonable and for beneficial purposes. CAL. CONST. art. X, § 2 (West Supp. 1993); see *infra* note 52.
13. See CALIFORNIA STATE WATER RESOURCES CONTROL BD., WATER QUALITY CONTROL PLAN FOR SALINITY: SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY 5-13 to 5-45 (1991) [hereinafter WATER QUALITY CONTROL PLAN] (draft).
14. See CALIFORNIA STATE WATER RESOURCES CONTROL BD., LOWER AMERICAN RIVER COURT REFERENCE TECHNICAL REPORT 152-56 (1988) [hereinafter TECHNICAL REPORT] (prepared in connection with *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, No. 425 955 (Alameda County Super. Ct. 1990)).

15. *See id.* at 165-70.
16. *See id.* at 160.
17. *See* WATER QUALITY CONTROL PLAN, *supra* note 13, at 5-45 to 5-53.
18. For a comparison of the instream flow laws of the other western states, see the other chapters in this book. *See also* Lori Potter, *The Public's Role in the Acquisition and Enforcement of Instream Flows*, 23 LAND & WATER L. REV. 419 (1988); A. Dan Tarlock, *Appropriation For Instream Flow Maintenance: A Progress Report on "New" Public Western Water Rights*, 1978 UTAH L. REV. 211; A. Dan Tarlock, *Recent Developments in the Recognition of Instream Uses in Western Water Law*, 1975 UTAH L. REV. 871; Richard L. Dewsap & Dallin W. Jensen, *State Laws and Instream Flows* (1977) (U.S. Dep't of Fish and Wildlife Contract No. 14-16-0008-2120FWS); Steven J. Shupe, *Legal Implications of Instream Flows and Other Nonconsumptive Uses* (June 1985) (speech presented at Western Water Law in Transition, a course sponsored by the Natural Resources Law Center, University of Colorado).
19. *See infra* text accompanying notes 26-64.
20. *See infra* text accompanying notes 65-88.
21. *See infra* text accompanying notes 89-92.
22. *See infra* text accompanying notes 93-100.
23. GOVERNOR'S COMMISSION REPORT, *supra* note 7, at 119.
24. *Id.* at 118-19. In response to the deluge of applications to construct small hydroelectric power dams that followed the enactment of the Public Utility Regulatory Policies Act of 1978, 16 U.S.C. §§ 2601-2708 (1982), the legislature adopted the Commission's recommendation in 1982. The California Public Resources Code now requires the Department of Fish and Game to "identify and list those streams and watercourses throughout the state for which minimum flow levels need to be established in order to assure the continued viability of stream-related fish and wildlife resources," CAL. PUB. RES. CODE § 10001 (West 1986), and to "prepare proposed streamflow requirements . . . for each stream or watercourse identified." *Id.* § 10002. Before it grants an application to appropriate water from a stream designated under section 10001, the State Water Resources Control Board must "consider" the Department's streamflow standards. *Id.*; CAL. WATER CODE § 1257.5 (West Supp. 1993); *see also infra* text accompanying notes 26-64.
25. *See infra* note 154.
26. *People v. Shirokow*, 26 Cal. 3d 301, 309-10, 605 P.2d 859, 865-66, 162 Cal. Rptr. 30, 35-36 (1980) (citing the Water Commission Act, 1913 Cal. Stat. ch. 586, § 11, *currently codified at* CAL. WATER CODE § 1201 (West. 1971)).
27. Riparian rights are an incident of the ownership of riparian land--i.e., land that is adjacent to a natural watercourse. *See* JOSEPH L. SAX, ROBERT H. ABRAMS AND BARTON H. THOMPSON, *LEGAL CONTROL OF WATER RESOURCES* 37-49 (2d ed. 1991). Riparian rights generally are not subject to the permit and license jurisdiction of the Board. *Cf. infra* note 28.

28. Technically, a permit from the Board is a temporary license to construct water impoundment and diversion facilities and to appropriate water. After the permittee completes construction, applies the water to the beneficial uses set forth in the permit, and otherwise fulfills the terms and conditions of the permit, the permittee may apply for a permanent license to appropriate water. See CAL. WATER CODE §§ 1375-1397, 1600-1610 (West 1971 & Supp. 1993); see also *infra* note 49.

Although the Board has no authority to require permits or licenses for riparians and pre-1914 appropriators, it has four types of indirect jurisdiction over such users. First, the Board has the power to regulate riparian and pre-1914 appropriative rights to prevent waste and unreasonable use of water. See *Imperial Irrigation Dist. v. State Water Resources Control Bd.*, 186 Cal. App. 3d 1160, 231 Cal. Rptr. 283 (1986); *People ex rel. State Water Resources Control Bd. v. Forni*, 54 Cal. App. 3d 743, 751, 126 Cal. Rptr. 851, 855 (1976). Second, it may regulate appropriative rights pursuant to its authority under the public trust doctrine. *United States v. State Water Resources Control Bd.*, 182 Cal. App. 3d 82, 149-50, 227 Cal. Rptr. 161, 200-02 [hereinafter *Delta Water Cases*] (1986). Third, the Board may assume direct jurisdiction over riparians and pre-1914 appropriators when it invokes its powers to conduct a statutory adjudication of all water rights in a surface stream system. *In re Waters of Long Valley Creek Stream Sys.*, 25 Cal. 3d 339, 348-49 & n.4, 599 P.2d 656, 661 & n.4, 158 Cal. Rptr. 350, 355 & n.4 (1979); CAL. WATER CODE § 2501 (West 1971). Fourth, the Board has asserted jurisdiction over all users and uses of water when establishing water quality standards. See *Delta Water Cases*, 182 Cal. App. 3d at 123-26, 227 Cal. Rptr. at 183-85; CALIFORNIA STATE WATER RESOURCES CONTROL BD., DECISION 1630: ON THE SAN FRANCISCO BAY/ SACRAMENTO-SAN JOAQUIN DELTA ESTUARY 122-31 (1993) [hereafter DECISION 1630].

29. See *infra* text accompanying notes 52-64.
30. This discussion is limited to the procedures that the Board must follow to protect instream flows during the permit process. An analysis of how the Board actually considers applications to appropriate water is set forth *infra* text accompanying notes 101-34.
31. CAL. WATER CODE § 1243 (West Supp. 1993). After receiving notice from the Board, the Department of Fish and Game shall "recommend the amounts of water, if any, required for the preservation and enhancement of fish and wildlife resources and shall report its findings to the Board." *Id.* This process differs from the adoption of comprehensive stream flow standards discussed *supra* note 24 in that the Department discharges its responsibilities under section 1243 of the Water Code on a case-by-case basis.
32. CAL. WATER CODE § 1243 (West Supp. 1993). The California Legislature has declared that "[t]he use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water." *Id.*
33. *Id.* § 1243.5 (West 1971). Section 1258 provides that "[i]n acting upon applications to appropriate water, the board shall consider water quality plans which have been established pursuant to Division 7 . . . of this code, and may subject such appropriations to such terms and conditions as it finds are necessary to carry out such plans." *Id.* § 1258.
34. *Id.* § 1257.
35. See *supra* note 24 and accompanying text.

36. CAL. WATER CODE § 1257.5 (West Supp. 1993).
37. *Id.* § 1253 (West 1971).
38. Such terms and conditions may be found in many water rights decisions and permits issued by the Board. *See, e.g., In re South Fork American River Project Water Rights* 91-103, State Water Resources Control Bd., Decision 1587 (1982) [hereinafter Decision 1587]. The Board maintains a catalog of frequently used terms and conditions, copies of which are available upon request. CAL. CODE REGS. tit. 23, § 780 (1993) (describing State Water Resources Control Bd., Permit Term Index (1982) [hereinafter Standard Permit Terms]). Standard Permit Terms 60-69 address protection of fish, wildlife, and recreational uses. *Id.*
39. *See Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 26 Cal. 3d 183, 605 P.2d 1, 161 Cal. Rptr. 466 (1980); *see also* CAL. WATER CODE § 275 (West 1971).
40. CAL. CODE REGS. tit. 23, § 780 (1993). The continuing authority of the Board is embodied in standard terms 12 and 13, in the Standard Permit Terms, *supra* note 38. It is based on Article X, Section 2 of the California Constitution, the public trust doctrine, and various provisions of the Water Code. CAL. WATER CODE §§ 100, 106, 275, 1243.5, 1250, 1253, 1391, 1393, 1394 (West 1971 & Supp. 1993); *see Delta Water Cases*, 182 Cal. App. 3d 82, 127-29, 149-52, 227 Cal. Rptr. 161, 185-87, 201-02 (1986).
41. *See e.g.*, Decision 1630, *supra* note 28 at 59-71.
42. *See, e.g.*, Decision 1587, *supra* note 38, at 97-98.
43. *Delta Water Cases*, 182 Cal. App. 3d at 129, 227 Cal. Rptr. at 187.
44. *See id.* (construing CAL. CONST. art. X, § 2). The California Constitution declares:
[T]hat because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.

CAL. CONST. art. X, § 2 (West Supp. 1993). The Supreme Court has said that this provision "establishes state water policy." *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 443, 658 P.2d 709, 725, 189 Cal. Rptr. 346, 362 (1983), *cert. denied*, 464 U.S. 977 (1983).
45. *Delta Water Cases*, 182 Cal. App. 3d at 129-30, 227 Cal. Rptr. at 187-88; *see Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 26 Cal. 3d 183, 194, 605 P.2d 1, 6, 161 Cal. Rptr. 466, 471 (1980).
46. *Delta Water Cases*, 182 Cal. App. 3d at 129-30, 227 Cal. Rptr. at 187-88; *see infra* text accompanying notes 65-88.
47. *Audubon*, 33 Cal. 3d at 445-49, 658 P.2d at 727-29, 189 Cal. Rptr. at 364-66; *see infra* text accompanying notes 58-64.
48. *See Delta Water Cases*, 182 Cal. App. 3d at 130, 148-52, 227 Cal. Rptr. at 187-88, 200-02.

49. Until recently, the Board's reserved jurisdiction formally terminated when the Board granted a license for the completed water project. See CAL. WATER CODE §§ 1394, 1600-1610 (West 1971 & Supp. 1993). In 1984, however, the Board adopted a standard permit term to extend its reserved jurisdiction to apply to licenses as well:

Pursuant to California Water Code Sections 100 and 275 and the common law public trust doctrine, all rights and privileges under this permit *and under any license issued pursuant thereto* . . . are subject to the continuing authority of the State Water Resources Control Board in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

CAL. CODE REGS. tit. 23, § 780(a) (1993); Standard Permit Terms, *supra* note 37, term 12 (adopted Oct. 30, 1984) (emphasis added). Thus, for permits granted after 1984, the Board's reserved jurisdiction continues throughout the life of the water right. For permits granted before 1984, the Board has significant authority under the reasonable and beneficial use and public trust doctrines to modify the terms of the license as required to protect instream uses. See *infra* text accompanying notes 52-64.

50. CAL. WATER CODE §§ 384, 386, 1701, 1727, 1736 (West 1971 & Supp. 1993).

51. *Id.* § 386 (West Supp. 1993); see *id.* §§ 1725, 1726.

52. Article X, section 2 of the California Constitution provides in relevant part:

The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water. Riparian rights in a stream or water course attach to, but to no more than so much of the flow thereof as may be required or used consistently with this section, for the purposes for which such lands are, or may be made adaptable, in view of such reasonable and beneficial uses.

CAL. CONST. art. X, § 2 (West Supp. 1993); see also CAL. WATER CODE §§ 100-101 (West 1971) (reiterating the reasonable and beneficial use requirements).

53. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983), *cert. denied*, 464 U.S. 977 (1983).
54. CAL. WATER CODE § 275 (West Supp. 1989). The Board shares this responsibility with the Department of Water Resources. *Id.*
55. *People ex rel. State Water Resources Control Bd. v. Forni*, 54 Cal. App. 3d 743, 126 Cal. Rptr. 851 (1976).
56. *Imperial Irrigation Dist. v. State Water Resources Control Bd.*, 186 Cal. App. 3d 1160, 231 Cal. Rptr. 283 (1986), *decree aff'd*, 225 Cal. App. 3d 548 (1990).

57. CAL. WATER CODE § 1243 (West Supp. 1993).
58. 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983), *cert. denied*, 464 U.S. 977 (1983).
59. *Id.* at 446-48, 658 P.2d at 728-29, 189 Cal. Rptr. at 364-66. At issue in *Audubon* was the applicability of the public trust—an ancient doctrine that establishes public rights to use the navigable waters of the state—to the appropriative water rights of the City of Los Angeles in four streams that supply Mono Lake. The Court held that the National Audubon Society's allegations that the city's diversions impaired the public trust in Mono Lake stated a cause of action. According to the Court, the values protected by the trust include navigation, commerce, fisheries, recreational uses, and preservation of the resource in its natural state. *Id.* at 434-35, 658 P.2d at 719-20, 189 Cal. Rptr. at 355-57.
60. *Id.* at 446, 658 P.2d at 728, 189 Cal. Rptr. at 364. If the Board fails to consider public trust values in making water resources decisions, members of the public may petition the Board to force proper consideration. See CAL. CODE REGS. tit. 23, § 745(c) (1993) (authorizing protests of water rights applications by persons alleging that the proposed appropriation "would not be[s]t conserve the public interest or public trust uses [or] would have an adverse effect on the environment"); *Audubon*, 33 Cal. 3d at 448-49, 658 P.2d at 729-30, 189 Cal. Rptr. at 366-67 (persons not holding water rights may petition Board to investigate waste and unreasonable use or to convene a statutory adjudication to protect the public trust).
61. Harrison C. Dunning, *The Public Trust Doctrine and Western Water Law: Discord or Harmony?*, 30 ROCKY MTN. MIN. L. INST. 17-1, 17-41 (1984) (quoting State Water Resources Control Board, Clarification of Water Rights Procedures Regarding Review and Consideration of Public Trust Values 1 (Nov. 3, 1983) (staff memorandum)).
62. See *id.* at 17-42.
63. *Audubon*, 33 Cal. 3d at 447, 658 P.2d at 728-29, 189 Cal. Rptr. at 365.
64. *Id.* (footnote omitted). Neither the Board nor the courts have had the opportunity to decide whether the public trust doctrine in fact limits Los Angeles's water rights, because the *Audubon* litigation languished in a procedural quagmire, see *National Audubon Soc'y v. Department of Water & Power*, 858 F.2d 1409 (9th Cir. 1988), and is now pending before the Board on reference from the Superior Court. For related litigation to establish stream flows in the Mono Basin based on section 5937 of the Fish and Game Code, see *California Trout, Inc. v. State Water Resources Control Bd.*, 218 Cal. App. 3d 187 (1990).
65. CAL. WATER CODE § 13160 (West Supp. 1993).
66. According to the Porter-Cologne Act of 1969, CAL. WATER CODE §§ 13100-13389 (West 1971 & Supp. 1993), the State Water Resources Control Board has supervisory power over the nine Regional Water Quality Control Boards. The regional boards are primarily responsible for issuing permits to point source dischargers of pollution both under California law and the National Pollutant Discharge Elimination System created by the federal Clean Water Act. CAL. WATER CODE § 13377 (West Supp. 1993); Clean Water Act § 402(b), 33 U.S.C. § 1342(b) (1982). The regional boards also must adopt ambient water quality control plans for all surface water basins under their jurisdiction, CAL. WATER CODE § 13240 (West 1971), subject to approval by the state board, which may adopt its own plan for an individual basin. *Id.* § 13170 (West Supp. 1993). For a general discussion of the relationship between the State Water Resources Control Board and the

regional boards, see William R. Attwater & James Markle, *Overview of California Water Rights and Water Quality Law*, 19 PAC. L.J. 957, 994-1012 (1988).

67. CAL. WATER CODE §§ 13170, 13377 (West Supp. 1993).
68. *Id.* § 13000 (West 1971); see also *id.* § 13241 (West Supp. 1993) (listing criteria for water quality plans established by regional boards).
69. See *supra* text accompanying notes 30-36.
70. CAL. WATER CODE § 13050 (West Supp. 1993).
71. See WATER QUALITY CONTROL PLAN, *supra* note 13, and Decision 1630, *supra* note 28.
72. *Id.* at 3.
73. *Id.*
74. The Central Valley Project (CVP) is an integrated system of reservoirs, canals, and water distribution facilities operated by the United States Bureau of Reclamation. Its principal components are: Lake Shasta Reservoir, which impounds the waters of the upper Sacramento River and its tributaries; Claire Engle Reservoir, which impounds the waters of the Trinity River for transbasin diversion into the Sacramento River; Folsom Reservoir on the American River; New Melones Reservoir on the Stanislaus River; the Tracy Pumping Plant, which diverts water from the Delta for export to the San Joaquin Valley; and Friant Dam, which impounds the waters of the San Joaquin River for export to the southern San Joaquin Valley and to the Tulare Basin. See WILLIAM L. KAHRL, THE CALIFORNIA WATER ATLAS 46-50 (1979). The CVP's projected net water supply capacity beyond 2010 is approximately 9.45 million acre-feet per year. CALIFORNIA DEPARTMENT OF WATER RESOURCES, CALIFORNIA WATER: LOOKING TO THE FUTURE 25 (1987) (Bull. 160-87). At that time agricultural users, with a projected need of 28.7 million acre-feet per year, will claim the lion's share of this water. See *id.* at 11.
75. The State Water Project (SWP) complements the CVP. As its name indicates, the SWP is owned by the state and is operated by the California Department of Water Resources. Its principal components are: Lake Oroville Reservoir, which impounds the waters of the Feather River for storage and transport to the Delta; the North Bay Aqueduct and South Bay Aqueduct, which deliver water to municipal, industrial, and agricultural users in the San Francisco Bay Area; Clifton Court Forebay and the Harvey O. Banks Pumping Plant, which divert water from the Delta; and the Edmund G. Brown, Sr., California Aqueduct, which transports that water to agricultural users in the San Joaquin Valley and to municipal and industrial users in Southern California. See WILLIAM KAHRL, *supra* note 74, at 50-56. The water supply capacity of the SWP is approximately 2.3 million acre feet per year. CALIFORNIA DEPARTMENT OF WATER RESOURCES, *supra* note 74, at 24.
76. CALIFORNIA STATE WATER RESOURCES CONTROL BD., WORKPLAN FOR THE HEARING PROCESS ON THE SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY (1987).
77. WATER QUALITY CONTROL PLAN, *supra* note 13, and DECISION 1630, *supra* note 28.
78. 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986).

79. *Id.* at 97-98, 227 Cal. Rptr. at 165-66; *see supra* text accompanying notes 73-75.
80. *Delta Water Cases*, 182 Cal. App. 3d at 116, 227 Cal. Rptr. at 178 (emphasis in original) (citing CAL. WATER CODE § 13000 (West 1971)).
81. *See id.*
82. *Id.* (emphasis in original) (citing CAL. WATER CODE § 13000 (West 1971)).
83. *See supra* text accompanying notes 73-75.
84. *Delta Water Cases*, 182 Cal. App. 3d at 126, 227 Cal. Rptr. at 185.
85. *Id.* at 129, 227 Cal. Rptr. at 187.
86. *Id.* at 141, 227 Cal. Rptr. at 195 (citing CAL. WATER CODE §§ 1394, 13241 (West 1971)).
87. *Id.* at 129-30, 149-51, 227 Cal. Rptr. at 187-88, 201-02. The Court stated that the reasonable use and public trust doctrines provide additional authority for the Board to require the two projects to maintain water quality in the Delta beyond the "without project" standards. *Id.*
88. *Id.* at 120, 227 Cal. Rptr. at 181.
89. *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 26 Cal. 3d 183, 605 P.2d 1, 161 Cal. Rptr. 466 (1980). In reaching this conclusion, the Court relied on the fact that Article X, Section 2 of the California Constitution is self-executing and therefore confers jurisdiction directly on the courts to enforce the constitutional requirement that all uses of water be reasonable and beneficial. *Id.* at 198-99, 605 P.2d at 8-9, 161 Cal. Rptr. at 473-74. The Court maintained one exception to concurrent jurisdiction when it did not disturb its earlier holding that claims that a water user be required to substitute reclaimed wastewater for potable supplies must be presented in the first instance to the Board, because of the technical complexities and the public health implications involved. *Id.* at 198-200, 605 P.2d at 9-10, 161 Cal. Rptr. at 474-75, *aff'g* *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 20 Cal. 3d 327, 341-44, 572 P.2d 1128, 1135-37, 142 Cal. Rptr. 904, 911-13 (1977).
90. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 448-51, 658 P.2d 709, 729-31, 189 Cal. Rptr. 346, 366-68 (1983), *cert. denied*, 464 U.S. 977 (1983).
91. *See id.* at 448-52, 658 P.2d at 729-31, 189 Cal. Rptr. 366-69; *Environmental Defense Fund*, 26 Cal. 3d at 200, 605 P.2d at 10, 161 Cal. Rptr. at 475.
92. *Audubon*, 33 Cal. 3d at 443-44, 658 P.2d at 725-26, 189 Cal. Rptr. at 362-63.
93. CAL. PUB. RES. CODE §§ 5093.50-5093.69 (West 1984 & Supp. 1993).
94. *Id.* § 5093.50 (West 1984).
95. *Id.* § 5093.54 (West Supp. 1993); *see id.* § 5093.545 (West Supp. 1993) (classification of river segments). The Legislature also has adopted special restrictions on development of the Smith River tributaries, *id.* §5093.541 (West 1984) and of the McCloud River. *Id.* §5093.542 (West Supp. 1993).

96. *Id.* § 5093.55(a) (West Supp. 1993). In 1988, this section of the Act was amended to include both the river and its segment. *Id.* Moreover, the Act explicitly prohibits the construction of dams or reservoirs on rivers that have been designated for study by the Secretary of the Resources Agency; the study is to be completed January 1, 1990. *Id.* § 5093.55(b). There are two exceptions to this general prohibition. *See id.* §§ 5093.55(a), 5093.57 (West 1984 & Supp. 1993) (construction of temporary flood control facilities on the Eel River); *id.* § 5093.55(a) (West Supp. 1993) (Secretary may authorize construction of water diversion facility to supply domestic needs of the residents of the counties through which river flows, if the Secretary determines that such a facility is necessary and "will not adversely affect the free-flowing condition and natural character of the river and segment"). Neither exception appears to allow the construction of dams or reservoirs.

97. *Id.* § 5093.56 (West Supp. 1993).

98. Under the Supreme Court's holding in *California v. United States*, 438 U.S. 645 (1978), the Board would have the authority to deny an application by the United States Bureau of Reclamation to appropriate water from a California wild and scenic river, or one of its tributaries, on the ground that the diversion could have an adverse effect on the free-flowing condition of the designated portion of the river. *Id.* at 678-79. The only exception would be where the Board's action interfered with the achievement of an express congressional directive. *Id.* at 679; *see also* *United States v. California*, 694 F.2d 1171 (9th Cir. 1982). Relying on *First Iowa Hydro-Electric Coop. v. FPC*, 328 U.S. 152 (1945), however, The Supreme Court has held that the Federal Energy Regulatory Commission (FERC) has exclusive authority to establish minimum stream flow standards for federally licensed hydroelectric projects. *California v. FERC*, 495 U.S. 490 (1990). The United States Court of Appeals for the Ninth Circuit recently held that "federal laws have occupied the field" and therefore preempt *all* state environmental regulation of hydroelectric facilities licensed by FERC. *Sayles Hydro Assoc. v. Maughn*, 985 F. 2d 451 (9th Cir. 1993). Based on these decisions, it is likely that the Court would permit FERC to license the construction of a hydroelectric project on a California Wild and Scenic River, notwithstanding the prohibitions of state law.

In contrast, the National Wild and Scenic Rivers Act expressly forbids FERC from licensing any hydroelectric facility "on or directly affecting" any federally designated river. 16 U.S.C. § 1278(a) (1982). Portions of fourteen California rivers have been included in the national wild and scenic rivers system. 16 U.S.C. § 1274(3) (Feather River); *id.* § 1274(21) (North Fork, American River); *id.* § 1274(53) (Tuolumne River); *id.* § 1274(62) (Merced River); *id.* § 1274(63) (Middle Fork, Kings River); *id.* § 1274(64)(A) (North Fork, Kern River); *id.* § 1274(64)(B) (South Fork, Kern River); *id.* § 1274(111)-(115) (Smith River system); *id.* § 1274(142) (Sespe River); *id.* § 1274(143) (Big Sur River); *County of Del Norte v. United States*, 732 F.2d 1462 (9th Cir. 1984) (the main stems of the Smith, Klamath, Eel Trinity, and Lower American Rivers), *cert. denied*, 469 U.S. 1189 (1985). Thus, on these rivers, FERC would be prohibited from granting licenses to projects that would adversely affect the values for which the river was included in the national rivers system. *See generally* Brian E. Gray, *No Holier Temples: Protecting the National Parks Through Wild and Scenic River Designation*, 58 U. COLO. L. REV. 551 (1987) (exploring some of the ways that the Wild and Scenic Rivers Act could be invoked specifically to protect water resources within the national parks and recommending some legislative revisions of the Act that would permit the Park Service to manage the national parks for this broader set of purposes).

99. CAL. PUB. RES. CODE § 5093.50 (West 1984).

100. *But cf. infra* text accompanying notes 120-34.

101. CAL. WATER CODE §§ 1243, 1243.5 (West Supp. 1993); *see supra* text accompanying notes 30-36.
102. CAL. WATER CODE §§ 1243, 1243.5, 1253 (West 1971 & Supp. 1993); *see supra* text accompanying notes 32-37.
103. *Johnson Rancho County Water Dist. v. State Water Resources Control Bd.*, 235 Cal. App. 2d 863, 874, 45 Cal. Rptr. 589, 596 (1965).
104. In the *Delta Water Cases*, 182 Cal. App. 3d 82, 227 Cal. Rptr. 161 (1986), the Court of Appeal observed that "[t]he nature of the public interest to be served by the Board is reflected throughout the statutory scheme." *Id.* at 103, 227 Cal. Rptr. at 169. Citing a number of sections of the Water Code that help to give content to the public interest standard, the Court stated:

As a matter of state policy, water resources are to be used "to the fullest extent . . . capable" (§ 100) with development undertaken "for the greatest public benefit" (§ 105). And in determining whether to grant or deny a permit application in the public interest, the Board is directed to consider "any general or co-ordinated plan . . . toward the control, protection, development . . . and conservation of [state] water resources . . ." (§ 1256), as well as the "'relative benefits" of competing beneficial uses (§ 1257). Finally, the Board's actions are to be guided by the legislative policy that the favored or "highest" use is domestic, and irrigation the next highest. (§ 1254).

Id. at 103, 227 Cal. Rptr. at 169-70. The Court added that "[n]onconsumptive or 'instream uses,' too, are expressly included within the category of beneficial uses to be protected in the public interest." *Id.*

105. CAL. WATER CODE § 13000 (West 1971).
106. *Id.*; *see also supra* text accompanying notes 78-82.
107. *Delta Water Cases*, 182 Cal. App. 3d at 110, 227 Cal. Rptr. at 174.
108. *Id.* at 113, 227 Cal. Rptr. at 176 (quoting CAL. WATER CODE § 1253 (West 1971) (emphasis added by court)); *see Bank of America v. State Water Resources Control Bd.*, 42 Cal. App. 3d 198, 212-13, 116 Cal. Rptr. 770, 779 (1974).
109. 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983), *cert. denied*, 464 U.S. 977 (1983).
110. *See Harrison C. Dunning, supra* note 61, at 17-41 to 17-42; *supra* text accompanying notes 58-64.
111. *Audubon*, 33 Cal. 3d at 446, 658 P.2d at 728, 189 Cal. Rptr. at 364-65 (emphasis added).
112. *Id.* at 446, 658 P.2d at 727, 189 Cal. Rptr. at 364.
113. *Id.*
114. *Id.* at 446-47, 658 P.2d at 728, 189 Cal. Rptr. at 365 (emphasis added).
115. *Id.* at 447, 658 P.2d at 728, 189 Cal. Rptr. at 365.

116. *Id.* at 452, 658 P.2d at 732, 189 Cal. Rptr. at 369.
117. *Id.* at 443, 658 P.2d at 725, 189 Cal. Rptr. at 362.
118. Several alternative characterizations of the *Audubon* holding are possible: Is it "feasible" to protect public trust uses? Is harm to the public trust "unavoidable"? What balance should be struck between the competing interests? Would protection of public trust uses be reasonable under the circumstances? Would preservation of the public trust be "consistent with the public interest"?
119. The Board's amendment of its regulations to incorporate the directives of the *Audubon* decision confirms this limited interpretation of the public trust doctrine. For example, the Board added to the regulation that asserts its continuing jurisdiction over all permits and licenses the statement that such jurisdiction "may be exercised by imposing further limitations on the diversion and use of water . . . to protect public trust uses." CAL. CODE REGS. tit. 23, § 780(a) (1993). The regulation provides, however, that "[n]o action will be taken pursuant to this paragraph unless the board determines . . . that such action is consistent with California Constitution Article X, Sec. 2; is consistent with the public interest and is necessary to preserve or restore the uses protected by the public trust." *Id.* The Board also amended the regulation that governs releases of stored water from water impoundment facilities for maintenance of water quality and minimum stream flows. That regulation now states that "the board may require releases of water diverted and stored whenever such releases are determined by the board to be in the public interest or are needed to protect public trust uses of water, if such requirement is reasonable under Article X, Section 2 of the California Constitution." *Id.* § 784(a).

This interpretation of *Audubon* also was confirmed by the final decision in the Lower American River adjudication. *Environmental Defense Fund v. East Bay Municipal Utility Dist.*, No. 425955 (Alameda Co. Supr. Ct. filed Jan. 2, 1990) (Statement of Decision). Judge Hodge stated that the public trust "occupies an exalted position in any judicial or administrative determination of water resource allocation." *Id.* at 27. He held, however, that in determining whether East Bay MUD's use of water diverted at the Folsom Reservoir violated the public trust in the American River below the dam, the competing consumptive and instream uses

must be balanced or evaluated to determine whether the fullest beneficial use of water has been achieved under Article X, section 2. Evaluation, or balancing, is implicit in the determination of "fullest beneficial use of water." The point of *Audubon* is that the Court does not stop with that determination. Having determined the "fullest beneficial use of water," the court must still be cautious to avoid needless harm to public trust values. And if the harm to those values becomes significant, then the fullest beneficial use of water may be precluded as a violation of public trust.

Id. at 30.

120. *See supra* text accompanying notes 93-100.
121. CAL. PUB. RES. CODE § 5093.50 (West 1984); *see supra* text accompanying note 94.

122. *See generally* CALIFORNIA STATE WATER RESOURCES CONTROL BD., LOWER AMERICAN RIVER COURT REFERENCE EXECUTIVE SUMMARY (June 1988) [hereinafter EXECUTIVE SUMMARY] (prepared in connection with *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, No. 425955 (Alameda County Super. Ct. 1988)). The Environmental Defense Fund sued EBMUD in an attempt to preserve stream flows in the Lower American River. *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 20 Cal. 3d 327, 572 P.2d 1128, 142 Cal. Rptr. 904 (1977), *vacated*, 439 U.S. 811 (1978), *rev'd on remand*, 26 Cal. 3d 183, 605 P.2d 1, 161 Cal. Rptr. 466 (1980). Pursuant to section 2000 of the California Water Code, the Superior Court referred the case to the Board for answers to twenty-one technical and legal questions, ranging from an analysis of the potential effects of EBMUD's proposed diversions on water quality in the Lower American River to the Board's interpretation of article X, section 2 of the California Constitution. Executive Summary, *supra*, at 1-2.
123. *See generally* TECHNICAL REPORT, *supra* note 14.
124. CALIFORNIA STATE WATER RESOURCES CONTROL BD., LOWER AMERICAN COURT REFERENCE LEGAL REPORT 165 (June 1988) [hereinafter LEGAL REPORT] (prepared in connection with *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, No. 425 955 (Alameda Co. Super. Ct. 1990)) (discussing court's Order for Reference in detail).
125. *Id.* at 151-52 (citing CAL. PUB. RES. CODE § 5093.50 (West 1984)).
126. *Id.* at 153.
127. *Id.*
128. *Id.* at 154.
129. *Id.* (citing Act of Sept. 27, 1982. ch. 1481, 1982 Cal. Stat. 5707).
130. Act of Dec. 20, 1972, ch. 1259, 1972 Cal. Stat. 2510.
131. Act of Sept. 27, 1982, ch. 1481, 1982 Cal. Stat. 5707. As amended, section 5093.55 prohibits the construction of any water impoundment facility on a wild and scenic river or on any designated segment. It provides that no water diversion facility may be

constructed on any [component] river and segment unless and until the [Secretary of the Resources Agency] determines that the facility is needed to supply domestic water to the residents of the county or counties through which the river and segment flows, and unless the secretary determines that the facility will not adversely affect the free-flowing condition and natural character of the river and segment.

CAL. PUB. RES. CODE § 5093.55 (West Supp. 1993).
132. Legal Report, *supra* note 124, at 154.
133. The Board's crabbed interpretation of the Act is erroneous in two respects. First, although the legislature did not establish specific minimum stream flows on component rivers, that does not mean that it did not intend "to assure any particular quantity of water in a designated stream." *Id.* As with most environmental statutes, the legislature set forth general directives as to the

management of component rivers under the Wild and Scenic Rivers Act, leaving the administrative agencies to implement those directives through specific standards. *Compare, e.g.,* CAL. PUB. RES. CODE §§ 5093.55, 5093.56 (West 1984 & Supp. 1993) (mandating study by the Secretary to determine what free flow is necessary to maintain the "natural character" of the river) *with* Clean Water Act § 303(c)(2)(A), 33 U.S.C. § 1313(c)(2)(A) (ambient water quality standards "shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter"). That the Act does not reserve fixed quantities of water or stream flows does not, however, authorize the Board to ignore the legislature's explicit policy directive.

The legislature declared it to be state policy that California's wild and scenic rivers "shall be preserved in their free-flowing state . . . for the benefit and enjoyment of the people of the state," CAL. PUB. RES. CODE § 5093.50 (West 1984), and stipulated that the use of water for this purpose "is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution." *Id.; cf. State ex rel. Dep't of Parks v. Idaho Dep't of Water Admin.*, 96 Idaho 440, 530 P.2d 924 (Idaho 1974) (upholding declaration by Idaho Legislature that appropriation of waters in Malad Canyon by Department of Parks to preserve stream flows is a beneficial use of such water). Contrary to the Board's construction, this language indicates that the Legislature intended to reserve a sufficient quantity and flow of water to preserve the free-flowing character of the component rivers.

The Board also failed to consider section 5093.56, which directly addresses its authority to approve of diversions of water upstream of a wild and scenic river. This section prohibits the Board from assisting or cooperating with "the planning or construction of any dam, reservoir, diversion, or other water impoundment facility that could have an adverse effect on the free-flowing condition and natural character" of a component river. CAL. PUB. RES. CODE § 5093.56 (West Supp. 1993). The terms of this proscription are precautionary, rather than flatly prohibitory. Yet, fairly construed, section 5093.56 requires the Board to deny an appropriation if it finds a significant risk that the diversion of water from the river could impair the instream uses that originally brought the river under the purview of the wild and scenic rivers system. The Board must evaluate the effects of the appropriation on such values as fisheries, recreational uses, and aesthetics and can only approve a diversion that would not unreasonably diminish those values. In making this determination, however, section 5093.56 requires the Board to be cautious and to err on the side of protecting the river, rather than facilitating the appropriation.

It can be argued that, because the two dams for the Folsom-South Canal Project—Folsom Dam and Nimbus Dam—had already been constructed, section 5093.56 should not apply. However, the Board reserved jurisdiction over the water rights permits for the project for the purpose of maintaining instream flows below Nimbus Dam. *In re Applications 18721, 18723, 21636 and 21637* (U.S. Bureau of Reclamation), State Water Resources Control Bd., Decision 1400, at 22 (1972). Therefore, its decision in the Lower American River Court Reference should be viewed as a continuation of its reserved authority and hence "assistance" or "cooperation" with the construction of the project within the meaning of section 5093.56.

134. CAL. PUB. RES. CODE § 5093.55a (West 1984 & Supp. 1993).
135. The Superior Court agreed with the Board's construction of the California Wild and Scenic Rivers Act. While holding that the "larger purposes" of the Act "were to preserve the collective public trust values" of component rivers, the Court interpreted the statute as requiring an accommodation of public trust values and the competing demands for domestic water supply. Judge Hodge concluded that the inclusion of the Lower American River in the California Wild and Scenic River system therefore did not preclude the adoption of a "physical solution"--in this

case, a minimum flow regime--that balances instream and consumption uses. *Environmental Defense Fund v. East Bay Municipal Utility District*, No. 425955 (Alameda Co. Supr. Ct. filed Jan. 2, 1990) (Statement of Decision), at 44-46.

136. Perhaps the best examples of this allocation process are the Bay-Delta hearings described above. *See supra* text accompanying notes 71-88.
137. CAL. WATER CODE § 1375(d) (West 1971).
138. *Temescal Water Co. v. Dep't of Pub. Works*, 44 Cal. 2d 90, 280 P.2d 1 (1955).
139. *See supra* text accompanying notes 30-39.
140. The California Supreme Court has held that the Board's determination that there is unappropriated water available confers no right on the applicant. The Board's decision is simply "a prerequisite to any exercise of its discretion in the issuance of a permit." *Temescal*, 44 Cal. 2d at 103, 280 P.2d at 9. Nor does this determination adjudicate the water rights of the respective parties: "[T]he rights of the riparians and senior appropriators remain unaffected by the issuance of an appropriation permit." *Delta Water Cases*, 182 Cal. App. 3d 82, 103, 227 Cal. Rptr. 161, 169 (1986) (citing *Duckworth v. Watsonville Water Co.*, 170 Cal. 425, 431, 150 P. 58, 60-61 (1915)).
141. CAL. WATER CODE § 1253 (West 1971); *see supra* text accompanying notes 30-36.
142. CAL. WATER CODE §§ 1243, 1243.5 (West 1971 & Supp. 1993); *see supra* text accompanying notes 26-88.
143. CAL. WATER CODE § 1253 (West 1971); *see supra* text accompanying notes 30-39.
144. *See* CAL. WATER CODE § 1350 (West 1971).
1145. *See, e.g.*, CALIFORNIA STATE WATER RESOURCES CONTROL BD., DECISION 1594: Water Rights Permits in the SACRAMENTO-SAN JOAQUIN DELTA WATERSHED (1983), *effectuated by* ORDER WR 84-2 (1984), in which the Board reserved jurisdiction to change the season of diversion.
146. CAL. CODE REGS. tit. 23, § 698 (1993); *see also* Standard Permit Term 6 (1976), *reprinted in* Standard Permit Terms, *supra* note 38 ("The amount authorized for appropriation may be reduced in the license if investigation warrants.").
147. "Physical solutions" may involve measures as varied as moving a diversion point or conserving water flows. *See, e.g.*, *Environmental Defense Fund v. East Bay Mun. Util. Dist.*, 26 Cal. 3d 183, 605 P.2d 1, 161 Cal. Rptr. 466 (1980) (plaintiffs seeking to move the new appropriator's point of diversion downstream for the purpose of protecting water flows); *Imperial Irrigation Dist. v. State Water Resources Control Bd.*, 186 Cal. App. 3d 1160, 231 Cal. Rptr. 283 (1986) (conservation of water to reduce the aggregate demands on the resource); *In re Applications 14858, 14859, 19303, and 19304 to Appropriate from Stanislaus River in Calaveras and Tuolumne Counties*, State Water Resources Control Bd., Decision 1422 (1973) (replacement of water appropriated by senior water rights holders with water supplied by the new project). *See generally* Harrison C. Dunning, *The "Physical Solution" in Western Water Law*, 57 U. COLO. L. REV. 445 (1986).

148. The Board may consider, for example, whether the proposed use is for a beneficial purpose, *see* CAL. CODE REGS. tit. 23, § 659 (1993); whether the applicant has alternative sources of supply, *see id.* § 700; whether the applicant has a water conservation program in place, *see id.* § 780(a); and whether reclaimed waste water could be substituted for the proposed appropriation, *see id.* § 651.
149. These alternatives could include supplying other applicants, *see* CAL. WATER CODE § 1243.5 (West 1971 & Supp. 1993); preserving the water for users within the area of origin, *see id.* §§ 1215-1219.5; providing for instream uses, *see id.* § 1243; and maintaining water quality standards, *see generally* WATER QUALITY CONTROL PLAN, *supra* note 13.
150. For example, the Board's standard permit form includes a printed declaration that the permit is granted "subject to vested rights." CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, DIVISION OF WATER RIGHTS, PERMIT FOR DIVERSION AND USE OF WATER (1972).
151. CAL. WATER CODE § 1243 (West Supp. 1993).
152. *See id.* § 1243.5.
153. *See id.* § 1257.
154. California's Department of Water Resources has projected a 39% increase in California's population between 1985 and 2010 and a concomitant 32% rise in urban applied water demand. CALIFORNIA DEPARTMENT OF WATER RESOURCES, *supra* note 74, at 5. It estimated that the demand for agricultural uses will remain relatively constant over this period. *Id.* at 11.
155. *See* WILLIAM L. KAHRL, *supra* note 74, at 28-57 (describing municipalization of water supplies for the many communities established far from water sources).
156. *See, e.g.,* CAL. WATER CODE § 1254 (West 1971) (designating domestic use as the "highest use" for the Board's consideration in applications to appropriate water).
157. *Id.*
158. *Id.* § 1259 (West Supp. 1993).
159. *Delta Water Cases*, 182 Cal. App. 3d 82, 103-04, 227 Cal. Rptr. 161, 169-70 (1986); *see* National Audubon Soc'y v. Superior Court, 33 Cal. 3d 419, 447 n.30, 658 P.2d 709, 729 n.30, 189 Cal. Rptr. 346, 365 n.30 (1983), *cert. denied*, 464 U.S. 977 (1983); CAL. WATER CODE § 1257 (West 1971).
160. As the California Supreme Court has stated:
- [T]he public trust imposes a duty of continuing supervision over the taking and use of . . . appropriated water. In exercising its sovereign power to allocate water resources in the public interest, the state is not confined by past allocation decisions which may be incorrect in light of current knowledge or inconsistent with current needs.
- Audubon*, 33 Cal. 3d at 447, 658 P.2d at 728, 189 Cal. Rptr. at 365.
161. *See supra* notes 44 & 52.

162. *See supra* notes 151-53 and accompanying text.
163. *See supra* notes 89-92 and accompanying text.
164. *See supra* text accompanying notes 101-19.
165. The Board retains jurisdiction to impose conditions on all water rights holders to prevent waste or unreasonable use. *See supra* notes 52-57 and accompanying text.
166. Indeed, in only a handful of cases have the Board and the courts found the exercise of an existing water right to be unreasonable, and in each situation the inefficiency of the use was extreme. *See, e.g.,* Joslin v. Marin Mun. Water Dist., 67 Cal. 2d 132, 429 P.2d 889, 60 Cal. Rptr. 377 (1967) (plaintiff demanded use of riparian right to unimpaired flow of stream to carry suspended sand and gravel); Peabody v. City of Vallejo, 2 Cal. 2d 351, 40 P.2d 486 (1935) (plaintiff's use of riparian right was for purpose of having full flow of river carrying silt for deposition on riparian land and for washing salts from soil); Erickson v. Queen Valley Ranch Co., 22 Cal. App. 3d 578, 99 Cal. Rptr. 446 (1971) (five-sixths of water diverted from stream lost in transmission); *In re Alleged Waste and Unreasonable Use of Water by Imperial Irrigation Dist., State Water Resources Control Bd., Decision 1600* (1984) [hereafter Decision 1600] (tailwater losses to Salton Sea in excess of one million acre feet per year), *decree aff'd*, Imperial Irrigation Dist. v. State Water Resources Control Bd., 225 Cal. App. 3d 548 (1990).
167. California Trout, Inc. v. State Water Resources Control Bd., 90 Cal. App. 3d 816, 825, 153 Cal. Rptr. 672, 678 (1979) (Reynoso, J., dissenting).
168. *See supra* notes 136-50 and accompanying text.
169. *See infra* notes 198-203 and accompanying text.
170. *Amicus Curiae* Brief of the Department of Water Resources in Support of Respondent California Trout, Inc. at 13-15, California Trout, Inc. v. State Water Resources Control Bd., 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979) (No. 17532) [hereafter DWR Brief].
171. *Id.* at 14.
172. Closing Brief of Appellant at 5, Fullerton v. State Water Resources Control Bd., 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979) (No. 44501), *quoted in* DWR Brief, *supra* note 170, at 14.
173. *California Trout*, 90 Cal. App. 3d at 824, 153 Cal. Rptr. at 677 (citations omitted).
174. National Audubon Soc'y v. Superior Court, 33 Cal. 3d 419, 445-47, 658 P.2d 709, 727-29, 189 Cal. Rptr. 346, 364-65 (1983), *cert. denied*, 464 U.S. 977 (1983). For a discussion of the effects of *Audubon* on instream flow protection, see *supra* text accompanying notes 58-64.
175. The Court limited its holding to the facts before it, allowing the plaintiffs to challenge an existing appropriation on the ground that the diversions unreasonably impaired the public trust in Mono Lake. *Audubon*, 33 Cal. 3d at 448-49, 658 P.2d at 729-30, 189 Cal. Rptr. at 366-67. It did not decide whether the members of the public also could rely on the public trust to justify private appropriations of water for public instream uses.

176. 33 Cal. 3d at 452, 658 P.2d at 732, 189 Cal. Rptr. at 369 (relying on, *inter alia*, Marks v. Whitney, 6 Cal. 3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971)).
177. *Id.* at 434-35, 658 P.2d at 719, 189 Cal. Rptr. at 356.
178. *Id.* at 447, 658 P.2d at 728, 189 Cal. Rptr. at 365.
179. See generally Jan S. Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right*, 14 U.C. DAVIS L. REV. 195 (1980).
180. See *supra* text accompanying notes 156-59.
181. See 33 Cal. 3d at 443, 658 P.2d at 725, 189 Cal. Rptr. at 362 (noting that all uses of water must conform to the reasonable use standard).
182. See CHARLES J. MEYERS & RICHARD A. POSNER, MARKET TRANSFERS OF WATER RIGHTS: TOWARD AN IMPROVED MARKET IN WATER RESOURCES 2-7 (National Water Commission Legal Study No. 4, 1971).
183. See, e.g., BONNIE C. SALIBA & DAVID B. BUSH, WATER MARKETS IN THEORY AND PRACTICE 4-7 (1987); ROBERT N. STAVINS, TRADING CONSERVATION INVESTMENTS FOR WATER (1983) (proposing that the Metropolitan Water District of Southern California finance Imperial Valley water conservation to obtain additional Colorado River water); ZACH WILLEY, ECONOMIC DEVELOPMENT AND ENVIRONMENTAL QUALITY IN CALIFORNIA'S WATER SYSTEM 8-10 (1985). For analyses of water transfer law and practice in the western states, see LAWRENCE J. MACDONELL, ED., THE WATER TRANSFER PROCESS AS A MANAGEMENT OPTION FOR MEETING CHANGING WATER DEMANDS (1991); *Water Transfer Symposium*, 31 Ariz. L. Rev. 697 (1989).
184. For example, the Imperial Irrigation District and the Metropolitan Water District of Southern California have agreed to a long-term transfer of 100,000 acre feet per year of conserved water previously used by Imperial for agricultural supply. See WESTERN NETWORK, WATER MARKET UPDATE, Dec. 1988, at 4.
185. See Agreement for Donation and Covenant of Water Rights between the Pittsburgh & Midway Coal Mining Co. (P & M Mining) and the Nature Conservancy, § 4.3 (Dec. 31, 1987), (entered into Delta County, Colo., Record Book 586, at 184) [hereafter P&M-TNC Agreement].
186. "Decreed storage rights" are rights to possess water by means of a dam. See COLO. REV. STAT. § 37-92-103 (1993 Cum. Supp.).
187. Quitclaim Deed, Mar. 8, 1988 (Pittsburgh & Midway Coal Mining Co. to the Nature Conservancy) 5 (entered into Delta County, Colo., Record Book 591). P & M Mining is a subsidiary of Chevron Corporation. See Chapman, *Gunnison Wildlife Hopes Bolstered By Chevron Gift*, The Denver Post, Mar. 15, 1988, at B3.
188. The Colorado Water Conservation Board is vested by statute "with the exclusive authority, on behalf of the people of the state of Colorado, to appropriate . . . such waters of natural streams and lakes as the board determines may be required for minimum stream flows or for natural surface water levels . . . to preserve the natural environment to a reasonable degree." COLO. REV. STAT. § 37-92-102(3) (1993 Cum. Supp.). For a description of the Colorado system of protecting instream flows, see Lori Potter, *supra* note 18, at 428-33.

189. COLO. REV. STAT. § 37-92-102 (1993 Cum. Supp.); see P&M-TNC Agreement, *supra* note 185, § 4.2.
190. P&M-TNC Agreement, *supra* note 185, § 4.2.
191. As a result of the 1991 statute described in the Postscript, this is no longer true. Existing appropriators may convert their consumptive water right into an instream right and transfer the right to another party, such as the Nature Conservancy, the California Department of Fish and Game, or other qualified entities.
192. *California Trout, Inc. v. State Water Resources Control Bd.*, 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979) (denying a private attempt to make an instream appropriation by finding no supportable right under the California Water Code); *Fullerton v. State Water Resources Control Bd.*, 90 Cal. App. 3d 590, 153 Cal. Rptr. 518 (1979) (denying California Department of Fish and Game an instream appropriation for the same reasons such an appropriation was denied to plaintiffs in *California Trout*).
193. See CAL. WATER CODE §§ 1201-1202 (West 1971 & Supp. 1993).
194. Although under the Colorado system there is no guarantee that the water transferred by P & M Mining to the Nature Conservancy will be used for its intended purpose, once procedural hurdles are passed, the state ultimately may take title to the decreed storage rights. The Nature Conservancy must convince the Colorado Water Conservation Board to accept the water right and to dedicate the water to instream uses. P&M-TNC Agreement, *supra* note 185, §§ 2.3, 4.2. In turn, the Board must petition the water court, as with any change in a water rights decree, to permit the water to be used for instream purposes. See generally 2 GEORGE VRANESH, COLORADO WATER LAW 441-47 (1987).
195. Moreover, with minor amendments to California's Conservation Easement law to include water rights, a consumptive user such as P & M Mining also could simply dedicate the water to instream flow purposes in the form of a conservation easement, retain the appropriative right, and obtain the variety of tax benefits afforded by the acceptance of a conservation easement. See THOMAS S. BARRETT & PUTNAM LIVERMORE, THE CONSERVATION EASEMENT IN CALIFORNIA 45-78 (1983) (discussing CAL. CIV. CODE §§ 815-816 (West 1982)).
196. In both cases, the parties would have to petition the Board to amend the transferor's permit to change both the place and purpose of use and to delete the point of diversion. See CAL. WATER CODE §§ 380-387, 1700-1706, 1735-1737 (West 1971 & Supp. 1993). This requirement would not apply to transfers of water by riparians and pre-1914 appropriators, however, because the Board has no permit jurisdiction over them. *Id.* § 1706; see *supra* note 26 and accompanying text.

To approve the transfer, the Board would have to find that the proposed instream use of the water was reasonable, that the change would not injure other legal water users, and that the transfer would not "unreasonably affect[] fish, wildlife, or other instream beneficial uses [or] unreasonably affect the overall economy of the area from which the water is being transferred." CAL. WATER CODE § 386 (West Supp. 1993). Inasmuch as transfers of water to instream uses necessarily augment stream flows, there could be no injury to other water users or to instream beneficial uses. Assessment of the reasonableness of the new instream use, as well as the determination that it would not harm the economy of the transferor area, would be left to the judgment of the Board.

Although the Board has never addressed the latter issue, a transfer of water to an instream use is unlikely to have adverse effects on the economy of the area in which the transferor appropriator is

located. The proscription against unreasonable harm to the area from which the water is transferred was enacted to prevent an exporter from depriving the area of origin of water reasonably needed for its own economic development. *See* 1984 Cal. Stats., ch. 1655, § 1. In contrast, transfers for instream uses would preserve the water supply of the area of origin.

197. *But see infra* text accompanying notes 248-51.
198. *See supra* text accompanying note 189 and the other chapters in this book.
199. "Any person or the state of Arizona or a political subdivision thereof [may] appropriate unappropriated water for . . . recreation [and] wildlife, including fish." ARIZ. REV. STAT. ANN. § 45-151A (1987). The Arizona Court of Appeals has held that this statute allows for the "*in situ* appropriation of water" without a physical diversion. *McClellan v. Jantzen*, 26 Ariz. App. 223, 225, 547 P.2d 494, 496 (1976).
200. Brian E. Gray, *supra* note 98, at 593-96.
201. *See supra* notes 173-81 and accompanying text.
202. *See National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 452, 658 P.2d 709, 732, 189 Cal. Rptr. 346, 369 (1983), *cert. denied*, 464 U.S. 977 (1983).
203. *See supra* notes 89-92 and accompanying text.
204. 90 Cal. App. 3d 816, 153 Cal. Rptr. 672 (1979).
205. Telephone interview with James Hamilton, Regional Manager, Central Coast Region, California Trout, Inc. (May 19, 1989).
206. *Id.*
207. *California Trout*, 90 Cal. App. 3d at 818, 153 Cal. Rptr. at 673.
208. *See, e.g., County of Del Norte v. United States*, 732 F.2d 1462 (9th Cir. 1984) *cert. denied*, 469 U.S. 1189 (1985); *California Trout, Inc. v. State Water Resources Control Bd.*, 207 Cal. App. 3d 585, 255 Cal. Rptr. 184 (1989).
209. 23 LAND & WATER L. REV. 419 (1988).
210. *Id.* at 420-21.
211. *Id.*
212. *See supra* notes 30-36 and accompanying text.
213. An additional reason to prefer organizations over individual appropriators is that business associations are legally immortal. Thus, the Board would be relieved of the task of ascertaining, following the death of an individual appropriator, whether the decedent's heirs or devisees would continue to use and to benefit from the instream water right.

214. The late writers Wallace Stegner and Norman MacLean come to mind. As examples of their sensitivity to the western environment and its effect on humanity, see NORMAN MACLEAN, *A RIVER RUNS THROUGH IT AND OTHER STORIES* (1976); WALLACE STEGNER, *WHERE THE BLUEBIRD SINGS TO THE LEMONADE SPRINGS: LIVING AND WRITING IN THE WEST* (1992); WALLACE STEGNER, *ANGLE OF REPOSE* (1971); WALLACE STEGNER, *BEYOND THE HUNDREDTH MERIDIAN: JOHN WESLEY POWELL AND THE SECOND OPENING OF THE AMERICAN WEST* (1953); WALLACE STEGNER, *THE SOUND OF MOUNTAIN WATER* (1946).
215. The Board would not have to concern itself with existing instream uses recognized under sections 1243 and 1243.5 of the California Water Code, *see supra* text accompanying notes 30-36, because the proposed instream appropriation would be wholly compatible with other instream uses.
216. *National Audubon Soc'y v. Superior Court*, 33 Cal. 3d 419, 446, 658 P.2d 709, 728, 189 Cal. Rptr. 346, 364 (1983), *cert. denied*, 464 U.S. 977 (1983).
217. *See supra* notes 101-08 and accompanying text.
218. As with other appropriations, the flow levels established in the permit could vary by season of use. *See* text accompanying *supra* notes 37-39. If other demands on a particular river are relatively large during the summer and fall months, for example, the flow level granted to the instream appropriation could be scaled back during those months to accommodate all uses.
219. The complainants in *Environmental Defense Fund v. East Bay Mun. Util. Dist.* have proposed this type of physical solution to the conflict between EBMUD's diversions and instream uses in the Lower American River. TECHNICAL REPORT, *supra* note 14, at 1.
220. CAL. WATER CODE § 1257 (West 1971).
221. CAL. CONST. art. X, § 2 (West Supp. 1993), *quoted supra* notes 44 & 52. As to the public trust doctrine, *see supra* notes 109-19 and accompanying text.
222. 67 Cal. 2d 132, 429 P.2d 889, 60 Cal. Rptr. 377 (1967).
223. *Id.* at 135, 429 P.2d at 891, 60 Cal. Rptr. at 379.
224. *Id.* at 134, 429 P.2d at 891, 60 Cal. Rptr. at 379.
225. *Id.* at 143, 429 P.2d at 897, 60 Cal. Rptr. at 385.
226. *Id.* at 145, 429 P.2d at 898, 60 Cal. Rptr. at 386.
227. *See, e.g.,* *Peabody v. City of Vallejo*, 2 Cal. 2d 351, 40 P.2d 486 (1935); *Gin S. Chow v. City of Santa Barbara*, 217 Cal. 673, 22 P.2d 5 (1933); *Imperial Irrigation Dist. v. State Water Resources Control Bd.*, 186 Cal. App. 3d 1160, 231 Cal. Rptr. 283 (1986), *decree aff'd*, 225 Cal. App. 3d 548 (1990); *Frickson v. Queen Valley Ranch Co.*, 22 Cal. App. 3d 578, 99 Cal. Rptr. 446 (1971).
228. *Joslin*, 67 Cal. 2d at 140, 429 P.2d at 894, 60 Cal. Rptr. at 382.
229. *Id.*
230. 33 Cal. 3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983), *cert. denied*, 464 U.S. 977 (1983).

231. *See supra* notes 52-64, 109-19 and accompanying text.
232. *See* 33 Cal. 3d at 447-48, 658 P.2d at 728-29, 189 Cal. Rptr. at 365-66.
233. *Id.* at 446, 658 P.2d at 728, 189 Cal. Rptr. at 365.
234. *Id.* at 447, 658 P.2d at 728, 189 Cal. Rptr. at 365.
235. *Id.* at 443, 658 P.2d at 725, 189 Cal. Rptr. at 362.
236. *See supra* notes 167-69 and accompanying text.
237. *See supra* note 149 and accompanying text.
238. *See supra* note 147.
239. *See supra* notes 164-66 and accompanying text.
240. *See supra* notes 160-63 and accompanying text.
241. CAL. WATER CODE § 1253 (West 1971), *quoted supra* text accompanying note 37.
242. *See supra* notes 168-69 and accompanying text.
243. *See* CAL. WATER CODE § 382 (West Supp. 1993).
244. *See generally* CHARLES J. MEYERS & RICHARD A. POSNER, *supra* note 182, at 2-7. Private transactions, however, frequently ignore the costs they impose on third parties. The California Water Code addresses the externalities problem by requiring an appropriator that seeks to transfer its permit to another user to obtain authorization from the State Water Resources Control Board. *See* CAL. WATER CODE §§ 386, 1736 (West 1971 & Supp. 1993). The Board may approve the change or transfer only if it finds that there would be no injury to any other legal user of the water or unreasonable effects on fish, wildlife, or other beneficial instream uses. *Id.* This review process could resolve the problems described in the text. For the reasons given there, however, an outright prohibition on the transfer of instream appropriative rights to consumptive uses would better serve the public interest.
245. *See* CAL. WATER CODE §§ 1395-1398 (West 1971 & Supp. 1993).
246. *But see supra* text accompanying notes 215-20.
247. *See supra* text accompanying notes 204-16.
248. Examples include the South Fork of the Tuolumne River, the South Fork of the Merced River and its tributaries, and Dinkey Creek, all of which ultimately flow into the San Joaquin River.
249. *See supra* text accompanying notes 215-20.
250. *See supra* notes 182-97 and accompanying text.

251. *See generally* CALIFORNIA STATE WATER RESOURCES CONTROL BD., DECISION 1485: SACRAMENTO/SAN JOAQUIN RIVER DELTA AND SUISUN MARSH (1978) (ordering release and reduction of appropriations by two major water projects to maintain water quality in the Sacramento-San Joaquin Delta and Suisun Marsh).
252. RAYMOND CARVER, *Where Water Comes Together With Other Water*, in WHERE WATER COMES TOGETHER WITH OTHER WATER 17-18 (1986).
253. Cal. Water Code § 1707 (West Supp. 1993).
254. *Id.*
255. *Id.*
256. Interview with Andrew Sawyer, Deputy Chief Counsel to the State Water Resources Control Board, March 1, 1993.
257. *See supra* note 52.
258. *See supra* part IVD.
259. *See* California Trout, Inc. v. State Water Resources Control Bd., 90 Cal. App. 3d 816, 819-21, 153 Cal. Rptr. 672, 674-75 (1979).

Colorado's Instream Flow Program: Integrating Instream Flow Protection Into A Prior Appropriation System

Steven O. Sims

Introduction

In the 1950's the Fryingpan-Arkansas Project ["Fry-Ark Project"] was proposed to divert waters from the Colorado River basin to the Arkansas River Basin. The Fry-Ark Project threatened to dry up numerous headwater streams on Hunter Creek and the Fryingpan River.¹ In order to preserve the aquatic habitat of the headwater streams, operating principles were negotiated that required the Fry-Ark collection system to bypass flows to the affected stream systems.

Although the bypass flows were approved by the State, Congress and the local water districts, no mechanism existed in Colorado water law to protect the bypass flows from later diversions. At the time of the Fry-Ark negotiations Colorado did not have an instream flow protection program, did not recognize piscatorial and environmental uses of water to be a beneficial use of water, and required a diversion for a valid appropriation.

Establishing the legal mechanism to protect free flowing streams and rivers was a difficult political task in Colorado. Colorado's prior appropriation system apportioned the right to use much of Colorado's water at the turn of the century. The water users that owned those senior rights did not favor an instream flow protection program that might impair those rights. In addition, Colorado had fought many long hard battles to establish the state's right to use its apportioned share of the waters arising in Colorado and flowing out of state. Those who fought for Colorado's interstate water rights were also reluctant to embrace any program that might make it difficult for Colorado to utilize its entitlements. As a result, state water policy prior to enactment of the instream flow program was focused on how to maximize consumptive use of water in Colorado and the prevailing opinion was that water left in a stream was water wasted.

Despite the structural and historical obstacles in the way of instream flow protection, the Colorado General Assembly enacted S.B. 97 in 1973 to create an instream flow protection program.² The program's goal was to "correlate the activities of mankind

¹ Steven J. Shupe authored this chapter in the first edition of the book. Portions of Mr. Shupe's research involving the Fryingpan-Arkansas bypass flows were relied upon by the revised edition author. In addition, portions of Mr. Shupe's work in the first edition relating to program implementation and enforcement were utilized in the revised edition. CWCB staff members, Dan Merriman and Ann Janiciki reviewed and approved the form and substance of the revised edition chapter concerning Colorado's instream flow program.

with some reasonable preservation of the natural environment."³ The instream flow program did not seek to undo the prior appropriation system by making instream flows senior to existing water rights but, instead, sought to fit the new rights within the prior appropriation system. The key parts of S.B. 97 recognized the maintenance of instream flows "to preserve the natural environment to a reasonable degree" as a beneficial use of water and removed the diversion requirement for the appropriation of a water right.⁴ These changes allowed instream water rights to be recognized as vested water rights on par with all other water rights recognized by the prior appropriation system. The weakness of this method of protecting instream flows is that the new instream flow water right stands in line like any other new water user in Colorado's first in time, first in right system. In practice, the instream flow water rights created by S.B. 97 were 70 years junior to the senior rights on most rivers in settled areas. The program did, however, provide the sought after protection on sparsely populated headwater, mountain and wilderness creeks.

S.B. 97 assigned the job of appropriating and protecting instream flow rights to the Colorado Water Conservation Board ("CWCB"). The CWCB was created in 1937 and since the 1950's has served as Colorado's voice on statewide water policy. The CWCB is a 14 member board with 10 voting members and 4 non-voting members. Its voting members represent Colorado's eight major river basins, the City and County of Denver and the Executive Director of the Colorado Department of Natural Resources. The non-voting members are the CWCB director, the State Engineer, the Director of the Division of Wildlife and the State Attorney General. Since its inception, the CWCB has been statutorily assigned a pro-development, pro-water project mission. The governor appoints CWCB members subject to state senate confirmation, but the governor by statute is bound to appoint those intimately familiar with water matters including water resource management, water project financing, engineering, planning, development of water projects, water law and irrigated farming or ranching. In giving the administration of the instream flow program to this pro-water development board, proponents of the instream flow program hoped to alleviate the fears of the water development community that the instream flow program would be insensitive to the needs of water users.

Crystal River Constitutional Challenge

Shortly after the CWCB's first appropriation of instream flow rights, a number of water districts challenged the constitutionality of the program in general and challenged specific appropriations on the Crystal River⁵ as being in contravention of S.B. 97. The Colorado Supreme Court upheld the constitutionality of S.B. 97 and the legality of the Crystal River appropriations.⁶

One of the main constitutional challenges to the instream flow program was the argument that the state constitution required that water be diverted in order to have a valid water right. The constitutional provision in question provides "the right to divert

the unappropriated waters of any natural stream to beneficial uses shall never be denied." ⁷ The court held that use of the term "divert" in this context did not mean diversion was a prerequisite for an appropriation.⁸ The court found the right to divert language was intended only to negate any thought that Colorado would follow the riparian doctrine.⁹

The challenge to the specific appropriations on the Crystal River was that the CWCB violated the last sentence of S.B. 97. This sentence provided "Nothing in the article shall ... deprive the people of the state of Colorado of the beneficial use of those waters available by law and interstate compact."¹⁰ The districts argued that this language was intended to subordinate instream flow rights to later appropriators or that the CWCB could only appropriate instream flow rights from the headwaters to the place of diversion of senior downstream appropriators. The supreme court rejected these arguments, finding:

The legislative intent is quite clear that these appropriations are to protect and preserve the natural habitat and that the decrees confirming them award priorities which are superior to the rights of those who may later appropriate. Otherwise, upstream appropriations could later be made, the streams dried up, and the whole purpose of the legislation destroyed.¹¹

With this finding the supreme court affirmed that instream flow rights were water rights of the same caliber as all other water rights appropriated in the state.

The 1981 Amendment

The Crystal River decision heightened the fears of some water users that an instream flow program would interfere with the development and consumptive use of water in the state. In order to address these fears the Colorado General Assembly adopted S.B. 414 which imposed the following limitations on CWCB instream flow appropriations:

37-92-102. Legislative declaration. (3)(a) Any such appropriation which is based upon water imported from one water division to another by some other appropriator shall not, as against the appropriator of such imported water or his successor in interest, constitute a claim, bar, or use for any purpose whatsoever.

(b) Any such appropriation shall be subject to the present uses or exchanges of water being made by other water users pursuant to appropriation or practices in existence on the date of such appropriation, whether or not previously confirmed by court order or decree.

(c) Before initiating a water rights filing, the board shall determine that the natural environment will be preserved to a reasonable degree by the water available for the appropriation to be made; that there is a natural environment that can be preserved to a reasonable degree with the board's water right, if granted; and that such environment can exist without material injury to water rights.

(d) Nothing in this section is intended or shall be construed to allow condemnation by this state or any person of easements or rights-of-way across private lands to gain access to a segment of a stream or lake where a water right decree has been awarded to the Colorado water conservation board.¹²

The major impact of the limitations was that the CWCB started seeking separate winter and summer flow rates for its instream flow reaches and divided the reaches to be preserved by the instream flow rights into smaller segments. Both of these results were caused by the water availability finding required by limitation (c). Prior to the S.B. 414 limitations, the CWCB would seek one flow rate for long stream segments, often based upon the summertime biological requirements of a stream cross section at the downstream end of the protected reach. This flow rate would often exceed the total amount of water in the stream on the upstream end of the protected reach, or it would exceed the amount of water in the stream during the low point of the hydrograph. S.B. 414 required a more practical and precise approach for selecting flow rates for the instream flow program.

1986 and 1987 Amendments

In 1986 the General Assembly adopted S.B. 91.¹³ This bill authorized the CWCB to acquire water rights for the instream flow program by methods other than appropriation. This legislation allowed the CWCB to seek donations of senior water rights on stream reaches in which CWCB-appropriated instream flow rights were too junior to provide reliable protection. S.B. 91 also required the CWCB to consult with the United States Departments of Agriculture and the Interior prior to appropriating an instream flow right. The federal consultation was designed to give the federal

government the ability to utilize the state instream flow program to preserve the natural environment of the lands under its management.

In 1987 the General Assembly adopted S.B. 212.¹⁴ S.B. 212 clarified the intent of the General Assembly that only the CWCB could make instream flow appropriations. This amendment was necessary in order to prevent private parties from asserting instream flow rights. Despite S.B. 212's provision naming the CWCB as the sole party entitled to seek an instream flow water right, private parties have obtained judicial approval of an alternative type of instream flow right.

City of Fort Collins - Poudre River Recreational Corridor Case

On December 31, 1986, the City of Fort Collins filed a water court application which sought "Instream Rights" in the Poudre River.¹⁵ Fort Collins sought these water rights for a reach of the Poudre River that runs through a park-like part of the city designated the Poudre River Recreational Corridor.

The CWCB objected to this application on the ground that only the CWCB may appropriate instream flow rights. The resolution of the CWCB's objection and the subsequent Colorado Supreme Court opinion¹⁶ concerning the Fort Collins application have defined the difference between acceptable instream uses of previously diverted water and those instream rights that may be held only by the CWCB.

Prior to trial on the application, the CWCB settled its objections with Fort Collins. The settlement agreement required Fort Collins to amend its application to remove the instream flow use claimed, to designate two definite points of diversion for the water rights claimed and to disclaim any intent to maintain dominion of the claimed waters downstream from the point of diversion. Fort Collins amended its application pursuant to its agreement with the CWCB and claimed points of diversion at the Nature Dam and Power Dam structures it maintains on the Poudre River.¹⁷

Although the CWCB settled prior to trial, the City of Thornton pursued the instream flow issues at trial. At trial Thornton argued that the Fort Collins application was a "thinly disguised minimum stream flow."¹⁸ The Division 1 Water Court ruled that the Nature Dam appropriation was a legitimate diversion but that the Power Dam was an instream flow. The water court refused to decree the Power Dam water right on the ground that only the CWCB could appropriate instream flows. Both cities appealed the decision.

The supreme court affirmed the Nature Dam decree but reversed the water court's decision not to decree the Power Dam appropriation. The supreme court began its analysis by reviewing the criteria for granting a decree for a conditional water right. The court found that, although the applicant must prove that it can and will divert the

water subject of the application, "a diversion in the conventional sense ... is no longer required."¹⁹ The court then found that both dams either removed water from the river channel (in the case of the Nature Dam) or controlled water within the river channel (in the case of the Power Dam) and thus met the statutory definition of diversion.²⁰

The supreme court distinguished the Fort Collins appropriation from a CWCB instream flow right by noting "a minimum stream flow does not require removal or control of water by some structure or device. A minimum stream flow between two points on a stream or river usually signifies the complete absence of a structure or device."²¹ The court also discussed the different beneficial uses of the two rights. The court found that although the CWCB uses its right to preserve the natural environment, that did not mean "that the beneficial uses to which waters controlled by some structure or device may not also redound to the preservation of piscatorial and other natural resources."²² The final distinction made by the supreme court concerned the CWCB's insistence that Fort Collins disclaim any intent to exercise its dominion over the water rights downstream of the point of diversion. The court concluded that it was not necessary for Fort Collins to give up dominion of the waters through the stream reach in which the water was applied to a beneficial use.²³

The Fort Collins decision was followed by another 1992 supreme court case in which the Upper Gunnison River Water Conservancy District ["UGRWCD"] sought and was granted a second fill of Taylor Park Reservoir.²⁴ UGRWCD diverted water from the Taylor River²⁵ for storage at Taylor Park Reservoir, where the water was subsequently released in order to produce optimum fishery habitat, late season rafting flows, and supplemental irrigation supplies.²⁶ Like the Fort Collins case, the CWCB originally opposed this application. The CWCB withdrew its opposition once UGRWCD clarified its application by limiting the water right application to use of previously stored waters for instream piscatorial uses within a defined stream reach. The supreme court affirmed the water court's decree holding that UGRWCD "controlled Taylor River water by ensuring that such water is stored and subsequently released from storage to accomplish the beneficial uses" contemplated by the application.²⁷ The court recognized that the piscatorial use sought by UGRWCD was different from the fishery protection provided by the CWCB instream flow rights. The court found that the UGRWCD water right sought to enhance fishery uses to a substantial degree throughout the year, while the CWCB's rights were only sufficient "to protect fish species for short periods of time."²⁸

The Fort Collins and UGRWCD cases illustrate an alternative type of instream flow right recognized in Colorado. The alternative instream flow right is not equivalent to the CWCB's instream flow rights since it apparently cannot exist in the absence of diversion structures. Nonetheless this right does allow parties to claim an instream use of water if the applicant can prove that previously diverted water is being used instream for a beneficial purpose.

Program Implementation And Enforcement

Appropriation of an Instream Right

By 1992, more than 1,200 instream water rights had been adjudicated on Colorado's rivers and streams through the efforts of the Division of Wildlife, the Office of the Attorney General, and the Colorado Water Conservation Board. These rights represent the protection of more than 7,500 miles of streams and rivers, mostly in the mountainous areas of the state. Cold water fishery needs are the most common yardstick used to measure the flow needed to preserve the natural environment to a reasonable degree. In addition to a cold water fishery standard, the CWCB has used other standards, including warm water fisheries and flows needed to protect amphibians. Each right extends through a designated reach of stream (unlike diverted water rights that are measured at a single point) and is sometimes broken into two or more flow rates reflecting different seasons of the year (e.g., 15 cfs from April through September; 8 cfs from October through March).

The process through which instream flow water rights are appropriated involves a number of steps. These include:

- . field work by the Division of Wildlife, Division of Parks and Outdoor Recreation, CWCB staff or federal land management organizations to gather fishery and flow data on streams targeted for protection;
- . efforts of the CWCB staff to work with the data, DOW personnel, local water users, and computer models to determine recommended instream flow levels;
- . staff presentation to the board of preliminary recommendations, with opportunity for further public input;
- . voting by the board to approve final instream flow levels;
- . filing by the CWCB through the Attorney General in the water court for instream flow rights; and
- . completing the water court process to establish adjudicated instream water rights.

Enforcement Procedures

Colorado's instream flow program works within the same prior appropriation system in which all other water rights are obtained and administered. For that reason under Colorado water law there is no guarantee that the decreed instream flow levels will be attained. Water users with priorities senior to the year in which an instream flow right is filed in water court will not be affected by a CWCB instream flow right, and senior users may continue diverting even if they reduce the flow below the specified instream flow level. Enforcement efforts are pursued against junior diverters or against proposed transfers of senior rights to new places of use, different purposes, or new points of diversion.

Emerging Issues Confronting Colorado's Instream Flow Program

In the late 1980's and early 1990's issues regarding inundation of instream flow reaches, acquisition of conditional water rights for conversion to absolute instream flow rights and modification of instream flow decrees have confronted the CWCB with new challenges in the administration of Colorado's instream flow program.

Inundation of Instream Flow Reaches

Inundation of an instream flow right results from the artificial impoundment of water within an instream flow reach.²⁹ Inundation can range in size from small on channel ponds created by diversion dams to massive multimillion dollar water storage reservoirs. The statute creating Colorado's instream flow program is silent on all issues regarding the CWCB's administration and protection of instream flow rights including the issue of whether the CWCB may oppose inundation of its instream flow rights. Beginning in 1986, the CWCB began opposing any water right application that proposed to inundate portions of instream flow reaches.

The overall policy implications of the CWCB's position on inundation generated substantial debate in the water development and environmental communities. Water development interests argued that instream flow rights were not injured by inundation because the instream flow stream reach was not dewatered. Opponents of inundation pointed to the adverse impacts of inundation on riparian areas, the loss of wetlands caused by inundation, and adverse impacts on fishery migration caused by building impassable structures on streams or rivers.

The CWCB rejected the no injury arguments and adopted a case by case approach when dealing with inundation issues pending the completion of rules and regulations for the instream flow program. From 1987 to 1992, the CWCB considered six cases concerning inundation of instream flow reaches.³⁰ The length of the stream

reaches to be inundated ranged from 65 feet in the case of Yamcolo Reservoir to nearly three miles in the case of Union Park Reservoir.³¹

The CWCB's inundation analysis has taken a similar course in all six cases. First the CWCB contacts the Division of Wildlife ("DOW") and DOW investigates the impact of the inundation on the natural environment. This investigation usually involves field surveys to determine the exact location of the inundation. Next the investigation assesses the vegetation and terrain to be inundated. The final part of the field investigation involves a survey of one or more cross sections of the stream reach subject to inundation in order to determine the types of fish inhabiting the reach. DOW then produces a recommendation to the CWCB concerning the inundation. In the case of some of the smaller and shallower inundations, DOW investigations have found that proposed inundations may actually improve the stream fishery by warming the water, improving nutrient supply and providing shelter for the resident fish populations. In this type of case the CWCB will not usually file a statement of opposition to the water court application seeking a decree that would inundate an instream flow reach.³²

The more problematic cases involve massive inundations such as that proposed by Arapahoe County in the Union Park project. The Union Park Reservoir would be over three hundred feet deep at its deepest point, when full, and would inundate three miles of riparian habitat. Local opponents of the project lobbied the CWCB to use the proposed inundation of Lottis Creek to stop the project. The CWCB was not willing to take a final position on Union Park until the federal and county agencies responsible for issuing 404 permits,³³ other federal permits,³⁴ and county land use permits³⁵ had imposed the terms and conditions needed to grant those permits. The CWCB withdrew its objection to Union Park after Arapahoe County agreed to subordinate all its senior water rights to the CWCB's instream flows on all project reaches. In addition, Arapahoe County agreed to comply with any requirements imposed by CWCB rules and regulations concerning inundation.

The rules and regulations establish a procedure in which a party seeking to inundate an instream flow right may settle the inundation issue with the CWCB in a non-judicial process.³⁶ After a staff investigation of the proposal, the CWCB may approve the request, outright or conditionally, or it may deny the request to inundate. Denial may be based upon findings that no adequate compensation for the interference is proposed by the applicant or the proposed inundation would be inconsistent with the goals of the instream flow program.³⁷ Compensation may include cash payments to the CWCB (if such payments can be used exclusively for furthering the goals of the instream flow program), installation of stream measuring, monitoring or reporting devices on instream flow stream reaches, construction of stream, channel or bank improvements which would permit the protection of the natural environment to a reasonable degree or the donation of water, water rights or interests in water in the vicinity of the inundation or as needed by the CWCB in other parts of the state.³⁸ In the event no out of court

settlement of the inundation issue can be agreed upon, the party seeking to inundate the instream flow reach may contest the CWCB's assertion of injury in water court.

Acquisition of Conditional Water Rights

In 1986 the Colorado General Assembly enacted Senate Bill 91³⁹ which amended the instream flow program and authorized the CWCB to acquire existing water rights for instream flow purposes. This power to acquire was expanded in 1987 by Senate Bill 212⁴⁰ which established a procedure for the CWCB to follow when considering acquisition proposals. In addition, S.B. 212 made acquisition agreements between the CWCB and the water rights owner enforceable as water matters in water court.

Shortly after the statutory changes were made to authorize acquisitions, The Nature Conservancy ("TNC") acquired a 300 cfs conditional water right⁴¹ on the Gunnison River from the Pittsburg and Midway Coal Mining Company ("P&M"). In 1987, TNC began negotiations on the terms of a donation agreement with the CWCB in which the CWCB would agree to accept the 300 cfs conditional water right and file a change of water right application to change the conditional right to an absolute water right for instream flow purposes for a 26 mile reach of the Gunnison River in the Black Canyon of the Gunnison.⁴² The donation agreement was finalized in January 1992 and the CWCB filed a change of water right application in August 1992.⁴³ The agreement between TNC and the CWCB would allow the CWCB to acquire a 1965 priority date for its instream flow in the Black Canyon of the Gunnison River. When the donation was originally proposed, local water development interests were concerned that the CWCB's acquisition of a 1965 right would disrupt water developments planned on the Gunnison River that had more junior appropriation dates. The CWCB did not hold an instream flow right on this reach of the Gunnison prior to the TNC donation. During the five-year period in which the proposed donation was discussed, TNC and the CWCB reached agreements with most major decreed water rights owners in the Gunnison Basin. These water right owners consented to the proposed change of water right with certain agreed upon terms and conditions. The change of water right application is still pending in water court.

The CWCB developed Section 7 of its draft rules and regulations to address concerns raised by acquisitions like the TNC donation. In the basis and purpose statement that precedes the rules and regulations, the CWCB states that "acquisition of conditional rights has the potential to disrupt opportunities to develop or utilize junior water rights for consumptive beneficial use in a river basin. This is especially true when the conditional right to be acquired faces financial, regulatory or other practical obstacles to its eventual development."⁴⁴

In order to minimize the disruptive effect on a basin by the acquisition of conditional water rights, the rules require the CWCB to conduct a "significant negative

effect" analysis to determine whether the acquisition would cause a significant negative effect upon (1) existing absolute water rights; (2) existing exchanges; (3) conditional water rights for which facilities have been constructed or which are substantially under construction; or (4) the ability of the people of the State of Colorado to develop and place to beneficial use those waters made available by law and interstate compact in a cost effective and responsible manner.⁴⁵ In the event that a significant negative effect caused by the acquisition is identified in regards to the three types of water rights, the CWCB would not acquire the conditional right.⁴⁶ In the event acquisition would cause a significant negative effect on the ability to develop and use waters made available by law or interstate compact, the CWCB is not automatically prohibited from acquiring the right, but instead is required to balance the benefit of acquiring the conditional water right with the significant negative impact. The CWCB is prohibited from acquiring the right unless the benefits outweigh the significant negative effect.⁴⁷

In addition to the significant negative effect analysis, the CWCB has imposed "stacking" limitations on the operation of any water rights including conditional water rights it acquires for instream flow purposes. Stacking refers to combining the flows of appropriated and acquired water rights in any given reach. The CWCB will stack acquired and appropriated water rights only to the degree necessary to preserve the natural environment to a reasonable degree.⁴⁸ The CWCB's stacking policy means that the CWCB will not always fully exercise each instream flow right it owns on a stream. This situation may occur when the CWCB has acquired a senior right on a stream in which it has already appropriated an instream flow right. The appropriated instream flow rights are generally very junior rights, since Colorado's instream flow program did not begin until 1973 and most senior water rights have priority dates in the late 1800's or early 1900's. When the CWCB appropriates an instream flow right it seeks a decree for that amount of water necessary to preserve the natural environment to a reasonable degree. If the senior right were added on top of the original CWCB appropriation, the total amount of water used for instream flow purposes could exceed that statutorily permissible amount of water.⁴⁹ Senior rights are acquired when the original CWCB appropriation is not senior enough to insure availability of sufficient water to preserve the natural environment to a reasonable degree. To date the CWCB has not purchased water rights for instream flow use, but the CWCB has accepted donations of senior water rights.⁵⁰

Acquisition of senior water rights, both absolute and conditional, is an important tool in the implementation of Colorado's instream flow program. Due to the possibility that the acquisition program may adversely affect some water users, the CWCB has imposed strict restrictions on acquisition of water rights for the instream flow program.

Modification of Instream Flow Decreases

1993 marks the 20th anniversary of Colorado's instream flow program. Since the program's inception in 1973, the CWCB's methods for quantifying instream flow amounts have grown more sophisticated. In the early years it was not uncommon for the CWCB to seek single year-round flow amounts on long stream reaches based upon data obtained from one river cross-section. This method of quantifying instream flows failed to address the natural fluctuation of the hydrologic cycle and failed to take into consideration contributions to stream flow from tributaries joining the stream within the instream flow reach.

The 1981 amendments to the instream flow statute⁵¹ required the CWCB to determine "that the natural environment will be preserved to a reasonable degree by the water available for the appropriation to be made."⁵² This limitation directed the CWCB to look at physical water availability prior to appropriating an instream flow right. Prior to this limitation, if the scientific study indicated that 10 cfs was needed in a stream reach, the CWCB would seek a 10 cfs right even if a senior upstream water right took 100% of the flow of the stream on a year-round basis. When considering physical availability, the CWCB first had to analyze the hydrologic cycle. The natural hydrologic cycle for most Colorado streams shows a peak flow in late spring and early summer tapering to very low flows during the winter months. In addition to the hydrologic cycle, fishery biologists advised the CWCB that fisheries needed much less water during the winter months when cold water, reduced sunlight, and reduced food sources lull most cold water fish species into inactivity.

The combination of these factors led the CWCB to seek separate summer flow levels and winter flow levels when appropriating instream flow rights. Problems have arisen when new water development has required more year round uses of water on stream reaches having one of the pre-1981 year round flows.

An example of this conflict occurred in 1992 on Snowmass Creek.⁵³ The Aspen Skiing Company sought to acquire senior water rights to expand its snowmaking operation. Prior to expansion, the ski company needed Forest Service special use permits and county land use permits. Neither agency wanted to grant the permits if the ski company's use of water would have an adverse impact on the environment. In preparation for the permitting process the county asked the DOW to assess the impact of the ski company's proposed diversions on the instream flow on Snowmass Creek. DOW and CWCB staff undertook a review of the proposal and the instream flow water right since it was one of the CWCB's first rights, decreed in 1976. The instream flow right was a year round flow of 12 cfs on the entire 17 mile length of the creek. Hydrology studies indicated that the typical winter flows on the upper third of Snowmass Creek varied from 5 to 10 cfs and the middle third varied from 9 to 10 cfs. Based on the studies done in the review process, the CWCB modified its existing instream flow right by breaking the single 17 mile reach into three segments with different flow requirements.

In addition, the Board appropriated higher summer flows for the middle and lower reaches and decided that 11 cfs, 7 cfs and 4 cfs of the 12 cfs right would be enforced on the lower, middle and upper reaches respectively during certain low flow months.

The opponents of the ski area snowmaking expansion sought judicial review of the CWCB's decision.⁵⁴ The opponents' primary substantive claims were that the CWCB did not have power to modify its instream flow water rights because the instream flow statute did not specifically grant that power and that a modification would be an impermissible collateral attack on a water court decree. The Denver District Court upheld the action of the CWCB in July 1993.

In order to codify its past practice, and to establish a procedure for dealing with future cases in which modifications of instream flow decrees are needed, the CWCB included a section on modifications in the draft rules and regulations concerning the instream flow program.⁵⁵ The CWCB rules and regulations define an instream flow modification to include "a decrease in the rate of flow described in the existing instream flow decree, segmenting an existing instream flow reach into shorter reaches, or subtracting water during any time period or season."⁵⁶

Although the CWCB retains discretion to approve modifications consistent with the goals of the Colorado instream flow program, one very important factor in granting the modification is whether the natural environment will be preserved to a reasonable degree after the modification. Requests for modification are subject to a two-meeting approval process.⁵⁷ At the first meeting the party requesting modification must establish a need for the modification⁵⁸ and must establish that one of the grounds for modification set forth in the rules is present.⁵⁹ The grounds for modification require that an error was made in the original appropriation or that the original appropriation obtained a flow rate in excess of the amount of water necessary to preserve the natural environment to a reasonable degree.⁶⁰ Once these preliminary requirements have been established, the CWCB may instruct the staff to do additional studies before final review.⁶¹ After considering any new studies and all public comment, the CWCB will allow the modification only if it can be accomplished or administered in conformance with the goals of the instream flow program.⁶²

Conclusion

Colorado has met the challenge of developing a system for protecting instream flows within the framework of a prior appropriation system. In designing this system, Colorado has gone to great lengths to protect existing vested water rights owners while maintaining flexibility for future utilization of Colorado's unused compact entitlements. While this system works well in establishing state owned water rights for instream flow purposes, turning those junior water rights into actual "wet" water in Colorado's often overappropriated streams, creeks, and rivers is not fully guaranteed. To accomplish the

CWCB goal of "correlating the activities of mankind with some reasonable preservation of the natural environment," the instream flow program must find innovative ways to put wet water in streams. The instream flow program has developed the acquisition and donation programs as tools to accomplish this ultimate goal.

Nearly forty years have gone by since work began to protect stream habitats with bypass flows in the Fryingpan-Arkansas Project. During that time Colorado's system has proved itself capable of solving each of the many new issues that have challenged the instream flow program without undermining the statewide consensus that has developed in support of the program.

Notes

1. Both the Fryingpan River and Hunters Creek are tributary to the Roaring Fork River. The Fryingpan has its confluence at Basalt, Colorado and Hunter Creek has its confluence at Aspen, Colorado.
2. 1973 COLO. SESS. LAWS 1521 § 2 (codified at COLO. REV. STAT. § 148-21-2(3) (1963) and COLO. REV. STAT. § 37-92-102(3) (1973)).
3. COLO. REV. STAT. § 37-92-102(3) (1990).
4. 1973 Colo. Sess. Laws 1521, § 1.
5. The Crystal River is a tributary of the Roaring Fork River with its confluence at Carbondale, Colorado.
6. Colorado Water Conserv. Dist. v. Colorado Water Conserv. Bd., 594 P.2d 570 (Colo. 1979) (Referred to as the Crystal River decision).
7. COLO. CONST. Art. XVI, § 6.
8. *Colorado R. Water Conserv. Dist.*, 594 P.2d at 573.
9. *Id.*
10. *Id.* at 575.
11. *Id.*
12. 1981 COLO. SESS. LAWS 1784, § 1; COLO. REV. STAT. § 37-92-102(3)(a)-(d) (1990).
13. 1986 COLO. SESS. LAWS 1095 § 1; COLO. REV. STAT. § 37-92-102(3) (1990).
14. 1987 COLO. SESS. LAWS 1305 § 2; COLO. REV. STAT. § 37-92-102(3) (1990).
15. The Poudre River has its headwaters on the eastern slope of the Rocky Mountains near Rocky Mountain National Park and has its confluence with the South Platte River at Greeley, Colorado.
16. *Thornton v. Fort Collins and Cache La Poudre Water Users*, 830 P.2d 915 (Colo. 1992).
17. The Nature Dam diverted water from the existing Poudre River channel into the Poudre River channel that existed prior to the 1983-84 floods. The Power Dam was a boat chute and fish ladder designed for use at low flow.
18. *Thornton*, 830 P.2d at 921.
19. *Id.* at 930.

20. COLO. REV. STAT. § 37-92-103(7) (1990) defines diversion as "removing water from its natural course or location, or controlling water in its natural course or location by means of a ditch, canal, flume, reservoir, bypass, pipeline, conduit, well, pump, or other structure or device."
21. *Thornton*, 830 P.2d at 931.
22. *Id.* at 931.
23. *Id.*
24. *Board of County Comm'rs v. Upper Gunnison R. Water Conserv. Dist.*, 838 P.2d 840 (Colo. 1992).
25. The Taylor River has its headwaters on the western slope of the Collegiate Range and joins with the East River at Almont to form the Gunnison River.
26. UGRWCD was granted a decree to release up to 500 cfs during certain times of the year. The CWCB instream flow right in the same reach is 100 cfs in the summer and 50 cfs in the winter.
27. *Board of County Comm'rs.*, 838 P.2d at 854.
28. *Id.* at 854.
29. *Rules and Regulations Concerning the Colorado Instream Flow and Natural Lake Level Program* ("Rules"), (Department of Natural Resources, Denver, November 10, 1993) § 8.00. The Rules were formally adopted November 10, 1993 and became effective December 31, 1993.
30. Application of Kensington Land Inv. Ptnrs., 86CW153, Division 5; Application of Upper Yampa Water Conserv. Dist. (Yamcolo Reservoir), 89CW139, Division 6; Application of City of Steamboat Springs (Fish Creek Reservoir Enlargement), 92CW23, Division 6; Application of City of Colorado Springs, 90CW56, Division 2; Application of Bd. of Cty. Comm'rs. for Arapahoe Cnty., 88CW178, Division 4 (Union Park Reservoir); Application of Van Straaten, 91CW14, Division 6.
31. The Union Park Project is a proposal by Arapahoe County to build a 900,000 acre foot reservoir on Lottis Creek which is a tributary of the Taylor River, Gunnison River System. Union Park would be filled by pumping and diverting water from Taylor Park Reservoir, the Taylor River and the East River. The water is to be used for hydropower generation and transmountain diversion for municipal use in Denver's southern suburbs.
32. *Rules*, § 8.01.
33. 404 permits regulate dredging and filling of waters of the United States. These regulations are the major federal wetlands regulation program. The 404 permits are issued by the Army Corps of Engineers in conjunction with the Environmental Protection Agency pursuant to the Clean Water Act § 404, 33 U.S.C. § 1344 (1988).
34. Other necessary federal permits include a Bureau of Reclamation right-of-way permit issued pursuant to 43 U.S.C. § 387 (1988); special use authorization from the Forest Service issued pursuant to the Federal Land Policy and Management Act, 43 U.S.C. § 1761(a)(1) (1988); and Section 7 consultation pursuant to the Endangered Species Act, 16 U.S.C. § 1531-44 (1988).

35. County regulations pursuant to "1041" powers are imposed pursuant to COLO. REV. STAT. §§ 24-65.1-101 to 502 (1988).
36. *Rules*, § 8.10.
37. *Rules*, § 8.34.
38. *Statement of Basis and Purpose, for Rules and Regulations Concerning the Colorado Instream Flow and Natural Lake Level Program* (hereinafter referred to as "Basis and Purpose"). The Basis and Purpose was added at the same time the rules were adopted. The Basis and Purpose explains CWCB's intentions in promulgating the rules.
39. 1986 COLORADO SESS. LAWS, 1095.
40. 1987 COLORADO SESS. LAWS, 1305 § 2.
41. Conditional water rights are water rights that have not been diverted and put to beneficial use but that are allowed a priority date based upon the time the water right owner made the first step towards appropriating an absolute water right. *Fort Lyon Canal Co. v. Amity Mut. Irr. Co.*, 688 P.2d 1110 (Colo. 1984).
42. The Black Canyon of the Gunnison is a national monument being studied for national park status. The Gunnison River has formed a canyon 2,800 feet deep and 53 miles long. The canyon is immediately downstream of the 1.2 million acre foot three reservoir Aspinall Unit feature of the Colorado River Storage Project Act and is 20 miles northeast of Montrose, Colorado.
43. Application of Colo. Water Conserv. Bd. 92 CW 107, Water Division 4.
44. *Basis and Purpose*, at 6.
45. *Rules*, § 7.10.
46. *Rules*, § 7.20.
47. *Rules*, § 7.20.
48. *Rules*, § 6.03(a).
49. *Basis and Purpose*, at 6.
50. The CWCB has received donations of two different rights on Boulder Creek located in Boulder, a group of rights on Hunter Creek located outside of Aspen, and rights on Fish Creek located outside of Steamboat Springs.
51. 1981 COLORADO SESS. LAWS 1784 § 1.
52. COLO. REV. STAT. § 37-92-102(3)(c) (1990).
53. Snowmass Creek has its headwaters in the Maroon Bells-Snowmass Wilderness Area near 14,014 ft. North Maroon Peak and runs approximately 17 miles to its confluence with the Roaring Fork River thirteen miles downstream of Aspen, Colorado.

54. *Aspen Wilderness Workshop Inc. v. Colorado Water Conserv. Bd.*, 92 CV 6091 Denver Dist. Ct. (1992). This case is on appeal in case number 93 CA 1362.
55. *Rules*, §§ 10.00 - .50.
56. *Rules*, § 10.00.
57. *Rules*, § 10.41.
58. *Rules*, § 10.10.
59. *Rules*, § 10.20.
60. *Rules*, § 10.22.
61. *Rules*, § 10.30.
62. *Rules*, § 10.40.

Instream Flows in Idaho

Josephine P. Beeman

Introduction

In Idaho, instream flows—water rights that keep water in lakes or streams to preserve scenic beauty, health, recreation, hydropower generation—are a product of legislation,¹ state water policy,² judicial interpretation,³ public trust considerations⁴ and federal/state conflicts⁵ in comprehensive water planning.

In 1964, Idaho was first forced to address the issue of instream flows when out-of-state interests proposed to divert water from Idaho to California and the Southwest. The Idaho Legislature met in an extraordinary session and proposed an amendment to the constitution, which was ratified by the voters in the general election of 1964, to create a state water planning agency to preserve and protect Idaho's water resources for use in the State.⁶ Idaho water policy continues to change and grow.

This chapter looks at three aspects of Idaho's instream flows. First, it traces the chronology of instream flow programs,⁷ highlighting impacts from hydrologic conditions and water distribution policy. Second, it summarizes current instream flows and related enforcement, legislative, and technical issues. Third, it looks at the potential impact of the Endangered Species Act, the Federal Power Act, and the Snake River Basin Adjudication on instream flows in Idaho.

Historical Development of Instream Flow Programs in Idaho

Although Idaho's constitution provided for the diversion of the state's water for certain beneficial uses,⁸ it was not until the Legislature declared that scenic beauty, health and recreation were additional beneficial uses that instream flows became an issue.⁹ The new "instream" water rights prescribed amounts of water in the lake or in the stream and prevented the water from being removed for other uses. Since the Legislature's first broad brush attempts to establish instream flows in Idaho, the concept has been further shaped by the courts,¹⁰ the Legislature,¹¹ various administrative agencies¹² and private interests.¹³

The Idaho Legislature Established the First Instream Flows for Idaho.

In 1890, when Idaho became a state, its constitution mirrored the appropriation doctrine then prevalent in western water law, establishing a right to appropriate

("remove," "divert" or "take control of") water from the streams for certain beneficial uses—domestic, agriculture, mining, and manufacturing.¹⁴ A person who diverts water and uses it for a beneficial purpose listed in the Idaho Constitution establishes an appropriative water right.

In 1925 and 1927,¹⁵ the Idaho Legislature first declared that the preservation of certain lakes for scenic beauty, health and recreation was also a beneficial use of the water. To preserve the water in the lakes, the Legislature appropriated certain lake levels in trust for the people of the State of Idaho and the Idaho Department of Water Resources' predecessor issued the resulting water right to the Governor.

The Legislature's declaration of new beneficial uses raised some question about the new water rights.¹⁶ Although the new beneficial uses—and the resulting water rights—had a legislative rather than a constitutional origin, no challenge was formally raised for decades.

In 1971, the Legislature again declared scenic beauty and recreational purposes to be beneficial uses of water;¹⁷ this time the Legislature went beyond lake levels to include flowing water for the instream flows. The Legislature authorized the appropriation of springs in trust for the people of Idaho and directed the Department of Parks to appropriate the water. When the Department of Parks complied and filed several applications with the Department of Water Resources to appropriate the waters specified by the Legislature, some major water users protested the application for spring flow in Malad Canyon and the Department of Water Resources refused to issue the permit.¹⁸ The resulting litigation brought attention to Idaho's developing instream flow program.

The Idaho Supreme Court First Addressed the Concept of Instream Flows in the Malad Canyon Decision.

The *Malad Canyon*¹⁹ litigation presented the court with three issues: 1) May a state agency appropriate water and obtain a priority without express constitutional authorization?²⁰ 2) Does appropriation of water for recreation and scenic views constitute a beneficial use?²¹ 3) May there be a valid appropriation right without a physical diversion of water from its natural channel?²² The Idaho Supreme Court confirmed that instream flows were constitutional and answered all three questions in the affirmative in upholding the Malad Canyon appropriation.²³

In the litigation, the Department of Water Resources claimed that it could not issue a permit for the spring flows in Malad Canyon because no physical diversion of water was proposed.²⁴ The protesting water users questioned whether a state agency could appropriate water without express constitutional authority for uses—esthetic values and recreational opportunities—not listed in the Idaho Constitution.²⁵ *Malad Canyon* decided that the Idaho Constitution does not require actual physical diversion of water

and that state agencies can appropriate water just like other persons. Finally, the court examined the list of water uses in the Idaho Constitution and found it did not preclude water rights for other beneficial uses, such as aesthetics and recreation.

The *Malad Canyon* decision confirmed the Legislature's appropriation of specific spring flows. Idaho still lacked any continuing process to evaluate and grant water rights for instream flow purposes.

The Idaho Water Resource Board Set Minimum Flows for the Snake River and Successfully Urged Idaho to Adopt Statewide Legislation for Instream Flows and Comprehensive River Planning.

In 1965, the Legislature established the Idaho Water Resource Board,²⁶ as required by a 1964 amendment to the Idaho Constitution.²⁷ The Board formulated and adopted the first State Water Plan.²⁸ The State Water Plan is a guide to future water resource management and development. The December 1976 Water Plan established minimum flows at three locations on the main stem of the Snake River and called for legislation to create a state-wide instream flow program. If legislation would allow a state agency to grant minimum streamflow permits, Idaho could proceed more rapidly to establish instream flows where unappropriated water was still available in excess of existing diverted uses.

The Water Board's designation of minimum streamflows on the Snake River and the eventual passage of a state-wide instream flow program²⁹ administered by the Department of Water Resources ended an era when the Legislature alone created instream flows for Idaho.

The Idaho Water Resource Board determined that the following instream flows at the Milner, Murphy and Weiser gaging stations on the Snake River were necessary to maintain water for hydropower production and other instream water uses.

GAGING STATIONS	Protected Flow (cubic feet per second) (Average Daily)
Milner	0 cfs
Murphy	3,300 cfs
Weiser	4,750 cfs

Flows at Milner were already frequently near zero because of diversions for irrigation. A zero minimum flow simply recognized the existing situation. The minimum flows at Murphy and Weiser were well below the previous lowest daily flows observed at

those locations. The 3,300 cfs instream flow at the Murphy gaging station was 5,100 cfs less than the 8,400 cfs operating capacity of the Swan Falls Power Plant immediately upstream from the gaging station. Again, upstream surface and groundwater irrigation had reduced the measured flows.

Idaho Power Company owns the Swan Falls Power Plant. In 1977, it filed suit to protect the hydropower water right from upstream irrigators and the Water Board's even lower minimum streamflow.³⁰ When the "Swan Falls" litigation was settled, new minimum flows were established for the Murphy gaging station: 3,900 cfs (April 1 to October 31) and 5,600 cfs (November 1 to March 31).³¹ Protection of these minimum flows required additional legislation.³²

The Swan Falls litigation was filed just months before the 1978 Legislature enacted the same minimum streamflows as the 1976 State Water Plan³³ and passed a statutory program to allow the Water Board to evaluate and apply for instream (minimum stream) flow rights with the Idaho Department of Water Resources.³⁴ Once Water Resources approved a minimum streamflow application, the Legislature could approve (by action or inaction) or disapprove (only by affirmative action) the resulting minimum streamflow permit.³⁵ The minimum streamflow legislation embodied the original concern of the State of Idaho regarding out-of-state diversions:

The Legislature further declares that minimum streamflow is a beneficial use of water of the streams of this State for the purpose of protecting this water from interstate diversions to other states or by the federal government for use outside the State of Idaho. Minimum streamflows as established hereunder shall be prior in right to any claims asserted by any other state, government agency or person for out-of-state diversion.³⁶

The legislation carefully protected Idaho water right applications filed earlier than minimum streamflow applications.

The 1976 State Water Plan also advocated a protected rivers program which, unlike the minimum streamflow program, would not safeguard earlier filed water right applications. The Water Board's 1976 Plan envisioned two new categories of rivers: *natural rivers* completely free from diversions or impoundments and administered as natural wilderness; and *recreational rivers* relatively free of diversions and impoundments and managed as rural, agricultural or urban environments.

In 1988, Idaho amended its water planning statutes to include state natural and recreational river designations³⁷ because federal law now required the Federal Energy Regulatory Commission to consider state comprehensive water plans for the site of

proposed hydropower facilities.³⁸ The 1988 Idaho Protected Rivers Act,³⁹ as it is called, requires the Water Resource Board to prepare a Comprehensive State Water Plan with components for specific geographic areas. The components of the State Water Plan would be additions to the overall State Water Plan. The Water Board has revised and amended the State Water Plan twice since the Protected Rivers Act was passed in 1988. During the same time, the Water Board has adopted six components of the State Water Plan for specific river reaches.⁴⁰

When the Water Board adopts a comprehensive plan for a river segment pursuant to the Protected Rivers Act, the plan designates the reach or sub-reaches as natural or recreational rivers.⁴¹ A natural river designation prohibits the following activities:⁴²

- Construction or expansion of dams or impoundments;
- Construction of hydropower projects;
- Construction of water diversion works;
- Dredge or placer mining;
- Alteration of the spring beds;
- Mineral or sand and gravel extraction within the stream bed.

The designation creates a minimum streamflow because it prohibits construction of water diversion works.

A recreational river designation allows the Board to determine which of the same six activities shall be prohibited and under what terms and conditions activities not prohibited may go forward.⁴³

While the Water Board studies a river to determine whether to designate it as natural or recreational, the Board can give the river interim protected status.⁴⁴ Existing water rights and previously permitted water rights are exempt from the statutory prohibitions that accompany interim designation.⁴⁵ Pending applications for which no permit has issued are not exempt from the statutory prohibitions during the study period.⁴⁶

Idaho's minimum streamflow legislation results in specific water rights for minimum streamflows with identified priority dates, but the Protected Rivers Act prohibits water diversion or hydropower construction without creating a water right for the protected reach. Increasingly, the Idaho Water Resource Board uses the Protected River Plan as a planning vehicle to recommend minimum streamflow applications. After the minimum streamflow water right is created, delivery and protection of the minimum streamflow may require additional state intervention.

The Idaho Department of Water Resources Commenced the Snake River Basin Adjudication and Adopted New Water Use Criteria to Protect Minimum Flows on the Snake River.

The final chapter of Idaho's early history in its instream flow program requires an examination of the Snake River Basin Adjudication and Idaho's "trust water" criteria developed to protect minimum flows on the Snake River.

In Idaho, the state supervises delivery of a water right (including instream flows) whenever the Department of Water Resources creates a water district "for the purpose of performing the essential governmental function of distribution of water among appropriators under the laws of the state of Idaho."⁴⁷ The Department of Water Resources can form a water district if a court has decreed some of the water rights in the area.⁴⁸ However, the statute does not permit Water Resources to form a water district in an area with no decreed water rights.⁴⁹ The minimum flows at the Murphy Gaging Station and the Weiser Gaging Station are in reaches of the Snake River with no decreed water rights. Milner Dam, with its instream flow of zero cfs, does not need a water right delivered. However, Milner Dam marks the endpoint of a water district with numerous decrees that have not been reviewed since the first half of the century.

In the absence of decreed water rights at Swan Falls and Weiser, there was no administrative mechanism available to protect the minimum streamflows of the Swan Falls agreement. Accordingly, the Swan Falls settlement provided for the initiation of a basinwide adjudication of the Snake River.⁵⁰ The adjudication would determine water rights for all of the Snake River Drainage Basin including the mainstem reaches which had no prior decree. The water rights could be administered by a water master and the instream flows at Murphy (near the Swan Falls plant) and Weiser would be delivered by a water master in times of shortage.

The state district court in Idaho commenced the Snake River Adjudication on November 19, 1987.⁵¹ Approximately 135,000 water right claims have been filed in the adjudication.

In addition to the adjudication the Legislature also addressed what to do with the Swan Falls historic water flows that exceeded the new Swan Falls minimum streamflows.⁵² The water flows at Swan Falls exceeding 3,900 cfs (in spring and summer) or 5,600 cfs (in winter) would be held in trust by Idaho until new consumptive appropriations were approved.⁵³ The "trust water", as it is called, may be appropriated if the director of Water Resources finds the consumptive use is in the public interest, after weighing specific "trust water" criteria:⁵⁴

- (1) the potential benefits both direct and indirect, that the proposed use would provide to the State and to the local economy;

- (2) the economic impact the proposed use would have upon electric utility rates in the State of Idaho, and the availability, foreseeability and cost of alternative energy sources to ameliorate such impact;
- (3) the promotion of the family farming tradition;
- (4) the promotion of full economic and multiple use development of the water resources of the State of Idaho; and
- (5) in the Snake River Basin above the Murphy Gage, whether the proposed development conforms to a stated development policy of up to twenty thousand (20,000) acres per year or eighty thousand (80,000) acres in any four (4) years.

The first regulations to implement the trust water statutes governed new surface water appropriations from the main stem of the Snake River and new groundwater appropriations tributary to the Snake River upstream from Swan Falls and Milner Dam. The 1986 Legislature amended the Idaho Code to provide that the trust water statutes do not apply above Milner Dam and that no water above Milner Dam shall be considered in the determination and administration of rights downstream from Milner Dam.⁵⁵ This creation of two rivers (one above Milner Dam and one below Milner Dam) was justified because of the existing zero minimum flow at Milner Dam set by the State Water Plan.

Idaho's Current Instream Flow Programs

Idaho continues to evaluate and issue minimum streamflows, using the Protected Rivers program to identify river reaches for future instream flows. The six year drought of 1987-1992, which reduced streamflows throughout the Snake River Basin, forced state administrators to test procedures to protect minimum streamflows. The Idaho Legislature continues to question the role of the Water Board and the Department of Water Resources in creating instream flows. But, no litigant has yet successfully challenged an existing minimum streamflow.

Instream (or Mimimun) Flows and Protected River Segments Exist on 1116 Miles of Idaho Rivers.

Idaho has 93,000 miles of rivers. The Department of Water Resources issued seven licenses and 42 permits to the Idaho Water Resource Board for minimum streamflows on an estimated 288 miles of Idaho streams between 1978 when the Legislature created the minimum streamflow program and the first quarter of 1993.⁵⁶ By comparison, under the Protected Rivers statute, in a three year period through March 1993, the Water Board designated 581 miles of protected rivers in Idaho and has 247 river miles currently under interim protection.⁵⁷

The process to create a minimum streamflow usually begins when another state agency requests the Water Resource Board to seek a minimum streamflow. The Board may conduct a hearing on the request and decide whether to file an application for permit with the Department of Water Resources.⁵⁸ The priority of the water right is the date the Water Board files the application with Water Resources.⁵⁹ If Water Resources approves the application (after a required hearing), the permit is sent to the Legislature and is deemed approved if the Legislature does not disapprove it.⁶⁰ Water Resources completes the statutory process when it issues a license to confirm use of the permit.

The Water Board's seven minimum streamflow licenses have 1978 or 1979 priority dates and each identifies a measured distance ("reach") with a beginning point and an ending point on a named spring, creek, or river, within which the minimum flow is protected. The water right may require one instream flow for winter conditions and another instream flow for summer conditions. The seven licenses provide minimum flows which total 303 cfs in winter and 311 cfs in summer.⁶¹

The Legislature has approved an additional 42 minimum streamflow permits on 245 miles of Idaho streams, providing 5,533.5 cfs to 10,209.5 cfs for winter and summer instream flows. The permits have priorities dating from 1978 to 1991. As of the summer of 1993, four older applications with 1978, 1979, and 1981 priority dates affecting 239 cfs on 1.5 miles of springs are pending final decision by Water Resources and 24 additional applications with 1988 to 1992 priority dates for 52,550.5 to 53,050.5 cfs on 295 stream miles are pending hearing by Water Resources.⁶²

The instream flows resulting from the minimum streamflow program are principally located on discrete tributary spring or stream systems. In contrast, the Protected Rivers program affects the major rivers themselves. The Idaho Water Resource Board has adopted six comprehensive state water plans that include protected river reach designations:

- (1) The Comprehensive State Water Plan for the South Fork of the Boise River Sub-Basin;
- (2) The Comprehensive State Water Plan for the Payette River Reaches;
- (3) Comprehensive State Water Plan for the Priest River Basin;
- (4) Henrys Fork Basin Comprehensive State Water Plan;
- (5) Comprehensive State Water Plan, Upper Boise River Basin;
- (6) Comprehensive State Water Plan for the Snake River: Milner Dam to King Hill;

Most of the basins have substantial stretches of river that have been designated as either natural or recreational, with the majority of the protected portions designated as recreational. The South Fork Boise River Basin has both natural and recreational segments, and has an entire drainage, the Big Smoky Creek Drainage, designated as natural. The Payette River drains over 3,240 square miles, and has several reaches

designated as recreational, but none listed as natural. The Priest River system runs for 88 miles, and has various segments listed as either natural or recreational, including 24.5 miles that are protected as an interim Protected River. Henrys Fork Basin has nearly 200 miles of protected river, somewhat more than half listed as recreational, and slightly less than half as natural. The Upper Boise River Basin has almost 1,130 miles of rivers and tributaries, and designates about 160 miles as protected, split almost equally between recreational and natural. Finally, the Middle Snake River has 62 miles of recreational river, and about 9.5 miles of natural river designation.

The basin planning schedule for the Idaho Resource Board lists 16 additional comprehensive water plans to be completed by the year 2000.⁶³

In 1992 Drought Threatened a Minimum Streamflow on the Snake River and Idaho Limited Junior Appropriators to Protect the Senior Instream Flow.

In the Spring of 1992, the sixth year of drought, water levels at the Weiser Gaging Station on the Main Stem of the Snake River declined below the 4,750 cfs minimum flow, which has a priority date in December 1976. On May 15, 1992, R. Keith Higginson, Director of the Idaho Department of Water Resources, issued a Moratorium Order for the Snake River Basin upstream from the USGS gage near Weiser. The moratorium stopped the processing and approval of then-pending and new applications for permits to appropriate water from all surface and groundwater sources within the Snake River Basin upstream from the Weiser Gaging Station. The Order exempted small domestic uses and non-consumptive uses of water. The moratorium allowed applications to develop supplemental groundwater sources for irrigation on lands which normally had full water rights from surface water now unavailable due to the drought. Similar moratorium orders for the Salmon and Clearwater River Basins and the Bear River Drainage in Great Basin tributaries underscore the severity of the drought in Idaho.⁶⁴

As the water level at the Weiser Gage continued to drop, letters were sent to surface water users holding water rights with priority dates later in time than the Weiser minimum streamflow. When the Weiser Gage dropped below 4,750 cfs, the same water users received a second letter notifying them that they must stop their diversions or a cease and desist order and civil penalties of up to \$100.00 per day would be sought by IDWR. The minimum flow at Weiser returned.

Return flow from major irrigation diversions in the Upper Snake River may be responsible for restoring the minimum flow; or the lowered water level may have de-watered Snake River pumpers with priority dates junior to the Weiser minimum streamflow. Because of the latter phenomenon—upstream diversions cannot take water from a low river—the minimum streamflow at Weiser might have been protected even without administrative intervention.

The Legislature Created Each Instream Flow Appropriation Until 1976 and Some Legislators Still Question the Role of the Idaho Water Resource Board and the Idaho Department of Water Resources in the Instream Flow Program.

Prior to the adoption of the State Water Plan of December 1976, only the Legislature had acted to establish minimum streamflows in Idaho. In the 1977 legislative session, immediately following the Idaho Water Resource Board's adoption of the State Water Plan with three minimum streamflows on the main stem of the Snake River, the Legislature enacted a law (without signature of the Governor) to provide that the State Water Plan could not be effective until "affirmatively acted upon" by the Legislature in a concurrent resolution, which could adopt, reject, or modify the Plan.⁶⁵

The Idaho Water Resource Board adopted minimum streamflows for the Snake River in December 1976. The Legislature, by concurrent resolution, adopted the same flows in 1978.⁶⁶ It was apparent that the Idaho Water Resource Board and the Idaho Legislature each thought it had exclusive authority to adopt a State Water Plan for Idaho. The Swan Falls litigation begun in 1977 was already examining the impact of the State Water Plan on the water rights at the Swan Falls facility.⁶⁷ The Speaker of the House and the President Pro Tempore of the Senate intervened in the Swan Falls litigation to determine the status of the State Water Plan.

The Idaho Supreme Court decided that the Legislature and the Board both had constitutional stature. The Idaho Supreme Court declared unconstitutional the statute passed by the Legislature in 1977 to delay the effectiveness of the State Water Plan. Idaho Code § 42-1736 "... requiring legislative approval of the State Water Plan is unconstitutional since it purports to authorize the Legislature to perform functions constitutionally assigned to the Water Resources Board..."⁶⁸ The Constitution was amended in 1984 to overturn the court's holding.⁶⁹ Current legislation provides that the State Water Plan is subject to review and amendment by the Legislature by law at the regular session immediately following the Board's adoption of the Comprehensive State Water Plan.⁷⁰

The minimum streamflow statute, adopted in 1978, has a somewhat similar provision to the 1977 statute which attempted to delay the effective date of the State Water Plan. The minimum streamflow statute states that minimum streamflow applications approved by the Director of the Idaho Department of Water Resources "shall not become finally effective until affirmatively acted upon by concurrent resolution of the Idaho Legislature."⁷¹ However, if the Legislature fails to act prior to the end of the regular session to which the application was submitted, the application is considered approved.⁷² A 1987 Attorney General's Opinion finds unconstitutional the language which authorizes the Legislature to reject a minimum streamflow by concurrent resolution.⁷³ The Legislature initially believed inaction would prevent the approval of minimum streamflow applications and was surprised when the minimum streamflow applications were deemed approved by the Legislature's inaction.

The 1993 Legislature considered House Bill 318, stating that no approved minimum streamflow application would become effective until the Legislature had adopted it by law. The bill passed the Idaho House, but failed in the Senate Resources Committee by a narrow vote. The significance of this proposed legislation is reflected in the fact that 20 of the 47 "legislatively approved" minimum streamflow permits resulted from legislative inaction including all but one of ten such permits "approved" since 1990.⁷⁴ Legislative failure to approve an application would require a new application with a new priority date to be filed for the affected minimum streamflow.

Technical Challenges to Minimum Streamflows Based on Inadequacy of Original Supporting Data Have Not Been Successful.

In 1991 the Idaho Department of Fish & Game unsuccessfully attempted to challenge the adequacy of the 4,750 cfs minimum streamflow at the Weiser Gage. The Weiser Irrigation District filed an application for 100 cfs from the Snake River for supplemental irrigation of land within the District.⁷⁵ Fish & Game missed the deadline for filing protests to the proposed application. IDWR allowed Fish & Game to participate in a fact-finding hearing. Fish & Game requested a minimum streamflow of 8,000 cfs and argued that under Idaho's statutory public interest standard⁷⁶ the Weiser Irrigation District application for 100 cfs should be denied because the 4,750 cfs minimum flow at Weiser was too low.

Water Resources approved the application for the permit, finding that the minimum streamflow of 8,000 cfs requested by Fish & Game greatly exceeded the amount required under the State Water Plan, a plan in which Fish & Game had participated in the establishment of the minimum streamflows. However, diversion between June 16 and August 31, times of historically low summer flows, was prohibited unless the District prepared and Water Resources approved a comprehensive operations plan protecting instream values below the point of diversion.⁷⁷ Fish & Game appealed from the granting of the application for the permit. The Idaho District Court affirmed the IDWR decision on March 15, 1993.⁷⁸

In another IDWR proceeding, Fish & Game raised the public interest issue in a protest to pending applications that would allow withdrawal of groundwater from wells that may be tributary to a protected reach of the Henrys Fork of the Snake River. The protected reach was established in 1992 by adoption of the Idaho Water Resource Board.⁷⁹ The protest did not prevent the permits from being issued. If the protest by Fish & Game and similar protests by Northside Canal Company and Twin Falls Canal Company had been successful, the protected reach would have operated like a minimum streamflow.

Future Impact from the Endangered Species Act, the Federal Power Act, and the Snake River Basin Adjudication

Resource issues raised by endangered salmon and snails may eclipse Idaho's minimum streamflow program, requiring larger instream flows than presently exist. Federal water right claims for instream flows in the Snake River Basin Adjudication may also overshadow existing minimum streamflows.

In 1992 Idaho Instituted a Three Year Test to Allow Storage Water from Reservoirs in Idaho to Augment Streamflows for Salmon Migration.

The Endangered Species Act⁸⁰ can and does affect the allocation of resources without regard to economic impact. According to one commentator:

One of the major complaints of opponents of the Endangered Species Act is that people and their livelihoods are not included in the determination. Whether true or not, the argument correctly focuses on the animus of the act being creatures of nature, not attention to man or the inattention of man.⁸¹

The listing of various salmon species as threatened or endangered⁸² precipitated a series of events to make water from the Snake River drainage in Idaho available to augment streamflows for salmon migration through the power dams on the Columbia River. At first, the Bonneville Power Administration with the help of Idaho Power Company purchased water from the water supply bank above Milner Dam to augment salmon flows (the so-called fish flush). The Idaho Department of Water Resources notified the various federal agencies involved in the fish flush debate that water from Idaho would not be made available outside the State unless a formal application for use of the water out-of-state was filed with Water Resources.⁸³

The Bureau of Reclamation filed transfers with Water Resources seeking to add augmentation for fish flows as a purpose of use on its storage rights on the Snake River drainage in Idaho.⁸⁴ Like the Malad Canyon application, the transfer applications were protested, in this instance by the Idaho Water Users Association, Pioneer Irrigation District, Settlers' Irrigation District, Twin Falls Canal Company and Northside Canal Company. Parallel efforts in the Idaho Legislature to authorize an experimental program and before Water Resources to prevent the transfers from removing water from irrigators facing a sixth consecutive year of drought resulted in the passage of Idaho Code 42-1763A.

Idaho Code 42-1763A(1) allows water from reservoirs in Idaho to augment flows in and out of the State of Idaho for salmon migration, provided the flows are used for power production purposes within the state of Idaho. The statute will sunset on January

1, 1995.⁸⁵ During the test period, the new statute suspends the usual examinations required to approve a change in nature of use or place of use: Is the water supply sufficient for the intended use? Will the use enlarge (increase the size of) the water right? Is the use in the public interest?⁸⁶

The statute also suspends the mandatory inquiries of Idaho Code § 42-401(3) required to approve use of water outside Idaho: the supply of water available to the state of Idaho; the current and reasonably anticipated water shortages within the state of Idaho; whether the transported water might help water shortages in Idaho; other sources of water available in the other state; water demands on the Bureau's water supply in the other state. Two safeguards remain for Idaho irrigators who have historically relied on water from Bureau reservoirs in Idaho: the water may be obtained only from willing lessors and the water must be rented through the local rental pool committee in basins where they exist.⁸⁷

As one commentator has observed, if the competing uses for water cannot be mediated, both the Endangered Species Act and the Public Trust Doctrine will allow the courts to fashion minimum streamflows to meet the needs of endangered species, regardless of the principles of the appropriation doctrine.⁸⁸

On a smaller scale, but no less devastating to the potentially affected water users, the federal government has listed certain snail species in Idaho as endangered.⁸⁹

The cases arising under the Endangered Species Act do not take into account the prior appropriation doctrine. Idaho's development of instream flows and a minimum streamflow program has occurred with constant reference to the appropriation doctrine and the protection of existing senior water rights.

Idaho Bans Hydropower Development in its Comprehensive River Plans, but the Federal Power Act Preempts Such Regulation.

The Federal Power Act, unlike the Endangered Species Act, recognizes the State's authority to regulate proprietary interests in water rights.⁹⁰ Western states, including Idaho, would like their authority under the Federal Power Act to include such non-proprietary interests in water rights as comprehensive water planning. For example, the "Comprehensive Water Plan Snake River: Milner Dam to King Hill" bans hydropower development at locations where three projects have pending hydropower applications with the Federal Energy Regulatory Commission. If FERC grants hydropower licenses for the facilities, recent Ninth Circuit law will allow Idaho only to look at impact to existing senior water right users before issuing water rights for the three projects.⁹¹

The Snake River Basin Adjudication Will Determine Federal Instream Flow Claims Which Far Exceed Existing Minimum Streamflows in Idaho.

The Snake River Basin Adjudication (SRBA) offers a contrast to the comprehensive State water planning process because the adjudication looks at existing water rights while the comprehensive planning process looks to development or restriction of future water uses. However, the SRBA is also a forum for the determination of federal water rights that can affect Idaho's future because the United States is claiming early priority instream flows in excess of state-established minimum streamflows. For example, the United States Fish and Wildlife Service claims a Snake River instream flow below Swan Falls which far exceeds the Swan Falls minimum flows and which, if decreed as claimed, has the potential to remove water from thousands of acres of existing irrigated land.²

Federal reserved water rights are not part of Idaho's minimum streamflow program, the protected rivers program, or the Swan Falls agreement.

Conclusion

As a result of possible federal actions under the Endangered Species Act and federal reserved right claims in the SRBA, minimum streamflow law in Idaho—and its focus on balanced growth and conservation—may be superseded by federal actions. The apparent certainty of Idaho's state law minimum streamflow program is replaced by an uncertain future for Idaho water users.

Notes

1. IDAHO CODE §§ 67-4301 to 67-4312 (1980 and Supp. 1986) (preservation of certain lakes as health resorts and recreation places); IDAHO CODE §§ 42-1501 to 42-1505 (Supp. 1988) (minimum streamflow); 1985 IDAHO SESSION LAWS p. 514 (minimum streamflows on the mainstem of the Snake River).
2. Idaho, through the action of the Idaho Water Resource Board (created by a 1964 constitutional amendment, Idaho Const. art. XV, § 7), has four times adopted a State Water Plan (December 1976, January 1982, December 1986, and January 1992).
3. State Dep't. of Parks v. Idaho Dep't. of Water Admin., 96 Idaho 440, 530 P.2d 924 (1974).
4. Kootenai Environ. Alliance v. Panhandle Yacht Club, Inc., 105 Idaho 622, 671 P.2d 1985 (1983); Shokal v. Dunn, 109 Idaho 330, 707 P.2d 441 (1985).
5. Sayles Hydro Association v. Maughan, 985 F.2d 454 (9th Cir. 1993)
6. Idaho Const., art. XV, § 7.
7. A comprehensive survey of instream flow programs in Idaho appears in: U.S. FISH WILD. SERV. BIOL. REP. 85(9) 103, OPPORTUNITIES TO PROTECT INSTREAM FLOWS IN IDAHO, OREGON, AND WASHINGTON (K. Brandes, ed. 1985).
8. Idaho Const. art. XV, § 3.
9. In 1925, a lake level was established for Big Payette Lake, IDAHO CODE § 67-4301 (1990); in 1927 lake levels were established for Priest Lake, Pend Oreille Lake, and Coeur d'Alene Lake, IDAHO CODE § 67-4304 (1990).
10. State Dep't. of Parks v. Idaho Dep't. of Water Admin., 96 Idaho 440, 530 P.2d 924 (1974).
11. IDAHO CODE §§ 42-1501 et seq.
12. See text accompanying notes 56 - 63.
13. See text accompanying notes 30 - 32.
14. Idaho Const. art. XV, § 3. A reference to "power" was added to this section by an amendment ratified in the general election of 1928.
15. See note 9.
16. Letter from the Director of the Idaho Department of Water Resources to the Governor of the State of Idaho (August 29, 1972). (Part of microfilm file for water right 65-2338 from Big Payette Lake).
17. See IDAHO CODE §§ 67-4307 to 67-4312 (1990).

18. State Dep't. of Parks v. Idaho Dep't. of Water Admin., 96 Idaho 440, 530 P.2d 924 (1974) (hereafter "Malad Canyon"). See Welsh, *Instream Appropriation for Recreation and Scenic Beauty*, 12 IDAHO L. REV. 263-75 (1975).
19. 96 Idaho 440, 530 P.2d 924 (1974).
20. 96 Idaho at 441, 530 P.2d at 925.
21. *Id.*
22. *Id.*
23. 96 Idaho at 442-450, 530 P.2d at 926-934.
24. 96 Idaho at 442, 530 P.2d at 926.
25. *Id.*
26. See 1965 Idaho Sess. Laws, ch. 320, enacting IDAHO CODE § 42-1732.
27. Idaho Const. Art XV, § 7.
28. The State Water Plan is a guide to future water resource management in Idaho and is contained in a series of documents. In July 1972, the Interim State Water Plan was published. It catalogued the resources of the state and presented various alternatives for future water policy to the public. The State Water Plan - Part One, The Objectives, was published in June 1974 to guide the direction of later efforts to formulate the water plan. In December 1976, the State Water Plan - Part Two was adopted, in which several state water policies were advanced. In January 1982, the State Water Plan was adopted as a result of the first formal review of the objectives and policies presented in parts one and two of the State Water Plan as previously adopted. The 1986 State Water Plan contains both the objectives and the policies and replaces the earlier two-part approach. (This explanation appears in the Forward to the 1982 Idaho State Water Plan.)
29. IDAHO CODE § 42-1501 (Supp. 1988).
30. The Swan Falls litigation is reported as: Idaho Power Co. v. State, 104 Idaho 570, 661 P.2d 736 (1983) (relative powers of the Idaho Water Resource Board and the legislature regarding the State Water Plan); Idaho Power Co. v. State, 104 Idaho 575, 661 P.2d 741 (1983) (status of the water rights for hydropower generation at the Swan Falls power plant). The district court case on remand is Idaho Power Company v. State, Ada County Civil No. 81375 (4th Judicial District in Boise).
31. See annotation to IDAHO CODE § 42-1636B, Policy No. 32. See WESTERN NATURAL RESOURCE LITIGATION DIGEST, Summer 1985 (Commentary Section) as *Commentary on Swan Falls Resolution* by Patrick D. Costello and Patrick J. Kole. The negotiated agreement for Swan Falls was subject to approval from the Federal Energy Regulatory Commission and the state district court. On July 30, 1986, the Federal Energy Regulatory Commission denied a request to have a subordination provision included in a power license issued on the Payette River. 36 FERC ¶ 61,135. This raised concern about possible approval of the Swann Falls agreement; however, Pub L. No. 100-216, 101 Stat. 1450 (December 29, 1987) directed FERC to issue an order approving a power license for Swan Falls which incorporates the Swan Falls Agreement.

32. IDAHO CODE §§ 42-203B, 42-203C, and 42-203D (1990 and 1993 Supp).
33. 1985 Idaho Sess. Laws P. 514.
34. IDAHO CODE §§ 42-1501 et seq.
35. IDAHO CODE § 42-1503 (1990).
36. IDAHO CODE § 42-1501 (1990).
37. State Comprehensive Water Plan Act, 1988 Idaho Sess. Laws 1090 (codified at IDAHO CODE §§ 42-1730-1731, and 42-1734A to 42-1734I (1990 and 1993 Supp.)).
38. 16 U.S.C. § 803(a)(2)(A)(ii).
39. IDAHO CODE §§ 42-1734A through 42-1734I.
40. See note 56.
41. IDAHO CODE § 42-1734A (1990).
42. IDAHO CODE § 42-1734A(5)(1990).
43. IDAHO CODE § 42-1734A(5)-(6) (1990).
44. IDAHO CODE § 42-1734D (1993).
45. IDAHO CODE § 42-1734F (1993 Supp.).
46. *Id.*
47. IDAHO CODE § 42-604 (1993 Supp.).
48. *Id.*
49. *Id.*
50. IDAHO CODE § 42-1406A (1990).
51. In Re the General Adjudication of the Rights to the Use of Water from the Snake River Basin Water System, Fifth Judicial District, Twin Falls Courts Civil No. 39576.
52. IDAHO CODE §§ 42-203B and 42-203C (1990).
53. IDAHO CODE § 42-203C (1990).
54. *Id.*
55. IDAHO CODE § 42-203B(2) (1990).

56. Idaho Dep't. of Water Resources, Minimum Streamflow Applications and Permits — Summary Status and cfs, March 12, 1993 (computer printout on file with the author) (hereafter Minimum Streamflow Summary).
57. Summary of Idaho State Protected Rivers, obtained from the Idaho Department of Water Resources, based upon The Comprehensive State Water Plan for the South Fork Boise River Sub-basin; the Comprehensive State Water Plan for the Payette River Reaches; the Comprehensive State Water Plan for the Priest River Basin; the Henrys Fork Basin Comprehensive State Water Plan; the Comprehensive State Water Plan, Upper Boise River Basin; and the Comprehensive State Water Plan for the Snake River: Milner Dam to King Hill. The designations of natural and recreational rivers in several of those plans are summarized in the annotations to Idaho Code §§ 47-1734A and 42-1734B.
58. IDAHO CODE § 42-1504 (1990).
59. IDAHO CODE § 42-1505 (1990).
60. IDAHO CODE § 42-1503 (1990).
61. Minimum Streamflow Summary, *supra* note 56.
62. *Id.*
63. Basin Planning Schedule provided by the Idaho Department of Water Resources, Central Planning Section.
64. Moratorium orders were issued in the following Idaho Department of Water Resources dockets: In the Matter of Applications for Permits for Diversion and Use of Surface and Ground Water within the Snake River Basin Upstream from the USGS Gauge on the Snake River near Weiser; In the Matter of Applications and Permits for the Diversion and Use [of] Water within the Salmon and Clearwater River Basins, Idaho; and In the Matter of Applications for Permit[s] for Diversion and Use of Ground Water within the Bear River Drainage and Great Basin Tributaries, all issued May 15, 1992.
65. IDAHO CODE § 42-1736 (1990).
66. 1978 Idaho Sess. Laws p. 1003, House Concurrent Resolution 48.
67. See note 30.
68. 104 Idaho at 574, 661 P.2d at 740.
69. 1984 S.J.R. No. 117, 1984 Idaho Session Laws, p. 689, proposed the constitutional amendment that was ratified in the general election of November 6, 1984.
70. IDAHO CODE § 42-1734B(6) (1990).
71. IDAHO CODE § 42-1503 (1990).
72. *Id.*

73. Opinions of the Idaho Attorney General 87-6. *But see* Mead v. Arnell, 117 Idaho 660, 791 P.2d 410 (1990).
74. Minimum Streamflow Summary, *supra* note 56.
75. Application No. 03-07041 before IDWR.
76. IDAHO CODE § 42-203A(5)(e) (1990).
77. In the Matter of Application for Permit No. 03-07041 in the Name of Weiser Irrigation District (1992).
78. Idaho Department of Fish & Game v. Idaho Department of Water Resources, Fourth District Court, Ada County Case No. 95031 (March 15, 1993).
79. The Water Board adopted the Henrys Fork Basin comprehensive plan initially in January 1992, but the legislature did not approve the comprehensive plan until March 17, 1993 (93 Idaho Session Laws p. 167), after the Water Board readopted the comprehensive plan with policy changes on December 3, 1992. The State Comprehensive Water Plan Act provides that a river designated by the Board as a protected river cannot be a final part of the comprehensive state water plan until approved by the legislature. IDAHO CODE § 42-1734B(8)(1990).
80. 16 U.S.C. §§ 1531 et seq.
81. Scott Reed, *Fish Gotta Swim: Establishing Legal Rights to Instream Flows through the Endangered Species Act and the Public Trust Doctrine*, 28 IDAHO L. REV. 654 (1992).
82. Michael Blumm, *Saving Idaho's Salmon: A History of Failure and a Dubious Future*, 28 IDAHO L. REV. 667 (1992). Professor Blumm discusses the listing of Idaho Salmon as endangered or threatened at pp. 687, 688, 712, and 713.
83. September 5, 1991, Letter from R. Keith Higginson, Director, Idaho Department of Water Resources, to "Distribution List" regarding Reclamation Storage Releases for Lower Snake River Flow Augmentation.
84. The administrative matter before the Idaho Department of Water Resources was captioned In the Matter of Applications for Transfer Nos. 3883, 3884, and 3885 in the Name of the United States Bureau of Reclamation.
85. 1992 Idaho Sess. Laws, ch. 101 § 4.
86. *See* IDAHO CODE § 42-1763A(2) (1993 Supp.)
87. IDAHO CODE § 42-1763A(3) (1993 Supp.)
88. Reed, *supra* note 81, at 665, 666.
89. First, the U.S. Fish & Wildlife Service (the "USFWS") listed five snail species known to live in the middle Snake River as endangered. 57 Fed.Reg. 59244 (December 14, 1992). The Idaho Farm Bureau has challenged this listing. Idaho Farm Bureau Federation, et al. v. Babbit, et al., Civil No. 93-0267-S-HLR (D. Idaho 1993).

Second, the USFWS listed the Bruneau Hot Springsnail (the "Springsnail") as endangered on January 25, 1993. 58 Fed.Reg. 5938. The known colonies of the Springsnail live in springs and seeps along the Bruneau River and Hot Creek. The listing resulted from a law suit filed by several conservation groups to force action on the USFWS's original listing proposal for the Springsnail of August 21, 1985. 50 Fed.Reg. 33803. USFWS and the conservation groups settled the lawsuit on November 24, 1993, with USFWS agreeing to submit a listing decision to the Federal Register by January 15, 1993. Idaho Conservation League, et al. v. Lujan, et al., Civil No. 92-0260-S-HLR (D. Idaho 1992) (Settlement Order dated November 24, 1992). The Idaho Farm Bureau and others have also challenged the Springsnail listing. Idaho Farm Bureau Federation, et al. v. Babbit, et al., Civil No. 93-0168-E-HLR.

90. Sayles Hydro Association v. Maughan, 985 F.2d 451, 454-455 (9th Cir. 1993); 16 U.S.C. § 821.
91. *Id.*
92. The United States Fish and Wildlife Service filed a federal reserved right claim to protect the Snake River Islands Unit of the Deer Flat National Wildlife Refuge because nesting water fowl on the islands become vulnerable to land predators when river flows decline. If the reserved right is approved as claimed, the Snake River would have a 1937 instream flow of 5,500 cfs to 17,500 cfs between Swan Falls and Homedale (measured at the Murphy gage), a 1963 instream flow of 5,500 cfs to 24,000 cfs between Homedale and Fruitland (measured at the Nyssa gage), and a 1963 instream flow of 5,500 cfs to 40,000 cfs below Payette to beyond Weiser (measured at the Weiser gage).

The reserved right flows exceed the 3,900 cfs (April 1 to October 1) and 5,600 cfs (November 1 to March 31) minimum flows of the Swan Falls settlement and a 1937 priority date would be senior to many Snake River diversions above and below Swan Falls Dam. The reserved right is believed to be exempt from the Swan Falls agreement so could limit post-1937 surface and groundwater diversions above Swan Falls. IDAHO WATER L. Q. (Summer 1993).

Minimum Desirable Streamflow In Kansas

Leland E. Rolfs

Legislative History

Since the inception of the appropriation doctrine in Kansas in 1945, one of the essential elements of a legally protectable water right has been, and is, the requirement of a "diversion".¹ This element was sacrosanct until 1980 when the Kansas Legislature enacted minimum desirable streamflow legislation² which changed forever the course of water law in Kansas.

The Identification And Selection Process

The State Water Resource Planning Act provides that it is a policy of the State of Kansas to identify "minimum desirable streamflows to preserve, maintain, or enhance baseflows for in-stream water uses relative to water quality, fish, wildlife, aquatic life, recreation, general aesthetics, and domestic uses and for the protection of existing water rights;..."³

After passage of the Act, the key water agencies in the State of Kansas, primarily the Division of Water Resources of the Kansas State Board of Agriculture, the Kansas Water Office, the Kansas Department of Health and Environment and the Kansas Department of Wildlife and Parks, met and negotiated minimum desirable streamflow values to be recommended to the Legislature. A number of factors were taken into consideration in selecting the target flows at each gaging station during each month of the year.

One factor in selecting the target flows was the physical availability of water. It was not the goal of minimum streamflow standards to have water in the stream all of the time. As the State Water Plan states, "a minimum desirable streamflow plan cannot create water where water does not exist..."⁴ Only in cases where reservoir storage is available to supplement streamflows can there be a likelihood of maintaining minimum desirable streamflows at all times. Two of the yardsticks used in evaluating realistic minimum desirable streamflow levels were the 14 day average low flow with a recurrence interval of five years and the average monthly flow that has occurred 90 percent of the time during the period of record. Frequency distribution of both the 14 day low flow and the flow duration statistics also were considered. By achieving a balance between the needs of the stream ecosystem and the natural availability of water, meaningful values can be set which are achievable. The monthly target flows at each gaging station are then set by statute, if the Legislature concurs in the recommendations.⁵

Effects Of Legislative Approval

Kansas law currently provides that whenever the Legislature approves a minimum desirable streamflow for any water course in Kansas, "the chief engineer shall withhold from appropriation that amount of water deemed necessary to establish and maintain for the identified water course the desired minimum streamflow." To date, minimum desirable streamflows have been set at various gages on 23 different water courses within the State of Kansas.⁷

Another key section of the minimum desirable streamflow legislation was passed on April 12, 1984.⁸ This section made every application for a water right filed after the date of enactment junior to any minimum desirable streamflow that might be set by the Legislature on or before July 1, 1990. The Legislature also required the Chief Engineer to make it an express condition of each and every appropriation right applied for after the effective date of the Act (April 12, 1984) that such right be "subject to any minimum desirable streamflow requirements identified and established pursuant to law on or before July 1, 1990 for the source of water supply to which such right applies...."⁹

This provision created a window of opportunity for the Legislature to set minimum desirable streamflows without having the Chief Engineer of the Division of Water Resources, Kansas State Board of Agriculture, flooded with applications to appropriate water before minimum desirable streamflow values could be agreed upon and passed by the Legislature, thereby possibly defeating the very purpose for setting minimum streamflow values. In other words, it was enacted to prevent a "race to the water course".

Is Minimum Streamflow A Water Right?

Is a minimum streamflow designation a water right? The answer is no. Although a minimum streamflow designation may have some of the attributes of a water right, it is not a water right. The minimum streamflow law merely allows the Chief Engineer, for the first time since the passage of the Kansas Water Appropriation Act in 1945, to withhold water from appropriation.¹⁰ Prior to that time, if water was available for appropriation and approval of a permit would neither prejudicially and unreasonably affect the public interest nor impair a senior right, the Chief Engineer was required by the Water Appropriation Act to grant a permit for additional appropriations until the last drop of the stream was appropriated.¹¹

Now Kansas water law allows the Chief Engineer to withhold water from appropriation to keep streams from being appropriated to extinction. The priority date of such withholding is always April 12, 1984. If a minimum streamflow target is not met, all non-domestic rights junior to April 12, 1984, for that source of supply, can be shut off

or restricted.¹² Vested rights and appropriation rights with a priority earlier than April 12, 1984 cannot be administered to effectuate minimum desired streamflows.¹³ Originally regulation of senior rights was considered, but it was felt there might be a "taking" of a real property right if senior rights could be administered to achieve minimum desirable streamflows that were not set at the time application was made for the senior water rights. Because minimum desirable streamflows were made enforceable only against rights filed for after the date of the Act, the "taking" issue was rendered moot. Because all permits applied for on or after April 12, 1984 have been issued with the condition that they are subject to any minimum desirable streamflows that was designated before July 1, 1990, each applicant has been put on notice of the possibility of being regulated to achieve minimum desirable streamflow requirements.

How Are Minimum Streamflows Regulated And Administered?

The Chief Engineer of the Division of Water Resources, Kansas State Board of Agriculture, is the person in the State of Kansas legally charged with the administration of the Kansas Water Appropriation Act. By means of a Memorandum of Understanding developed between the Division of Water Resources and the Kansas Water Office, the Kansas Water Office has agreed to monitor streamflows on all streams with designated minimum desirable streamflows.¹⁴ It is the responsibility of the Kansas Water Office to notify the Chief Engineer whenever streamflows fall below the established minimum desirable streamflow at any identified gaging station. Once the discharge has been less than the minimum desirable streamflow for seven consecutive days, the Kansas Water Office may verbally request administration to achieve minimum desirable streamflow targets. This request must be confirmed in writing within seven working days. The Division of Water Resources will then administer flows in each stream reach by making sure that there are no illegal appropriators, that all vested or appropriation rights are operating within their terms and conditions (i.e., staying below their authorized maximum instantaneous diversion rate or maximum annual quantity) and restricting appropriators who are junior to the minimum streamflow designation to the extent necessary to achieve the required target flows.

Such administration will continue until such time as the "situation is relieved". The decision as to when the "situation is relieved" is left to the discretion of the Division of Water Resources, which then informs the Kansas Water Office.

The Chief Engineer has required flow meters on all surface water diversions on a stream if: (a) minimum streamflows have been designated and (b) it is anticipated that there may be administration within the near future. Also, attempts have been made to educate water users on streams where minimum streamflows have been designated to facilitate administration at such time as may become necessary in the future.

Since 1984, minimum streamflow administration has taken place on three streams.

The Little Arkansas River was administered in 1984 and in 1988. The Little Blue River was administered in 1988. The Lower Republican River Basin was administered for about the first half of 1992. The administration on the Lower Republican included administration of all hydraulically connected wells which had a priority date junior to April 12, 1984. The decision to administer the wells beginning in January 1992 was based on streamflows at that time and low static water levels in the alluvium. It was felt junior well owners would rather know before planting season that they might not be authorized to pump rather than having them shut off during July or August. Fortunately, mother nature relieved the situation in July 1992 with abundant Republican River flow.

One difficult task facing the Division of Water Resources is devising a policy concerning the approval and administration of wells that are hydraulically connected to the stream. Obviously wells in or near the stream have as great, or almost as great, an impact on streamflow as does a surface diversion. These wells can be administered effectively because shutting off a well almost immediately restores streamflow to the extent the well was affecting the streamflow. The more difficult issue is the approval or administration of hydraulically connected wells which are further from the stream. Once they begin pumping, they may not affect the stream for from a week to several months. Once they are shut off, they will not restore streamflow for a similar period of time or longer. The Division of Water Resources is developing policies in some basins concerning approval and regulation of wells hydraulically connected to the stream in minimum streamflow basins.

Related Legislation

The 1988 Session of the Kansas Legislature also added authority for the State of Kansas to purchase water rights in an over-appropriated area on a cost sharing basis.¹⁵ These rights can then be held in the "custodial care" of the state. Both surface and groundwater rights may be purchased to restore streamflow in over-appropriated areas. As of October 1, 1993, this provision had not been utilized.

The Water Assurance Program Act¹⁶ allows the creation of Water Assurance Districts below large federal reservoirs to provide releases to benefit municipal and industrial users downstream. Obviously, maintenance of target flows can have many spinoff instream flow benefits. To date, two Assurance Districts have been created: one is operational in the Kansas River, the other is in negotiations in the Marais des Cygnes River. One other assurance district on the Neosho River is in the formation process.

Cheyenne Bottoms

On January 29, 1992, David L. Pope, Chief Engineer of the Division of Water Resources, Kansas State Board of Agriculture, declared an Intensive Groundwater Use

Control Area in the Walnut River Basin in central Kansas. The action was precipitated by a request to secure water for a senior surface water right in the basin held by the Kansas Department of Wildlife and Parks for the benefit of Cheyenne Bottoms Wildlife Refuge. The action taken by the Chief Engineer was to restrict the total withdrawals in the basin to the long term sustainable yield of the basin. This required placing various restrictions on groundwater users junior to the Cheyenne Bottoms' right. Most junior users were irrigators, but some were for municipal and other types of beneficial use.

Contrary to rumors, this action was not taken pursuant to minimum desirable streamflow regulation and was a water rights administration based on priority of water rights and the Intensive Groundwater Use Control Area statutes.¹⁷

Conclusion

Minimum streamflow in Kansas is emerging from infancy into adolescence. To date, the primary effort has been concentrated in the planning and designation phases. Much of the groundwork has been laid, and Kansas has gained some actual field administration experience. Every indication is that the program is realistic, practical and enforceable.

Even though the July 1, 1990 window for designating minimum desirable streamflow with a priority date of April 12, 1984, has closed, minimum desirable streamflow can still be designated, but such designations will take a priority date as of the date of designation, not April 12, 1984. There is currently no plan to add additional streams to the minimum desirable streamflow designations in the statute. Current planning efforts are focused on strategies to implement current minimum desirable streamflow values and alternatives for achieving instreams benefits on designated or other streams.

Table - MINIMUM DESIRABLE STREAMFLOWS (cfs)

Watercourse				Month								
	J	F	M	A(a)	M(a)	J(a)	J	A	S	O	N	D
Marais des Cygnes												
Ottawa	15	15	15	15(40)	20(50)	25(50)	25	25	20	15	15	15
LaCygne	20	20	20	20(50)	20(150)	25(150)	25	25	20	20	20	20
Neosho												
Americus	5	5	5	5(20)	5(30)	5(30)	5	5	5	5	5	5
Iola	40	40	40	40(60)	40(200)	40	40	40	40	40	40	40
Parsons	50	50	50	50(100)	50(300)	50(300)	50	50	50	50	50	50
Cottonwood												
Florence	10	10	10	10(30)	10(60)	10(60)	10	10	10	10	10	10
Plymouth	20	20	20	20(60)	20(150)	20(150)	20	20	20	20	20	20
Little Arkansas												
Alta Mills	8	8	8	8	8	8	8	8	8	8	8	8
Valley Center	20	20	20	20	20	20	20	20	20	20	20	20
Arkansas River												
Kinsley(b)	2	2	3	3	5	5	3	1	1	1	2	2
Great Bend(b)	3	3	3	3	10	10	5	3	2	2	2	3
Hutchinson	80	80	100	100	100	100	80	80	60	60	60	80
Rattlesnake Creek												
Macksville(b)	5	5	10	10	10	10	5	1	1	1	5	5
Zenith	15	15	15	15	15	15	5	3	3	3	10	15
North Fork Ninesah Above												
Cheney	40	50	50	50	40	30	10	5	5	10	40	40
South Fork Ninesah												
Pratt	10	10	10	8	8	8	5	5	5	5	10	10
Murdock	80	90	90	90	90	50	30	30	30	50	80	80
Ninesah												
Peck	100	100	100	100	100	70	30	30	30	50	100	100
Saline												
Russell	5	5	15	15	15	12	2	2	2	5	5	5
Smoky Hill												
Ellsworth(c)	20	20	25	30	35	45	35	15	15	15	20	20
Medicine Lodge												

Table - MINIMUM DESIRABLE STREAMFLOWS (cfs)													
Watercourse					Month								
Kiowa	50	55	60	60	40	30	6	1	1	4	40	50	
Chikaskia													
Corbin	30	45	50	45	40	30	16	5	5	8	30	30	
Big Blue													
Marysville	100	100	125	150	150(d)	150(d)	80	90	65	80	80	80	
Little Blue													
Barnes	100	100	125	150	150(d)	150(d)	75	80	60	80	80	80	
Republican													
Concordia(e)	100	125	150	150	150	150	150	150	80	65	80	100	
Clay Center	125	150	200	250	250	250	200	200	100	90	100	125	
Mill Creek													
Paxico	8	8	8	25	30	35	10	5	5	2	5	8	
Delaware													
Muscotah	10	10	20	20	20	20	5	3	3	2	10	10	
Walnut River													
Winfield	30	35	40	65	100	100	30	25	20	20	20	30	
Whitewater River													
Towanda	10	15	15	20	25	25	10	5	5	5	6	10	
Spring River													
Baxter Springs(f) ...	175	200	250	300	450	350	200	160	120	120	150	175	
Chapman Creek													
Chapman	10	15	15	15	15	15	10	10	10	10	10	10	
Solomon River													
Niles	40	50	60	60	90	90	50	50	40	40	40	40	

- (a) Spawning flows to be managed if reservoirs in flood pool; otherwise use lower flows.
- (b) Subject to subsequent assessment of lagged effects of extensive groundwater appropriations in regional aquifer.
- (c) Subject to subsequent assessment of lagged effects of upstream depletions.
- (d) Subject to the stateline flows contained in the Blue River Compact.
- (e) Subject to subsequent assessment of Harlan County reservoir operations, development of compact stateline flows and lagged effects of upstream depletions.
- (f) Flows measured at Quapah, Oklahoma; may need review if a new station is established.

History: L.1985, CH.338, §2; L.1987, CH.402, §1; L.1989, CH.309, §1; April 13.

Notes

1. KAN. STAT. ANN. § 82a-701(f),(g) (1989).
2. See KAN. STAT. ANN. §§ 82a-703 to -703c (1989). The table from KAN. STAT. ANN. § 82a-703c is reproduced in Table 1.
3. KAN. STAT. ANN. § 82a-928(i) (1989). The State Water Resource Planning Act mandates the Kansas Water Office to formulate, on a continuing basis, a comprehensive State Water Plan for the management, conservation and development of the water resources of the state. This Act is separate and distinct from the Kansas Water Appropriation Act, administered by the Chief Engineer of the Division of Water Resources, Kansas State Board of Agriculture, which is regulatory in nature. The State Water Resource Planning Act further provides that the Kansas Water Office, with the approval of the Kansas Water Authority, annually shall submit to the Legislature and to the Governor an updated water plan containing recommendations which are necessary to achieve the long range goals and objectives for the management, conservation and development of the waters of the state, KAN. STAT. ANN. § 82a-903 and KAN. STAT. ANN. § 82a-906.
4. Kansas Water Plan, Management Section, Subsection: Minimum Desirable Streamflows, FY 1990, page 2, paragraph 10.
5. KAN. STAT. ANN. § 82a-703c (1989).
6. KAN. STAT. ANN. § 82a-703a (1989).
7. KAN. STAT. ANN. § 82a-703c (1989).
8. KAN. STAT. ANN. § 82a-703b(a) (1989).
9. KAN. STAT. ANN. § 82a-703b(a) (1989).
10. KAN. STAT. ANN. § 82a-703a (1989).
11. KAN. STAT. ANN. § 82a-711 (Supp. 1992). Applications are required to be in good faith and in proper form for the utilization of water for beneficial purpose.
12. KAN. STAT. ANN. § 82a-703b(a) (1989).
13. KAN. STAT. ANN. § 82a-703b(b) (1989).
14. Memorandum of Understanding between the Kansas Water Office and the Kansas State Board of Agriculture, Division of Water Resources, to implement the administration of established minimum desirable stream flows, dated November 8, 1984.
15. KAN. STAT. ANN. § 2-1908(m) (1988); KAN. STAT. ANN. § 2-1915(c) (1988); KAN. STAT. ANN. § 82a-707 (1989).
16. KAN. STAT. ANN. §§ 82a-1330 - 1348 (1989).

17. KAN. STAT. ANN. § 82a-1036 - 1040 (1989).

Instream Flow Policy In Montana: A History And Blueprint For The Future'

Matthew J. McKinney

Introduction

The allocation of water in Montana, as throughout the West, historically focused on satisfying "offstream" uses for domestic and commercial consumption, irrigated agriculture, industry, and mining.¹ Although offstream uses of water remain critical to the economic development of the state, there has been an increasing demand and effort since the 1970's to protect "instream flows"² for fish and wildlife, recreation, aesthetic and scenic values, and water quality.

In Montana, as in other western states, the protection of instream flows has emerged as a major water resource issue for two converging reasons. First, instream values, most notably fisheries, have been threatened by the overappropriation of water³ coupled with periodic droughts.⁴ Second, there is a growing appreciation of the many values of instream flows.⁵ In addition, there is an increasing recognition of public rights in free-flowing water.⁶ Together, these converging trends have raised the issue of instream flow protection to the top of the state's water management agenda.⁷

In 1967, the Montana legislature responded to the growing public demand to protect instream flows by passing the Water Resources Act.⁸ The act specifies, among other things, that "the water resources of the state must be protected and conserved to assure adequate supplies for public recreational purposes and for the conservation of wildlife and aquatic life."⁹ This statutory declaration of instream flow policy has supported a variety of activities taken to manage instream resources. Nevertheless, Montana's instream flow policy leaves much room for improvement, and was one of the most controversial water issues addressed in recent legislative sessions.

The purpose of this chapter is to review the history of instream flow protection activities in Montana and to outline a blueprint for instream flow policy in the future. The chapter begins by examining the social, economic, and environmental value of instream flow protection in Montana. It then evaluates the history of instream flow protection in Montana by reviewing state, federal, regional, and Indian efforts to protect

Reprinted with permission from 11 Public Land Law Review 81-133 (1990), published by the University of Montana School of Law, Missoula, Montana 59812. Some sections have been revised and updated.

and manage instream resources. This discussion also considers the role of the public trust doctrine in protecting instream flows in Montana. This chapter then traces the development in 1988 of the controversial instream flow protection section of Montana's state water plan. This is followed by a discussion of the state's water leasing program for instream flows, which emerged from the state water planning process. Finally, a blueprint for improving instream flow policy in Montana is presented. Hopefully, this chapter will help stimulate and structure the debate on instream flow policy in Montana.

The Value of Instream Flows

Social Values

Instream flows provide a variety of social values to residents of and visitors to Montana. Free-flowing waters were critical to the exploration and settlement of the state. Consequently, there is a historical and cultural value in maintaining the flows on such transportation routes as the Missouri River that were so important to the Lewis and Clark and other expeditions. Reducing the flows on such streams and rivers to the point where they no longer support recreational activities limits the historical imagination and destroys some of the cultural heritage associated with the water.

Free-flowing water also supports many recreational values, such as fishing, rafting, boating, hiking, and camping in and around Montana's numerous streams and lakes. These values not only attract visitors to the state, which translates into economic value, but form the core of the Montana "outdoor spirit." To many people, outdoor recreation is synonymous with the "Big Sky" state.

Instream flows also provide life-support value, particularly in maintaining the quality of Montana's waters for both human and non-human uses. Natural water quality is closely related to flow—higher flows tend to carry more dissolved solids. Reducing the amount of flow, therefore, decreases a river's capacity to assimilate pollutants. Instream flows also play a critical role in recharging aquifers that supply a wide variety of consumptive uses, including public drinking water.

Free-flowing waters may also generate a myriad of scientific, aesthetic, genetic diversity, character-building, and religious values.¹⁰

Economic Values

While instream flows provide numerous social values, they also provide several economic benefits to the state. According to a recent set of studies, stream fishermen spend over \$52 million per year in Montana, while lake fishermen spend about \$47

million annually.¹¹ The studies also reveal that stream fishermen would be willing to pay another \$122 million for the experience, while lake fishermen would be willing to spend another \$93 million.¹² Thus, while fishermen currently spend nearly \$100 million per year, the potential economic value of instream flows in Montana is over \$200 million annually.¹³ By comparison, the average annual cash receipts for the last ten years from irrigated agriculture is about \$640 million.¹⁴

Although the estimated economic value of instream flows, as determined by the study, is substantial, the figures are conservative; they do not include dollars spent in the pursuit of hiking, picnicking, floating, and other recreational activities in and around streams and rivers throughout the state. In addition, the figures do not include the commercial value of fishing, nor do they include the potentially substantial option, existence, or bequest values associated with natural resource use.¹⁵ Moreover, the economic value of instream flows is likely to increase in the future as the demand for water-based recreational experiences increases.¹⁶

Environmental Values

In addition to the variety of social and economic values derived from free-flowing water, instream flows also provide benefits to the natural environment. Adequate streamflows are essential to maintain the integrity of Montana's several nationally-acclaimed blue-ribbon trout streams. During the drought of 1988, flows in several streams were reduced to the point where fish died.¹⁷

Another important function of instream flows in the natural environment is to maintain stream channels for a variety of purposes. The U.S. Forest Service has recently argued that instream flow requirements for channel maintenance must be based on fundamental principles of geomorphology.¹⁸ Stream channels are formed and maintained by frequently recurring flows of water and sediment. If such flows are not available on a frequent basis, the Forest Service argues, the natural equilibrium of the stream channel will be changed, with a potential loss in the capacity of the channels to carry subsequent flows of equal or greater magnitude.¹⁹

Legislative and administrative decisionmakers must incorporate instream flow values into water management decisions, or the resulting water use patterns may become inefficient.²⁰ Without reliable information on the demand for instream flow protection, water policy decisions will continue to emphasize offstream diversions for consumptive uses, such as irrigation, manufacturing, and urban growth. Recent evidence on the economic value of water for instream uses suggests that instream benefits can exceed the benefits generated by some offstream uses, and therefore economic development within the state could be enhanced by more attention to instream flow protection for recreation and wildlife.²¹

A History of Instream Flow Protection

State Efforts

Murphy Rights

The first state effort to protect instream flows in Montana was the legislature's enactment in 1969 of a law allowing the state Fish and Game Commission to file for water rights on the unappropriated waters of 12 "blue ribbon" trout streams to maintain streamflows necessary for the preservation of fish and wildlife habitat.²² The resulting appropriations, known as "Murphy rights" after the principal sponsor of the bill, set a priority over other uses only until the district court in which the streams are located determines that such waters are needed for a more beneficial use.²³ Under this statutory authority, the Montana Department of Fish, Wildlife, and Parks (DFWP) filed for appropriations on 12 "blue ribbon" trout streams in Montana, including Big Spring Creek, Blackfoot River, Flathead River, Gallatin River, Madison River, Missouri River, Rock Creek (Clark Fork), Smith River, Yellowstone River, and the Middle, South, and North Forks of the Flathead River.²⁴

While the legislation authorizing Murphy rights was repealed in 1973, the claimed appropriations remain valid. As of September 1989, temporary preliminary decrees have been issued on Big Spring Creek, the Gallatin River, the Madison River, Rock Creek, the Yellowstone River, the Middle Fork of the Flathead River, and the South Fork of the Flathead River.²⁵ Temporary or preliminary decrees have not been issued on the Blackfoot River, the Missouri River, the Flathead River, the Smith River, or the North Fork of the Flathead River.²⁶ To date, the appropriations have not been challenged in court by other water users.

Murphy rights are prospective in that they protect instream values from future consumptive appropriations. However, given their relatively junior status, they may be ineffective in maintaining stream flows when there is not enough water to satisfy all water uses. In addition, since the statutory authority for Murphy rights is no longer applicable, and never was intended to be applicable to all streams within the state, it is a very limited strategy for protecting instream values. Nevertheless, Murphy rights are currently the most senior water rights for instream flow purposes in Montana, and therefore represent one of the most effective present strategies for protecting instream values.

Water Reservations

In 1973, the state expanded efforts to protect instream resources by enacting the Montana Water Use Act which sets forth a systematic and comprehensive mechanism for

the protection of instream values.²⁷ The law provides an opportunity to reserve water for future diversionary and consumptive uses as well as for maintaining stream flows for the protection of existing water rights, aquatic life, and water quality.²⁸

Under the reservation statute, the state or any political subdivision of the state, including federal agencies, may apply to the Board of Natural Resources and Conservation (BNRC) to reserve water for both offstream uses as well as instream uses, including future irrigation, municipal growth, multipurpose storage, recreation, fish and wildlife, and maintenance of water quality.²⁹ Applications must include a discussion of the purpose and an analysis of the need for the reservation, a quantification of the amount of water requested as well as the amount available, an analysis that the reservation is in the public interest, and a management plan.³⁰

Upon receiving a reservation application, the Department of Natural Resources and Conservation (DNRC) processes it through the procedures outlined in MCA §§ 85-2-307 through 85-2-309. The DNRC also notifies other state departments and interest groups with an interest in the reservation.

After this notification process, the DNRC must accept objections, if any, to the proposed reservation.³¹ Those objecting to the reservation must specify how it would adversely affect their water rights or other interests. If the DNRC determines that an objection is valid, it must then hold a public hearing.³²

Once the objections have been resolved to the satisfaction of the BNRC, it may then adopt an order reserving water, provided that the applicant has shown that:

- there is a need for the reservation;
- the amount of water requested is necessary for the stated purpose of the reservation;
- the reservation is in the public interest;
- special criteria are met if the use is to be out of state.³³

Unless otherwise specified by the legislature, a water reservation has a priority of appropriation dating from the filing with the DNRC of a notice of intent to apply for a water reservation in a basin in which no other notice of intent is pending.³⁴

Reservations are to be reviewed at least once every ten years, and if the objectives of the reservation are not being met, the BNRC may extend, revoke, or modify the reservation.³⁵ In addition to the ten-year review, the BNRC may also modify an instream flow reservation every five years. If the total amount of an instream flow reservation is not needed to fulfill its purpose, *and* an applicant can show that its need outweighs the need of the original reservant, the BNRC is allowed to reallocate the excess to another qualified reservant.³⁶ Reallocation may only take place once every five years, and the reallocation amount retains the original reservation priority date.

In addition to these provisions for reallocating instream flow reservations, the BNRC recently adopted a rule to allow the voluntary transfer of a reservation from one qualified applicant to another.³⁷ Under certain conditions, this rule could be used to increase the amount of water reserved for instream flow purposes.

To date, instream flows have been reserved on approximately 69 stream segments in the Yellowstone River Basin.³⁸ The 69 stream segments constitute a total of about 2,078 stream miles, or approximately 12.5 percent of the total stream miles in the state. Approximately 70 percent of the average annual flow in the upper basin of the Yellowstone River has been reserved for instream flows, while between 58 and 66 percent of the average annual flow in the lower basin of the Yellowstone River has been reserved for instream flows.³⁹

Instream flow reservations were recently granted in the Missouri River Basin above Fort Peck Dam, which includes many of the state's "blue ribbon" fisheries.⁴⁰ The DFWP received the reservations on 281 stream reaches, one lake, and one swamp.⁴¹ The Department of Health and Environmental Sciences (DHES) and the U.S. Bureau of Land Management also received water reservations for water quality and fish and wildlife purposes, respectively.⁴²

According to the Board order, the DFWP would have limited standing to protect their instream reservations where the basin is closed to further appropriations.⁴³ This condition, if imposed, would limit the force and effect of the reservations because the DFWP would not be able to object to the water uses for which the basin is closed.

Senate Bill 282, which was signed by the Governor, closes the Madison and Jefferson River Basins, in the headwaters of the Missouri River, to further appropriations except for groundwater, some water storage projects, domestic and municipal uses, and stockwater uses.⁴⁴ Two additional bills, both signed by the Governor, have closed other parts of the Missouri River Basin to further appropriations with similar exemptions.⁴⁵

In addition to the instream flows that have been reserved in the Yellowstone and Missouri River Basins, applications are pending on about 25 stream segments in the Clark Fork River Basin in western Montana.⁴⁶ If approved, these 25 segments will constitute a total of about 400 stream miles, or approximately 2.5 percent of the total stream miles in the state. Approximately 43 percent of the average annual flow in the Clark Fork River Basin would be reserved for instream flows.

While the reservation process provides a systematic mechanism to evaluate the instream flow needs of a stream or watershed, to balance instream with future consumptive uses, and to legally protect needed instream flows, there are several problems that limit its effectiveness for protecting instream resources. First, the reservation process is time-consuming, cumbersome, and costly. Consequently, it is most efficiently applied to entire basins, while it is a relatively inefficient process for protecting

instream flows on single streams. Second, a reservation for an instream flow cannot exceed 50 percent of the average annual flow on gauged streams,⁴⁷ which may not be sufficient to protect instream resources in all cases.

A third limitation of the reservation process is that, until 1989, priority dates for reservations were not established until the applications had been approved, which can often take years from the time the application is submitted. Meanwhile, consumptive water users have been allowed to continue acquiring water use permits, thereby incrementally degrading instream values before they can be protected. (An exception to this statutory provision is the 1984 priority date established by the legislature for reservations in the Missouri River Basin, even though the reservation process is not expected to be completed until 1993.)⁴⁸ Although the priority date for all reservations was changed by the 51st Legislature to the time a reservation application is received by the DNRC, the original provision may nevertheless limit the effectiveness of instream flow reservations in the Yellowstone and Clark Fork River Basins.

Another limitation of the reservation process is that all reservations, including instream flow reservations, must be reviewed at least once every ten years and may be modified at that time,⁴⁹ thereby rendering them less secure than appropriations received under the water permitting process. The BNRC may also reallocate water reserved for instream flows once every five years if a competing applicant can show that the total amount of an instream flow reservation is not needed to fulfill its purpose *and* that his need outweighs the need of the instream flow reservant.⁵⁰

In addition to these limitations of the reservation process, only a few public entities are using the reservation process to protect instream flows, including the DFWP, the DHES, the U.S. Bureau of Land Management, and the North Custer Conservation District. The U.S. Forest Service, the National Park Service, and the U.S. Fish and Wildlife Service, all managers of public lands possessing significant instream values, have not shown an interest in using the reservation process to protect instream flows on public lands.

Finally, the reservation process, like other prospective mechanisms to protect instream flows, is not capable of addressing situations where the primary threat to instream values is severe dewatering from senior consumptive water users or during a drought. What is needed in these cases is a mechanism to effectively put water back in the stream, rather than simply maintaining the status quo.

Public Interest Criteria

Another mechanism potentially available to protect instream values in Montana is the application of "public interest" criteria for initial permit applications and for changes or transfers in appropriative rights.⁵¹ Where a person wishes to appropriate more than

4,000 acre-feet per year and 5.5 cubic feet per second, the applicant must show the projected uses to be reasonable, based on a consideration of:

- the existing and future demands on the state water supply, including needs to preserve instream flows for aquatic life;
- the benefits to the applicant and the state;
- the effects on the quantity and quality of water for existing uses in the source of supply;
- the availability and feasibility of using low-quality water for the purposes outlined;
- the effects on private property rights by the creation or contribution to saline seep;
- the probable significant adverse environmental impacts of the proposed water use.⁵²

In addition to outlining these criteria, the public interest statute clarifies the DNRC's authority to issue permits subject to terms, conditions, restrictions, and limitations considered necessary to satisfy these criteria.⁵³ The statute also allows the state to condition appropriations for transport out of specified basins and all out-of-state transport of water.⁵⁴ The public interest criteria can thus be used to condition certain appropriations to protect instream values.

While these public interest criteria are potentially useful in protecting instream flows, their effectiveness is limited since they apply only to applications for very large amounts of water, and consequently they have not yet been applied to protect instream flows. Not only are there few water permit applications large enough to trigger these public interest criteria, but there may be cases where even a small new use can cause an unacceptable impact to instream values. In addition, the criteria do not take into consideration the cumulative impacts of consumptive uses on instream values in a given river. That is, several appropriations on a river, each less than the 4,000 acre-feet threshold, together may significantly reduce the flow in the river and thereby threaten instream values. However, since the permits fall below the 4,000n acre-feet threshold, they are issued with few, if any, considerations to protect instream values.

Another limitation of the public interest criteria is that they do not relate the size of the application to the amount of water in the stream—i.e., an application for less than 4,000 acre-feet may be acceptable on a large stream but devastating to a small one. In addition, the criteria do not apply to all changes or transfers of water rights. Finally, even if the public interest criteria were applicable to more situations and considered the cumulative impacts of all water permits, they do not result in the acquisition of an instream water right per se. Moreover, there is some question as to whether the conditions are enforceable against any future appropriators.

Adjudication Proceedings

Instream flows may also be protected in Montana during adjudication proceedings. The DFWP may represent the public in adjudication proceedings for the purpose of establishing public recreational uses of water prior to 1973.⁵⁵ To date, the DFWP has claimed water rights for instream flow purposes on 12 streams⁵⁶ and approximately 76 ponds, lakes and reservoirs.⁵⁷

In general, the courts have supported instream flow claims when a diversion has been present.⁵⁸ However, the courts have not been so kind to instream flow claims made when a diversion is not present. The landmark case on this point is referred to as Bean Lake.⁵⁹ The DFWP filed a claim in 1982 for an existing water right in Bean Lake, claiming recreational and fish and wildlife uses, with a priority date of 1951. In a 1987 decision, the Water Court ruled that the claim was invalid because the DFWP never diverted or impounded the lake water, and never demonstrated an intent to claim the water right or gave notice to other water users of that intent.⁶⁰

On appeal, the Montana Supreme Court supported the Water Court's findings and conclusions.⁶¹ While MCA § 85-2-223, states that the statute "shall not be construed in any manner as a legislative determination of whether or not a recreational use sought to be established prior to July 1, 1973, is or was a beneficial use," both the Water Court and the supreme court found that recreation and fish and wildlife uses are beneficial uses.⁶² This supreme court, however, stated that

under Montana law before 1973, no appropriation right was recognized for recreation, fish, and wildlife, except through a Murphy Right statute. The prevailing legal theory was that some form of diversion or capture was necessary for an appropriation even though some forms of non-diversionary water rights were given appropriation status. In this case, the Water Court denied the appropriation water right claim because of the lack of diversion, intent, and notice. Whatever the merits of the lack of diversion argument, the DFWP and the public could not have intended an appropriation where none was recognized by law, and for the same reason, adverse appropriators could not have had notice of such a claim. We therefore uphold the Water Court's decision. . . .⁶³

The DFWP argued that the natural lake constituted an impoundment and therefore served as a diversion. In addition, they argued that the history of recreational use and stocking served as notice and intent to appropriate water to lakes with fish. The implication of the supreme court's decision is that instream flow claims made under MCA § 85-2-223, without some type of artificial diversion are not valid appropriations. This will have a significant impact on the adjudication of other instream flow claims made by the DFWP, many of which are not associated with diversion structures.⁶⁴

Reservoir Management

Although the construction, operation, and maintenance of reservoirs for hydroelectric power production and water storage may threaten instream values in many cases, such activities also provide opportunities for protecting instream resources by decreasing the uncertainty of stream flows and providing a relatively constant flow regime throughout the year. Several opportunities have been pursued in Montana to manage reservoir flows for fish and other instream uses. While some of these activities require the consideration of fish and wildlife values in the projects constructed by the federal government, as well as in those licensed by it, others are pursued and established at the discretion of an administrative agency.

Federal Statutes

Two federal statutes have been used in Montana to condition the construction and operation of reservoirs on behalf of instream flow protection. First, pursuant to the Federal Power Act,⁶⁶ Montana has imposed conditions on hydropower licenses requiring release of a certain amount of flow at specified times to protect valuable fisheries. The 1986 Electric Consumers Protection Act amendments⁶⁶ to the Federal Power Act, along with the regulations adopted pursuant to this act, require the Federal Energy Regulatory Commission (FERC) to find that a proposed project is best adapted to a comprehensive plan for a waterway, including navigation, water power, and other beneficial public uses, such as recreation, fish and wildlife.⁶⁷ To facilitate this objective, each license issued by FERC shall include conditions for the protection, mitigation, and enhancement of fish and wildlife affected by the development, operation, and management of the project.⁶⁸ The conditions are to be based on recommendations received under the Fish and Wildlife Coordination Act from the U.S. Fish and Wildlife Service and state fish and wildlife agencies. If FERC believes that any recommendation is inconsistent with the purposes of the license, it must publish findings to that effect as well as specify conditions that satisfy the requirement outlined above. The DFWP has submitted several recommendations to FERC for conditioning hydropower licenses to protect fish and wildlife resources.⁶⁹ FERC generally incorporates these recommendations into the conditions for their hydropower licenses, and is currently in the process of relicensing nine hydroelectric facilities in the Upper Missouri River Basin and several others throughout the state.⁷⁰

Second, the Pacific Northwest Electric Power Planning and Conservation Act⁷¹ contains significant requirements for preserving and restoring anadromous fish as well as resident fisheries. A regional council created by the act is directed to develop a plan for the protection, mitigation, and enhancement of fish and wildlife, and managers of federal power facilities are required to afford "equitable treatment" to fish and wildlife, insuring that their operations do not subordinate fish and wildlife to other project objectives. This strategy has been used by the DFWP to maintain resident fisheries on both the South

Fork and the mainstem of the Flathead River below the Hungry Horse Dam by requiring a minimum flow release from the reservoir.⁷² In order to satisfy instream flows for power and the endangered salmon fishery in the Columbia River, additional flows are being let out of both Hungry Horse Dam (located on the South Fork of the Flathead River) and Libby Dam (located on the Kootenai River).⁷³ While these flows provide instream flows for valuable fisheries, they are likely to draw the reservoirs down to their lowest level in history, thereby limiting recreational opportunities at the lakes and potentially threatening fish and wildlife resources associated with the lakes.⁷⁴

Agreements for Voluntary Releases

In addition to conditioning hydropower and other water projects, the state has also negotiated with reservoir operators, including the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, Montana Power Company, Washington Water Power Company, and state operators, for voluntary releases of water at several reservoirs to protect instream values. Many of these agreements are written, and all are informal. To date, agreements or management plans have been developed at six reservoirs, including Canyon Ferry,⁷⁵ Yellowtail,⁷⁶ Hebgen,⁷⁷ Hauser,⁷⁸ Holter,⁷⁹ and Tiber⁸⁰ reservoirs. Agreements are currently being negotiated at several other reservoirs.

In general, when the state enters into negotiations with reservoir operators, the operator typically maintains control of the flow releases but attempts to provide streamflows that will satisfy instream flow needs. The reservoir operator may also exercise options, such as buying power from other sources to insure minimum streamflows can be provided (this approach was employed by the U.S. Bureau of Reclamation at Canyon Ferry Reservoir during the drought of 1987). In some cases, the DFWP may prioritize its requests for streamflows in the event of inadequate water. For example, a lower summer flow than desired may be prescribed in order to save water for spawning fish in the fall. The outflow and reservoir levels may be discussed annually or more often if necessary. Advisory committees, such as the Canyon Ferry coordinating committee, together with other water users and interested parties, are often consulted to convey information about present and future conditions affecting a reservoir operation and to reevaluate priorities.

One of the more successful negotiated agreements has focused on the instream values of the Madison River.⁸¹ The Madison River is one of Montana's best known trout streams. Located at the headwaters of the basin is Hebgen Dam, a privately-owned facility that partially regulates the river and is largely used for storage to enhance hydropower generation downstream. Although the project provides a variety of important benefits to the state, releases of water from the reservoir have historically had a deleterious impact on river fishery production.

In search of a solution to this ongoing problem, the DFWP worked with the Montana Power Company, owner of the facility, to design a voluntary release pattern from the dam that substantially improved fishery habitat conditions in the river and, at the same time, preserved much of the owner's hydropower generation prerogative. The willingness of MPC to cooperate, as well as the broad public support for enhancing the fishery in the Madison River, was instrumental in the success of these negotiations.

Purchase of Storage Rights

To complement efforts at negotiating voluntary releases from reservoirs to protect instream values, the state has also purchased reservoir storage on several occasions to protect important fisheries and recreational opportunities. This strategy has been used on the Bitterroot River, a major trout and recreation stream that winds through the mountains of western Montana.⁸²

Over time, irrigation diversions along the Bitterroot River have increased to the point where they often seriously deplete the river and diminish fish habitat and recreational floating opportunities. In the interest of developing a long-term solution to this recurring problem, the DFWP has focused its attention on stored water in the state-owned Painted Rocks Reservoir.

Located in a headwaters tributary of the Bitterroot River, the reservoir was built for irrigation use that has not fully materialized. In the 1950s, the DFWP purchased 5,000 acre-feet of water annually⁸³ with an additional 10,000 acre-feet purchased in 1987, to augment flows in the Bitterroot River. During the summers of 1985 and 1986, water purchased was depleted by downstream irrigation users.⁸⁴ As a result, several sections of the river were nearly dried up. After negotiations between the DFWP and the irrigation companies, a petition was jointly submitted to the District Court. The Court, in turn, appointed a water commissioner in 1987 and 1988 to help ensure delivery of the purchased water. The DFWP recently renegotiated the water purchase contract with the DNRC, which will expire in 2004.⁸⁵

The DFWP has also purchased water from Newlan Creek Reservoir, a privately managed reservoir on a tributary to the Smith River, to protect flows in the Smith River, one of Montana's outstanding recreational rivers.⁸⁶ During the drought of 1992, DFWP purchased 1,000 acre-feet of stored water at five dollars per acre-foot to augment instream flows.⁸⁷

State Recreational Waterway Program

The state's Recreational Waterway Program⁸⁸ provides another mechanism to indirectly protect instream resources. In 1972, the DFWP established a "State

Recreational Waterway Program" through administrative rulemaking.⁸⁹ The purposes of the program are: (1) to maintain and improve Montana's prime free-flowing and productive streams; (2) to improve other streams so they may be added to the system; and (3) to encourage and obtain multiple recreational attributes of streams in the system, with special emphasis on fishing.⁹⁰

The program extends the original blue-ribbon fisheries concept and identifies ten criteria for selecting streams, including: blue-ribbon fisheries, recreation potential, historic and scenic qualities, recreational economic opportunities, hunting areas, waterfowl habitat, freedom from pollution, adequate public access, stream protection potential, and popular request and interest.⁹¹

To date, several stream segments have been included in the State Recreational Waterway Program, including the Flathead River system above Flathead Lake and above Hungry Horse Reservoir, the Missouri River from Fort Benton to Fort Peck, Rock Creek near Missoula, the Smith River, and the Yellowstone River.⁹² The first two rivers were subsequently included in the National Wild and Scenic River system,⁹³ while the Yellowstone River has received an instream flow reservation.⁹⁴

Although this program does not provide a mechanism for legally protecting instream flows, it does provide a framework for identifying and prioritizing streams based on the values cited above. The Northwest Rivers Study,⁹⁵ which encompasses the entire state, could serve as a data base for the program.

Federal Efforts

Wild and Scenic Rivers

The federal Wild and Scenic Rivers Act⁹⁶ was designed to preserve in a free-flowing condition certain rivers possessing outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values. It provides a process by which rivers may be recommended for inclusion, studied, and eventually listed under the wild and scenic rivers system. The Act prohibits the Federal Energy Regulatory Commission from licensing water projects on, or directly affecting rivers included in the system, and provides interim protection for rivers under study for inclusion. The Act also contains an express assertion of a federal reserved water right for the amount of water reasonably necessary for the preservation and protection of those features for which a river is designated.⁹⁷ The Wild and Scenic Rivers Act has been used to protect instream values on four stream reaches in Montana—the North, South, and Middle Forks of the Flathead River, and on one reach on the Missouri River.⁹⁸

In addition to the four stream reaches that have already been protected, the U.S. Forest Service is in the process of identifying additional rivers for inclusion in the wild

and scenic rivers system. To date, 76 river segments have been identified as eligible on the nine national forests in Montana.⁹⁹ These rivers constitute a total of 946.4 stream miles, with 13 segments or 134.60 miles classified as scenic; 45 segments or 469.70 miles classified as recreational; and 30 segments or 336.30 miles classified as wild.¹⁰⁰

The streams identified on the Beaverhead, Flathead, and Lolo National Forests are only tentatively eligible until final decisions are documented as amendments to the respective forest plans. The streams on the other national forests that have been identified as eligible for designation under the wild and scenic rivers program have been documented in the respective forest plans or amendments to the plans. All forest plans must provide for the protection of eligible river segments until a future decision is made on possible wild and scenic designation. A suitability study will be completed for each eligible river segment some time after the final forest plans are released.

While the national wild and scenic rivers program is a potentially useful strategy for protecting instream resources, it is a politically sensitive program (because it has land use as well as water use implications) that will likely take many years to implement. Consequently, the water rights associated with designated stream reaches become that much more junior in status, and thereby limit the effectiveness of this strategy to protect instream flows.

Public Land Management Opportunities

Public land management decisions provide other opportunities to protect instream flows. The right-of-way provisions of the Federal Land Policy and Management Act¹⁰¹ grant discretionary authority to allow water works. If a diversion is permitted, public land management agencies have a duty to impose conditions that will protect the environment, including fish and wildlife habitat.¹⁰² The U.S. Forest Service in Montana has used this authority to protect instream values by conditioning land use permits for irrigation diversions, hydropower plants, and reservoir developments.¹⁰³

Regulating water diversions in this manner does not protect instream flow values as fully as acquiring a water right for instream flow purposes. Diversions jeopardizing the streamflow level still can be made upstream from the national forests or on private inholdings within the forests; these diversions would be outside of the permitting process. Nevertheless, the Forest Service's authority to deny or condition future water diversions on national forests gives the agency considerable potential for protecting water resources.

In addition to denying or conditioning permits, federal land management agencies may also have the authority to set instream flows in the process of achieving the congressionally defined management purposes of the public lands.¹⁰⁴ The Forest Service, the Bureau of Land Management, the National Park Service, and the U.S. Fish and Wildlife Service, managing water much like any other resource pursuant to the

agency's authority, could each take action on a particular stream when its planning process showed a need to protect that resource. Delegated administrative authority to set instream flows may be a logical and essential aspect of the agency's authority to manage its lands.

In the process of developing its national forest plans, the U.S. Forest Service articulates specific goals for fish and wildlife enhancement, watershed management, and related instream flow management activities.¹⁰⁵ While the pursuit of these goals does not result in the acquisition of a formal water right for instream flow protection, the impact of proposed activities on the forest is reviewed in light of the goals. The proposed activities may then be accordingly denied or conditioned during the permitting process.

Federal Reserved Water Rights

The federal reserved water rights doctrine assures that public lands set aside or reserved by the United States for a particular purpose have adequate water.¹⁰⁶ More specifically, the doctrine recognizes rights to a quantity of water sufficient to fulfill the specific purposes for which the land was reserved.¹⁰⁷ Unlike other water rights, reserved water rights on federal and Indian land have a priority dating back to when the reservations were established, even if the actual use of reserved water begins long after other water users have appropriated water from the stream.

Quantification Under the Doctrine

The federal reserved water rights doctrine provides that, when federal reservations are carved out of public land holdings, the amount of water without which the "primary purposes" of the reservations would be defeated is implicitly reserved for use on the federal reservations.¹⁰⁸ However, the quantity of water necessary to satisfy the original purposes of the reservations may not always be sufficient to protect the most valuable instream benefits. This is especially true on lands administered by the U.S. Forest Service and the Bureau of Land Management.

Although there has been a general recognition by the courts that reserved water rights exist on national forest lands,¹⁰⁹ the U.S. Supreme Court has ruled that such rights do not exist for fish, wildlife, recreational and so-called "secondary purposes" of the national forests.¹¹⁰ Consequently, the U.S. Forest Service is quantifying reserved water rights by claiming that the national forests cannot secure "favorable conditions of flow" without viable stream channels maintained by instream flows.¹¹¹ A question arises as to whether the location, amount, and timing of the channel maintenance instream flows will be sufficient to maintain the primary instream values—i.e., fish, wildlife, recreation, and so

on. If not, the reserved water rights doctrine may have little value as a mechanism to protect instream flows on national forest lands.

The other major debate on quantifying reserved water rights on the national forests revolves around wilderness areas. In *Sierra Club v. Block*,¹¹² the federal district court in Colorado held that reservation of national forest lands for wilderness areas created a "double" federal reserved water right. One reserved water right was created when the land was reserved for national forest purposes from the public domain. According to *Block*, another right was created when the national forest lands were reserved for wilderness purposes. In a formal opinion, the Department of Interior solicitor concluded to the contrary.¹¹³ As a result, the quantification of reserved water rights in wilderness areas remains an open question and has stymied the designation of additional wilderness areas in many states.¹¹⁴

In contrast to the debate over quantifying federal reserved water rights on national forest lands, one lower court has ruled that no such water rights exist on lands administered by the Bureau of Land Management.¹¹⁵ Since the public lands under the jurisdiction of the Bureau of Land Management were not withdrawn from the "public domain" when Congress passed the Federal Land Policy and Management Act, the statutory framework for the Bureau, the court ruled that such lands do not fall under the reserved rights doctrine.

While there is some question as to the feasibility of using the federal reserved water rights doctrine to protect instream flows on lands administered by the U.S. Forest Service, the National Park Service and the U.S. Fish and Wildlife Service are in a better position to utilize the reserved rights doctrine to protect instream values given the original purposes of their reservations of land (i.e., national parks and monuments and wildlife refuges). According to a Department of the Interior Solicitor's Opinion, the National Park Service may acquire reserved water rights for scenic, natural, and historic conservation uses, wildlife conservation, and public enjoyment, while the U.S. Fish and Wildlife Service may claim reserved rights for purposes of protecting migratory birds and other wildlife.¹¹⁶

Efforts to Claim Reserved Water Rights

In addition to the inherent limitations of the federal reserved rights doctrine as a mechanism to protect instream flows on public lands, there have been problems in quantifying and negotiating the flows required to protect various uses. Given the large volumes of water requested, along with the seniority of their priority dates, the issue is politically volatile, and final decisions are therefore slow in the making.

To date, only some of the federal land management agencies within Montana have claimed federal reserved water rights for instream flow purposes. All these claims are

currently under negotiation with the state's Reserved Water Rights Compact Commission,¹¹⁷ and may eventually provide another vehicle for protecting instream flows on public lands.

The National Park Service and the Compact Commission have recently completed a negotiated agreement on reserved water rights for Yellowstone National Park, Glacier National Park, and Big Hole National Battlefield.¹¹⁸ The agreement includes water rights to protect instream flow values associated with these public lands. The Bureau of Land Management has claimed a federal reserved water right on the Wild and Scenic River stretch of the Missouri River to maintain flows for the paddlefish.¹¹⁹ The U.S. Fish and Wildlife Service has claimed reserved rights to maintain lake levels and instream flows on five wildlife refuges.¹²⁰ Finally, although the U.S. Forest Service has yet to submit claims for reserved water rights on the national forests, there is speculation that they may submit a proposal for instream flow reserved rights depending on the outcome of ongoing litigation over this issue in Colorado.¹²¹

Northwest Power Planning Council Protected Areas

The Northwest Power Planning Act¹²² directs the Northwest Power Planning Council (NWPPC) to develop a "program to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries." In response to this direction, the NWPPC adopted the Pacific Northwest Hydro Assessment Study Work Plan, designed to designate protected areas on the basis of fish and wildlife values and to rank potential hydropower sites on the basis of fish and wildlife impacts.¹²³ During the course of this study, it became apparent that the distinction between "protected areas" and "site ranking" was confusing, and in October 1987, the staff of the NWPPC distributed an issue paper on "Protected Areas Designation" in which the site ranking language was largely dropped.¹²⁴

In place of the original site ranking concept, the NWPPC staff proposed the use of only two categories of sites: (1) sites which fall into high value fish and wildlife areas and therefore should be designated as unsuitable for development; and (2) sites which do not fall into the high resource value areas and therefore are potentially developable.¹²⁵ The staff further recommended that the NWPPC develop rules to designate protected areas according to the following guidelines: (1) protect all areas currently used by anadromous (ocean-migrating) fish or potentially usable by anadromous fish in the Columbia River Basin; (2) protect all areas currently used by anadromous fish outside the Columbia River Basin; (3) protect high quality resident fish and wildlife areas both inside and outside the Columbia River Basin; and (4) provide for reevaluation of protected areas after basinwide planning is completed.¹²⁶

After considerable public participation, on August 10, 1988 the NWPPC adopted a proposal to designate over 2,000 stream miles, or about 30 percent of the 6,800 stream

miles in the Columbia River Basin in western Montana, as "protected areas" because of their importance as critical fish and wildlife habitat.¹²⁷ According to amendments to the Columbia River Basin Fish and Wildlife Program, no new hydroelectric development should be allowed in designated "protected areas."¹²⁸ The amendments clarify that this provision applies only to "new" hydropower projects, and that existing hydroelectric projects, relicensing of existing projects, or adding hydropower to existing non-hydropower projects are not subject to the provision.

The NWPPC urged the Federal Energy Regulatory Commission, the Bureau of Reclamation, and the U.S. Army Corps of Engineers to consider the "protected areas" in their decisionmaking processes "to the fullest extent practicable."¹²⁹ In addition, the amendments say that the Bonneville Power Administration should not acquire power from hydroelectric facilities located in the protected areas.¹³⁰ Although the protected areas would not result in water rights for the protection of instream flows, they would indirectly protect instream values by eliminating certain stream segments from hydropower development.

Indian Reserved Water Rights

Indian reserved water rights¹³¹ can also result in the protection of instream flows in Montana, particularly where Indian tribes have treaty fishing rights. Interference with river flows by diversion, impoundment, or pollution of waters so that fish habitat is damaged may reduce the ability of tribes to take a meaningful share of fish as guaranteed in their treaties. A situation recently emerged in Montana where the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation claimed a reserved water right for the protection of fish under their treaty.¹³²

In the summer of 1986, the U.S. Bureau of Indian Affairs (BIA) established a minimum streamflow policy for the Flathead Reservation in northwest Montana. One of the effects of the policy was to diminish the water available for non-Indian irrigated agriculture. At the request of the irrigators, a federal district court in Montana granted a preliminary injunction prohibiting the BIA from implementing the policy.¹³³

The Ninth Circuit Court of Appeals dismissed the preliminary injunction and remanded the case to the district court on grounds that the district court erred in applying the principle of "just and equal distribution."¹³⁴ This principle assumes that all who seek a right to the water stand on the same footing, notwithstanding the lack of an adjudicated decree establishing priorities among water right users. The injunction failed to accord the aboriginal fishing rights the protection federal law gives them against the claims and considerations of junior appropriators. Since the priority of the aboriginal fishing rights is dated time immemorial, they obviously predate all competing rights, and the district court erred in holding that water claimed under tribal aboriginal fishing rights must be shared with junior appropriators.¹³⁵

Since this case was appealed and has been remanded to the district court to determine the extent to which the tribes are entitled to instream flows under their treaty, it remains to be seen how effective this strategy will be in protecting instream values. The only other Indian tribes that have formally claimed and received a reserved water right for instream flow purposes are those on the Fort Peck Reservation.¹³⁶ Article III, Section L of the Fort Peck-Montana Compact specifies that:

At any time within five years after the effective date of this Compact, the Tribes may establish a schedule of instream flows to maintain any fish or wildlife resource in those portions of streams, excluding the mainstem of the Milk River, which are tributaries of the Missouri River that flow through or adjacent to the Reservation. These instream flows shall be part of the Tribal water right with a priority date of May 1, 1888. Water remaining in a stream to maintain instream flows pursuant to such a schedule shall be counted by the Tribes as a consumptive use of water.¹³⁷

The recent negotiated settlement with the Northern Cheyenne tribe may provide instream flows for fish and wildlife below the Tongue River Dam "depending on the availability of water on an annual basis."¹³⁸ This provision, however, does not "create an operational preference for fish and wildlife purposes relative to other project purposes."¹³⁹

The Public Trust Doctrine

Although the public trust doctrine has been applied in Montana, its utility for protecting or enhancing instream flows remains an open question. The Montana Supreme Court applied the public trust doctrine, apparently for the first time, in three related decisions: *Montana Coalition for Stream Access v. Hildreth*,¹⁴⁰ *Montana Coalition for Stream Access v. Curran*,¹⁴¹ and *Galt v. State*.¹⁴² The issue in these cases was the public's right to use watercourses for recreational purposes, such as floating and fishing.¹⁴³

The significance of these cases with respect to using the public trust doctrine to protect instream flows in Montana is difficult to assess. The issue before the court—the public's right to use waterways for recreation—does not raise a question regarding the duties or limitations that may be imposed on the state or its permittees in the allocation of water resources. Nevertheless, the application of the public trust doctrine in these cases sets a precedent for the use of the doctrine in Montana.

In addition, given the broad application of the public trust doctrine in other western states,¹⁴⁴ it is not inconceivable that it could eventually be used to protect instream flows in Montana. Although the traditional public trust doctrine involved the disposition of submerged lands to private or allegedly inappropriate public uses, its

application has been significantly extended to a variety of purposes through court decisions and legislation.¹⁴⁵ First, some states have extended the coverage of the doctrine beyond those watercourses navigable for title to all, or nearly all, waters of the state. The leading example is Montana,¹⁴⁶ where the courts and legislature have applied the public trust to all waters usable for recreational purposes. Second, some cases have extended the doctrine beyond the traditional purposes of commerce, navigation, and fishing, with the most common "new" purposes being various forms of recreation.¹⁴⁷ Third, various cases have extended the reach of the doctrine beyond watercourses per se,¹⁴⁸ and have applied it to dry sand beaches,¹⁴⁹ wildlife,¹⁵⁰ state parks,¹⁵¹ and all public resources.¹⁵²

Finally, and the extension most germane to the protection of instream flows, several state courts have extended the public trust doctrine to appropriation of water. In general, these courts hold or suggest that water rights might be curtailed if such appropriations substantially impair the public trust values at stake. The Mono Lake¹⁵³ and Bay Delta¹⁵⁴ cases are the most notable opinions on this extension, but similar opinions can be found in Alaska,¹⁵⁵ Idaho,¹⁵⁶ and North Dakota.¹⁵⁷

While the practical effect of the Mono Lake case on the use of the public trust doctrine to protect instream flows is still uncertain, Professor Blumm¹⁵⁸ argues that recent cases illustrate at least four different types of public trust remedies: "(1) a public easement guaranteeing access to trust resources; (2) a restrictive servitude insulating public regulation of private activities against constitutional taking claims; (3) a rule of statutory and constitutional construction disfavoring terminations of the trust; and (4) a requirement of reasoned administrative decision making."¹⁵⁹ While these remedies vary, Blumm argues that they all possess the unifying theme of promoting public access to trust resources or to decisionmakers with authority to allocate those resources.

Instream Flow Protection and the State Water Plan

Although Montana has made significant progress in protecting instream flows, ongoing activities are fragmented, consisting of several policies, programs, and practices, but no comprehensive plan and little coordination among state, federal, regional, and Indian governments. Moreover, some of the existing mechanisms need refinement if they are to effectively protect instream resources. New legal and institutional mechanisms may also need to be developed to enhance or increase flows in dewatered basins. During 1988, these and many other issues were addressed under the aegis of the state water plan.

The State Water Plan

In 1967, the Montana legislature passed the Water Resources Act which outlines several water management goals for the state.¹⁶⁰ The legislature also called for the development of a state water plan as the mechanism to accomplish the goals.¹⁶¹ According to statutory guidelines, the state water plan should be comprehensive; coordinated; provide for multiple uses; set out a progressive program for the conservation, development, and utilization of state's water; and propose the most effective means by which the state's water resources may be used for the benefit of the people with due consideration of alternative uses and combinations of uses.¹⁶²

The DNRC is responsible for developing the state water plan. In the process of formulating the plan, the DNRC is to consult with and solicit the advice of the legislature's Water Policy Committee; hold public meetings prior to plan adoption; adopt the plan with the approval of the BNRC; publish the plan and submit it to the Water Policy Committee and to each general session of the legislature.¹⁶³

Prior to 1987, efforts to develop the state water plan focused on basin plans.¹⁶⁴ While these plans resulted in volumes of technical information, they never considered the institutional and political feasibility of implementing their recommendations. Consequently, the plans provided little guidance to resource managers in resolving water management problems and ended up as "shelf art."

In 1987, the DNRC embarked on a new approach to developing the state water plan. After reviewing the water planning process of other western states, the DNRC decided to adopt an approach used by the Kansas Water Office.¹⁶⁵ This approach allows individuals and groups affected by water management decisions to participate directly in the development of policies, programs, and management decisions.

As currently designed, the Montana state water plan is a collaborative, consensus-building process for resolving water policy and management issues.¹⁶⁶ It is an issue-oriented plan designed to address the full range of water management issues facing the state. The planning process recognizes that a large number of federal, Indian, state, local, and even regional entities have a role in the management of Montana's water, and that several parties are affected by water management decisions, including irrigators, municipalities, energy and industrial developers, and fish, wildlife, and outdoor enthusiasts. Accordingly, it provides an opportunity for all these parties to be involved in formulating and implementing the plan, thereby promoting coordination and cooperation in resolving water management issues. Finally, the planning process is continuous and adaptable, allowing for changes in social, economic, and environmental objectives and needs.

Although the DNRC is responsible for developing the state water plan, it has realized that the most valuable role it can play is not to determine what decision or

outcome is reached, but how decisions are made. The DNRC has decided to facilitate the development of the state water plan by focusing on such concerns as who is involved in the process; how issues are identified, framed, and their consideration bounded; what information is brought to bear; how alternatives are developed and analyzed; how trade-offs are made; and what the procedures are for implementing, monitoring, enforcing, and evaluating the final decisions. The state water planning process provides a forum for the broad set of interests affected by water management decisions to voluntarily sit down together, exchange information, and develop solutions through negotiation, collaboration, and consensus building.

The Montana state water plan focuses on two basic types of issues. First, the planning process is designed to document, evaluate, and revise the legal and institutional framework for resolving statewide water management issues, such as groundwater management and wild and scenic river protection. Second, it addresses watershed-specific issues. This effort may focus on a single issue at a time, such as water pollution, or consider multiple water uses at the same time. Using the legal and institutional tools developed by addressing statewide water management issues, the long-term objectives of the watershed-specific plans are to document available water supplies and existing uses and rights; to protect future water resource needs and priorities; and to integrate water, land, environmental, social, and economic goals, identify conflicts, and assess tradeoffs in order to optimize water use within the basin.

During 1988, the first year of implementing this new planning approach, the governor appointed a State Water Plan Advisory Council¹⁶⁷ (SWPAC) to oversee development of the plan. The SWPAC consisted of ten members who represented a broad range of interests in water resources, including the directors of the state departments of Natural Resources and Conservation; Fish, Wildlife and Parks; and Health and Environmental Sciences; a representative from the Governor's Office; four legislators (representing a diversity of water user interests); and two representatives of the public (a recognized water law expert and the manager of a large irrigation district).

The SWPAC selected four statewide issues to address during the first planning cycle including: water information management; federal hydropower licensing and state water rights; instream flow protection; and agricultural water use efficiency.¹⁶⁸ DNRC then created broad-based Technical Advisory Committees to help analyze each issue and provide alternative solutions and recommendations.

As it was finally adopted, the instream flow protection plan section begins with the following policy statement: "Instream flows are an important use of water, and mechanisms should be developed and refined to protect and enhance instream resources. However, instream flow protection activities must not adversely affect existing water rights and should be weighed and balanced against alternative future uses of water."¹⁶⁹ Within this broad policy framework, the plan section addresses four issues: (1) incorporating instream flow concerns into the water use permitting process; (2)

evaluating the security of instream flow reservations; (3) increasing instream flows in dewatered streams; and (4) sponsoring research to improve instream resource management and decisionmaking.¹⁷⁰

Incorporate Instream Flows into the Permitting Process

The first issue addressed is the need to incorporate instream flow concerns into the water use permitting and change of use process.¹⁷¹ As mentioned in the previous section of this chapter, the state of Montana has public interest criteria that could be used to condition new water use permits and changes in existing water rights.¹⁷² However, the criteria apply only when an applicant wishes to appropriate more than 4,000 acre-feet per year and 5.5 cubic feet per second. To date, the criteria have not been applied to protect instream flows because no application has arisen that would trigger the criteria. In addition, the criteria are not applicable to smaller water project or change applications that may also threaten instream values. Finally, the criteria do not relate the size of the application to the quantity of water available in a watercourse.

During the state water planning process, several options were considered for incorporating instream flow concerns into the water use permitting process.¹⁷³ The first was to simply eliminate the threshold that triggers the public interest criteria, and apply the criteria to all new water use permits and change applications. The result of this option, in certain cases, would be to deny or condition new water use permits and change applications by requiring a certain amount of water to be left instream. While such conditions would not result in an instream flow water right per se, they would result in de facto reservations of water for instream flow purposes.

Another option was to relate the size of the water right application to the amount of water available in a stream, and apply the public interest criteria when the application exceeds a given percent of the available flow. A third option was to revise the criteria to consider the cumulative impacts of water appropriations on an entire river basin.

The final option was to improve the ability of the reservation process to protect instream flows from subsequent water use permits by establishing the priority dates for reservations at the time applications are filed, rather than when the BNRC makes its final decision. Since the reservation process is very time consuming, establishing priority dates at the time of application would protect the pending instream reservations from permits for offstream water uses that are acquired while the reservation applications are being reviewed.

After considerable debate among environmental and agricultural water users, the final recommendation in the state water plan is to promote more timely acquisition of instream flow reservations by assigning a priority date at the time a qualified applicant submits a notice of intent to reserve water.¹⁷⁴ This recommendation is designed to deter

the granting of permits that would threaten instream resources while reservation applications are being reviewed. It also allows the instream flow reservants to object to future water use permits or change applications that may threaten instream flow values.

During the 51st legislative session, Senator William P. Yellowtail and Representative Robert Ream, both members of the SWPAC in 1988, introduced SB 447 to implement this recommendation of the state water plan.¹⁷⁵ The bill, which passed both the Senate and the House without much debate, amended MCA § 85-2-316, the water reservation statute. MCA § 85-2-316(9)(a) now specifies that a water reservation has a priority of appropriation dating from the filing, with the DNRC, of a notice of intention to apply for a water reservation in a basin in which no other notice of intention is pending. The notice of intention to apply must specify the basin in which the applicant is seeking a reservation.

Once the DNRC receives the notice of intent, it must then identify all potential water reservation applicants in the basin and notify them of the opportunity to submit an application for a reservation and receive the base priority date, as defined above.¹⁷⁶ To receive the base priority date, the applicants must submit a correct and complete water reservation application within one year after the filing of the notice of intent to apply.¹⁷⁷ The Board may extend the time for preparing the application upon a showing of good cause.¹⁷⁸

As recommended in the state water plan, the Board may subordinate a water reservation to a water use permit if: (1) the permit application was accepted by the DNRC before the date of the BNRC order granting the reservation; and (2) the effect of subordinating the reservation to one or more permits does not interfere substantially with the purpose of the reservation.¹⁷⁹ The BNRC also establishes the relative priority of all the reservations that have the same base priority date.

Although SB 447 implements one recommendation of the state water plan section on instream flow protection, it only indirectly addresses the problem it was designed to resolve—i.e. how to incorporate instream flow concerns into the water use permitting and change application process. This mechanism may have little impact on-the-ground because of the possibility of subordinating an instream flow reservation to an intervening water use permit. Clearly such a provision defeats the entire purpose of incorporating instream flow concerns into the water use permitting and change application process. However, it presumably maintains the BNRC's direction to weigh and balance competing water uses within a particular stream or basin. More direct and efficient strategies for incorporating instream flow concerns into the water use permitting and change application processes are discussed later in the section on water leasing.

Evaluate the Security of Instream Reservations

The second issue addressed in the instream flow section of the state water plan is the security (or lack thereof) of reservations for instream flow purposes. As noted earlier, reservations are to be reviewed at least once every ten years and, if the objectives of the reservation are not being met, the BNRC may extend, revoke, or modify the reservation.¹⁸⁰ While this periodic review of all water reservations allows the state to reconsider the allocation of water in light of emerging needs and changing priorities, it does not provide much security to either instream or offstream reservations. Moreover, if the BNRC finds that the total amount of an instream flow reservation is not needed to fulfill its purpose, *and* a qualified applicant can show that its need outweighs the need of the instream reservation holder, the excess water may be reallocated to the competing applicant.¹⁸¹

Once again, several options were considered in response to this issue during the planning process.¹⁸² The first was to review only those revisions that have not been put to beneficial use, and to consider instream flow reservations perfected upon approval by the BNRC. This option would thus eliminate both the ten-year review and the potential for reallocating instream flow reservations. However, it would also eliminate the BNRC's ability to reallocate reserved water in light of new information and changing social values.

Another option was to delete the ten-year review for all reservations put to beneficial use, and again consider instream reservations perfected upon approval by the BNRC. This option would maintain the BNRC's ability to reallocate water reserved for instream uses once every five years. However, it would clearly place the burden of proof on the entity wishing to reallocate water away from instream flow reservations. This option would also maintain the BNRC's ability to reallocate both reserved water that is not put to beneficial use, as well as water reserved for instream uses. It marginally improves the security of instream reservations by eliminating the ten-year review for instream reservations.

While there was once again some disagreement on how to resolve this issue, the state water plan recommends an evaluation of the relative security of instream flow reservations after the BNRC completes its review of the Yellowstone River reservations.¹⁸³ In 1990, the BNRC completed the first ten-year review of the majority of instream flow reservations and did not revoke or modify any of these reservations.¹⁸⁴ At least for now, the instream flow reservations are secure. However, the security of instream reservations may be threatened less by the ten-year review process than by the possible reallocation of instream reservations once every five years. While all reservations, both instream and offstream, are subject to the ten-year review process, only instream flow reservations may be reallocated on the basis of competing uses. Although no such reallocation has yet taken place, the potential for such a reallocation exists. As a simple matter of fairness, instream and offstream reservations should be treated equally.

Either they should both be subject to reallocation once every five years or the reallocation provision should be deleted.

Increasing Flows in Dewatered Streams

The third and perhaps most important issue addressed in the state water plan section on instream flow protection is the need for legal and institutional mechanisms to increase flows in dewatered streams.¹⁸⁵ Instream resources are often threatened in streams that are subject to regular or periodic low flow conditions due to overappropriation, drought, or a combination of the two. Since the water reservation process is prospective, acquiring junior rights to protect against future consumptive appropriators is ineffective in dealing with streams that are being seriously dewatered. The issue here is not how to maintain existing flow levels, but how to increase the flows in dewatered streams.

Once again, several options were considered in response to this issue.¹⁸⁶ The first set of options focused on the transfer of senior, offstream water rights to public or private entities for instream flow purposes. Several variations of this option were considered.

In certain circumstances, existing consumptive water rights might be sold voluntarily to either public or private entities, with the water normally depleted from the stream legally accruing to instream flows. As an alternative to the purchase of existing rights, offstream water rights might be leased for instream purposes. According to this strategy, an irrigator, for example, would receive annual lease payments from an instream water use advocate and continue to operate as usual until drought occurs and water for instream purposes becomes critical. During the drought, and in accordance with the lease agreement, the irrigator would cease his normal water use and allow the flows involved to remain instream. Even though the consumptive use would be curtailed, the irrigator would have been compensated for this loss and may be able to use the land involved for a non-irrigated crop.

Yet another transfer-type option that was considered focused on the donation of offstream water rights to instream uses. The option of allowing emergency transfers of water rights, without review for potential adverse affects to existing water users, was also considered.

In addition to simple transfers from senior consumptive water rights to instream uses, water use efficiency might also be encouraged or paid for by an instream flow advocate, with the conserved water being legally appropriated for instream use. However, even if water salvaged from conservation measures could be voluntarily sold or otherwise transferred, there is still the possibility that the right may be considered abandoned.¹⁸⁷ There is little incentive to conserve water if it cannot be sold or

otherwise transferred. In order to use this approach, water right abandonment statutes would have to be amended so that permanent or temporary transfers of conserved water would not result in the permanent loss of the right.

As an alternative to the transfer of water rights from offstream to instream uses, the public trust doctrine was also considered as a mechanism to increase instream flows in dewatered streams. While the application of the public trust doctrine in Montana has been very limited, there are important precedents throughout the West that may lead to more specific applications with respect to protecting instream values. While such an approach may disrupt existing water uses and there is likely to be controversial, it nevertheless provides a last resort to protecting valuable instream flows and the public's interest in free-flowing water.

Another option considered for increasing flows in dewatered streams was adjudicating water rights and appointing water commissioners.¹⁸⁸ Instream values may be protected in certain cases by the delivery of large quantities of water to downstream uses with senior water rights. Thus, by completing the adjudication process and appointing water commissioners where water rights are not voluntarily enforced, instream flow values may be protected in certain cases by the delivery of water to downstream, senior water right holders.

The final option considered in relation to this issue was to provide funding and encourage public entities to purchase or lease water stored in reservoirs above dewatered streams. This option also contemplated revising the operating procedures on reservoirs to coincide with instream flow needs; assessing the feasibility of new storage projects to enhance instream flows; and promoting cooperative solutions at the local level. Finally, this option suggested that public entities should pursue inter-basin transfers and groundwater sources as alternative ways to increase flows in dewatered streams.

After considerable debate and much disagreement, the state water plan recommended that the DFWP be allowed to lease water rights from offstream or consumptive uses for purposes of protecting instream flows in important streams.¹⁸⁹ As explained in the state water plan, this opportunity is entirely voluntary and would not jeopardize existing offstream water rights. It would result in the temporary transfer of an offstream water right to increase instream flows during critical low flow periods. Under the lease agreement, the offstream water user would still hold the water right and be compensated for leaving water in the stream during certain years. This strategy would also allow for the temporary emergency leasing of off-stream or stored water rights to protect instream resources during critical low flow periods. Leases for instream flow purposes could not occur if they would result in adverse effects to existing water users.

This recommendation, more than any other in the state water plan, created a considerable amount of controversy among a variety of water users. It was also the focus

of much misunderstanding and misinformation. Nevertheless, the leasing concept is embodied in HB 707 of the 51st legislative session,¹⁹⁰ and is discussed at length below.

A second recommendation in the state water plan to address the enhancement of instream flows is to support public entities in purchasing or leasing water stored in reservoirs above dewatered streams and in revising the operating procedures on such reservoirs.¹⁹¹ In addition, the state water plan recommends that the feasibility of new storage projects to enhance instream resources should be assessed. Finally, cooperative solutions at the local level, such as irrigation scheduling, are supported by the state water plan. The two recommendations on water storage were incorporated into the 1989-90 state water planning cycle, which focuses, among other issues, on water storage.¹⁹²

Sponsor Research to Support Instream Resource Management

In addition to policy and program recommendations, the state water plan section on instream flow protection also addresses the need for additional research and information on which to make instream resource management decisions.¹⁹³ Three specific areas of research were identified in the final plan section.

First, the effect of return flows on the maintenance and enhancement of instream resources should be studied. Second, instream flow quantification methods should be evaluated to determine if existing methods result in an appropriate amount of water for instream resources. Finally, the state water plan recommends an assessment of the physical availability of water to meet the demands for instream resource protection. In addition to these three research and information needs, the need to develop methods to quantify or at least better justify instream flows for recreation, aesthetic, and other "intangible" benefits was considered early on in the planning process, but was later deleted.

As may be apparent, the state water plan's first look at the issue of instream flow protection has largely been a learning process. The planning process provided a forum for diverse interests to come together and discuss issues of mutual concern. Although the substantive recommendations on instream flow protection may leave room for improvement, the process of bringing all the affected interests together to discuss the issue has resulted in opening new communication channels and educating all water users on the many values associated with water in Montana.

Water Leasing: An Incremental Step

Without question the most controversial, and perhaps the most far-reaching spin-off of the state water plan section on instream flow protection is HB 707. After the original bill was modified significantly by agricultural interests, it appeared to be dead in

March, 1989.¹⁹⁴ It was resurrected, however, after lengthy debate, amendments, and procedural maneuvering.

Eventually, the amended bill proved acceptable to enough parties and was passed by the Montana legislature. It was signed by the Governor on May 11, 1989 and amended during the legislative sessions in 1991 and 1993. This section reviews the specific provisions of the legislation and its implementation.

The Water Leasing Program

The water leasing statute created a temporary program that allows the DFWP to lease water rights for the purpose of maintaining or enhancing streamflows for the benefit of fisheries.¹⁹⁵ The leasing program was designed to provide an opportunity for all affected interests in the state to study and evaluate the social, economic, and environmental impacts of transferring water from traditional uses to instream uses.

The DFWP, with the consent of the Fish and Game Commission, must submit potential stream reaches to the BNRC.¹⁹⁶ The BNRC may declare a stream reach eligible for leasing only if it finds that water leasing is "necessary" to maintain or enhance streamflows for fisheries.¹⁹⁷ The original statute specified that the BNRC may designate no more than five stream reaches where water leasing may occur in the state.¹⁹⁸ However, the Montana Legislature amended the statute in 1991 to allow up to 10 stream reaches on which leasing could occur, and amended it again in 1993 to allow up to 20 stream reaches.¹⁹⁹

Once the BNRC designates a stream reach on which leasing may occur, the DFWP must then prepare and submit an application for a lease authorization to the DNRC. The application must include specific information on the length and location of the stream reach in which the streamflow must be maintained or enhanced.²⁰⁰ It must also provide a detailed streamflow measuring plan that describes where and how the streamflow will be measured.²⁰¹ The maximum quantity of water that may be leased is the amount historically diverted by the lessor.²⁰² However, only the amount historically consumed, or a smaller amount if specified by the DNRC in the lease authorization, may be used to maintain or enhance streamflows below the lessor's point of diversion.²⁰³

A proposed water lease must proceed through the same change-of-use procedures as any change in water right. Upon receipt of an application for a lease authorization, the DNRC must publish a notice of the application consistent with MCA § 85-2-307.²⁰⁴ Parties who believe they may be adversely affected by the proposed lease may file an objection as provided in MCA § 85-2-308.²⁰⁵ A lease may not be approved until all objections are resolved.²⁰⁶ The priority date for a lease authorization is the same as the priority date of the leased water right.²⁰⁷

Under the original statute, a lease could not be issued for a term of more than four years, but could be renewed for up to ten years per renewal.²⁰⁸ However, the Montana legislature amended the statute in 1991 by allowing initial leases for up to 10 years (except for a lease of water made available from a water storage or conservation project, which may be issued initially for up to 20 years), along with one renewal for up to 10 years. The DFWP must notify the DNRC of their interest to renew a lease authorization.²⁰⁹ Upon receiving notice of a lease renewal, the DNRC must notify other appropriators potentially affected by the lease and allow 30 days for submission of new evidence of adverse effects.²¹⁰ A lease authorization is not required for a renewal unless an appropriator with a priority senior to the lease authorization submits evidence not previously considered of adverse effects to his rights.²¹¹ If this happens, a new lease authorization must be obtained according to the requirements outlined above.²¹² Neither a change in an appropriation right nor any other authorization is required for the reversion of the leased water right to the lessor's previous use.²¹³

During the term of the original lease, the DNRC may modify or revoke the lease authorization if an appropriator, other than one involved in the initial change of use proceeding, proves by substantial credible evidence that his water right is adversely affected.²¹⁴ A person issued a water use permit with a priority date after the filing date of an application for a lease authorization may not object to the exercise of the lease, the renewal of the lease, or the reversion of the water right to the lessor.²¹⁵

Although the DFWP is the only entity allowed to lease water for instream flow purposes, it may accept contributions from public or private entities for such purposes.²¹⁶ The Montana office of the Nature Conservancy signed an agreement with the DFWP to help raise money for the Montana Water Leasing Trust Fund.²¹⁷ This fund serves as a repository for contributions from private individuals, foundations, and corporations who wish to help implement the water leasing program by providing funds to lease water rights for instream flow purposes.

Limitations in Design

Montana's water leasing program represents an incremental step in the right direction. It provides an opportunity to explore the costs and benefits of transferring existing water rights to instream flow uses. It is a potentially useful mechanism, in Montana and throughout the West, to increase flows in dewatered streams while protecting existing water rights.

Although the water leasing program provides an additional tool for managing instream resources in Montana, it has several limitations in design. First, it is an administratively cumbersome process. It requires the DFWP to receive approval for an instream flow lease from both the Fish and Game Commission and the BNRC—in

addition to going through the change of use process. While such checks and balances may be politically expedient, they indirectly increase the transaction costs of instream flow leases by increasing the time required to process such a lease. Moreover, they create a process where the decision on which streams to lease is more likely to be made on political grounds than for biological and technical reasons.

If instream flow leasing is supposed to represent a free market approach to resource management, it would make more sense to eliminate the roles of the Fish and Game Commission and the BNRC; allow the DFWP to identify the streams on which leasing may be needed; negotiate with existing water rights holders on the feasibility and terms of a lease; and resolve any potential adverse impacts to third parties through the change of use process, as is done with other water rights transfers and changes. Such an approach would let biological needs and market forces, rather than politically appointed boards and commissions, dictate where and when instream flow leases might occur. It would also protect existing water right holders through the change of use process.

A second limitation of the water leasing program is that it allows leasing only for fisheries. While maintaining instream flows for fisheries may sometimes be sufficient to protect other instream flow benefits, such as water quality and recreational activities, it is not likely to be sufficient in all cases. On certain streams there might be a demand to increase instream flows purely for the other benefits. To restrict the purposes for leasing is to limit the opportunities to manage an important natural resource.

Another limitation of the program is that only the DFWP is allowed to lease water for instream uses. Clearly it is not the only entity interested in managing instream resources. Fishing resorts, rafting companies, outfitters, and associated tourism-related business, not to mention conservation groups and other resource management agencies, may all be interested in enhancing instream flows on certain streams and rivers. Several economists have argued that both public and private parties should be allowed to lease water, on grounds that it would allow them to compete equally in water markets and in the water rights appropriation process with municipal, industrial, and agricultural interests for scarce water rights.²¹⁸

Although there are several persuasive arguments to allow all public and private entities to lease water rights, there are also several arguments against the idea.²¹⁹ Opponents argue that (1) if private parties were allowed to lease water for instream flow purposes, all of the waters in a particular basin would eventually end up as instream water rights, and this would adversely affect the local economy and lifestyle; (2) allowing private parties to lease water for instream flows would create a market for the speculation of water rights in which traditional water users such as agricultural irrigators could not afford to participate; and (3) private entities could not adequately promote the so-called public goods benefits of instream flow benefits. While all of these arguments raise important points, they do not reflect the financial, economic, or environmental

realities of the situation. Moreover, these concerns could be addressed in the allocation and administration of an instream flow water lease.²²⁰

The fourth and final limitation of the water leasing program is that it is limited to leasing and does not allow for gifts or purchases of existing water rights for instream uses. Although such permanent transfers might limit modifications if third parties' water rights are adversely affected, they provide more secure protection of the instream resource. Moreover, transaction costs might decrease because fewer change-of-use proceedings would be required. Several western states are currently experimenting with a variety of mechanisms that provide for more permanent transfer of water rights from offstream to instream uses.²²¹

Implementation Performance

During the four years since the water leasing program was created, the DFWP has acquired two leases, both on Mill Creek, a tributary to the Yellowstone River.²²² The DFWP negotiated an agreement with several water users to improve the existing irrigation system and to lease the conserved water to enhance the spawning habitat for cutthroat trout. The DFWP will pay \$7,500 per year for about 6 cubic feet per second from one water right holder.²²³ It will also pay \$12,750 to the Mill Creek Water and Sewer District for an annual release of water each August to flush cutthroat fry to the Yellowstone River.²²⁴ In addition to providing the water, the District must install, operate, maintain, and pay all the cost associated with measuring devices to monitor the amount of water diverted by the District. It must also petition the district court no later than July 1 of each year to appoint a water commissioner for Mill Creek. Finally, the District must encourage the DNRC to designate Mill Creek as a "chronically dewatered stream."²²⁵

In addition to the leases on Mill Creek, the DFWP has evaluated the feasibility of leasing water on nearly 100 other stream reaches, most of them in western Montana.²²⁶ It is actively pursuing leases on five stream reaches.²²⁷

During the first two years of the water leasing program, the DFWP, along with other individuals and groups supportive of the program, spent a considerable amount of time responding to the hysteria created by the program.²²⁸ Throughout the state water planning process and the legislative session, there was considerable confusion and misinformation about the intent of the program and the impact of water leasing on existing rights and return flows.²²⁹ Representatives from the DFWP, the DNRC, Trout Unlimited, and other organizations spent many hours talking to agricultural water users about the water leasing program and instream flow protection in general. Although the DFWP evaluated the feasibility of leasing on several streams, it was actively pursuing leases on only two stream reaches by the end of the second year, and had terminated negotiations with one other water right holder.²³⁰

In response to the perceived lack of results during the first two years, the Montana Wildlife Federation sponsored a bill in the 1991 legislative session to allow any public or private entity to appropriate unappropriated water, and to purchase or lease existing water rights for instream flows.²¹ After nearly 500 angry farmers and ranchers testified against this bill at a public hearing, it died without much of a whimper in the Senate Natural Resources Committee.

A second bill, supported by both agricultural and environmental interests, amended the water leasing program in a variety of ways.²² While several individuals and groups from the agricultural community supported the water leasing program, their support appeared to stem less from an interest in water leasing per se, and more from the fear of SB 212 or something worse—such as a public trust lawsuit.

During the next two years, Senator Don Bianchi, who carried SB 212, convened a series of meetings with representatives from agriculture and environmental groups to discuss different strategies for instream flow protection. The outcome of this consensus-building effort was SB 346, introduced by Senator Bill Yellowtail in the 53rd Montana legislature (1993). This bill, which would have allowed appropriated water to be transferred to an instream use, received a favorable hearing in the Senate before being tabled in the House Natural Resources Committee.

In response to SB 346, some representatives from the agricultural community continued to argue that such a measure is unnecessary given the existence of the water leasing program. Other representatives from the agricultural community, however, supported SB 346, suggesting that it is consistent with the property rights and market-based approaches that they have historically supported. This support from some members of the agricultural community represents an important phase in the evolving politics of instream flow protection in Montana.

Two important lessons emerge from Montana's effort to lease water for instream flows. First, water leasing and instream flow protection represent a fundamental shift in the traditional way water has been used in Montana. It is not surprising, therefore that there is so much resistance to the idea. The major challenge in moving this agenda forward is to continue the dialogue among the diverse interests. Although the effort by Senators Bianchi and Yellowtail did not result in more progressive instream flow policy during the 53rd legislative process, they should be commended for continuing the dialogue and providing an opportunity for diverse interests to come together, share their perspectives and values, and search for common ground.

Second, water leasing is not a panacea. It appears to be most valuable for increasing flows in small tributary streams that provide important spawning grounds. Water leasing is much more complex on larger streams given the number of water rights that may be needed to sufficiently increase flows, along with the number of water right holders that might be affected by the lease. In these cases, other strategies, including

releases from water storage projects and cooperative timing of irrigation withdraws, may be more appropriate.

A Blueprint for the Future

Although a variety of actions have been taken to manage instream resources in Montana, the efforts are piecemeal and focus primarily on acquiring existing flows and protecting them from future offstream diversions. Moreover, there is rarely any coordination among different entities responsible for or interested in instream resource management.

In light of these limitations, this section outlines a blueprint for the future of instream flow policy in Montana. The basic assumption of this blueprint is that the state should take a proactive approach to managing instream resources while protecting existing water rights.

The blueprint provides a strategy for developing a comprehensive, statewide instream flow program. It is designed to bring all affected parties together to identify the need for instream flow protection throughout the state, regardless of jurisdictional boundaries. It is also designed to evaluate existing instream flow management strategies and to develop additional strategies where necessary.

Create an Instream Resource Coordinating Committee

Given the variety of state, federal, regional, Indian, and private entities involved in managing instream resources, in addition to the many individuals and groups affected by instream flow management activities, the first step to improve the management of instream resources in Montana should be to create a broad-based committee to coordinate instream flow activities across the state. This committee should consist of at least one representative from each interest affected by instream resource management activities, including both instream and offstream water user groups. It should also include those entities that have formal responsibility for implementing actions on the ground, such as state and federal government agencies and perhaps state legislators. Individual members on the committee should possess not only the technical skills required to analyze instream flow needs and alternative management strategies, but also the ability to make decisions and commitments on behalf of the organizations they represent.

The fundamental purpose of the coordinating committee should be to facilitate communication, cooperation, and coordination among all the parties affected by instream resources management. More specifically, the tasks of the committee should include: (1) evaluating and developing instream flow management strategies; (2) assisting local watershed interests in identifying priority stream reaches and instream values; and (3)

maintaining and evaluating instream flow protection activities. Each of these tasks is outlined in detail below.

Evaluate and Develop Instream Flow Management Strategies

One of the first tasks of the coordinating committee should be to evaluate existing instream flow management strategies and determine if additional strategies are necessary. In general, two different types of strategies are necessary for a successful instream resource management program.²³³ First, there should be a way to maintain existing (unappropriated) flows, thereby deterring future offstream diversions that may threaten instream resources. Second, the program should include mechanisms to increase flows in dewatered streams. While both types of strategies are currently available in Montana, they may need to be refined to be more effective.

Maintaining Unappropriated Flows

In Montana, as throughout the West, there are two basic ways to maintain existing (unappropriated) flows.²³⁴ The first is to provide a mechanism that requires new water use permits and changes in existing water rights to be reviewed on the basis of "public interest" criteria, including the protection of instream resources. These criteria would deny or condition new water use permits, changes, and/or transfers in the use of existing water rights if they adversely affected instream resources. They would provide for a specified level of natural flow to be left in the stream and require the permittee to discontinue diverting water when the natural streamflow falls below that level.

Although Montana has a set of public interest criteria, it has been argued that they are generally ineffective in protecting instream resources.²³⁵ Assuming that the state is interested in managing and protecting instream resources, the public interest criteria should be applied to all new water use permits and all proposed changes and transfers of water rights. In addition, the existing criteria in Montana should be reviewed in light of the public interest criteria of other western states.²³⁶ Although public interest criteria may vary by state, they all include one or more of the following: (1) the benefit to the applicant; (2) the economic impact; (3) the effect on fish and game resources and public recreational resources; (4) the effect on public health;²³⁷ (5) the loss of alternative uses of water; (6) potential harm to other persons; and (7) the effect upon access to navigable or public waters. Alaska²³⁸ and Idaho²³⁹ have the most comprehensive and precise list of public interest criteria, and may provide useful models for revising Montana's public interest criteria.

The state is making some progress in this area. During the 1991-1992 state water planning process, the State Water Planning Advisory Council addressed the issue of how to better integrate water allocation and water quality protection.²⁴⁰ One of the

recommendations in this plan section is to allow the DNRC to condition or deny new water use permits and change of use applications if:

- the water quality of another appropriator would be adversely affected; or
- the use would result in a downgrading of the classification for state waters pursuant to MCA 75-5-301 for that particular stream; or
- the ability of discharge permit holder(s) to satisfy effluent limitations would be adversely affected.

This recommendation was incorporated into SB 280 in the 53rd legislative session which was signed by the Governor on April 21, 1993.

The second basic strategy needed to help maintain existing flows is the ability to appropriate unappropriated water for instream uses. The primary mechanism for accomplishing this objective in Montana is the reservation process.²⁴¹ In general, this is a reasonable strategy for maintaining existing flows for instream purposes. However, as explained earlier in this chapter, it suffers from several limitations and could be improved. As documented during the state water planning process, perhaps the most serious limitation of the reservation process is the potential reallocation of instream flow reservations.²⁴²

In addition to public interest criteria and the reservation process, there are a variety of other mechanisms that could be employed to maintain existing flows for instream uses.²⁴³ These strategies include federal regulatory and permit conditions,²⁴⁴ the contribution of water rights to instream flow programs,²⁴⁵ and prohibiting new diversions via wild and scenic river programs and similar programs.²⁴⁶ The state should also continue to discuss the merits of allowing public and private entities to acquire unappropriated water for instream uses through the permitting process.²⁴⁷ All potentially available strategies to maintain existing instream flows should be identified and evaluated in terms of their applicability to resource management situations in Montana.

Increasing Flows in Dewatered Basins

In addition to providing a variety of mechanisms to maintain existing (unappropriated) flows, Montana's instream flow program should also include several strategies for increasing flows in dewatered streams. The water leasing program and the recent legislative attempts to allow any person to acquire appropriated water and change it to an instream use are designed to address this issue. Purchasing existing water rights for instream flow purposes is allowed in several western states²⁴⁸ and has been practiced

with some success.²⁴⁹ Allowing senior water rights to be gifted or donated to appropriate entities for instream uses is also allowed in some states.²⁵⁰

Another strategy employed in Montana to increase flows in dewatered streams has been to schedule the timing and amount of reservoir releases to coincide with instream flow needs.²⁵¹ This strategy, in addition to other local, cooperative solutions, such as irrigation scheduling, is supported by the state water plan.²⁵²

Another promising strategy for enhancing instream flows is to improve the efficiency of water use and allow the salvaged water to be transferred to an instream use. In 1991, the Montana legislature passed a bill, which emerged out of the state water planning process, to allow the holders of appropriation rights who salvage water to retain the right to use that water.²⁵³ In 1987, the Oregon legislature provided an innovative twist on this strategy by allowing irrigators who conserve water to sell or use the historically retrievable losses, provided that 25 percent of the salvaged water is dedicated to the state for maintaining instream flows, if needed.²⁵⁴ Finally, several western states allow for some type of temporary or conditional transfer of water to a variety of uses, including instream flow protection, to allow quick responses to emergency situations.²⁵⁵ The 52nd Montana legislature passed another bill that emerged out of the state water planning process to allow for temporary changes in appropriation rights.²⁵⁶

Several other transfer-type mechanisms could also be used to increase flows in dewatered streams, but to date have been used primarily by municipalities in search of water supplies during the drought season.²⁵⁷ For example, "lease-back" arrangements refer to transactions where land and water rights are purchased and then leased back to the original owner for a certain period of time.²⁵⁸ This strategy increases the long-term security and control of the water rights over dry-year options or simple leases.

Exchanging the priority among water right holders is another potentially effective way to increase or maintain flows in dewatered basins depending on their location and timing.²⁵⁹ In such arrangements, senior water right holders would defer their seniority for some type of compensation, allowing the water to remain instream through critical stream reaches and drought periods. This approach was recently implemented in Montana on the Blackfoot River.²⁶⁰ The DFWP holds an instream flow right on the Blackfoot. During 1988, when flows in the river diminished to the point of threatening the survival of fish populations, the DFWP approached an irrigator who holds water rights that are both junior and senior to the instream flow right. The DFWP, attempting to enforce its instream flow right, requested the irrigator to cease diverting his junior water right. The irrigator, however, suggested that the DFWP could utilize his senior water right to help maintain instream flows if he could continue diverting the junior right to water crops. The DFWP agreed to this proposal since it would increase flows in the critical stream reach as effectively as the junior water rights.

Exchanging or alternating water sources may also prove to be a useful instream flow management tool.²⁶¹ In Colorado,²⁶² Wyoming,²⁶³ New Mexico,²⁶⁴ and Utah²⁶⁵ it is very common to exchange native streamflow for reservoir storage in order to ensure water availability in the late summer season. It is also common to exchange surface water for groundwater. Such arrangements could be used in certain cases in Montana to maintain or increase flows for instream resources.

Finally, water banks may also prove useful at some point as a way to maintain or increase flows in dewatered streams.²⁶⁶ Water banking involves storing excess water available during high flow years in reservoirs or underground and maintaining savings accounts to keep track of stored water. In dry years, withdrawals can be made from stored supplies and the accounts debited accordingly. This approach was used in 1988 by The Nature Conservancy and others who purchased 3,200 acre-feet of water from the Upper Snake River Water Bank to aid trumpeter swans in eastern Idaho.²⁶⁷

As this brief overview reveals, many different types of water transfer arrangements are available that can increase instream flows in dewatered streams. These innovative transfers are attractive not only because they can improve instream resource management, but also because, if appropriately designed and implemented, they pose less of a threat to existing water right holders than three other potentially useful mechanisms for increasing instream flows in dewatered streams—reserved water rights, the public trust doctrine, and a constitutional amendment.²⁶⁸ While these latter strategies may be used to increase instream flows in dewatered streams, they are likely to disrupt the existing allocation and pattern of water use in Montana, and therefore are less preferred than voluntary, transfer-type strategies.

Identify Priority Stream Reaches and Instream Values

After evaluating, revising, and developing flow management strategies, the coordinating committee should work with local watershed interests to identify stream reaches needing protection. Streams should be classified in terms of whether the primary resources management issue is one of maintaining existing flows or increasing flows in dewatered streams. Specific instream resource values should be identified and the quantity of flow needed to protect the values estimated. Priorities should be established and available water supplies and existing uses and rights documented. The State Recreational Waterway Program²⁶⁹ and the Northwest Rivers Study²⁷⁰ may provide an appropriate database and framework to accomplish this systematic inventory of instream values and management needs.

In addition to identifying instream flow needs for streams and rivers throughout the state, the coordinating committee and the local watershed interests should evaluate the need to establish minimum lake levels. Moreover, the committee should evaluate the

potential for improving the structure and stability of stream channels before selecting an appropriate instream flow management strategy.²⁷¹

Once this basic information is assembled, future water resource needs and priorities should be projected on a basin-specific basis. Water, land, environmental, social, and economic goals should then be integrated. Conflicts should be identified and trade-offs assessed in order to optimize water use within each basin. Ideally, this effort should take place within the context of a multiple-use, basin-specific water planning process that includes all of the affected interests in the watershed.²⁷² At this point in the process, the coordinating committee should provide technical expertise and represent the broader public interest in protecting instream resources. The local interests, assuming they represent a balanced perspective, should take the lead in making trade-offs between instream and offstream uses of water. The process should also provide ample flexibility for market-based mechanisms to achieve all water management objectives, including the protection of instream flows.

Select and Apply Appropriate Strategies

Once instream resource values have been inventoried and streams needing protection prioritized, specific strategies for managing instream resources should be selected and applied.²⁷³ This decision should be based on whether the primary resource problem is one of maintaining existing flows or increasing flows in dewatered basins. A variety of institutional and political factors must also be considered, such as the availability of appropriate institutional resources and the likelihood of controversy over the proposed action.

Monitor, Enforce, and Evaluate Instream Flow Protection Activities

The final component of the blueprint is to effectively monitor, enforce, and evaluate the implementation of the various management efforts, particularly the status of instream water rights. Without adequate monitoring and enforcement, instream resource management efforts may be doomed to failure.

In general, there are two approaches to monitoring and enforcing instream water rights. The first approach, used in Washington,²⁷⁴ is to make a call on the river when junior users threaten to injure instream water rights. This approach requires gaging stations to measure when the streamflow drops below the specified level, as well as personnel to monitor the gages. In Montana, very few streams currently have enough gages to make this approach effective. The second approach, used in Colorado,²⁷⁵ is to prevent changes or transfers in senior water rights that may potentially injure instream water rights. This approach does not require the installation of costly stream gages or the commitment or personnel to monitor the gages. Rather, it monitors "paper rights,"

and is most useful where very few junior appropriative rights are being established and there is an active water market.

In addition to monitoring and enforcing instream water rights, an on-the-ground evaluation should be conducted to determine if instream resources are being adequately protected by current management efforts and if third parties are being adversely affected. The evaluation should focus on the resource and determine if too much or too little water has been set aside for protecting the instream values in question.

Conclusion

Montana has made significant progress in managing instream resources. Although much remains to be done to protect this valuable natural resource, the state appears to be moving into a new phase where agricultural water users are more willing to consider both the public and private benefits of instream flow protection. This change in the political climate, albeit small, provides hope for the future.

While the state's current approach to instream resource management could be improved in a variety of ways, three recommendations stand out. First, instream flows should be protected on the basis of ecological boundaries, not artificial jurisdictional and property rights boundaries. Second, a variety of effective mechanisms need to be developed and employed to increase the flows in dewatered streams. Finally, existing instream flow water rights need to be vigorously enforced to ensure that instream resources are being appropriately protected.²⁷⁶

The protection of instream values in Montana, as throughout the West, is inevitable given the changing values and demands of the public. Although it is imperative to protect the traditional uses of water, Montana's laws and institutions governing the allocation and use of water resources must and will be adapted to these new values and demands. The only outstanding question is whether the changes in these laws and institutions will result in destructive or constructive relationships among water users, resource managers, and policymakers. While there are obvious differences among all these players, let us hope that their common commitment to the land, water and quality of life in Montana will provide the foundation for developing innovative instream flow policies and building sustainable communities.

Notes

1. The doctrine of prior appropriation, the basic tenet of western water law and policy, was adopted to facilitate the settlement and development of the West. One of the traditional provisions of the doctrine was the need to direct water out-of-stream and put it to beneficial use, narrowly defined as municipal, agricultural, and industrial. For a history of western water law and policy, *see* HUTCHINS, U.S. DEP'T OF AGR., MISC. PUB. NO. 1206, WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES, (1971).
2. Instream flows generally refer to water left in a stream or river, unavailable for diversion and offstream use, to satisfy fish, wildlife, recreation, and other purposes.
3. Perhaps the most dramatic example of the threat of overappropriation in Montana occurred in the early 1970's, when the Department of Natural Resources and Conservation (DNRC) received a number of large industrial water use applications for coal-related development in the Yellowstone River Basin (*see generally*, Fritz, et al., *Public Rights in Water – A Montana Perspective, 3rd Annual Western States Water Council Water Management Symposium*, September 11 - 12, 1986). At the same time, energy companies optioned more than 500,000 acre-feet of water from Yellowstone Reservoir, a large impoundment on the Bighorn River, for coal development. The legislature viewed these large permit applications and water sales as a threat to future agricultural and municipal growth in the basin, as well as to the free-flowing status of the Yellowstone (MONTANA DEP'T OF NATURAL RESOURCES AND CONSERVATION, YELLOWSTONE RIVER BASIN: FINAL ENVIRONMENTAL IMPACT STATEMENT FOR WATER RESERVATION APPLICATIONS 5-6 (Feb. 1977)).

In response to the perceived threat, the legislature enacted a four-year moratorium on Yellowstone permit applications of more than 20 cubic feet per second or 14,000 acre-feet of storage (MONT. CODE ANN. § 85-2-601 (1974)). The language of the four-year moratorium emphasized the need to reserve water for future agricultural and municipal needs, as well as for instream flows to protect existing rights, water quality and aquatic life. *Id.*

4. During the drought of 1988, which was preceded several years of low flows, the natural flow in several famous fly-fishing streams, including the Big Hole, Beaverhead, and Madison rivers, dropped far below the average annual flow, thereby threatening the viability of the fisheries. *Drained Rivers Rouse Montana*, HIGH COUNTRY NEWS, Nov. 20, 1989, at 16. After irrigators diverted what little water was available in these rivers, the reduction in flow in the rivers resulted in the death of thousands of fish. The Department of Fish, Wildlife and Parks estimates that it will take between five and eight years of normal precipitation to bring the fisheries back. The drought continues to affect both instream and offstream uses of water. In 1992, 41 out of 56 counties in the state were eligible for federal drought disaster assistance. The status of these counties has not changed. As of April, 1993, only 4 of 15 major river basins in the state have snowpacks above 75 percent of historical average. *See* MONTANA DROUGHT ADVISORY COMMITTEE, A REPORT TO THE GOVERNOR DESCRIBING THE POTENTIAL FOR DROUGHT IN MONTANA IN 1993 (March, 1993).
5. *See* MONTANA DEP'T OF FISH, WILDLIFE AND PARKS, 1988 MONTANA STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN (1988). The 1988 SCORP projects a significant increase in water-based recreational activities.

6. See generally THORSON, et al., *Forging Public Rights in Montana's Waters*, 6 PUB. LAND L. REV. 1 (1985).
7. The issue of instream flow protection was selected in 1987 by the broad-based State Water Plan Advisory Council as one of the first issues to be addressed by the new state water plan.
8. MONT. CODE ANN. § 85-1-101 (1967).
9. MONT. CODE ANN. § 85-1-101(5) (1967).
10. For an excellent taxonomy of values associated with the natural world, see ROLSTON, ENVIRONMENTAL ETHICS: VALUES IN AND DUTIES TO THE NATURAL WORLD (1988).
11. See Duffield, Loomis, & Brooks, *The Net Economic Value of Fishing in Montana*, MONTANA DEP'T OF FISH, WILDLIFE AND PARKS (1987).
12. *Id.*
13. Another recent study sponsored by the Sport Fishing Institute estimates that nearly \$200 million were spent in Montana for fishing in 1985. THE INDEPENDENT RECORD, Nov. 21, 1989, at 3B. In addition, the Travel Promotion Bureau of the State of Montana recently estimated that tourists from other states and nations poured \$658 million into Montana in a recent 12-month period, generating a \$1.4 billion impact on the state's economy. THE INDEPENDENT RECORD, Dec. 13, 1989.
14. MONTANA DEP'T OF AGRICULTURE, MONTANA AGRICULTURAL STATISTICS 1988, (1988).
15. The literature on economic valuation recognizes many different values associated with natural resources. These include "user" values for recreational and commercial hunting and fishing, wildlife sightings, and photography, in addition to "non-user" values. Non-user values are difficult to measure and may be of several types. Those associated with preserving a species and its habitat so that one has the option to enjoy them in the future are termed "option values", willingness to pay for preservation so that one's heirs can benefit is termed "bequest value", and values generated simply by knowing a species or a unique site will continue to exist are termed "existence values." See generally *Valuation of Wildland Resource Benefits*, (Westview Press, 1984). The little empirical evidence that exists suggests non-user values can be sizeable, especially for unique sites and endangered species. See Walsh, et al., *Valuing Option, Existence, and Request Demands for Wilderness*, 60 LAND ECON. 14 (1984).
16. *Supra* note 5.
17. *Supra* note 4.
18. See *In re Matter of the Amended Application of the United States for Reserved Water Rights in the Platte River*, Case No. W-8439-76, District Court, State of Colorado, decided Feb. 12, 1993; *United States v. Jesse*, 744 P.2d 491 (Colo. 1987).
19. *Id.*
20. See BONNIE G. COLBY, *INSTREAM FLOWS: ECONOMIC VALUES AND POLICY ALTERNATIVES* (1988).

21. *Id.* See also MISSOURI RIVER BASIN: FINAL ORDER OF THE BOARD OF NATURAL RESOURCES AND CONSERVATION ESTABLISHING WATER RESERVATIONS ABOVE THE FORT PECK DAM (July 1, 1992) comparing the economic value of instream and offstream uses of water.
22. MONT. CODE ANN. § 89-801 (2) (1991). The concept of the "blue-ribbon" fisheries originated in the late 1950's with a concern over the potential incremental loss of Montana's 20,000 to 30,000 miles of well-stocked fishing streams. The concern led to an inventory and assessment of the state's fishing streams on the basis of accessibility, aesthetics, use, and productivity. Streams were placed in one of five classes, the Class I streams considered "outstanding." In 1959, the Stream Fishery Classification Map for Montana was printed, and the color blue—the traditional color of county fair "1st prize" ribbons—was used to identify Class I fishing streams. Over 400 miles of stream received a Class I rating in 1959. The stream classification system was slightly modified in 1980. See HOLTZEN, *Color Them Blue*, MONTANA OUTDOORS (May/June, 1984).
23. MONT. CODE ANN. § 89-801 (2) (1991).
24. *Id.*
25. Personal communication, Bob Arrington, Water Rights Adjudication Program Manager, Montana Department of Natural Resources and Conservation (Sept. 8, 1989).
26. *Id.*
27. MONT. CODE ANN. § 85-2-316 (1991).
28. MONT. CODE ANN. § 85-2-316(1) (1991).
29. MONT. ADMIN. R. § 36.16.102(3); MONT. CODE ANN. §§ 2-15-3302 (1991).
30. MONT. ADMIN. R. § 36-16.104.
31. MONT. CODE ANN. § 85-2-308 (1991).
32. MONT. CODE ANN. § 85-2-309 (1991).
33. MONT. CODE ANN. §§ 85-2-316(3)-(4) (1991).
34. MONT. CODE ANN. § 85-2-316(9) (1991).
35. MONT. CODE ANN. § 85-2-316(10) (1991).
36. MONT. CODE ANN. § 82-2-315(11) (1991).
37. Minutes of the Board of Natural Resources and Conservation, (Nov. 20, 1989).
38. Order of the Board of Natural Resources Establishing Water Reservations, 39-72 (Dec. 15, 1978).
39. *Id.*
40. *Supra* note 21.

41. *Id.* at 115.
42. *Id.* at 96 and 186.
43. *Id.* at 185. On the state's basin closure policy, see MONT. CODE ANN. § 85-2-319 (1990).
44. Senate Bill 282, 53rd Leg. (1993). Signed by the Governor on April 1, 1993.
45. House Bill 365, 53rd Legis. (1993) closed the Teton River Basin, which is near Great Falls, Montana; H.B. 395; 53rd Leg. (1993) closed the entire Missouri River Basin above Great Falls, including the Madison and Jefferson River Basins.
46. MONTANA DEPT OF FISH, WILDLIFE AND PARKS, *Application for Reservations of Water in the Upper Clark Fork River Basin* (Nov. 1986).
47. MONT. CODE ANN. § 85-2-316(6) (1991).
48. MONT. CODE ANN. § 85-2-331 (1991).
49. MONT. CODE ANN. § 85-2-316(10) (1991).
50. MONT. CODE ANN. § 85-2-331 (1991).
51. MONT. CODE ANN. § 85-2-311(2)(c) (1991).
52. *Id.*
53. MONT. CODE ANN. § 85-2-311(a)(1) (1991).
54. MONT. CODE ANN. § 85-2-311(3)(b) (1991).
55. MONT CODE ANN. § 85-2-223 (1991).
56. Memorandum on S.B. 76 Instream Flow Claims from Fred Nelson to Steve Brown and Stan Bradshaw, Montana Department of Fish, Wildlife and Parks (Sept. 16, 1985).
57. Memorandum on S.B. 76 Fish, Wildlife, and Recreation Claims for Ponds, Lakes, Reservoirs, and Swamps from Fred Nelson to Bob Lane, Montana Department of Fish, Wildlife and Parks (Oct. 30, 1986).
58. *See e.g.*, In the Matter of the Adjudication of the Existing Rights to the Use of All the Water, Both Surface and Underground, Within the Kootenai Tributaries of the Kootenai River in Flathead and Lincoln Counties, Montana (In the Water Courts of the State of Montana, Clark Fork Division - Kootenai Rover Basin, Case No. 76D-48 and Case No. 76D-49, July 23, 1986) ruling that claims made by the Department of Fish, Wildlife and Parks for instream flow purposes on Young Creek and Tobacco River are valid appropriations.
59. Case 41u-7, Yellowstone Division of the Montana Water Courts, Aug. 27, 1987.
60. *Id.*

61. In the Matter of the Adjudication of the Dearborn Drainage Area, 766 P. 2d 228 (Mont. 1988).
62. *Id.* at 11.
63. *Id.* at 16-17.
64. See generally *supra*, notes 56 and 57.
65. 16 U.S.C. § 291 (1988).
66. P.L. 99-495 (1986).
67. 16 U.S.C. § 791(a) (1988).
68. 16 U.S.C. § 803(j) (1988).
69. Personal communication with Larry Peterman and Liter Spence, Montana Department of Fish, Wildlife and Parks (Sept. 7, 1989).
70. See e.g., Pine Creek Project, Federal Energy Regulatory Commission Hydropower License 8546-011.
71. 16 U.S.C. § 839 (1988).
72. *Supra* note 69.
73. Personal communication with Richard Moy, Chief, Water Management Bureau, Department of Natural Resources and Conservation (April 5, 1993).
74. *Id.*
75. MONTANA DEP'T OF FISH, WILDLIFE AND PARKS, UPPER MISSOURI RIVER RESERVOIR OPERATING GUIDELINES FOR FISH, WILDLIFE AND RECREATION (April 1985).
76. MONTANA DEP'T OF FISH, WILDLIFE AND PARKS, UPPER BIGHORN RIVER FISHERIES MANAGEMENT PLAN (Aug. 1987).
77. *Supra* note 69. No formal written contract has been developed for this agreement.
78. *Supra* note 69. No formal written contract has been developed for this agreement.
79. *Supra* note 69. No formal written contract has been developed for this agreement.
80. MONTANA DEP'T OF FISH, WILDLIFE AND PARKS, TIBER RESERVOIR MARIAS RIVER RECOMMENDED OPERATING GUIDELINES FOR FISH, WILDLIFE AND RECREATION (Feb. 24, 1988).
81. *Supra* note 69.
82. Montana Department of Natural Resources and Conservation Painted Rocks Reservoir Water Purchase Contract with Montana Department of Fish, Wildlife and Parks (June 26, 1987, and Dec. 3, 1992).

83. Water Purchase Contract between the State Water Conservation Board, the Montana Fish and Game Commission, the Ravalli County Fish and Wildlife Association, and the Western Montana Fish and Game Association (March 5, 1958).
84. *Supra* note 69.
85. *Supra* note 69.
86. Agreement with Water Purchase Contract (between the Montana Department of Fish, Wildlife and Parks and Meagher County Newlan Creek Water District, July 24, 1987).
87. See Fred Nelson and Frank Culver, *Evaluation of Newlan Creek Reservoir Water Purchase to Augment Stream Flows in the Smith River, Montana* (Montana Department of Fish, Wildlife, and Parks, Helena, Montana, November, 1992)
88. MONT. ADMIN. R. § 12-8-401.
89. *Id.*
90. *Id.*
91. *Id.*
92. *Supra* note 69.
93. P.L. 94-486 (1976).
94. Order of the Board of Natural Resources Establishing Water Reservations 39-72 (Dec. 15, 1978).
95. MONTANA DEP'T OF FISH, WILDLIFE AND PARKS, PACIFIC NORTHWEST RIVERS STUDY: ASSESSMENT GUIDELINES FOR MONTANA (Dec. 1986).
96. 16 U.S.C. § 1271 (1988).
97. See FEDERAL WATER RIGHTS, 89 INTERIOR Dec. 553 (1979).
98. P.L. 94-486 (1976).
99. U.S. DEP'T OF AGRICULTURE, FOREST SERVICE, WILD AND SCENIC RIVER RECOMMENDATION FOR MONTANA, NORTH DAKOTA, AND IDAHO (Sept. 12, 1989).
100. *Id.*
101. 43 U.S.C. §§ 1762-1771 (1988).
102. 43 U.S.C. § 1701 (1988); see also 36 C.F.R. § 251.56.
103. Personal communication with Ron Russell, U.S. Forest Service (Sept. 8, 1990).
104. See Wilkinson & Anderson, *Land and Resource Planning in the National Forests*, 64 ORE. L. REV. 1 (1985).

105. See, e.g., UNITED STATES DEP'T OF AGRICULTURE, FOREST SERVICE, HELENA NATIONAL FOREST, FOREST PLAN 11-22 (April, 1986). This section of the forest plan outlines the following standards for the protection of fisheries: "(1) Maintain quality water and habitat for fish by coordinating Forest activities and by direct habitat improvement. . .; (2) Instream activities should allow for maximum protection of spring and fall spawning habitats; and (3) Structures installed within streams supporting fisheries will be designed to allow upstream fish movement, especially to spawning areas."
106. The reserved water rights doctrine was initially formulated by the Supreme Court in relation to Indian reservations. *Winters v. United States*, 207 U.S. 568 (1908). It was first extended to public land reservations in 1963. *Arizona v. California*, 373 U.S. 546, (1963). For a history of federal reserved water rights, including all the landmark cases, see COGGINS AND WILKINSON, FEDERAL PUBLIC LAND AND RESOURCES LAW 369-405 (2nd ed., 1987). For a history of federal reserved water rights in Montana, see Miller, *Taming the Rapids: Negotiation of Federal Reserved Water Rights in Montana*, 6 PUB. LAND L. REV. 167-182 (1985). For a discussion of reserved water rights on wilderness and Forest Service lands in general, see Johnson, *Reserved Water Rights for Wilderness and Forest Lands: The Interaction of United States v. New Mexico and Sierra Club v. Block*, 9 PUB. LAND L. REV. 127-144 (1988).
107. Johnson, *supra* note 106.
108. *Arizona v. California*, 373 U.S. 546 (1963).
109. *United States v. New Mexico*, 438 U.S. 696 (1978).
110. *Id.*
111. *United States v. Jesse*, 744 P.2d 491 (Colo. 1987).
112. *Sierra Club v. Block*, 615 F. Supp. 44 (D.Colo., 1985).
113. U.S. Dep't of Interior, Solicitor's Opinion #M-36914, Supp. III (July 26, 1988).
114. *Interior Water Right May Drown Colorado Wilderness Bills*, HIGH COUNTRY NEWS, Sept. 11, 1989, at 6. For an excellent article on the politics of reserved water rights for wilderness areas, see John D. Leshy, *Water and Wilderness/Law and Politics*, 23 LAND AND WATER LAW REVIEW 389 (1988).
115. *Sierra Club v. Watt*, 659 F.2d 203 (D.C.Cir. 1981).
116. See *Federal Water Rights*, 86 INTERIOR Dec. 553 (1979).
117. See *supra* note 111. The U.S. Forest Service presented a proposal to the Reserved Water Rights Compact Commission on November 20, 1986. Personal communication with Susan Cottingham, Reserved Water Rights Compact Commission, on September 7, 1989. The Reserved Water Rights Compact Commission was formed in 1979 for the purpose of negotiating with federal agencies and Indian tribes to quantify reserved rights.
118. See, House Bill 693, An Act Ratifying a Reserved Water Rights Compact Between the United States National Park Service and the State of Montana (pending in the 53rd Legislature, 1993).

119. U.S. BUREAU OF LAND MANAGEMENT, INSTREAM FLOW REQUIREMENTS FOR THE WILD AND SCENIC MISSOURI RIVER (1984).
120. Personal communication with Susan Cottingham, Reserved Water Rights Compact Commission, on (Sept. 7, 1989) (Some documentary information is on file with the Compact Commission).
121. See *In re the Matter of the Amended Application of the United States for Reserved Water Rights in the Platte River*, Case No. W-8439-76, District Court, State of Colorado, decided Feb. 12, 1993.
122. 16 U.S.C. § 839b(h)(1)(A) (1988).
123. NORTHWEST POWER PLANNING COUNCIL, STAFF ISSUE PAPER PROTECTED AREAS DESIGNATION (1987).
124. *Id.*
125. *Id.*
126. *Id.*
127. NORTHWEST POWER PLANNING COUNCIL, PROTECTED AREAS AMENDMENTS AND RESPONSE TO COMMENTS (Sept. 14, 1988).
128. *Id.*
129. *Id.*
130. *Id.* (Amendments to the Northwest Conservation and Electric Power Plan).
131. *Winters v. United States*, 207 U.S. 564 (1908). For a more complete discussion of Indian reserved water rights in Montana, see MacIntyre, *Quantification of Indian Reserved Water Rights in Montana: State Ex Rel. Greely in the Footsteps of San Carlos Apache Tribe*, 8 PUB. LAND L. REV. 33-59 (1987). See also the other articles in this volume.
132. Treaty of Hell Gate, 12 Stat. 975 (1959).
133. *Joint Bd. of Control of the Flathead, Mission and Jocko Irrig. Dists. v. United States and Confed. Salish and Kootenai Tribes of the Flathead Reserv.*, 832 F.2d 1127 (9th Cir. 1987).
134. *Id.*
135. *Id.*
136. MONT. CODE ANN. § 85-2-201 (1987).
137. *Id.*
138. See *Water Rights Compact—State of Montana, Northern Cheyenne Tribe, and United States of America* (June 11, 1991) as ratified by the *Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992* (Pub. L. No. 102-374, (1992)).

139. *Id.* at 20.
140. *Montana Coalition for Stream Access v. State of Montana*, 684 P.2d 1088 (Mont. 1984).
141. *Montana Coalition for Stream Access v. Curan*, 682 P.2d 163 (Mont. 1984).
142. *Galt v. State of Montana*, 731 P.2d 912 (Mont. 1987).
143. For an excellent review of these cases, along with the development of the public trust doctrine in Montana, see Thorson, Brown, and Desmond, *supra* note 6. See also Josephson, *An Analysis of the Potential Conflict Between the Prior Appropriation and Public Trust Doctrines in Montana Water Law*, 8 PUB. LAND L. REV. 81-114 (1987).
144. For a history of the public trust doctrine, including several recent cases, see THE PUBLIC TRUST AND THE WATERS OF THE AMERICAN WEST: YESTERDAY, TODAY, AND TOMORROW (Lewis and Clark Northwestern School of Law, November 19, 1988); see also *Natural Audubon Society v. Superior Court*, 33Cal.3d 419, 658 P.2d 709, *cert. denied*, 464 U.S. 977 (1983) (protecting lake levels in Mono Lake from diversions in California); *Kootenai Environmental Alliance v. Panhandle Yacht Club*, 105 Idaho 622, 671 P.2d 1085 (Idaho 1983) and *Shokal v. Dunn*, 707 P.2d 441 (Idaho 1985) (protecting recreation, aesthetics, water quality, and a range of wildlife values in Idaho); *Canihti v. Boyle* 107 Wash. 2d 662, 732 P.2d 989 (1987) (protecting fishing, boating, swimming, waterskiing, and related purposes in Washington); *United Plainsmen v. North Dakota State Water Conservation Commission*, 247 N.W.2d 457 (N.D. 1976) (protecting water supply fisheries, and future water needs in North Dakota); and *Robinson v. Ariyoshi*, 658 P.2d 287 (1982) (protecting all public resources in Hawaii).
145. See Wilkinson, *The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine*, 19 ENVTL. L. 425, 465-6 (1989).
146. *Montana Coalition for Stream Access v. Curran*, 682 P.2d 163 (Mont. 1984); *Montana Coalition for Stream Access v. State of Montana*, 684 P.2d 1088 (Mont. 1984).
147. See e.g., *Marks v. Whitney*, 491 P.2d 374, (Cal. 1971) (declaring trust purposes are far broader than traditional uses of navigation, commerce, and fishing, and include use as open space and wildlife habitat, and use for scientific purposes, hunting, bathing, and swimming); *Orion Corp. v. Washington*, 747 P.2d 1062 (Wash. 1987), *cert. denied*, 108 S. Ct. 1996 (1988) (declaring public trust rights include navigation, fishing, swimming, water skiing, and other related recreational purposes); and *Caminiti v. Boyle*, 732 P.2d 989 (Wash. 1987) (declaring fishing, boating, swimming, water skiing, and related purposes as trust values).
148. For a compilation of these cases, see Reed, *The Public Trust Doctrine: Is It Amphibious?* 107 ENVTL L. & LITIGATION 116 (1986).
149. See e.g., *Matthews v. Bay Head Improvement Ass'n*, 471 A.2d 355 (N.J. 1984).
150. See e.g., *Wade v. Kraemer*, 459 N.E. 2d 1025 (Ill. 1985).
151. See e.g., *Gould v. Greylock Reservation Comm'm*, 215 N.E.2d 114 (Mass. 1966). For a case extending the trust to a national park, see *Sierra Club v. Department of Interior*, 398 F.Supp. 284 (N.D. Cal. 1975).

152. *Robinson v. Ariyoshi*, 658 P.2d 287, 311 n. 34 (Haw. 1982).
153. *See supra* note 133. For a complete discussion and evaluation of this case, see Summerville, *The Shadow of the Mono Lake Decision in Montana*, 6 PUB. LAND L. REV. 203 (1985).
154. *United States v. State Water Res. Control Bd.*, 227 Cal Rptr. 161 (1986).
155. *CWC Fisheries v. Bunker*, 755 P.2d 1115 (Alaska 1988).
156. *Kootenai Environmental Alliance v. Panhandle Yacht Club*, 671 P.2d 1085, 1095 (Idaho 1983); *Shokal v. Dunn*, 707 P.2d 441, 451 (1985).
157. *United Plainsmen v. North Dakota St. Water Conserv. Comm.*, 247 N.W.2d 457, 416-63 (N.D. 1976).
158. Blumm, *Public Property and the Democratization of Western Water Law: A Modern View of the Public Trust Doctrine*, 19 ENVTL. L. 573 (1989).
159. *Id.* at 578.
160. MONT. CODE ANN. § 85-1-101 (1991).
161. MONT. CODE ANN. § 85-1-101(10) (1991).
162. MONT. CODE ANN. § 85-1-203 (1991).
163. *Id.*
164. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, STATE WATER PLAN DEVELOPMENT: A REVISED APPROACH (REPORT TO THE FIFTEENTH SESSION OF THE MONTANA LEGISLATURE, JANUARY 1987).
165. KAN. STAT. ANN.. § 82a-903.
166. The information presented in this section is based on the author's participation in the design and administration of Montana's state water plan. For a more detailed discussion and evaluation of the state water planning process, see McKinney *Designing Dispute Resolution Systems for Water Policy and Management*, 8 NEGOTIATION JOURNAL Spring 153 (1992).
167. Gov. of Mont. Exec. Order No. 20-86 (December 31, 1986) (creating the State Water Plan Advisory Council).
168. *Id.*
169. WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (February, 1988) at 2.
170. *See generally Id.*
171. *Id.* at 3.

172. MONT. CODE ANN. § 85-2-311(2)(c) (1991).
173. *See* WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, INSTREAM FLOW PROTECTION, STATE WATER PLAN ISSUE PAPER No. 2 at 33-5, 44 (April 15, 1988); MONTANA WATER PLAN--INSTREAM FLOW PROTECTION COMPONENT EXECUTIVE SUMMARY (RECOMMENDATIONS FROM THE EXPANDED INSTREAM FLOW PROTECTION TECHNICAL ADVISORY COMMITTEE, at 4-5.9 (May 16, 1988); WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (PRELIMINARY DRAFT) at 3 and 5 (1988); and WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (REVISED DRAFT), at 3-4 (1988).
174. *Supra* note 169 at 3.
175. Senate Bill 447, 51st Montana Legislature.
176. MONT. CODE ANN. § 85-2-316(9)(b) (1991).
177. MONT. CODE ANN. § 85-2-316(9)(c) (1991).
178. *Id.*
179. MONT. CODE ANN § 85-2-316(9)(d) (1991).
180. MONT. CODE ANN. § 85-2-316(10) (1991).
181. MONT. CODE ANN. § 85-2-316(11) (1991).
182. *See* WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, INSTREAM FLOW PROTECTION, STATE WATER PLAN ISSUE PAPER No. 2 at 35-8, 44-5 (April 15, 1988); MONTANA WATER PLAN--INSTREAM FLOW PROTECTION COMPONENT EXECUTIVE SUMMARY (RECOMMENDATIONS FROM THE EXPANDED INSTREAM FLOW PROTECTION TECHNICAL ADVISORY COMMITTEE, at 5-6, 9-10 (May 16, 1988); WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (PRELIMINARY DRAFT) at 3, 5 (1988); and WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (REVISED DRAFT), at 3-4 (1988).
183. *Supra* note 169 at 3.
184. *See* Board of Natural Resources and Conservation, *In the Matter of the Ten-Year Review of the Yellowstone Basin Water Reservations Issued in December 15, 1978: Notice of Conclusion of Review Process* (December 10, 1990).
185. *Supra* note 169 at 3.
186. *See* WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, INSTREAM FLOW PROTECTION, STATE WATER PLAN ISSUE PAPER No. 2 at 38-40, 45 (April 15, 1988); MONTANA WATER PLAN--INSTREAM FLOW PROTECTION COMPONENT EXECUTIVE

SUMMARY (RECOMMENDATIONS FROM THE EXPANDED INSTREAM FLOW PROTECTION TECHNICAL ADVISORY COMMITTEE, at 7-8, 10 (May 16, 1988); WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (PRELIMINARY DRAFT) at 4,6 (1988); and WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN MANAGEMENT SECTION: SUBSECTION ON INSTREAM FLOW PROTECTION (REVISED DRAFT), at 3-5 (1988).

187. MONT. CODE ANN § 85-2-404 (1991).
188. *See generally* text accompanying notes 140-142.
189. *Supra* note 169 at 3.
190. *See* House Bill 707, 53rd Montana Legislature, codified at MONT. CODE ANN. §§ 85-2-436, 437.
191. *Supra* note 169 at 4.
192. WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, MONTANA WATER PLAN, SECTION: WATER STORAGE (Dec. 1990).
193. *Supra* note 169 at 4.
194. For the legislative history of House Bill 707, see History and Final Status of Bills and Resolutions of the Senate and House of Representatives of the State of Montana, Fifty-First Legislature at 478 (Regular Session, Jan. 2, 1989 to April 21, 1989).
195. MONT. CODE ANN §§ 85-2-436, 437 (1991).
196. MONT. CODE ANN. § 85-2-437(1) (1991).
197. MONT. CODE ANN. § 85-2-437(2) (1991).
198. MONT. CODE ANN. § 85-2-437(3) (1991).
199. *See* Senate Bill 383, 53rd Montana Legislature (1993).
200. MONT. CODE ANN. § 85-2-436(2) (1991).
201. MONT. CODE ANN. § 85-2-436(2)(C) (1991).
202. MONT. CODE ANN. § 85-2-436(2)(d) (1991).
203. *Id.*
204. MONT. CODE ANN. § 85-2-436(2)(b) (1991).
205. *Id.*
206. *Id.*

207. MONT. CODE ANN. § 85-2-436(2)(g) (1991).
208. MONT. CODE ANN. § 85-2-436(2)(e) (1991).
209. *Id.*
210. MONT. CODE ANN. § 85-2-436(2)(e) (1991).
211. *Id.*
212. *Id.*
213. MONT. CODE ANN. § 85-2-436(2)(h) (1991).
214. MONT. CODE ANN. § 85-2-436(2)(f) (1991).
215. MONT. CODE ANN. § 85-2-436(2)(i) (1991).
216. MONT. CODE ANN. § 87-1-60(1) (1991).
217. Draft Agreement establishing the Montana Water Leasing Trust Fund, signed Nov. 10, 1989 by The Nature Conservancy and Nov. 16, 1989 by the Department of Fish, Wildlife and Parks.
218. COLBY, *INSTREAM FLOWS-ECONOMIC VALUES AND POLICY ALTERNATIVES* (1988). Colby generally argues that markets could do a better job of reflecting instream flow values if state laws permitted appropriation, purchase, and seasonal leasing of rights for instream maintenance by both public and private organizations. *See also* ANDERSON, *WATER CRISIS: ENDING THE POLICY DROUGHT*, at 91 (Cato Institute, 1983). Anderson argues that "state laws that prohibit the private ownership of water for instream use inhibit market solutions to instream use conflicts." With these prohibitions removed, Anderson suggests, we could move a long way toward efficient allocation and use.
219. The argument for private instream water rights is forcefully made by Gray, *A Reconsideration of Instream Appropriation Water Rights in California*, in *INSTREAM FLOW PROTECTION IN THE WEST*, (MacDonnell, Rice & Shupe, eds. Natural Resources Law Center, University of Colorado School of Law, 1989). The argument against private instream water rights is summarized by DeYoung, *Instream Flow Protection in a Water Market State: The Case of New Mexico*, *id.*
220. *Id.* Gray at 206-211
221. Recent legislation in Colorado (COLO. REV. STAT. § 37-92-102(3) (1991), Utah (UTAH CODE ANN. § 73-3-3 (1989)), and Wyoming (WYO. STAT. § 413-1007 (Supp. 1992)) has specifically sanctioned the transfer of water rights for instream flow enhancement. In 1987, the Oregon legislature provided an innovative twist to the transfer of water rights for instream purposes. The new law allows irrigators who conserve water to sell or use the historically retrievable losses, provided that 25 percent of the salvaged water is dedicated to the state for maintaining instream flows, if needed (OR. REV. STAT. § 537.348 (1988)).
222. *See Water Rights Lease Agreement Between the Montana Department of Fish, Wildlife and Parks and Donna B. and John O. Gray* (Oct. 7, 1992); *Water Rights Lease Agreement Between the Montana Department of Fish, Wildlife and Parks and Water Rights Holders* (Nov. 1992); and DEPARTMENT OF

NATURAL RESOURCES AND CONSERVATION, AUTHORIZATION TO CHANGE APPROPRIATION WATER RIGHT NO. 43B-V(W)035249-00 AND NO. 43B-V(W)005862-00 (both approved on Jan. 27, 1993).

223. See MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS, ANNUAL PROGRESS REPORT ON THE WATER LEASING PROGRAM (submitted to the Water Policy Committee, Board of Natural Resources and Conservation, and the Fish, Wildlife, and Parks Commission, Nov. 30, 1992): 3.
224. *Id.* at 3-4.
225. See MONT. CODE ANN. § 85-2-150 (1991). If a stream is classified as chronically dewatered, the water right holders on that stream must install measuring devices at all points of diversion within two years.
226. *Supra* note 1 and MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS, *Streams Investigated for Water Leasing Since Passage of House Bill 707* (Jan. 30, 1991)
227. Personal communication with Chris Hunter, Chief, Special Projects Bureau, Department of Fish, Wildlife, and Parks (April 13, 1993).
228. The implementation of the water leasing program during the first two years is examined in Matthew J. McKinney, *Leasing Water for Instream Flows: The Montana Experience*, 2 RIVERS (1991): 247-254.
229. See WATER RESOURCES DIVISION, DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, SUMMARY OF PUBLIC COMMENTS ON THE STATE WATER PLAN (Fall, 1988). Also see letters commenting on the state water plan on file at the Water Resources Division.
230. See *supra* note 228 at 252 outlining six reasons for the limited results during the first two years.
231. See Senate Bill 212 (52nd Montana Legislature, 1991).
232. See Senate Bill 425 (52nd Montana Legislature, 1991); *supra* note 228 at 252; and discussion and footnotes on pages 118-121 of law review article.

See S. Res. 425 (52nd Leg., xx Sess. (1991); *supra* note 228 at 252; and discussion and footnotes on pages 118-121 of law review article.
233. See generally McKinney, *Letting the Rivers Run: Toward a Model Instream Flow Program*, in SYMPOSIUM PROCEEDINGS ON HEADWATERS HYDROLOGY (American Water Resources Association, Missoula, MT, June 1989).
234. *Id.* See also Shupe, *Keeping the Waters Flowing: Stream Flow Protection Programs, Strategies and Issues*, in INSTREAM FLOW PROTECTION IN THE WEST, *supra* note 220.
235. See text accompanying notes 47 - 50.
236. Several western states have incorporated public interest criteria into their water use permitting and change processes, including Alaska (ALASKA STAT. § 46.15.080 (1991)), Arizona (ARIZ. REV. STAT. ANN. § 45-153 (1988)), California (CAL. WATER. CODE §§ 1243, 1253, 1255-58 (1971)), Idaho (*Shokal v. Dunn*, 707 P.2d 441 (1985)), Nevada (NEV. REV. STAT. § 533.370(3) (1986)), New

Mexico (N.M. STAT. ANN § 72-12-1 (1979)), Utah (UTAH CODE ANN. § 73-3-8 (1989)), and Washington (WASH. REV. CODE Title 75). Colorado and Oregon have yet to incorporate public interest criteria for reviewing new water use permits and changes in water rights.

237. This criteria might include a provision that allows water quality discharge permit holders to object to new permits and change applications so that they can maintain water instream for water quality purposes.
238. ALASKA STAT. § 46.15.080 (1991).
239. See *Shokal v. Dunn*, 707 P.2d 441 (Idaho, 1985).
240. See Water Resources Division, Department of Natural Resources and Conservation, (*Montana Water Plan Section on Integrated Water Quality and Quantity Management*) (Nov. 2, 1992).
241. MONT. CODE ANN., § 85-2-316 (1991).
242. For suggestions on how to improve this and other provisions of the reservation process as it applies to instream flows, see generally text accompanying notes 181-84.
243. See generally McKinney, *supra* note 233.
244. Several federal regulatory programs and permit conditions may be used to maintain existing flows, including Section 404 of the Clean Water Act (33 U.S.C. §§ 1251 - 1387, the Endangered Species Act (16 U.S.C. §§ 1531-44), Federal Energy Regulatory Commission permits (see *California v. Federal Power Commission*, 345 F.2d 917 (9th Cir. 1965) and 16 U.S.C. § 791(a)), and the Federal Land Management and Policy Act (43 U.S.C. 1761-71, 1982). For an explanation of how each of these strategies might be used to maintain existing flows, see generally McKinney, *supra* note 233.
245. Where only one or a limited number of public entities are authorized to appropriate unappropriated water for instream flows, private parties and other public entities may acquire offstream water rights and then donate them to the state's instream flow program. The Nature Conservancy has used this approach to maintain instream flows in Colorado, while the Water Heritage Trust, located in California, is expected to pursue this approach (see generally McKinney, *supra* note 233).
246. A final set to strategies to help maintain existing instream flows are those that prohibit new diversions from specified stream reaches. This may be accomplished by declaring a moratorium on new appropriations and depletions, as in Montana (MONT. CODE ANN. § 85-2-319 (1991)), Idaho (IDAHO CODE § 42-1736 (1990)), Oregon (OR. REV. STAT. § 536.410 (1988)), and Washington (WASH. REV. CODE Chap. 90.54 (1992) and § 75.20.050 (1962)). Another strategy to prohibit new diversions is to designate wild and scenic rivers, as authorized in California (CAL. PUB. RES. CODE §§ 5093.50-69 (1984)), and Oregon (OR. REV. STAT. §§ 390.805-925 (1988)). While these type of programs do not always result in the acquisition of formal water rights, they almost always prohibit new diversions and other developments that would threaten the instream resources at the time of designation. A similar program is the Northwest Power Planning Council's Protected Areas Program (see generally text accompanying notes 122-130).
247. Most western state instream flow programs allow only public entities, and typically only one state agency, to acquire and hold a water right for instream flow purposes (see generally McKinney & Taylor, *Western State Instream Flow Programs: A Comparative Assessment*, INSTREAM FLOW INFO.

PAPER NO. 18, U.S. FISH AND WILDLIFE SERVICE BIOL. REP. 89(2)(1988). Montana's reservation process is unique in that it allows any public entity, broadly defined to include state and federal government agencies, conservation districts, and municipalities, to acquire and hold a water reservation for a variety of purposes, including instream flows. Several states, however, also allow private parties to acquire and hold water rights for instream flow purposes, including Alaska (ALASKA STAT. § 45.15.145 (1992)), Arizona (see Dishlip, *Instream Flow Water Rights: Arizona's Approach*, in *INSTREAM FLOW PROTECTION IN THE WEST*, (MacDonnell, Rice, and Shupe, eds. Natural Resources Law Center, University of Colorado School of Law, 1989), and Nevada (see *State of Nevada v. Mirros*, No. 18105, Dec. 21, 1988). In Oregon, 25 percent of water conserved by offstream water rights must be allocated to instream flows, and private parties are allowed to retain ownership of the instream flow portion of the water right (OR. REV. STAT. § 537.348 (1988)). See generally Gray and De Young, *supra* note 219.

248. See e.g., COLO. REV. STAT. § 37-92-102 (1990), UTAH CODE ANN. § 73-3-3 (1989), and WYO. STAT. § 41-3-107 (1977).
249. For example, The Nature Conservancy is pursuing the acquisition of several senior water rights in the Yampa River basin to help maintain flows for endangered fish (Water Market Update, Oct. 1988 at 10); In 1989, a fishing club in Colorado leased 18 acre-feet of water to augment evaporative losses in a highly valued lake (Water Market Update, 1989); In Idaho, The Nature Conservancy recently purchased about 100 acres of wetland area and 6 cubic feet per second of water to maintain habitat for waterfowl (Water Market Update, April 1989 at 4); Finally, the Nevada Wildlife Federation recently purchased 35 acre-feet of water to maintain instream flows for waterfowl (Water Market Update, March, 1989 at 3). For a recent update on the acquisition of water rights for instream uses via the market, see Wigington, *Update on Market Strategies for the Protection of Western Instream Flows and Wetlands*, PROCEEDINGS OF A CONFERENCE ON MOVING THE WEST'S WATER TO NEW USES: WINNERS AND LOSERS (Natural Resources Law Center, University of Colorado School of Law, June 6-8, 1990).
250. In what is considered the first major donation of water rights for instream flow purposes, the Chevron Corporation recently donated to The Nature Conservancy a 300 cubic feet per second water right on a 26 mile stretch of the Gunnison River in southwestern Colorado (U.S. Water News, 1988). The water right will protect the spectacular Black Canyon of the Gunnison, preserve one of the best gold medal trout fisheries in the nation, and may lead to Wild and Scenic Rivers designation.
251. See text accompanying notes 75-81.
252. See generally text accompanying notes 189-193.
253. MONT. CODE ANN. § 85-2-419 (1991).
254. See OR. REV. STAT. § 537.348 (1988).
255. See e.g., COL. REV. STAT. § 37-92-103 (1990); UTAH CODE ANN. § 73-3-3 (1989); and Washington Senate Bill 5196 (1989).
256. MONT. CODE ANN. § 85-2-407 (1991).

257. See Colby, McGinnis, Rait, & Wahl, TRANSFERRING WATER RIGHTS IN THE WESTERN STATES — A COMPARISON OF POLICIES AND PROCEDURES (Natural Resources Law Center, University of Colorado School of Law, February, 1989).
258. *Id.* at 70.
259. *Id.*
260. Personal communication with LITER Spence, Montana Department of Fish, Wildlife and Parks, on Sept. 7, 1989.
261. *Supra* note 257 at 70-71.
262. COLO. REV. STAT. §§ 37-83-101 - 104 (1990).
263. WYO. STAT. § 41-3-106 (1986).
264. N.M. STAT. ANN. § 72-12-24 (1978).
265. UTAH CODE ANN. § 73-3-20 (1953).
266. *Supra* note 257 at 71-72.
267. Water Market Update, March 1989 at 3.
268. Two constitutional initiatives were discussed during the 51st Montana legislative session. For a summary of both initiatives, see generally, *Water-Rights Initiative Broader Than Failed Bill*, INDEPENDENT RECORD (April 5, 1989). During the debate on House Bill 707 in the 51st Montana legislature, there was a rumor that if something like House Bill 707 did not pass, certain interest groups were going to petition the state for a constitutional amendment that would require a minimum stream flow in all rivers and streams throughout the state. Such an amendment, if ever instituted, could radically upset the existing allocation and use of water in Montana. The overriding issue here is whether the state has the legal authority to take a usufructuary right to water away from someone who is beneficially using the water and to reallocate the water in light of changing social values. For a comprehensive discussion of this and other issues related to the public trust doctrine, see 19 ENVTL L. 3(1989). The entire issue is devoted to this topic.
269. See text accompanying notes 88-91.
270. *Supra* note 95.
271. See generally Rosgen, *A Stream Classification System*, in RIPARIAN ECOSYSTEMS AND THEIR MANAGEMENT: RECONCILING CONFLICTING USES (U.S. FOREST SERVICE, ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION, FIRST NORTH AMERICAN CONFERENCE, April 16-18, 1985, Tucson, Arizona, Gen. Tech. Report RM-20); Kondolf & Sale, *Application of Historical Channel Stability Analysis to Instream Flow Studies*, in PROCEEDINGS ON THE SYMPOSIUM ON SMALL HYDROPOWER AND FISHERIES (AMERICAN FISHERIES SOCIETY, May 1-3, 1985, Aurora, Colorado); and Orsborn & Anderson, *Stream Improvements and Fish Response: A Bio-Engineering Assessment*, 22 WATER RES. BULL. 3 (1986).

272. See David H. Getches, *Water Planning: Untapped Opportunity for the Western States*, JOURNAL OF ENERGY LAW AND POLICY 9(1988); and Charles F. Wilkinson, *Aldo Leopold and Western Water Law: Thinking Perpendicular to the Prior Appropriation Doctrine*, LAND AND WATER LAW REVIEW 24(1989): 1-38.
273. For example, the U.S. Forest Service's current efforts to identify and study river segments for inclusion in the national wild and scenic river program should be considered one management tool among several that could be applied to protect and manage instream resources (see text accompanying notes 96-100).
274. See Barwin & Slattery, *Protecting Instream Resources in Washington State*, in INSTREAM FLOW PROTECTION IN THE WEST, (MacDonnell, Rice, and Shupe, eds., Natural Resources Law Center, University of Colorado School of Law, 1989).
275. See Shupe, *Colorado's Instream Flow Program: Protecting Free-Flowing Streams in a Water Consumptive State*, in INSTREAM FLOW PROTECTION IN THE WEST, (MacDonnell, Rice, and Shupe, eds., Natural Resources Law Center, University of Colorado School of Law, 1989).
276. For an excellent discussion on enforcing water rights "at the headgate," see Shupe, *Water Rights Decisions in the Western States: Upgrading the System for the 21st Century*, WESTERN WATER POLICY PROJECT, DISCUSSION SERIES PAPER NO.4 (Natural Resources Law Center, University of Colorado School of Law, 1990). Shupe's basic observation and argument is that enforcing water rights "at the headgate" is based more on local cooperation and traditional water use patterns than simple adherence to the prior appropriation doctrine. The question is, how will instream flow water rights be incorporated and treated in this system of local, traditional enforcement of water rights.?

Nebraska Instream Appropriation Law and Administration

J. David Aiken

Instream appropriations have had a short and controversial history in Nebraska. Grudgingly authorized as part of a 1984 legislative compromise to increase state water project funding and to mediate environmental disputes regarding new water projects, Nebraska instream appropriation statutes have gradually evolved into an effective means for protecting instream values. Initially providing only modest methods for preserving streamflow, instream appropriation statutes have been strengthened by legislative oversights as well as through generally sympathetic administrative and judicial interpretations. This chapter first will briefly trace the development of Nebraska's 1984 instream flow legislation. The next part will describe the current instream flow statutes, administration and judicial interpretation. The chapter will conclude with an evaluation of Nebraska's instream flow protection policies.

Legislative History

Instream appropriations were only reluctantly granted entry into Nebraska water law, as a grudging response to successful environmental litigation stopping proposed water projects. In the 1970s several water projects in Nebraska or affecting Nebraska were stopped or delayed by successful environmental litigation under the National Environmental Policy Act and federal endangered species statutes.¹ Platte River projects in particular were subject to the 1978 federal designation of the central Platte River as critical habitat for several endangered species.² The realization that any water project involving the Platte River could be stopped on endangered species grounds made irrigation groups more sensitive to the need to somehow accommodate environmental interests so that water development projects could continue. Nebraska instream appropriation statutes were adopted in 1984 as part of an overall legislative program to mediate instream flow conflicts between water developers and environmental interests.³

The 1984 instream flow legislation authorized the Nebraska Natural Resources Commission (NRC)⁴ to obtain instream appropriations from the Nebraska Department of Water Resources (DWR). However, instream appropriations could be withdrawn by the DWR at the recommendation of the interagency Water Management Board (WMB)⁵ to accommodate new water projects. This "take-away" feature for instream appropriations was controversial but probably was politically required to enact any instream appropriation legislation in Nebraska.

The instream appropriation statutes were amended in 1985 to authorize Natural Resource Districts (NRDs)⁶ and the Nebraska Game and Parks Commission (GPC) to

apply for instream appropriations rather than the NRC. The GPC, given its wildlife management responsibilities, would be generally more sympathetic to protecting instream values than the NRC. Thus the 1985 amendments strengthened instream appropriation statutes. In 1991 the take-away provision was inadvertently repealed, further strengthening instream appropriations as a means for protecting instream values. Part of the 1984 instream flow compromise included increased state funding for water project development. The 1984 increased funding soon became the victim of state budget reductions. In addition, the WMB had taken a conciliatory stance on the Federal Energy Regulatory Commission (FERC) relicensing of Kingsley Dam,⁷ angering those who expected a more pro-irrigation WMB response. Consequently, irrigation interests persuaded the Legislature to terminate the WMB. In doing so, the take-away provisions authorizing the DWR to rescind a vested instream appropriation when the WMB so recommended in order to facilitate new water project development were also repealed.⁸ Ironically, this important result was probably not one sought by those causing the WMB's demise.

As a result of the 1985 and 1991 amendments, the instream appropriation statutes have evolved from a limited means for protecting instream values to a more effective means. While further changes are needed to reduce disputes between environmentalists and water developers, Nebraska's instream flow statutes now provide a meaningful method for protecting instream values.

Instream Appropriation Procedures

The first application for an instream appropriation was initially denied in 1987. The amended application was subsequently granted in 1989 by the DWR to the GPC for Long Pine Creek, Nebraska's highest-rated cold water fishery. The Long Pine instream appropriation and the instream appropriation statutes were sustained by the Nebraska Supreme Court in 1990. The first NRD instream appropriation (and the second instream appropriation) was granted in 1992 by the DWR to the Central Platte NRD for the central Platte River to protect critical habitat for several endangered species. The Long Pine and Central Platte instream appropriations are the only ones granted to date.

Parties and Definitions

Section 46-2,108 of the Nebraska Revised Statutes defines instream appropriation as "the undiverted application of the waters of a natural stream within or bordering upon the state for recreation or fish and wildlife purposes."⁹ Instream appropriations may be acquired by either the GPC or by an NRD for recreation or fish and wildlife purposes.¹⁰ Instream uses of water for fish and wildlife purposes are considered to be beneficial water uses, suggesting that other instream uses are not beneficial. However, other

instream values that would be protected by the instream appropriation are considered in evaluating its benefits.¹¹

Preapplication Proceedings

To acquire an instream appropriation, the applicant must conduct studies to specify stream segments with a critical need for instream flow protection. The study must quantify the instream flow needs for the identified stream segment.¹² The applicant must hold a public hearing on the instream appropriation in the affected area before an application is filed with the DWR.¹³

Instream Appropriation Applications

The application must include the stream location where the instream flows begin and end, and the time of year when flows are most critical. The application must also provide a detailed description of the amount of water necessary to provide adequate instream flows.¹⁴ The quantity sought to be appropriated may be only that amount necessary for recreation or fish and wildlife.¹⁵

Notice of the application must be published for three weeks, locally and statewide. Any person may object to the proposed instream appropriation and request a hearing within two weeks of the final publication of notice. The DWR may conduct studies of its own to evaluate an instream application.¹⁶

An application for an instream appropriation may be approved by the DWR director if the director finds that:

- there is unappropriated water available for appropriation;
- the appropriation is necessary to maintain the instream use or uses for which the appropriation has been requested;
- the appropriation will not interfere with any senior surface water appropriation;
- the rate and timing of the flow is the minimum necessary to maintain the instream use for which the appropriation has been requested; and
- the instream appropriation is in the public interest.¹⁷

The application may be granted for a rate of flow less than requested, or for a period of time shorter than requested.¹⁸

In making the public interest determination the director must consider:

- the economic, social, and environmental value of the instream use or uses including, but not limited to, recreation, fish and wildlife, induced recharge for municipal water systems, and water quality maintenance; and
- the economic, social, and environmental value of reasonably foreseeable alternative out-of-stream use of the water that will be foregone or accorded junior status if the appropriation is granted.¹⁹

Impoundments for Instream Appropriations

If the director determines that there is insufficient unappropriated natural flow available for the instream appropriation and if the applicant consents, the director must request the NRC to conduct a study to determine whether the instream flow needs can be met through the use of stored water in a new water storage facility. The study must address storage site availability, cost, and other appropriate findings and conclusions.²⁰ If the NRC determines that instream flows can be met through the use of stored water in a new facility, the instream applicant may request state financial assistance for construction of the storage facility. The cost of the project may be shared with any other users of stored water.²¹ Significantly, the instream flows impoundment study provision section 46-2,116.01 does not require the DWR to deny an instream appropriation application if the instream flows cannot be met entirely by natural flow.

Instream appropriations apply only to the stream segment for which the appropriation is granted. The stream segment and the determination of a reasonable and necessary amount of water required for instream flow purposes must be defined specifically by the DWR in the appropriation permit. After water has passed through the stream segment defined in the instream appropriation, the water is then available for further appropriation.²²

Instream Appropriation Administration

Instream appropriations will be administered in the same fashion as other appropriations except that the preference for junior natural flow appropriations over senior storage appropriations section 46-241 does not apply.²³ Instream appropriations are subject to cancellation for three years consecutive nonuse.²⁴ The statutory exceptions to cancellation are generally not applicable to instream appropriations.

Administrative and Judicial Interpretation

Long Pine Instream Appropriation

On December 14, 1989, the DWR granted in part a GPC instream appropriation application for Long Pine Creek.²⁵ The Long Pine appropriation is the first granted under Nebraska's 1984 instream appropriation statute. The first instream appropriation application was filed by GPC January 8, 1987 for Long Pine Creek, a tributary of the Niobrara River in northwest Nebraska. Long Pine is the state's highest rated cold water fishery, supporting rainbow and brown trout. GPC requested 11 cfs for the upper stream segment, 56 cfs for the middle segment, and 65 cfs for the lower segment. The application was vigorously contested by local irrigation interests. DWR dismissed the application as incomplete June 27, 1987, ruling that required public interest issues had not been addressed.²⁶ GPC refiled April 29, 1988, reducing its requested flows. This filing was approved by DWR for the middle and lower segments.

As set out above, the first criterion for instream appropriation approval is whether sufficient unappropriated water is available for instream appropriation.²⁷ In the case of *Long Pine*, the DWR director determined that ample unappropriated water was available, as average annual streamflow exceeded the quantities requested. DWR rejected irrigation district contentions that streamflow in Long Pine was primarily irrigation project seepage and thus unavailable for appropriation.²⁸

The second approval criterion is whether the appropriation is necessary to maintain the instream use.²⁹ DWR dismissed irrigation district arguments that the instream use was required to be threatened before water was "necessary" to maintain the instream use. DWR did rule, however, that because cold water fishery habitat in the upper segment was sparse, GPC had failed to show the instream appropriation was necessary to maintain a naturally reproducing trout fishery in that reach.

The third approval criterion is whether the appropriation will interfere with any senior appropriation.³⁰ The DWR director found no interference, rejecting irrigation district claims that the instream appropriation would interfere with its use of irrigation seepage water. The district did not show how it relied on seepage for part of its water supply.

The fourth approval criterion is whether the rate and timing of flow requested is the minimum necessary to maintain the instream use.³¹ DWR dismissed irrigation district arguments that GPC was required to prove that the quantity requested was the absolute minimum required to maintain the instream use. Regarding the methodology for determining instream flow requirements, DWR rejected GPC's evidence developed using the Instream Flow Incremental Methodology, concluding that GPC's implementation was flawed. However, DWR did accept anecdotal evidence of a fish kill

at flows greater than those requested by GPC, and evidence of streamflow requirements determined under the Tennant method.

The last approval criterion is whether the instream appropriation is in the public interest.³² Again, as set out above, public interest considerations include (1) the economic, social, and environmental value of the instream use; and (2) the economic, social, and environmental value of reasonably foreseeable alternative out-of-stream uses foregone or accorded junior status if the appropriation is granted.³³ The DWR director found that positive economic, social, and environmental value resulted from Long Pine instream uses. Objectors testified that the economic value of additional irrigation from Long Pine exceeded the economic value of instream uses. However, proponents testified that most irrigable land was already developed, and the remainder could be most economically irrigated with ground water. The DWR director concluded that the Long Pine appropriation would not interfere with reasonably foreseeable out-of-stream uses, did not conflict with state water use goals, and was in the public interest. The director noted that if a conflicting more beneficial use were subsequently proposed, the instream appropriation could legally be subordinated to the new use under the then existing take-away provision section 46-2,117.

Long Pine Supreme Court Decision

On appeal, the Nebraska Supreme Court affirmed the Long Pine instream appropriation, as well as the constitutionality of Nebraska's instream appropriation statutes.³⁴ The *Long Pine* decision is a strong judicial affirmation of both the instream appropriation statutes and DWR administrative procedures in granting instream appropriations.

Many issues were raised on appeal, including whether the Nebraska Constitution prohibited instream appropriations. Article XV, section 5 of the Nebraska Constitution states that "the right to divert unappropriated waters of every natural stream for beneficial use shall never be denied except when such denial is demanded by the public interest." Irrigation interests argued that this "right to divert" language showed that the framers of the Nebraska Constitution intended only to authorize appropriations that involved a physical diversion of water from the stream, and that uses not involving a physical diversion of water were therefore not legal. The Nebraska Supreme Court rejected this argument, reasoning that the "right to divert" language was included in the Constitution to clearly adopt the appropriation doctrine and reject the riparian rights doctrine.³⁵ The court also noted that, regardless of the original intentions of the framers of the Nebraska Constitution, the terms and provisions of the Constitution "are constantly expanded and enlarged by construction [i.e. judicial interpretation] to meet the advancing affairs of men."³⁶ The court further noted that in the only other western states with diversion language in their constitution, Idaho and Colorado, the state supreme courts

had approved instream appropriation statutes as not violating a constitutional water diversion requirement.³⁷

The court also ruled that the DWR had properly determined that unappropriated water was available for appropriation,³⁸ and that instream uses were not required to be "threatened" by new diversions before instream appropriations could be acquired.³⁹ Regarding the "minimum quantity necessary" language of section 46-2,115(4), the court ruled that the quantity appropriated did not need to be the absolute minimum required, but instead the amount needed to maintain the existing instream use.⁴⁰ Finally the court ruled that the Long Pine instream appropriations were in the public interest.⁴¹

Long Pine dashed the hopes of irrigators that instream appropriations were unconstitutional, violating the cherished but illusory constitutional right to divert. *Long Pine* removed any lingering doubts (or desires) that instream appropriations were not a legitimate part of Nebraska's appropriative system.

Platte River Instream Appropriation

On July 2, 1992 the DWR in a historic decision granted instream appropriations for the central Platte River, including the whooping crane critical habitat region, to the Central Platte NRD.⁴² The Platte endangered species critical habit area, designated by administrative order in 1978,⁴³ has posed a seemingly insurmountable barrier to upstream Platte River water development in Nebraska and Colorado. In an attempt to deal with the endangered species/instream flow issues plaguing the unsuccessful Prairie Bend I irrigation project, on July 25, 1990, Central Platte filed with the DWR instream appropriation applications to protect the whooping crane critical habitat.⁴⁴ The instream appropriations were designed to protect the endangered least tern, piping plover, bald eagle, and whooping crane, as well as the nonendangered sandhill crane. During summer low flow periods the critical species are terns and plovers, the only species with summer flow requirements.

The Central Platte application sought (and received) tern-plover flows of 500 cfs throughout the length of the critical habitat from August 23 to June 23, and 600 cfs from June 24 to August 22. The DWR granted these appropriations even though the 600 cfs summer flows have historically been realized no more than 29 percent of the time.

Approval of the tern-plover 600 cfs instream appropriation would seem to violate section 46-2,116(1), which states that instream appropriation applications shall be approved if "there is unappropriated water available to provide for the appropriation." In interpreting this provision the Nebraska Supreme Court in *Long Pine* stated "[a]lthough there may be occasions when the flow drops below that requested, absolute dependability is not required; the supply need only be 'fairly continuous and dependable.'"⁴⁵ In the Central Platte instream appropriation, the DWR approved

appropriations despite actual flows significantly below those requested because the instream use to be protected was able to exist despite regular low-flow periods:

Exhibits . . . indicate that flows of the Platte River are highly variable. Nonetheless, species identified with the [instream flow appropriation] applications and native to the Platte River have adapted to the fluctuating flow regime Barring drastic and lasting flow reductions, it is reasonable to conclude that each identified population will continue to use and to depend, at least in part, on habitat and food sources in the Platte Valley. Thus, whether requested flows pass a particular measuring station during much or very little of the time is not determinative. It is judged that the "fairly continuous and dependable" standard established [in] In Re Application A-15738, 226 Neb. 146, 410 N.W.2d 101 (1987), must be considered within the context of the applications at hand. To this reviewer, [the] applications . . . meet this standard.⁴⁶ [citation]

The DWR also suggested that, because the instream appropriations do not involve significant financial investment, the social cost of granting the appropriations despite an unreliable water supply is small in contrast to a traditional water project, where project sponsors could lose their investment.

The DWR interpretation of section 46-2,116(1) should significantly facilitate instream appropriations on streams where flows are erratic but the species to be protected are able to survive despite fluctuating streamflows. A literal interpretation of the section 46-2,116(1) sufficient unappropriated water available criterion would make it difficult to appropriate flows on streams where the desired flows are not available most of the time.

The DWR also suggested it would have granted larger crane instream appropriations if they had been requested. The DWR concluded that Central Platte's model indicated higher flows were needed to maintain crane habitat. However, the DWR ruled that Central Platte was bound by the lower amount requested in its application.⁴⁷ This raises the possibility that GPC may apply for an additional instream appropriation to increase the total crane instream appropriations to the maximum the DWR indicated it would approve.⁴⁸

Prospects for Instream Flow Protection in Nebraska

Several alternatives are typically available for protecting instream values under appropriation law, including instream appropriations, purchasing senior appropriations

for environmental purposes, using stored water to augment streamflow, and environmental litigation. Non-litigation alternatives are generally most desirable, as instream values are protected through the normal administration of water appropriations. In Nebraska, however, instream appropriations have only recently been established as a reliable method for protecting instream values.

Application Requirements

To appropriate water for instream flows the applicant must present detailed information regarding the costs and benefits of the proposed appropriation. No such balancing is required for general appropriations. Instead, the applicant must basically describe the proposed water use.⁴⁹ Applications for general appropriations may be denied if unappropriated water is unavailable, or if denial is demanded by the public interest.⁵⁰ However, the typical administrative practice is to grant uncontested appropriations without making specific water supply or public interest findings. More detail is, however, required for export appropriations and interbasin appropriations, and the required water supply and public interest information requirements are similar to those for instream appropriations.⁵¹

The section 46-2,115 water supply and section 46-2,116 public interest information requirements for instream appropriation applications are not unreasonable, but they do add an additional burden and expense on the applicant and thus discourage applications. A more equitable procedure would be to either extend the water supply and public interest application requirements to all appropriation applications or to delete these requirements for instream appropriation applications.

Streamflow Augmentation Options

Instream appropriations are only one way to protect instream values, although a fundamental method. Where sufficient unappropriated water is not available to meet instream flow needs, other options must be pursued. In most western states these options would include purchasing senior rights and converting them to instream appropriations, or augmenting streamflow with stored surface water or ground water. Only one of these options is available in Nebraska: purchasing stored water for instream flows.⁵² In Nebraska, natural flow surface appropriations can be purchased for use only in the same river basin and only for the same purpose as the original appropriation.⁵³ Thus, instream flow proponents cannot purchase senior irrigation direct flow appropriations and convert them to instream appropriations. Similarly, ground water may not be used off the overlying land in Nebraska except for municipal or industrial purposes and then only with DWR approval.⁵⁴ Thus, ground water apparently could not be pumped into a stream for flow augmentation. This lack of flexibility in Nebraska water law was recognized in a 1988 state study of water transfers and exports, and

legislation recommended to remove these restrictions on appropriation sales and ground water uses.⁵⁵ Unfortunately, these recommendations were not legislatively adopted. Implementing these recommendations would add considerable flexibility to Nebraska water law and would give resource managers, including instream flow proponents, additional options to accomplish water management objectives.

Conclusion

Nebraska instream appropriations are evolving into a more effective means for protecting instream values. The discriminatory take-away provision making any instream appropriation potentially subject to a junior storage project was inadvertently repealed in ending the short life of the ill-fated Water Management Board. The ability to use stored water for instream purposes was legislatively confirmed in 1992. All that remains to have a more comprehensive range of legal tools available to protect instream values is the ability to purchase existing appropriations and convert them to an instream use. The general inflexibility of Nebraska water law precludes this valuable option. Were this option available, however, environmental interests might be more likely to use their financial resources to purchase water rights for instream flows rather than engage in litigation, an outcome sought in the original 1984 instream appropriation legislation.

Notes

1. J. David Aiken, *New Directions in Nebraska Water Policy*, 66 NEB.L.REV. 8, 25-40 (1987) [hereinafter *New Directions*]; J. David Aiken, *Instream Appropriations in Nebraska*, in LAWRENCE J. MACDONNELL, ET AL (eds.), *INSTREAM FLOW PROTECTION IN THE WEST*, 313-20 (1989).
2. J. David Aiken, *Federal Appeals Court Requires Federal Energy Regulatory Commission to Consider Endangered Species in Relicensing Proceedings*, 1 RIVERS 150-51 (1990).
3. *New Directions*, *supra* note 1, at 58-69.
4. The NRC is Nebraska's water planning agency, whose responsibilities include promoting water development projects. NEB. REV. STAT. §§ 2-1504(1) -1507 (1991). The NRC is composed of 16 members, 13 river basin representatives elected by local natural resources districts (NRDs) and three gubernatorial appointees representing municipalities, surface water irrigators, and ground water irrigators. *Id.* § 2-1504(2). As most of the NRC commissioners represented NRDs, who in turn reflected predominantly agricultural interests, the NRC was not expected to acquire instream appropriations where they might conflict with water development interests. *See New Directions*, *supra* note 1, at 63-65, 67. Regarding NRDs, *see infra* note 6.
5. The WMB was a central feature of the 1984 compromise legislation. The WMB was authorized to resolve disputes between water developers and environmentalists and to force a water project compromise on the competing parties. NEB. REV. STAT. § 2-15,110 (repealed 1991). The WMB was also authorized to request the DWR to modify or rescind a vested instream appropriation if needed to accommodate a new water project. *Id.* § 46-2,117 (1988) (repealed 1991).
6. NRDs are regional conservation districts organized along river basin lines with broad soil and water management and development responsibilities, similar to the local soil and water conservation districts found in most states. NRDs are financed by a property tax and governed by a board of directors. J. David Aiken, *Nebraska Ground Water Law and Administration*, 59 NEB. L. REV. 917, 974-5 (1980). Directors are nominated by subdistricts, giving rural areas of an NRD disproportionate representation on the NRD board. This was reformed in 1987 when the population disparity among subdistricts was limited to 3-1 (i.e. an urban subdistrict may have no more than three times the population of a rural subdistrict). NEB. REV. STAT. § 2-3214 (1991). Pending legislation would require NRD subdistricts to be reapportioned on the basis of one person-one vote by 1996.
7. Regarding the Kingsley FERC relicensing, *see Aiken, supra* note 2.
8. NEB. REV. STAT. § 46-2,117 (1988) (repealed 1991).
9. *Id.* § 46-2,108 (1988).
10. *Id.*
11. *Id.* § 46-2,116(1) (1992). The other instream uses that may be considered are induced recharge for municipal water systems and water quality maintenance.

12. *Id.* § 46-2,109 (1988).
13. *Id.* § 46-2,110.
14. *Id.*
15. *Id.* § 46-2,108; The application fee is \$500. *Id.* § 33-105(2) (Supp. 1992).
16. *Id.* § 46-2,114 (1988).
17. *Id.* § 46-2,115.
18. *Id.*
19. *Id.* § 46-2,116 (Supp. 1992). In the initial Long Pine instream appropriation application, the DWR ruled in dismissing the application that an instream appropriation application must address all of the water supply and public interest factors required to be considered by the DWR in evaluating an instream appropriation application. Failure to address all issues will result in dismissal of the application. *In re Applications A-16533, A-16534, and A-16535*, Neb. Dep't of Water Resources (June 23, 1987).
20. NEB. REV. STAT. § 46-2,116.01 (Supp. 1992).
21. *Id.* § 46-2,116.02.
22. *Id.* § 46-2,118 (1988).
23. *Id.* § 46-2,119. Under NEB. REV. STAT. § 46-241 (1988) a junior direct flow appropriator may issue a call for water from a senior storage appropriator to stop storing water if the water is needed by the junior direct flow appropriator.
24. *Id.* §§ 46-2,119, 46-229.04.
25. *In Re Application A-16642*, Neb. Dep't of Water Resources, (Dec. 14, 1989), *noted in* J. David Aiken, *First Nebraska Instream Appropriation Granted*, 1 RIVERS 231-35 (1990).
26. *In re Applications A-16533, A-16534, and A-16535* Neb. Dep't of Water Resources, (June 23, 1987), *noted in* J. David Aiken, *Nebraska Department of Water Resources Denies First Instream Appropriation Application*, 1 RIVERS 67-9 (1990).
27. NEB. REV. STAT. § 46-2,115(1) (1988).
28. The director cited in this regard *Northport Irr. Dist. v. Jess*, 337 N.W.2d 733 (Neb. 1983).
29. NEB. REV. STAT. § 46-2,115(2) (1988).
30. *Id.* § 46-2,115(3).
31. *Id.* § 46-2,115(4).
32. *Id.* § 46-2,115(5).

33. *Id.* § 46-2,116 (Supp. 1992).
34. *In Re Application A-16642*, 463 N.W.2d 591 (Neb. 1990) ("Long Pine").
35. *Id.* at 599-603.
36. *Id.* at 600.
37. *Id.* at 602-05.
38. *Id.* at 605-08.
39. *Id.* at 608-09.
40. *Id.* at 609-11.
41. *Id.* at 611-13.
42. *In re Applications A-17004 through A-17009*, Neb. Dep't of Water Resources (July 2, 1992).
43. 50 C.F.R. § 17.95(b) (1992).
44. Regarding Prairie Bend I *see* J. David Aiken, *Central Platte Instream Appropriation Granted*, 25 WATER L. NEWSL. no.1, at 7 (1992).
45. *Long Pine*, *supra* note 34, 463 N.W.2d at 606.
46. *In re Applications A-17004 through A-17009*, *supra* note 42, at 7.
47. *In Long Pine*, *supra* note 36, the Nebraska Supreme Court stated that the DWR "director is not empowered to grant a larger [instream] appropriation than that requested." 463 N.W.2d at 611.
48. At this writing the GPC has conducted the preapplication hearings on a new lower Platte River instream appropriation but has not yet formally filed its application with the DWR. Central Platte NRD has opposed the proposed application as effectively tying up the remaining unappropriated water in the Platte.
49. NEB. REV. STAT. § 46-233(2) (1988).
50. *Id.* § 46-234.
51. *Id.* §§ 46-233.01, 46-289.
52. *Id.* § 46-252 (Supp. 1992). This statute was amended in 1992 to clarify the authority of the Central Nebraska Public Power and Irrigation District and the Nebraska Public Power District to release stored water for instream purposes to comply with FERC relicensing conditions. Regarding the Kingsley FERC relicensing of *see* Aiken, *supra* note 2.
53. *Id.* §§ 46-290 to -294 (1988).
54. *See* Aiken, *supra* note 6 at 986-8.

55. Report on the Water and Water Rights Transfers Study, Nebraska Water Management Board, (1988); J. David Aiken, *Selling Nebraska's Water in* RUSSELL L. SMITH, ed., NEBRASKA POLICY CHOICES, 89-129 (1988).

Protecting New Mexico's Instream Flows

Tim DeYoung

Introduction

For a significant portion of its journey through New Mexico, the Rio Grande is an artifice, a flood control channel that only fills during runoff each Spring. Much of its flows are diverted into countless ditches and canals beginning in Northern New Mexico's apple orchards and stretching to the chile fields of the Mesilla Valley. Like many rivers throughout the West and all of New Mexico's major rivers, the Rio Grande has been engineered to allow for diversions, to control floods, and to deliver a sure supply of water to meet interstate and international compact obligations. The river's value as a critical natural habitat has not been fully appreciated until recently.

The prior appropriation doctrine was designed to permit, if not encourage, diversions from streams and rivers. The doctrine persists in New Mexico without major modifications. Obviously, leaving water in streams and rivers is valued for riparian habitat preservation, recreation, aesthetics, navigation, and water quality. The legal right to divert streamflows and change the point of diversion to upstream diversion points has the potential to reduce flows in a stream section to the detriment of instream values. Groundwater withdrawals from steam-related aquifers similarly can dewater fragile riparian habitat. Not surprisingly, the appropriation doctrine increasingly is criticized for disregarding instream values. New Mexico has been singled out for its alleged failure to protect instream flows.¹

New Mexico admittedly is one of the few states that still does not recognize instream flows as a protectable beneficial use of water. Instream flow legislation has been proposed for several years but none of the proposals has become law. Why hasn't New Mexico passed legislation to protect instream values? When I wrote the first version of this chapter in 1988, I hypothesized that legislation had failed primarily because recognizing instream flow water rights fundamentally would alter the state's regulatory strategy for managing water, a strategy of limited governmental controls coupled with heavy reliance upon private water rights markets. In a subsequent article about another failed attempt to enact instream flow protection in 1989, I further posited

¹ This chapter initially was based on research conducted for the Executive Committee of the New Mexico Department of Agriculture. The revisions are the result of individual research, the time for which was made possible by my employer, Modrall, Sperling, Roehl, Harris & Sisk, P.A. The views expressed belong solely to the author. Special thanks are due to Greg Ridgley, Charles DuMars, Tom Bahr, Lana Dickson, Larry MacDonnell, Eluid Martinez, Michael Hatch, D.L. Sanders, Bill Sayre, and Ramona Gallegos.

that New Mexico's fondness for the status quo mitigates against significant policy change, especially in the water policy arena.²

Both of these reasons continue to be valid in my opinion as an increasingly vocal coalition of rural-based water users continue to block proposed legislation. Another possible reason explored in this updated chapter is that the current system—broadly defined to include federal, as well as state, laws, policies, and programs—provides *de facto* protection as well as opportunities for further protection of instream flows. The history of failed efforts to enact instream flow legislation, discussed below, still is useful material for both proponents and opponents of instream flow water rights. Alternative means within state law to protect instream flows also are presented. Additionally, a more comprehensive view of federal policies and programs is in order because recent developments suggest that the protection of endangered fish species, critical riparian habitats, and water quality are important objectives on the federal policy agenda.

Because creating instream flow rights could affect established water rights and increase regulatory costs, the opposition to recognizing instream flow water rights has remained staunch. Recent state and federal efforts have emerged to protect the state's riparian habitats in the absence of state instream flow legislation. Throughout the state, federal and state agencies, task forces, and private groups have initiated a variety of programs to protect and enhance the state's streams and rivers. Although much work remains, New Mexico clearly has entered into a new era of water management, one that is much more attuned to the protection of riparian environments. Whether these programs will be effective is an open question.

Attempts to Enact Instream Flow Protection Legislation

Not unlike desert wildflowers, instream flow bills have appeared nearly every year in the New Mexico Legislature, only to wither and die by the end of the session. In 1992 and 1993, no instream flow bills appeared. Unsuccessful attempts have been made to amend state water statutes so that the use of water for instream flow purposes is a declared beneficial use. Other bills simply provided that no diversion of the water from its natural channel would be required to maintain a water right where the water is used for the propagation or maintenance of fish and wildlife. Both of these approaches presumably would allow for private ownership of instream flow water rights. In contrast, consideration has been given to an approach that would allow a designated public agency to propose critical stream segments for protection but would not create instream flow water rights.

Declaring Instream Use Beneficial

House Bill 228, introduced in 1977, simply declared that the use of water for instream flow purposes is beneficial.³ The New Mexico State Constitution provides that

beneficial use shall be the measure, the limit, and the right to use water.⁴ If using water instream is beneficial by law, then one could claim an instream flow water right. Although the Constitution and water law statutes do not enumerate beneficial uses, state courts had long held that any use of water that is necessary for a useful purpose, including recreation, meets the beneficial use standard.⁵ Instream flow advocates probably sponsored this bill to prevent a ruling by the State Engineer that leaving water instream was not a legally beneficial use.

In response to the bill, then State Engineer Steve Reynolds provided an extensive list of objections that have been repeated by opponents ever since. He first questioned the wisdom of redefining "beneficial use" by statute, rather than by constitutional amendment. He also questioned the need for such legislation because, in his view, case law probably supported instream flows and the use of water for fish and wildlife, recreation, and aesthetic purposes as beneficial uses.⁶ Mr. Reynolds further argued that, if created, instream flow rights should only be owned by a state agency that "could carefully consider the public interest before making a filing." Finally, Mr. Reynolds warned that if instream flow rights were to be created, then a claim could be made that the right had a priority date of "time immemorial" unless such rights were assigned a priority date such as the effective date of the act.

In retrospect, statutory recognition of instream flows as a beneficial use of water was a simplistic approach that might have been a catalyst for extensive regulatory reform. One hurdle would have been quantification. To quantify diversionary rights, state regulators have only had to determine the amount of water needed. To protect instream uses, regulators also may need to determine water quality, seasonal variations, and depths of flows. For these reasons, quantifying the instream flow right remains a daunting task even in those states that have implemented programs.

In lieu of exact measurement of each surface water diversion, New Mexico has regulated diversions by estimates of the duty of water. The duty of water needed for beneficial irrigation is a function of cropping patterns, soil types, on-farm conveyance facilities and related factors. If, for example, a farmer needed to divert three acre-feet for each acre of alfalfa, then his farm delivery right would be a function of the number of acres he owned times the duty of water. But what is the duty of water for instream use?

The measure of an instream use is generally considered to be the "minimum" streamflow. Minimum streamflow can refer to the "natural" flow, the amount subject to seasonal, cyclical, and irregular fluctuations, or to a preservation flow, the amount needed to preserve existing levels of fish, wildlife, and recreational uses.⁷ If the measure of beneficial use is the preservation flow, then merely leaving water instream may be insufficient. Whenever natural fluctuations reduce stream velocity, increases in water temperature or decreases in quality or depth might destroy aquatic habitat. Also, seasonal or other fluctuations in flows might subvert an instream right owner's ability to "use" the water beneficially. In consequence, instream flow rights, to be effective, may

require preservation flows which in turn will require specific guarantees not required for traditional water rights.

A relatively simple but often very costly solution for providing preservation flows is to build upstream storage facilities.⁸ Storage can "save water" for use in dry seasons and enhance the ability to control temperature and quality by regulating releases. Another solution, one favored by some instream flow advocates, is to settle for natural flows. This of course might limit instream flow designations to those stream segments that historically have had sufficient flows to support fish habitats. At the same time, legislators may be more likely to support such a bill, especially if there is no request for an appropriation for storage.

In any event, legislative proposals have failed to indicate how the beneficial use standard is to be applied to instream flows. In Wyoming, instream flow legislation clearly indicates: "waters used for the purpose of providing instream flows ... shall be the minimum flow necessary to establish or maintain fisheries."⁹ Adoption of the preservation flow concept is accompanied by provisions that both allow for storage and require a specific definition of the minimum amount required for a specified stream segment. House Bill 228 and subsequent New Mexico legislation pale by comparison.

Waiving the Diversion Requirement

Constitutional and statutory language expressly or implicitly requiring artificial diversions reflects the West's rejection of the riparian rights doctrine.¹⁰ The physical diversion of water traditionally served a regulatory purpose by giving notice to would-be appropriators that an established right existed at a particular location. Because instream flows are diversion-less, one influential water expert several years ago concluded: "[t]he requirement of an actual diversion is the major doctrinal barrier to the recognition of instream flow appropriations."¹¹ The diversion requirement has been removed in most of the western states and there are recent indications that in New Mexico, the State Engineer will not oppose an application to change water rights on the grounds that there is no physical diversion.¹²

House Bill 64, introduced in 1987, represents one of many attempts to remove the diversion requirement in New Mexico.¹³ Like earlier bills,¹⁴ instream flows were to be protected by allowing any appropriator to possess water rights without a diversion if used for the propagation or enhancement of fish and wildlife. Introduced by a Santa Fe legislator, Max Coll, House Bill 64 was supported by the Sierra Club, the Conservation Voters Alliance, and the New Mexico Wildlife Federation.¹⁵ After introduction, it was amended significantly by the House Agricultural Committee. The agricultural committee version retained the diversion exemption but added several qualifications.¹⁶ The substitute bill passed the committee and the House, but died in the Senate.

During his tenure, State Engineer Reynolds consistently questioned whether waiving the diversion requirement was constitutional.¹⁷ In 1972, the New Mexico Supreme Court in fact held that a man-made diversion, among other things, is necessary to establish agricultural water rights.¹⁸ However, an unpublished letter from an assistant attorney general concludes that only agricultural water rights require a diversion structure.¹⁹ Authority and practice in other states further suggest that a state legislature pursuant to its plenary power constitutionally may waive the diversion requirement by passing instream flow legislation.²⁰

Diversion-less water rights also have been opposed because state waters might be "lost" to downstream states. As one opponent of House Bill 64 noted, for example, if the last several miles of the Gila River in New Mexico were governed by an instream flow right, then deliveries to Arizona would be increased regardless of New Mexico's entitlement to interstate waters.²¹ Ironically, instream flows on the Gila may increase due to federal efforts to protect critical habitat for endangered or threatened species and a similar program is being implemented on the San Juan River in northwest New Mexico.²²

Private Ownership of Instream Flow Water Rights

Proposed legislation also has been opposed on the grounds that the right to acquire and own instream rights should be limited to a state agency. Steve Reynolds argued that public ownership was the best means to serve the public interest:

[T]here is serious question whether private individuals or corporations should be given the power to make filings that could so profoundly affect the public interest in the management and use of the waters of the state. If instream rights are to be recognized in New Mexico, careful consideration should be given to provisions that would limit such rights to a state agency that could carefully consider the public interest before making a filing, and perhaps have the power to relinquish any instream rights if and when it appeared to interfere with development and use of water that is in the public interest.²³

In response, instream flow legislation subsequently was proposed that provided for exclusive public ownership with provisions for relinquishment.

Private ownership of instream flow rights generally has been prohibited in an overwhelming majority of the western states.²⁴ Notwithstanding the fact that there may be private claimants willing to act as public trustees, most states have decided that only public agencies should be permitted to protect what are essentially public benefits.²⁵ In

Arizona, private appropriations of instream flows have been allowed on a limited basis.²⁶ New Mexico may follow the Arizona example to the extent that the Arizona approach is seen as a way to protect instream values without raising the tax burden on New Mexico citizens and to the extent that private ownership is politically and legally acceptable.

State Agency Appropriation For Instream Flows

In November, 1985, then Governor Anaya appointed a team of top state officials to draft a bill to provide for "minimum flows in streams and rivers in New Mexico."²⁷ In addition to the State Engineer, the team included the Secretary of the Natural Resources Department and the Director of the Game and Fish Department (hereafter Game and Fish). Although the bill was not submitted to the legislature, it merits consideration.

An initial draft of the bill provided that only Game and Fish could acquire diversion-less instream flow rights through purchase, lease, or gift, but not condemnation.²⁸ The State Engineer would be required to provide a water master to monitor affected stream reaches. The rights would only be for in-state use and would become available for consumptive use should conditions change, as determined by the State Engineer. In response to the proposal, the State Engineer recommended several modifications, including allocating the costs of new water masters to the Department of Game and Fish, allowing Game and Fish to sell the instream right at the direction of the Game and Fish Commission, and requiring that any additional metering, evaporation, and infiltration measurements would be provided by Game and Fish.²⁹ Although the State Engineer's modifications primarily concerned the allocation of regulatory costs, they were to prove decisive.

Game and Fish was concerned that the State Engineer's changes would in effect create a second class water right that would be more expensive to protect than normal diversionary rights. Similarly, the Natural Resources Department could not understand why estimation was sufficient for diverted rights but monitoring would be necessary for instream rights. Because of these and other problems, the team recommended to the Governor that they preferred not to submit the legislation.

The nearly proposed legislation is distinctive in its attempt to carefully delineate the allocation of costs and the acquisition and ownership of rights. Two major defects found in the prior New Mexico legislative approaches would have been addressed. First, instream rights could only be acquired by a state agency, Game and Fish, that would coordinate its instream flow program with other water management objectives including maximizing in-state use and minimizing impacts on existing rights owners. Second, the purposes of the physical diversion requirement could be served by using a combination of water masters and extensive monitoring wherever nondiversionary rights were established.

The disagreement over who should pay may reflect the state's limited financial resources. The state "water budget" has been exhausted in recent years due to ongoing stream adjudications, litigation with Texas, and the State's nascent regional water planning program. To protect instream flows without affecting existing water rights, a well-designed, comprehensive and therefore costly effort may be required. Legislators thus are confronted with equally unattractive options: either appropriate sufficient capital or require existing agency budgets to absorb the regulatory costs of instream flow protection. The third option, do nothing, so far has been far more attractive.

Protection of Critical Streams

After the Anaya initiative failed in the 1988 session, state officials continued to develop a comprehensive instream flow protection proposal. In late December 1988, a draft bill supported by environmental groups appeared in the state Senate.³⁰ Remarkably, the draft included the most objectionable features of past failed bills including removal of the diversion requirement and private ownership of instream flow water rights. The bill was dropped, at least in part due to negotiations with sponsors of an alternative bill that was subsequently introduced as the Instream Flow Protection Act (the act).³¹

Rather than creating instream flow water rights, the proposed act would have protected instream flows by prohibiting new diversions in specified stream segments. An inventory of potential sites above existing diversions first would be conducted by the State Game Commission in consultation with the State Engineer. After public hearing, specific stream segments would be recommended to the legislature. Protecting legislatively designated segments would become the responsibility of the State Engineer who could either deny or place limitations on new water diversions at or upstream from the segments.

An important feature of an initial draft of the act, the limitation of designations to stream segments above existing diversions, was criticized because no protections would be provided for stream segments below existing diversions. An amendment to the act provided for the study of other protection or enhancement measures for stream segments which are "substantially affected," i.e. "downstream from" existing diversions. Emerging from Senate Committees with a "do pass" recommendation, the amended act passed the Senate and went on to the House. After passing the House Agriculture Committee, the act died at the eleventh hour of the session in the Appropriations Committee.

The act's demise apparently was not caused entirely by the act's substantive features. Representative Max Coll, author of the simpler House Bill 64 (to remove the diversion requirement), saw the act as an attempt to forever block the creation of effective instream flow protections.³² Coll explained that the act's supporters included the State Engineer and agricultural water user groups, the same people and organizations

who had blocked his earlier attempts to create instream flow water rights. Ironically, the State Engineer's memo on the act was not supportive.³³ But perception is sometimes more important than reality, especially in politics.

Although attempts were made to introduce instream flow legislation in the 1990 and 1991 sessions, none of these efforts were successful.³⁴ In the 1991 session, a bill substantially similar to the Instream Flow Protection Act of 1989 was introduced.³⁵ The State Engineer took the position that the bill was acceptable and no opposition was raised in the Senate Conservation Committee. However, after the Senate Conservation Committee sent the bill on the floor with a "do pass" recommendation, the bill died even though the similar 1989 bill had passed the Senate. Opposition apparently came from representatives aligned with New Mexico's acequias or water ditch associations that predominate in the north central part of the state.³⁶

Summary

In the 1992 and 1993 sessions, no instream flow protection bills were introduced as proponents of instream flow protection gave up or pursued other means. The legislative history is littered with several unsuccessful efforts to modify New Mexico's approach to water management. Except for attempts to protect instream values by designating critical stream sections, proposed legislation has been ill-designed, providing little guidance for the introduction of a new and essentially different water right. Moreover, advocates apparently assume there is a crucial need but this assumption does not seem to be founded on empirical studies of the problem. Consequently, the debate has been largely symbolic, a clash between competing ideologies.

Instream Flow Protection Opportunities Under State And Federal Law

Tools and Opportunities For Instream Flow Protection

The potential for instream flow problems appears to be directly proportional to the number of legally permissible physical opportunities for diversions. Where increasing demand requires more diversions, then instream fisheries are threatened. The debate over instream flows can be enhanced by an accurate and comprehensive assessment of specifically threatened locations, but no such assessment has been disseminated.³⁷

A consistent theme in the opposition to instream flow legislation is the view that law and practice provide sufficient protection. For example, State Engineer Reynolds repeatedly observed that significant quantities of water are left instream throughout the state:

The streamflow required at various points in the State is governed by interstate compacts, international treaties, federal court decrees, water rights conferred by the State ..., and legislation authorizing federal water development projects. In many situations, an incidental effect of these institutional constraints is an instream flow having important value in terms of recreation, fish and wildlife habitat and aesthetics. Furthermore, in many areas of the State the geography and public land ownership patterns adequately protect instream values. Mountain streams generally do not provide favorable sites for conservation storage and beneficial use of water.³⁸

Opponents continue to assert that sufficient *de facto* instream protections exist.

Protections may not be needed where diversions upstream from existing fisheries or riparian habitats are prohibited or impractical. For example, stream headwaters on federal and state lands often are left in their natural state. While new diversions in or near headwaters are possible on national forest and Bureau of Land Management lands, federal agencies increasingly are reluctant to allow diversions which threaten instream flows.³⁹ In contrast, protection may be needed on private lands to prevent future diversions in these locales.

Although it is true that by law New Mexico must deliver certain amounts of water to downstream users including Texas, Arizona, Colorado, and Mexico, instream flow values may be threatened or destroyed below reservoirs when releases are scheduled without consideration of impacts upon riparian habitats. For example, minimal releases during winter months may harm trout fisheries in tailwaters below reservoirs whereas high flows during the spring run-off can decimate nesting habitat of migratory birds downstream. Water rights owners as well as state or local water agencies generally have little say because reservoir releases are controlled by federal agencies on New Mexico's major rivers.⁴⁰

Using Existing State Law

Even without the recognition of instream flow water rights, New Mexico's prior appropriation system provides several opportunities for instream flow protection. One promising approach is the relaxation of the use-it-or-lose-it doctrine. In New Mexico, four years of continued and unexcused non-use may result in forfeiture.⁴¹ The common law doctrine of abandonment also is recognized where water rights may be lost upon a showing that the owner intentionally relinquished the rights. Abandonment and forfeiture penalties for non-use may provide an incentive for water rights owners to continuously divert their full entitlement of water even when all of the water is not

needed and even if the diversion is detrimental to riparian habitats. Pursuant to a 1991 amendment, an exemption from forfeiture is available when water rights are acquired and placed in a water conservation program approved by the State Engineer.⁴² Consequently, it may be possible for conservancy districts, community ditch associations, or the Interstate Stream Commission to acquire water rights and place them in a water conservation program to protect instream flows.

An instream flow right might be created simply by transferring an existing water right to an instream use. State Engineer Eluid Martinez has suggested that a properly constructed application might be approved by his office.⁴³ Because the use of water for fish, wildlife and recreation purposes has been recognized as a beneficial use, the major hurdle would appear to be the diversion requirement, assuming that the transfer would not impair existing rights or be contrary to the public welfare. If successful, the water right could not be forfeited or abandoned because beneficial "use" occurs automatically by leaving the water in the stream.

Protecting Instream Values By Using Public Trust and Public Welfare Limitations

State water codes uniformly include public interest or public welfare criteria whereas the public trust doctrine derives primarily from common law traditions.⁴⁴ Relatively few states have used the public trust doctrine to protect instream values but some recent cases suggest the doctrine has great potential as a tool for environmental protection advocacy.⁴⁵ New Mexico litigants have not yet challenged water diversions on public trust grounds. In contrast, instream flow protection may be achieved in New Mexico on public welfare grounds.

Public welfare considerations potentially may be used in New Mexico to limit water rights transfers. Pursuant to 1985 amendments, New Mexico allows the State Engineer to consider public welfare in water rights transfers and standing requirements for protestants have been relaxed.⁴⁶ These amendments were not introduced to protect instream flows; the legislative intent seems to have been to respond to a clear and present danger, the thirst of El Paso. Nevertheless, any substantially and specifically affected person can protest proposed transfers and the State Engineer has the authority to deny or condition those transfers that threaten instream flows if he concludes the transfer would violate the public welfare or water conservation requirements. Instream flow values therefore might be protected, but there are no guarantees.

Protecting instream flow values by employing public welfare scrutiny has distinct advantages because water rights transfers and appropriations would not be allowed where instream values would be harmed. At the same time, instream flow rights would not be required. Many states explicitly include protection of instream values in statutory definitions of public interest factors.⁴⁷ Others, including New Mexico, do not define the

term, but leave its application up to administrative discretion. A statutory definition of public welfare values explicitly recognizing instream flows therefore may be desirable.

Arguably, allowing individuals or state agencies to purchase upstream diversionary rights in order to increase existing streamflows is a voluntary, market-based solution to the problem. However, in many locales water rights transfers may allow for urban exploitation of rural areas. In New Mexico, upstream water rights often are owned by Hispanic, subsistence farmers whose families have been using and maintaining community ditch systems or acequias for hundreds of years. Theoretically, urban-based white water rafters who want to enhance natural streamflows could purchase agricultural water rights and place the rights in an approved water conservation program. If the economic and social impact on the affected rural areas would be great, would the transfer be consistent with the public welfare?

With respect to the potential conflict between instream advocates and the acequias, the current State Engineer has pointed out that water transfers to instream uses might diminish the economic base of the community acequia. In his view, the acequias have considerable value to the state:

If we consider New Mexico's traditional Indian and Hispanic communities to be unique and that people visit here because of the Indian and Hispanic communities, should we consider state legislation that permits or establishes historical zones around these communities and makes it more difficult to transfer water rights out of those communities?⁴⁸

In any event, attempts to transfer water rights from acequias to augment instream flows are likely to be controversial.⁴⁹ The potential conflict may be overstated because the acequias and other irrigation ditches often enhance rather than destroy instream values by providing additional riparian habitat, open space, and in some locales, recreational opportunities for hikers, birdwatchers, and others who walk along the ditch.

To avoid actual conflict, many advocate the use of the state's ongoing water planning process. Beginning in 1987, the New Mexico Legislature has authorized funds for regional water planning and, since that time, over twenty plans have been initiated.⁵⁰ The 1993 legislature has endorsed the preparation of a state water plan which will complement the ongoing regional water plan process.⁵¹ The State Engineer expects that a key element of these plans will be the protection of instream flow values. Significant opportunities for instream flow advocates therefore will be available.

Protecting Streamflows By Conjunctive Use Management

In 1956 the State Engineer assumed jurisdiction over groundwater use in the Rio Grande Valley in order to protect surface rights as well as to facilitate the state's ability to meet its compact obligations.⁵² New Mexico, therefore, was one of the first states to implement conjunctive use management, an integrated approach to the management of interrelated surface and groundwater supplies. In declared groundwater basins, the State Engineer has the discretionary authority to grant groundwater permits subject to the retirement of surface water rights.

The retirement of surface water rights as a precondition to groundwater pumping can prevent depletion of surface water flows because generally, water percolates down through the soil to fill underground aquifers and then moves laterally to recharge stream beds. Over time, groundwater depletions inevitably will affect associated streams. However, uncertainty about the impact on the river of groundwater wells gives the office of the State Engineer considerable discretion in deciding whether to grant or deny groundwater applications.⁵³

Properly applied, New Mexico's regulation of groundwater can maintain the volume, but not necessarily the quality and timing, of flows in the state's rivers and streams. The State Engineer has taken an important step recently by promulgating new regulations that require the metering of groundwater withdrawals in critical basins. Eventually, surface water diversions also may need to be metered to prevent excessive diversions.⁵⁴

Using Project Water for Instream Flow Protection

The prior appropriation doctrine is only part of New Mexico water law. Another important tier is composed of the rules and regulations for the storage of "project" water, i.e., water stored in countless federal, state, and private reservoirs. Such reservoirs alter riparian habitats both above and below storage facilities. For example, catfish stocked in downstream reservoirs have decimated upstream native trout populations as far as ten miles from the storage facility. More obviously, storage facilities have altered the natural hydrograph of countless rivers by generally replacing high spring flows and low flows in winter and late summer with a regime of consistently high flows during the irrigation season and lower flows during the winter and spring.

Recently, releases from New Mexico reservoirs have been altered to enhance a variety of instream flow values. For example, proponents of the long-delayed Animas-La Plata Project, authorized by Congress in 1968, were dealt a damaging blow by the U.S. Fish and Wildlife Service (the Service) in October, 1991. The Service determined that the impacts of the proposed project, which would alter the flows of the Animas and La Plata Rivers in La Plata County, Colorado and San Juan County, New Mexico, would jeopardize the continued existence of endangered fish including the Colorado Squawfish. However, the Service concluded that the project could proceed without jeopardy if a

number of steps were taken, including reoperation of Navajo Dam to replicate historic flow conditions and implementation of a recovery program.

A similar program has been initiated for other rivers in the Upper Colorado River Basin. These programs require mimicry of pre-dam streamflows so that the prior practice of steady and controlled releases from dams throughout the year is replaced with a program of releases intended to imitate the pre-dam hydrograph of high spring flows and low winter flows.⁵⁵ Although the success of the recovery program is undetermined, it provides a good example of instream flow protection without the creation of instream flow water rights.

On the Rio Grande, the Bureau of Reclamation (Reclamation) recently has acknowledged that its river channelization and straightening programs, in operation for decades, have had adverse environmental impacts.⁵⁶ In a 1992 impact statement concerning river maintenance for the Rio Grande, Reclamation recognizes that meandering rivers accommodate a wide range of flows and have riffles and pools that both help contain sediment and provide aquatic habitat. In contrast, straightened rivers and channels may be detrimental to riparian vegetation and wildlife habitat and are often aesthetically displeasing. Reclamation's reorientation appears to stem in part from Executive Orders 11988 and 11990 which charge Reclamation to avoid, where possible, modification of flood plains and wetlands.⁵⁷ Instream values should benefit because vegetation destruction will be minimized, and the more stable banks will require less erosion maintenance. Moreover, pools and riffles will recover more quickly after high flow events. Reclamation's policy change not only promises to be more environmentally sensitive, but recurring maintenance costs are expected to be reduced.⁵⁸

With respect to Reclamation's river maintenance program, the Service recommends "creating instream flows in the Rio Grande for the entire project area."⁵⁹ In its view, the regulation of flows within the project area has gradually diminished the capability of the native cottonwood-willow community to sustain and perpetuate itself. Scouring flows during spring run-off had prepared seed beds and allowed for the dispersal of these native plants. By changing the natural hydrograph, invasive exotic plant species, primarily salt cedar, have taken over. Moreover, flows necessary for channel maintenance with volumes large enough to move sediment plugs are not available.⁶⁰

In response, Reclamation has made a number of environmental commitments to minimize impacts of its river maintenance and construction activities. However, Reclamation specifically objects to the Service's recommendation that developed and undeveloped lands should be acquired and options for creating instream flows in the Rio Grande should be explored. In its view, these recommendations "go well beyond the authority existing in the legislation mandating Reclamation to provide for the efficient transport of water and sediment to Elephant Butte Reservoir."⁶¹ Although Reclamation may not have the authority to acquire critical riparian lands, there is no question that it

can regulate flows as it does on the San Juan. In any event, a multi-agency task force which includes both Reclamation and the Service has been formed to preserve terrestrial and aquatic resources along the river.⁶² The possible designation of the silvery minnow as an endangered species promises to increase the pressure for alteration of the current flow regime.⁶³

A somewhat similar situation exists on the Gila River in southwestern New Mexico. In 1968, Congress authorized construction of Hooker Dam and Reservoir or a suitable alternative as a unit of the Central Arizona Project.⁶⁴ However, the authorizing legislation provides that additional consumptive use in New Mexico can be made only so long as it will not cause economic injury to any downstream water user. Reclamation initiated the Upper Gila Water Supply Study in 1982 to evaluate Hooker Dam and its alternatives. In 1986, the Service listed two fish species, the spike dace and the loach minnow, as threatened under the Endangered Species Act and is considering the designation of reaches of the Gila River and its tributaries as critical habitat for these fish. Although a subsequent study by Reclamation concluded that a water project might be developed in a manner that is consistent with protecting endangered fish species inhabiting the Gila River, the project has been deferred indefinitely until the economic returns of the project can be justified.⁶⁵ In the interim, the Service and private conservation groups are taking steps to protect this critical riparian habitat.

Cooperative solutions have been reached below and between a number of the state's reservoirs. On the Rio Chama, one of the tributaries of the Rio Grande, releases from the El Vado Reservoir (part of the San Juan—Chama Project) have been managed to help accommodate the recreational needs of rafters and boaters. At the same time, the State Engineer has established that, when the Rio Chama falls below 100 cfs during the irrigation season, the reservoir must be operated to pass all of the river's natural flows. Downstream irrigators must be protected because no storage can take place that deprives these senior water right owners of their lawful supplies.⁶⁶

Similar programs are being implemented throughout the state in response to initiatives by a variety of private and public actors. Although win-win solutions are possible in some cases, accommodation of competing interests typically will be difficult. For example, irrigators are best served by storing water during the winter to insure adequate supplies during the irrigation season. On the other hand, advocates of cold water fisheries generally prefer steady releases throughout the year and therefore have objected to minimal flows during the winter. Steady releases may be inimical to endangered species, however. White water rafters generally prefer high flows during the warmest summer months and especially on weekends. Flow regimes also must serve the state's interstate compact and international treaty obligations. Resolving these inherent conflicts therefore represents a significant challenge.

Instream Protections Under Federal Statutes

A number of instream flow protections exist under current federal law that may be applicable to New Mexico. Federal permits or licenses for water projects may directly require bypass or flow-through of natural streamflows. For example, Forest Service storage facilities on national forest lands commonly require preservation and enhancement of natural streamflows. Issuance of § 404 dredge and fill permits by the Army Corps of Engineers similarly requires consideration of the potential effects on riparian habitats. The federal Office of Surface Mining is authorized to impose conditions on mining permittees to "minimize the disturbance to the prevailing hydrologic balance at the mine-site and associated off-site areas and to the quality and quantity of water in surface and ground water systems."⁶⁷ In conjunction with the National Environmental Policy Act (NEPA), significant opportunities for preventing or modifying future projects and incorporating instream flow protection into renewals or reissuances of permits or licenses therefore are available. The following federal statutes are particularly important in New Mexico.

Project Enabling Legislation

Enabling legislation for federal storage projects and other facilities also may provide a basis for challenging actions that threaten instream values. For example, one of the specific objectives of the Colorado River Storage Project is to "mitigate losses of, and improve conditions for, the propagation of fish and wildlife."⁶⁸ More generally, Congress has declared that the entire Colorado River Program should serve a number of purposes including flood control, navigation improvement, storage and delivery of water for municipal, industrial, and other beneficial purposes, improving water quality, outdoor recreation, and the generation and sale of electric power.⁶⁹

In 1976, environmental groups successfully used enabling legislation in litigation to protect riparian habitats on the San Juan River. The National Wildlife Federation, the New Mexico Wildlife Federation, and several intervenors filed an action for declaratory and injunctive relief to challenge the Bureau of Reclamation's attempted construction of a power plant at the Navajo Dam.⁷⁰ The court affirmed that construction of the power plant was not authorized under statutes relating to either the Colorado River Storage Project or the Navajo Indian Irrigation Project. The Bureau was criticized for its failure to consider adequately the effects that construction of the hydroelectric facility might have on aquatic and other wildlife below the Navajo Dam.⁷¹ Consequently, the Bureau was required to conduct an environmental impact statement detailing impacts on downstream fish and wildlife before proceeding with the project.

The Clean Water Act

There are a number of federal acts which indirectly may allow for protection of instream flows. In addition to the Endangered Species Act, discussed above, the Clean Water Act plays a pivotal role. To comply with the Act, instream flows may be used to dilute non-point source pollution. To avoid violation of ambient water quality standards, Albuquerque is contemplating using some of its San Juan-Chama Project water rights for dilution purposes.

New Mexico is especially aware that, under the Act, Indian tribes are recognized as states and may promulgate their own water quality standards.⁷² Recently, a number of Indian tribes and Pueblos, primarily along the Rio Grande, have promulgated surface water quality standards that will require drastic improvements in water quality. For example, the Isleta Pueblo south of Albuquerque promulgated surface water quality standards to allow for ceremonial and recreational use of the Rio Grande. Upstream dischargers, primarily the City of Albuquerque, consequently may be required to enhance treatment of its effluent before discharging it into the Rio Grande. Faced with cost estimates of up to \$250 million, Albuquerque has responded by suing the EPA for approving the Isleta standards.⁷³

The Wild and Scenic Rivers Act

The federal Wild and Scenic Rivers Act allows for the designation, preservation and protection of scenic, recreational, geologic, fish and wildlife, historic, cultural and related values represented by specific river segments.⁷⁴ For example, the Rio Grande and some of its tributaries have been designated part of the National Wild and Scenic Rivers System. This Act contains an express assertion of a federal reserved water right for the amount reasonably necessary to preserve the values to be protected. However, diversions of water are not expressly prohibited.

Using Federal and Indian Reserved Water Rights to Protect Instream Flows

Federal Reserved Water Rights

In general, the water law of a particular state controls the appropriation and use of water within that state, including water on federally owned lands. The Desert Land Act of 1877 severed water from federal lands and gave control of that water to the various western states for the use of the public.⁷⁵ Federal reserved water rights for lands Congress withdraws from the public domain are the significant exception to this general rule.

A long series of cases have recognized that both the federal government and Indian tribes may have water rights necessary for the purposes of federal or Indian reservations.⁷⁶ In a key decision involving the State of New Mexico, the United States Supreme Court limited federal government water rights claims to the amount needed for the express purposes of the reservation.⁷⁷ Because the 1897 Organic Act authorizing the establishment of national forests did not expressly include recreation and preservation of scenic beauty as primary purposes of the reservations made under the Act, reserved water rights could not be claimed for these purposes. The Court did acknowledge, however, that one purpose of the national forests was to secure favorable conditions of water flow. Subsequently, the Forest Service as well as other federal agencies have initiated litigation in order to establish federal reserved rights for instream flow protection.⁷⁸ Like national forests, claims may be asserted for federal reserved water rights in national parks and wildlife refuges. In contrast, no water rights generally have been reserved for BLM lands, unless a Wild and Scenic River section or other federal reservation is located on these lands.

A practical application of the reserved rights doctrine can be found in a stream adjudication involving the Red River in northcentral New Mexico.⁷⁹ In this adjudication, the United States claimed reserved water rights under the Organic Act, the Multiple Use Sustained Yield Act of 1960, the Wilderness Act of 1964, and the Wild and Scenic Rivers Act of 1968. In 1984, the state and federal governments along with Molybdenum Corporation, Inc., a mining company with significant water rights claims, reached a stipulation that recognized federal reserved water rights. However, a number of community acequias served by the Red River objected.

The dispute was eventually resolved when the United States withdrew their water rights claims for the Latir Peak Wilderness Area within the Carson National Forest and the acequias withdrew their objections to the water rights claims based upon the Wild and Scenic Rivers Act.⁸⁰ Consequently, a federal reserved water to maintain instream flows in the Wild and Scenic Rivers area of the Red River has been adjudicated. The water right has been quantified on a monthly basis in terms of minimum average monthly instream flows in cubic feet per second. The Final Judgment and Decree, however, provides that these minimum average monthly instream flows shall not be enforceable against domestic well water rights permitted under state law.⁸¹ By implication, the United States may enforce their water rights against subsequent surface water appropriators and transferors. This case is significant because, throughout the state, a number of stream adjudications are ongoing and, in several of these adjudications, the United States has made reserved water rights claims for instream flows.

Indian Reserved Water Rights and Aboriginal Claims

Historically, instream flows were used for fishing and religious purposes by New Mexico's indigenous people. As with federal reservations, if one of the essential purposes of the Indian reservation was to preserve the Indians' right to fish or hunt, then the tribe may have a significant claim for water rights, including instream flows, to serve these purposes.⁸² Recent litigation in Wyoming has clarified the right of some tribes to use their water rights to protect instream values.⁸³

In addition to Indian reservations, there are several Indian pueblos whose claims to water rights are based upon a different legal footing.⁸⁴ In addition to tribal reserved rights claims, some of the pueblos have asserted a right to minimum instream flows based on tribal aboriginal title to their lands.⁸⁵ For example, an aboriginal rights claim to instream flows was recently made by the Laguna Pueblo in the stream adjudication of the Rio San Jose in west central New Mexico.⁸⁶ Although rejected by the Special Master and the court on the basis of a prior settlement, the claims have been appealed.

Aboriginal rights claims are based on the "retained rights doctrine," which provides that aboriginal rights to natural resources are retained unless expressly extinguished by the United States.⁸⁷ Although aboriginal rights claims have not yet gained the level of acceptance achieved by the reserved rights doctrine, it may prove to be an effective tool for instream flow protection outside of established tribal reservations.

Conclusion

New Mexico has developed a minimally regulated private water rights market. In the case of instream flow protection, the market has been protected by a classic regulatory strategy—denial of entry. Theorists tell us that entry is denied to prevent destructive competition.⁸⁸ A franchise is granted to a limited number of participants who in turn, provide resources for a just and reasonable price. In the case of instream flows, entry has been denied to prevent a different type of competition—one that might be equally destructive.

Instream flow water rights are, in some respects, superior to diversionary rights. Traditional forfeiture and abandonment tests may not apply. More importantly, the ability to claim impairment is greatly enhanced. In consequence, the flexibility of free market transfers might be restricted. But, because the current system promotes and allows water rights transfers with limited regard to impacts on natural environments, denial of entry prevents internalization of these costs and riparian habitats may suffer.

Reliance on the current system is understandable because the state's financial resources are limited, and the existing system provides some measure of protection to instream flows as well as significant opportunities for further protection. Moreover,

federal agencies have initiated a number of programs designed to protect and enhance instream flow values on the state's major rivers. The current system may be inadequate to protect instream values in the future, however, as groundwater withdrawals and water rights transfers continue.

Repeated attempts to pass instream flow legislation suggest that there is considerable support for preserving the state's remaining free flowing streams and rivers. While increased use of public welfare standards might protect these opportunities, a better solution for New Mexico might be to develop a reservation system that prevents further diversions at particularly valuable stream locations where federal protections are insufficient.

Notes

1. *See generally*, Steven J. Shupe, *Keeping the Waters Flowing*, INSTREAM FLOW PROTECTION IN THE WEST, (Lawrence J. MacDonnell, et al. eds., 1989). Critics contend that as much as ninety percent of New Mexico's riparian ecosystems have been lost or significantly altered during the last century. Aubrey Johnson, *The Thin Green Line*, in IN DEFENSE OF WILDLIFE (1989). On April 20, 1993, American Rivers, a national environmental advocacy group, placed the Rio Grande at the top of their "most endangered rivers" list.
2. Tim De Young, *Different Approach, Same Result: The Instream Flow Protection Act of 1989*, N.M. NAT. RES. L.R. (1989). Preserving the current regime even at the expense of natural environments perhaps is not surprising in light of New Mexico's political culture. Observers describe the state's politics as exceedingly parochial, a "friends and neighbors" approach to politics where new and strange ideas are generally rejected in favor of reliance on the status quo. Lupsha, *The Role of Politics and Political Culture in New Mexico's Economic Development*, in AN ECONOMIC DEVELOPMENT STRATEGY FOR NEW MEXICO (1988). Attitudinal surveys of state residents further suggest that conservatism is especially prevalent in the water policy arena. TIM DE YOUNG, PREFERENCES FOR MANAGING NEW MEXICO WATER; (N.M. Water Res. Research Inst., Report No. 184, 1984).
3. This section, except where noted, is derived from a Memorandum from Steve Reynolds, re: House Bill 228, (Feb. 7, 1977) (State Engineer Files, Santa Fe, NM). For an extended discussion of the diversion requirement, *see infra* notes 22-44 and accompanying text.
4. N.M. Const. art. XVI, § 3.
5. *See State ex rel. Erickson v. McLean*, 62 N.M. 264, 308 P.2d 983 (1957) (beneficial use if use is necessary for some useful purpose); *U.S. v. Ballard*, 184 F. Supp. 1 (D.N.M. 1960) (conservation by the state game commission is a beneficial use); *State ex rel. State Game Commission v. Red River Valley Co.*, 51 N.M. 207, 182 P.2d 421 (1945).
6. There are a number of water rights under valid permits which use water for recreation, wildlife protection, and fish propagation. For example, the State Game and Fish Department owns water rights for state fish hatcheries. In addition, water is stored in various facilities by both public and private parties to enhance fishing and recreation.
7. A. Dan Tarlock, *The Recognition of Instream Flow Rights: "New" Public Western Water Rights*, 25 ROCKY MT. MIN. LAW INST. 24-1, 24-7 (1979).
8. As discussed *infra*, the state has an extensive system of dams and reservoirs and it appears that flow regimes have been, and are being, modified to protect instream flow values.
9. WYO. STAT. § 41-3-1001(c) (1985).
10. *See Justice Bakes' concurring opinion in State of Idaho Dept. of Parks v. Idaho Dept. of Water Administration*, 96 Id. 440, 530 P.2d 924 (1974). He concludes that the diversion language in the Idaho state constitution only reflects a disdain for the riparian doctrine. Further, he finds no practical reason why a diversion should be required. 530 P.2d at 933.

11. Tarlock, *supra* note 7, at 24-7.
12. Interview with Eluid Martinez, Santa Fe, New Mexico (April 29, 1993) (Martinez Interview); Michael Hatch of the New Mexico Game and Fish Department argues that because *in situ* water rights are owned by Game and Fish for non-diversionary reservoir rights, there is no reason why instream water rights cannot be created. See Michael Hatch, *Strategies to Accommodate In Situ Uses of Water in New Mexico*, (Unpublished, 1992).
13. H.R. 64, 38th Leg., 1st Sess., (1987): "[w]hen water is used for the propagation or maintenance of fish and wildlife, diversion of the water from its natural channel shall not be required to maintain the beneficial use."
14. See e.g., H.R. 52 and S. 92, 36th Leg., 2d Sess. (1984).
15. L.A. TIMES, Jan. 31, 1987 at sec. I, p. 13, Col. 1.
16. Most importantly, the priority of rights transferred to instream use would be junior to most water rights. Also, instream rights could not be acquired through condemnation and the State Engineer was to deny the application for instream use if the State Engineer determined it would reduce the amount of water available for beneficial consumptive use in New Mexico. House Agricultural Committee Substitute for H.R. 64, 38th Leg., 1st Sess. (1987).
17. E.g., Memorandum from S.E. Reynolds re House Bill 64, (Jan. 23, 1987) (State Engineer's Files, Santa Fe, NM).
18. State ex rel. Reynolds v. Miranda, 83 N.M. 443, 493 P.2d 409 (1972); see also, Comment, *The Prerequisite of a Man-Made Diversion in the Appropriation of Water Rights*, 13 NAT. RESOURCES J. 170 (1973). Note that the court was not directly considering instream flows. The court held that grazing stock on and cutting hay from the bottom of a wash did not create an agricultural water right.
19. Letter from Lee Peters, Assistant Attorney General, to Brant Calkins, (Jan. 31, 1984) (State Engineer Files, Santa Fe, NM).
20. For an historical review of relevant authority in several states, see TRELEASE AND GOULD, WATER LAW 27-29 (4th Ed. 1986). In a key case, the Supreme Court of Idaho held that their state constitution does not require actual physical diversions. State of Idaho, Dept. of Parks v. Idaho Dept. of Water Administration, 96 Id. 440, 530 P.2d 924 (1974). A Colorado court earlier had reached an identical conclusion. Genoa v. Westfall, 141 Colo. 533, 349 P.2d 370 (1960). In both Idaho and Colorado, the constitutional language expressly mentions the right to "divert and appropriate." Art. 15, § 3 of the Idaho Constitution declares "(t)he right to divert and appropriate the unappropriated waters of any natural stream to beneficial use, shall never be denied." Art. XVI, § 6 of the Colorado Constitution provides: "the right to divert the unappropriated waters of any natural stream shall never be denied." In contrast, the New Mexico Constitution doesn't explicitly mention diversion, it merely states that unappropriated water belongs to the public and is subject to appropriation. Art. XVI, § 2 reads in pertinent part: "The unappropriated water of every natural stream, perennial or torrential, within the State of New Mexico, is hereby declared to belong to the public and to be subject to appropriation for beneficial use, in accordance with the laws of the state. Priority of appropriation shall give the better right." (emphasis added).

21. Senator Ike Smalley purportedly noted this possibility during legislative hearings. Interview with S.E. Reynolds, State Engineer, in Santa Fe, New Mexico, (Oct. 17, 1988).
22. See discussion *infra* at notes 64-67.
23. Reynolds Memorandum, *supra* note 3, at 4.
24. Only one state, Alaska, appears to expressly provide for the private ownership of instream flow rights. ALASKA STAT. § 46.15.145 (1984).
25. See Tarlock, *supra* note 7, at 3-4; but see TERRY ANDERSON, WATER CRISIS: ENDING THE POLICY DROUGHT 73-85 (1983). In states without instream flow programs, public ownership may be but is not always required. In Nevada, a state court upheld the State Engineer's grant of a recreation water right without a diversion to the federal Bureau of Land Management. Nevada v. Morros, 766 P.2d 263 (Nev. 1988). The court explained that, because the application was for public recreation use, a public entity must make the application.
26. Arizona courts have interpreted that state's appropriation statutes to authorize *in situ* appropriations for recreation and wildlife purposes despite the fact that the legislature has never passed instream flow legislation. In 1983, the Department of Water Resources granted instream permits to the Nature Conservancy and the Bureau of Land Management. Since that time, the Department has received numerous requests for instream rights from public and private land owners. Herb Dishlip, *Instream Flow Water Rights: Arizona's Approach*, in this book at Chapter 10.
27. Letter from Toney Anaya, Governor, to Steve Reynolds, State Engineer (Nov. 9, 1985) (State Engineer Files, Santa Fe, NM).
28. Except where noted, the information in this paragraph is based on a Letter from Leo Griego, Secretary of Natural Resources Department to Steve Reynolds, State Engineer (Dec. 9, 1985) (State Engineer Files, Santa Fe, NM).
29. Letter from Steve Reynolds, Leo Griego, and Harold Olson, to Governor Toney Anaya (Jan. 15, 1986) (State Engineer Files, Santa Fe, NM). With regard to costs, the State Engineer's recommended statutory language would have read as follows, "The Dept of Game and Fish shall pay the annual cost of measurement and administration incurred by the state and the owners of other water rights as the result of the creation and maintenance of instream flows pursuant to this Section 72-5-40 as those costs are determined by the State Engineer."
30. S. Discussion Draft, Dec. 29, 1988, 39th Leg., 1st Sess. (not numbered) (1989).
31. S. 491, 39th Leg., 1st Sess. (1989).
32. Interview with Max Coll, State Representative, in Santa Fe, NM (March 23, 1989).
33. Memorandum from S.E. Reynolds, re: S. 491, 4 (February 16, 1989) (State Engineer Files, Santa Fe, NM).
34. See, e.g., HB 859 (1991). This bill, sponsored by Rep. Coll, would amend N.M. STAT. ANN. § 72-5-24 (1978), a surface water statute, to permit the owner of a water right to change the purpose of

use of the right to the propagation or maintenance of fish, wildlife, or recreation within a stream even though there is no diversion of water for the new use.

35. Senate Bill 563.
36. In a recent workshop on instream flow protection sponsored by the New Mexico Water Resources Research Institute, continued opposition to instream flow legislation was evident, especially among participants from the acequias. *See Proceedings, 37th Annual New Mexico Water Conference, Water Resources Report No. 273* (Jan. 1993). Participants in an instream flow workshop argued that instream flow water rights had the potential to disproportionately harm the cultural and social values associated with acequias and pueblos.
37. Internal memos listing critical locations have been prepared by the Game and Fish Department, but their memos have not been released. Interview with Michael Hatch, in Santa Fe, NM (April 29, 1993).
38. Reynolds Memorandum *supra* note 33, at 4-5.
39. *See, e.g.,* Bureau of Land Management, New Mexico Riparian-Wetland 2000: A Management Strategy, (October 1990). In this document, one of BLM's stated goals is to "take an active role in supporting instream flow legislation in New Mexico." *Id.* at 17.
40. *See* Section B.3. *infra* for a discussion of reservoir release schedules.
41. N.M. STAT. ANN. § 72-5-28 (surface water rights) and § 72-12-8 (ground water rights) (1992 Cum. Supp.).
42. N.M. STAT. ANN. § 72-5-28 (1992 Cum. Supp.)
43. *House Panel Tables Stream Habitat Bill*, ALBUQUERQUE JOURNAL (Feb. 2, 1991) A-1.
44. Public interest and public trust doctrines are presented together because of their similar practical effects on instream flow protection. However, the two principles derive from fundamentally different legal origins.
45. *See*, Harrison P. Dunning, *Instream Flows and the Public Trust*, in this book at chapter 4. Few states are likely to apply either public trust or public interest criteria retroactively against vested rights owners for various reasons including the duty to provide just compensation. *See* Stuart Somach, *The Financial Impacts of Instream Protection*, 33 ROCKY MTN. MIN. L. INST. 25-1 (1987).
46. Prior to amendments, N.M. STAT. ANN § 2-5-7 allowed the State Engineer to consider the public interest only for applications for unappropriated waters. Until 1983, impairment to existing water rights was the only basis on which an application to transfer a point of diversion or place of use could be denied. N.M. STAT. ANN. §§ 72-5-23 and -24. In response to a federal court decision, the State Legislature in 1983 amended the groundwater statutes to allow new appropriations and transfers for out-of-state use, if not contrary to the conservation of water or otherwise detrimental to the public welfare. *City of El Paso v. Reynolds*, 563 F. Supp. 379 (D.N.M. 1983). 1983 N.M. Sess. Laws, Ch. 2. The same court then ruled most of these amendments were constitutional because the conservation and public welfare criteria were applicable to both in-state and out-of-state uses. *City of El Paso v. Reynolds*, 597 F. Supp. 694 (D.N.M. 1984). In 1985, the Legislature responded by amending both the ground and surface water statutes to add the public

welfare and conservation criteria to all new appropriations and transfers. 1985 N.M. Sess. Laws, Ch. 201, amending the water laws.

47. *E.g.*, in North Dakota, N.D. CENT. CODE § 61-04-06 (1978), defines public interest factors as: (a) benefit to the applicant; (b) effect of resulting economic activity; (c) effect on fish, game, and public recreational opportunities; (d) effect of loss of alternative uses of the water; (e) harm to other persons; (f) intent and ability of the applicant to complete the appropriation.
48. E. Martinez, "Current Ideas for New Mexico Water Planning," in *Proceedings* (37th Annual New Mexico Water Conference, Water Resources Report No. 273 at 15) (Jan. 1993).
49. *See, e.g.*, *Ensenada Land and Water Association v. Sleeper*, 107 N.M. 494, 760 P.2d 787 (Ct. App. 1988); Note, *The Milagro Beanfield Water Wars Revisited in Ensenada Land and Water Association v. Sleeper: Public Welfare Defies Transfer of Water Rights*, 29 NAT. RES. J. 861 (1989).
50. Summary of Proposed and Funded Regional Water Plans from 1987-1991. Interstate Stream Commission (unpublished, 1992).
51. House Memorial 34 (1st Session, 1993).
52. *See City of Albuquerque v. Reynolds*, 71 N.M. 428, 379 P.2d 72 (1962) (jurisdiction and duties of State Engineer relates to all public waters subject to use by prior appropriators including streams and underground waters.)
53. In eastern New Mexico, the United States Supreme Court held that New Mexico had failed to make sufficient deliveries of surface water to Texas. *Texas v. New Mexico*, 482 U.S. 124 (1987). To increase surface flows in the Pecos River, the state is actively purchasing and retiring surface and groundwater rights in order to repay its water debt to Texas and to prevent future violations of the Pecos River Compact.
54. *See* Amendment No. 29, Rules and Regulations Governing the Drilling of Wells and Appropriation and Use of Ground Water In New Mexico, IV N.M. Register No. 7 (April 15, 1993); Martinez Interview.
55. Ironically, abnormally high releases from the Navajo Dam in northwest New Mexico in Spring, 1992, destroyed the nesting habitat of Canada geese and other migratory waterfowl. Although the high releases were attributed to abnormally warm temperatures which hastened the spring thaw, it appears that the Bureau of Reclamation was retaining water prior to that time in order to mimic high spring flows for the squawfish restoration project.
56. Bureau of Reclamation, "Final Supplement to the Final Environmental Impact Statement: River Maintenance Program for the Rio Grande" (June, 1993) (Rio Grande EIS).
57. *Id.* at 49.
58. *Id.* at 20.
59. U.S. Fish and Wildlife Service, Final Fish and Wildlife Coordination Act Report for the Operation and Maintenance Program for the Rio Grande (April 6, 1992) (included as an appendix in the Rio Grande EIS).

60. *Id.* at 30.
61. *Id.* at Environmental Commitment Appendix.
62. *Id.*
63. *See* 58 F.R. 19,220 (April 13, 1993).
64. Public Law 90-357.
65. *See* Bureau of Reclamation, Upper Gila Water Supply Study, Special Report on Alternatives (1987).
66. *See*, Steven J. Shupe & J. Folk-Williams, *The Upper Rio Grande: A Guide to Decision Making, Western Network*, 20-22 (1988).
67. Surface Mining Control and Reclamation Act of 1977, § 510(b)(10), 30 U.S.C. § 1260(b)(10) (1988). A recent decision, however, appears to limit OSM's authority to impose conditions to protect downstream water rights claims. *Peabody Coal Co. v. Office of Surface Mining Reclamation and Enforcement*, 123 I.B.L.A. 195, GFS (MIN) 28 (1992).
68. 43 U.S.C. § 620(g).
69. 43 U.S.C. § 1501(a).
70. *National Wildlife Federation v. Andrus*, 440 F. Supp. 1245 (D.D.C. 1977).
71. *Id.* at 1251.
72. 33 U.S.C. § 1377.
73. *City of Albuquerque v. Reilly*, (D.N.M. Civ No. 93-82M, Jan. 25, 1993).
74. 16 U.S.C. §§ 1271-1289.
75. *See Idaho Dept. of Water Resources v. United States*, 832 P.2d 289, 296 (Idaho 1992).
76. *See, e.g., Cappaert v. United States*, 426 U.S. 128, 138 (1976).
77. *U.S. v. New Mexico*, 438 U.S. 696 (1978).
78. *Sierra Club v. Watt*, 659 F.2d 203 (D.C. Cir. 1981).
79. *See* Final Judgment and Decree on the United States' Water Rights, State of New Mexico ex rel. State Engineer and The United States of America v. Molybdenum Corp. of America, et al., CIV 9780-SC (D.N.M. June 11, 1992).
80. *Id.* at 5.
81. *Id.* at 4.

82. See *Winters v. United States*, 207 U.S. 564 (1908); Comment, *Administration of Reserved and Non-Reserved Water Rights on an Indian Reservation: Post-Adjudication Questions on the Big Horn River*, 32 NAT. RES. J. 682 (1992); Michael C. Blumm, *Unconventional Waters: The Quiet Revolution in Federal and Tribal Minimum Stream Flows*, 19 ECOL. L. Q. 445 (1992).
83. See *In re General Adjudication of All Rights to Use Water in Big Horn River System*, 753 P.2d 76 (Wyo. 1988), *aff'd*, *Wyoming v. United States*, 492 U.S. 406 (1989); see also *In Re Big Horn River System*, 835 P.2d 273 (Wyo. 1992).
84. *State of New Mexico ex rel. Reynolds v. Aamodt*, 537 F.2d 1102 (10th Cir. 1976), *cert. denied*, 429 U.S. 1121 (1977).
85. See Becker, *They Had Command of the Lands and the Water . . . All Their Beneficial Uses . . .*: *Indian Water Rights in the West*, 2 RIVERS No. 166 (1991).
86. See Special Master's Report, *State of New Mexico, ex rel. Martinez v. Kerr-McGee Corp., et al.*, (CB-83-190-CV, CB-83-220-CV (Consolidated) (13th Dist. Ct.) (November 5, 1992) *adopted* May 18, 1993).
87. *United States v. Winans*, 198 U.S. 371 (1905).
88. L. SCHWARTZ, J. FLYNN, & H. FIRST, *GOVERNMENT REGULATION* 65-66 (6th ed. 1985).

Instream Flow Protection in Oregon

Michael J. Mattick

Introduction

Water management and water use in Oregon and throughout the West increasingly appear to be the subject of litigation and the focus of new legislation directed at water allocation practices and programs. New rules and standards are being developed to govern how society will utilize this finite resource. It seems unlikely that new rules will be retroactive, but as in the Mono Lake case¹, there may be as yet undefined limitations on existing rights to use water. Consistent with this trend, instream flows and the notion of a public trust doctrine continue to be in the forefront of water issues.

History Of Instream Flows In Oregon

Oregon's experience with instream flows covers a period of over 30 years. With the enactment of the water resource planning statutes in 1955,² the Oregon legislature provided an administrative process to establish minimum flows. Current law directs: "The maintenance of minimum perennial stream flows sufficient to support aquatic life, to minimize pollution and to maintain recreational values shall be fostered and encouraged if existing rights and priorities under existing laws will permit."³ Despite brief interruptions from time to time, the state has made gradual progress in assessing its water resources, formulating water resource policies for most major drainage basins and setting minimum flows. Between 1955 and 1988, 547 minimum flows were established at specific points or stream reaches. Most of the major rivers and tributaries have some degree of protection for the benefit of instream uses.

However, precipitation and the water resources are not spread evenly across the state. Approximately 83 percent of the average annual runoff occurs in the western one-third of the state's land area. Most minimum flows are located on rivers and streams in western Oregon, reflecting both the distribution of runoff and an emphasis on anadromous fish. Pollution abatement represents few of the flows set to date. But, in many instances, pollution abatement and other instream purposes may be adequately addressed under the flow levels identified as necessary for aquatic life.

Minimum perennial stream flows are established as administrative rules rather than water rights. Like water rights, the flows have priority dates and are subject to the same variations in water availability as other appropriations. Like other administrative rules, there are requirements for notice and hearing prior to adoption of minimum flows.

In addition to minimum flows, the Water Resources Commission has used other management tools of water use classification⁴ and withdrawal⁵ to promote or protect instream values. Although estimates of the quantity of water involved vary, Oregon has made a significant commitment toward protection of instream flows and instream flow values.

There were few legislative changes in the minimum flow provisions between 1955 and 1983, but methods, perspectives, and criteria employed by the Water Policy Review Board (now the Water Resources Commission) tended to change with time. In the late 1950s the volume of minimum flows administratively set tended to reflect physical low flow characteristics of the stream or stream system under consideration. Consequently, most of the flows established during those first efforts were relatively low compared to available flow and were established with little or no seasonal variation. Beginning in the 1960s, the Oregon Department of Fish and Wildlife (DFW) undertook a statewide study to apply consistent and species-specific criteria in calculating flow requirements for aquatic life.

Procedures For Establishing Minimum Flows

The Oregon method of determining minimum flow needs includes the physical inspection of stream reaches to determine the locations where passage is limited due to local characteristics. Transects are taken at the identified locations following the shallowest courses from bank to bank. The stream is measured at various flow levels to develop a relationship between depth and velocity for passage requirements of the fish in question. Stream reaches that are used for spawning and rearing are also analyzed to determine depth and flow requirements.

Once the physical inspection is completed, values are calculated to meet flow requirements for the specific species in question. Flow values are then tabulated by month for a 12 month period. Minimum flows are requested to maintain streamflow at a specific location on the stream.

Recent Legislative Amendments

In 1983, the legislature further refined the minimum flow process.⁶ New provisions declared the establishment of minimum perennial stream flows to be a high priority of the Water Policy Review Board/Water Resources Commission (Commission) and Water Resources Department (WRD).

The 1983 legislation provided a means for the DFW and the Department of Environmental Quality (DEQ) to submit applications for additional minimum streamflows or to revise existing minimum flows. Applications submitted are given a

priority date as of the date they are received by the WRD. The Commission evaluates applications for new or revised minimum flows, then takes one of the following actions:

- * adopts the requested minimum perennial streamflow;
- * adopts a minimum perennial streamflow at some other rate after making a finding that the other rate is more appropriate to support aquatic life and minimize pollution; or,
- * rejects the recommended minimum perennial streamflow after making a finding that establishment of the minimum flow is of lesser importance than other uses of the waters of the particular stream.⁷

The 1983 legislation also directed the departments of Fish and Wildlife and Environmental Quality to submit a list of up to 75 of their highest priority streams with applications for minimum stream flows. A list of 75 locations and applications for minimum flows by the departments was received by the WRD on November 3, 1983.

The Water Policy Review Board/Water Resources Commission held public hearings in each basin in which minimum flows were requested. The Commission completed its consideration of the flows by January 1, 1986, as directed by the legislature in 1983. Forty-three (43) of the requested minimum flows were adopted as requested, 22 were adopted after being modified, and 10 were rejected. The Board/Commission took other action such as withdrawal of some streams or stream segments for some of the 10 which were rejected.

Scenic Waterways

In 1970, after a successful initiative campaign, the voters of Oregon established the State Scenic Waterway Program.⁸ The Scenic Waterways Act immediately set into motion a state protection program for certain rivers throughout the state. The Act states:

It is declared that the highest and best uses of the waters within scenic waterways are recreation, fish and wildlife uses. The free flowing character of these waters shall be maintained in quantities necessary for recreation, fish and wildlife uses. No dam, or reservoir, or other impoundment facilities shall be constructed or placer mining permitted on waters within scenic waterways. No water diversion facility shall be constructed or used except by right previously established or as permitted by the Water Resources Commission upon a finding that such diversion is necessary to

uses designated in ORS 536.310(12), and in a manner consistent with the policies set forth under ORS 390.805 to 390.925. The Water Resources Commission shall administer and enforce the provisions of this subsection.⁹

The Act is administered primarily by the State Parks and Recreation Department (Parks). Other state agencies—the Division of State Lands, the Oregon State Marine Board and the Oregon Water Resources Department—have special responsibilities. The Scenic Waterway Program promotes cooperative protection and wise use of rivers in the system by all federal, state and local agencies, individual property owners, and recreational users.

The Scenic Waterway system originally included 496 free flowing miles of six rivers. Since 1970, another river segment was added by a governor's declaration, the state legislature added two river segments and a lake, and Oregon voters added 25 river segments. The Act now embraces 1,100 miles of stream and a 6,672 acre lake.

In order to carry out its responsibility, the Water Resources Commission has identified instream flow needs for fish, wildlife and recreation on all of the state scenic waterways. The WRD can permit new water uses only where these needs are exceeded.

Instream Water Rights

Senate Bill 140 was passed by the legislature in 1987 and became effective on September 27, 1987.¹⁰ The purpose of the law is to provide more protection for instream uses of water such as recreation, pollution abatement, and maintenance of aquatic life. The new law provides three methods for developing instream water rights:

- DFW, DEQ, and Parks can request instream water rights from the Water Resources Commission;
- the purchase, lease, or donation of private water rights for conversion to instream water rights; or
- the conversion of existing minimum perennial streamflows to instream water rights.¹¹

In 1988, the Water Resources Commission adopted standards by rule to guide instream water right requests.

All instream water rights are held in trust by the WRD. They have the same status as all other water rights except that future municipal purposes may gain precedence over instream rights applied for by state agencies. There is no requirement for "proof of use". Once approved, applications are issued a certificate.

In 1992, the Commission amended the rules governing the processing of instream water right applications. The amendments were aimed at ensuring that all persons or groups interested in water allocation have a fair and equal opportunity to raise public interest issues during the review of applications.

The Commission Cannot Apply

The same 1987 legislation that created instream water rights also instructed the Commission to convert existing minimum streamflows to instream water rights. Concurrent with those actions, Parks was empowered to submit water right applications for recreational flows. Prior to that time, only the Commission on its own motion, the Department of Fish and Wildlife, and the Department of Environmental Quality could investigate adoption of minimum perennial streamflows. Now the three agencies (DFW, DEQ and Parks) can apply for instream water rights,¹² and the Water Resources Commission can no longer establish an instream flow on its own motion.

A Flood Of Applications

The 1988 rules also specified that, one year after their adoption, each applicant agency had to have in place its own administrative rules identifying the methods which would be used in determining the instream flow levels requested before submitting additional applications. All three agencies have adopted guiding rules. To date, the DFW has submitted the most applications (over 900). Parks, jointly with DFW, filed 36 applications. DEQ, which put into rule the most rigorous flow determining methodology, has yet to submit an application. This may be largely due to the time consuming methodologies dictated by this agency's rules.

To date, the WRD has processed 36 applications through to the certificate stage.

Difficulties Encountered With The Program

By September, 1990 36 instream water rights applications had been certificated (within 23 months of the WRD adopting its administrative rules). At this time almost 170 instream water right applications had been filed, and new applications were being filed at a rate of 40 per month.

In late 1990, the instream water right program began receiving greater attention from agricultural, municipal and rural domestic interests. The primary allegations included:

- that instream water rights would often be set at flow levels which exceed those remaining, after appropriation, during the low flow period of each year;
- that applications often requested flow levels greatly exceeding what is naturally possible, even if no water were appropriated from the stream, during the low flow times of the year; and
- that the effect of establishing these new instream water rights would be to close many streams to any new appropriation.

This last issue was complicated as it not only would affect irrigated agricultural uses, but also the ability to allow additional diversions for stock watering and new domestic uses.

The Water Resources Commission became involved in the debate. Several Department presentations were made at Commission meetings and many options were explored. Finally, the Commission took action and directed the WRD to issue seven instream water right certificates.

Soon thereafter, an organization primarily representing agricultural interests filed a law suit alleging that interested parties were denied a fair opportunity to challenge the instream water right applications. This suit eventually led to the amendment of the WRD's rules governing the processing of both instream and out-of-stream applications. New rules were adopted in 1992 which:

- broaden the WRD's public notice requirements for all applications;
- specify the WRD's obligations regarding notification of preliminary determinations made on applications;
- define time limits for interested parties to file objections and protests to these determinations; and
- specify additional criteria to be used in making public interest determinations.

During the development of these rules the Commission also evaluated other WRD procedures relative to the processing of water use applications. A concern was the practice of reviewing and issuing permits and instream water rights other than in the order in which they were received. Once an instream water right is certificated, it may affect the subsequent evaluation of all other water use applications, even applications with earlier tentative priority dates. The current practice is to process all (both instream and out-of-stream) applications in the order in which they were filed for each major drainage basin in the state.

The public and citizen interest, the lawsuit, and the rule writing effort all combined to delay further processing of instream water right applications. The WRD is now processing the earliest out-of-stream applications filed throughout the state and is once again on the verge of processing instream water right applications and wrestling with the remaining issues.

New Policies

In July 1992, the Commission adopted a statewide water allocation policy. One of the main components of this policy was the establishment of an 80 percent exceedence standard for water availability¹³. Prior to the issuance of a new out-of-stream surface water permit, the WRD must determine that all existing water rights, both instream and out-of-stream, will be satisfied at least 80 percent of the time for a given period. The WRD has been evaluating streamflow needs on a monthly basis.

This standard does not apply to instream water right applications but has a significant impact on out-of-stream applications. When determining if water is available for a new out-of-stream application, the WRD must determine whether all existing out-of-stream appropriations, instream water rights and scenic waterway flows are likely to be exceeded 80 percent of the time for each month the proposed use would need water. Prior to this policy, the WRD relied on an imprecise 50 percent exceedence standard. The net result of this change is that fewer permits for new appropriations are being issued.

Remaining Issues

The 1992 rule amendments added a great deal of guidance for the processing of water use applications (who gets notified, time limits for comments, objections, protests, etc.). However, the amendments did not provide any new guidance addressing the potential for new instream water rights to curtail additional development of surface waters of the state. It is hoped that the new rules will provide the opportunity for a complete and thorough evaluation of all of the ramifications of new instream water rights.

Prophecy

New instream water rights will affect water availability to develop new surface water uses throughout the state. It is unclear to what extent new instream water rights will be reduced or conditioned to allow new uses where an instream right would otherwise curtail new development. When the Commission considered this issue in April 1992, there was agreement that, in most situations, a limited amount of the available

flows should be exempt from regulation for new domestic and stock uses. This may be the case in the future as well. While instream water rights have not yet been issued with exemptions for new irrigation, industrial, or other uses, the rules and process allow for the examination of such a need. Exemptions for other than domestic and livestock uses will occasionally occur, but their occurrence will be infrequent.

Both instream and out-of-stream user groups are awaiting the processing of new instream water right applications. Challenges to the program from both sides are likely.

The Larger Picture

Water Shortage Conditions

Some of the limitations with the current instream flow program are a direct result of water shortage conditions. Few Oregon streams have sufficient summer flows to satisfy all desirable instream and out-of-stream demands. Under standards for minimum streamflow application review, water availability cannot be the primary factor in determining whether or at what level minimum flows are set. Instream flow requirements are substantial in some cases, resulting in a number of recently established flows well in excess of anticipated summer flow levels. Consequently, while most of the testimony at public hearings tends to support the general concept of minimum flows and the protection of instream values, reaction to specific proposals is often more mixed.

In shortage areas, the identification of minimum flows may pinpoint goals to be achieved through watershed management practices, riparian restoration programs,¹⁴ and development of storage projects. In a few instances, true multipurpose projects have been constructed to meet instream flow needs along with the more conventional requirements of irrigation, municipal, and industrial supplies. An example is the Galesville Reservoir owned and operated by Douglas County. The reservoir stores 42,225 acre feet, 4,000 of which are dedicated to fish enhancement. This water is released during the summer months to maintain flows and cool water temperatures below the dam.

Monitoring And Regulation

With decreasing field resources and increasing numbers of water rights generally, water use regulation of the instream flow program is becoming more and more difficult. Not all established instream water rights can be regularly monitored with existing staff.

By working with other resource agencies, the WRD hopes to identify and monitor the highest priority streamflows. WRD staff is currently working with the DFW in

developing a list of highest priority minimum flows. It is hoped that DFW field staff can assist by monitoring streamflows at some specified minimum flow locations.

Regulation of flows affecting other appropriate rights is generally on a complaint basis. Maintaining adequate staff to monitor and regulate the distribution of water rights and the enforcement of minimum flows is an increasing problem in an era of scarce government resources.

The Future

In the past, large federally financed and constructed projects were the typical solution to water supply problems. Flood control, power production, and irrigation have traditionally been the basis for federal water projects. For a number of reasons, the historical federal support is changing.

Favorable storage sites are increasingly difficult to find. Many of the best sites have already been developed. Most of the remaining undeveloped sites have significant associated environmental impacts and have consistently failed to demonstrate a favorable benefit-cost ratio under federal criteria. An example is the proposed storage site on the North Fork of Meechem Creek in Umatilla County.

Additionally, the emphasis of water needs is shifting away from the traditional basis of federal projects. Agricultural use may actually be decreasing in some areas. Most Oregon communities have enacted flood plain zoning to reduce damages associated with future development in flood plain areas. The apparent reluctance of the federal government to participate in water projects, combined with the shift away from typical project purposes, suggests that the western states will need to develop new solutions to local and regional water problems.

Rather than reallocation of existing shortages, there is support in Oregon for management of the resource with an emphasis on meeting future needs through conservation and more efficient use. Water management is one method which will increase streamflow in many areas. Its effectiveness may depend on the use of a mix of smaller incremental programs. Conservation, watershed restoration, streamside enhancement, and off-channel storage are being actively explored as part of the solution to current conflicts and to meet future water supply needs.

While agriculture, power, and flood control uses are waning, the use of water to maintain fisheries, support recreation, and maintain water quality is receiving greater public attention than in the past. These new and expanding interests may provide the incentive and opportunity to form broad-based coalitions to support renewed efforts in water resources management and development.

Notes

1. **National Audubon Soc'y v. Superior Ct. of Alpine County**, 33 Cal. 3d 419, 189 Cal. Rptr. 346, 658 P.2d 709, *cert. denied*, 464 U.S. 977 (1983).
2. OR. REV. STAT. § 536 (1955).
3. OR. REV. STAT. § 536.310(7) (1987).
4. OR. REV. STAT. § 536.340 (1987).
5. OR. REV. STAT. § 536.410 (1987).
6. OR. REV. STAT. § 536 (1983).
7. OR. REV. STAT. § 536.325(4) (1987).
8. OR. REV. STAT. § 390.805 (1985).
9. OR. REV. STAT. § 390.835 (1971).
10. OR. REV. STAT. §§ 537.322 -.360 (1987).
11. OR. REV. STAT. § 537.346 (1987).
12. OR. REV. STAT. § 537.336 (1987).
13. OR. ADMIN. R. Ch. 690, Div. 400. (1990).
14. These programs involve both structural and non-structural stream, bed, and bank improvement in or within 500 feet of streams. The emphasis is on non-structural programs, e.g., placing branches in the stream to collect silt and planting grass or other riparian vegetation.

Instream Flows in Utah

Mark A. Holden

Introduction

Historically, Utah water law has not recognized instream flow as a beneficial use of water, and little protection of instream flows has been provided at the state level. As in other western states, the appropriation doctrine has been adopted for allocating water in Utah. This process has served the needs of the people of Utah well and continues to do so. Under this doctrine traditional beneficial uses such as irrigation, mining, municipal, hydropower, and industrial processes have been the basis and measure of a water right. In the last few decades, however, economic and societal values have changed in Utah as elsewhere, and the importance of protecting and preserving in-place natural resources through instream flows in streams has been recognized.

Most dedicated instream flows for fishery and/or recreation purposes in Utah have resulted from federal activities associated with water development projects. While most of the instream flows are not legally protected as water rights under Utah state law, the flows have been recognized by most entities involved so that, as a practical matter, they have been protected.

Bureau of Reclamation water projects originally authorized by Congress during the 1950s and 1960s require instream flows downstream from project features on nine separate river reaches as part of the operational criteria. Completion of the Central Utah Project (CUP) as authorized by the Reclamation Projects Authorization and Adjustment Act of 1992¹ including the 1980 Streamflow Agreement and the Amended Streamflow Agreement of 1990² will result in instream flow commitments on thirteen additional segments of eight streams. Implementation of several mitigation, conservation and enhancement projects authorized by the 1992 Reclamation Act could result in several more stream segments receiving instream flows. The CUP section of the Act stipulates that water be acquired in order to provide instream flows in several designated stream reaches. Those water rights must be conveyed to the Utah Division of Wildlife Resources (Wildlife Resources) within 30 days so that Wildlife Resources can file for instream rights in accordance with applicable state law. The Federal Energy Regulatory Commission has required instream flow bypasses for fishery purposes as conditions of license or exemption on several hydroelectric projects in Utah. In addition, a few state-funded water development project sponsors have agreed to provide instream flows for protection of endangered or other species through consultation with Wildlife Resources, U.S. Fish and Wildlife Service, and other agencies.

Two significant changes in state water law in the past few decades reflect the growing concern to protect natural stream values. In 1971, the state legislature amended Utah law³ to allow the State Engineer to reject an application to appropriate water, or to limit the extent of the appropriation, if approval of the full requested appropriation would unreasonably affect public recreation or the natural stream environment. This statute was first invoked in 1983 on the Logan River in northern Utah, in connection with a hydroelectric license. In this case, the State Engineer restricted the approval of the water right based on a recommendation from Wildlife Resources, and an instream flow was required for fishery and recreation purposes. This instream flow requirement also was listed in the license issued by FERC to operate the facility. Similar use of this provision has been made by the State Engineer several times since 1983.

In the early 1980s, instream flow protection became a more visible issue in Utah. In 1982, the Utah Instream Flow Needs Committee was formed, representing the interests of nature study groups, wilderness advocates, recreationists and fishery professionals. This committee was successful in gaining enough political support to have House Bill 8 introduced to the legislature in 1983. House Bill 8 would have broadened the definition of beneficial use under Utah water law to include instream flows for the enhancement, preservation, or propagation of aquatic wildlife. The bill would have allowed Wildlife Resources to file a change application (point of diversion, place and/or nature of use) for existing water rights acquired by the Division, for instream purposes. The bill never passed out of the Natural Resources and Energy Interim Committee for consideration by the legislature.

The Utah Instream Flow Needs Committee continued its efforts to lobby for this cause. William H. Geer, then Acting Director for the Division, carried the cause to the legislature again in 1985. A bill similar to House Bill 8 was introduced in this session but, once again, was defeated. The issue was referred to an ad hoc committee to work out a compromise bill for the next session. House Bill 58 resulted from the ad hoc committee's efforts, and it was introduced to the legislature in 1986. Although the ad hoc committee supported House Bill 58, other opposition was still strong enough to require a few amendments. In this amended form, House Bill 58 passed the Utah State Legislature in the 1986 session.⁴

In the 1991 legislative session, Senate Bill 117 was introduced, which would have amended the instream flow statute to allow the Utah Division of Parks and Recreation (Parks and Recreation) to file change applications for instream flow purposes. This legislation was referred to the Natural Resources and Energy Interim Committee for further study. Subsequently, Dee C. Hansen, then Executive Director of the Utah Department of Natural Resources, was appointed as chair of a broad-spectrum task force, consisting of water user representatives and environmental and recreation interests. The task force was asked to consider modifications to the existing instream flow statutes and to draft legislation for introduction during the next legislative session. The task force successfully reached a consensus on draft legislation. Introduced as Senate Bill 7 in the

1992 legislative session, the law passed, further modifying the instream flow provisions of Utah law.⁵

The Legal Framework

The Instream Flow Law

Utah's current instream flow law allows Wildlife Resources or Parks and Recreation to file for temporary (up to one year) or permanent changes for instream purposes on perfected water rights presently owned by either division; on perfected water rights purchased by either division through funding provided for that purpose by legislative appropriation, or acquired by lease, agreement, gift, exchange or contribution; or on appurtenant water rights acquired by either division with the acquisition of real property. Since the amendments in 1992, changes can be filed for the purpose of providing water for instream flows in a designated section of a natural stream or altered natural stream necessary for the propagation of fish, for public recreation, or for the reasonable preservation or enhancement of the natural stream environment. Prior to 1992, the instream flow law allowed only Wildlife Resources to file a change for instream flow rights for the limited purpose of preservation or propagation of fish. Under the current law, a change application must identify the points on the stream between which the instream flow would be provided, and must document the public benefits expected to accrue from the instream flow. Additional information may be requested by the State Engineer in evaluating the application. Legislative approval is required before either Division can purchase water rights specifically for instream flow purposes. The law specifically states that unappropriated water cannot be appropriated for instream purposes, nor can either Division acquire water rights by eminent domain for instream flows or any other purpose.

Other Applicable Statutes

Utah water law empowers the State Engineer to withhold approval or rejection of an application to appropriate water until the ramifications of the appropriation are fully investigated.⁶ In conducting investigations, the State Engineer is obligated to consider several criteria, including whether the appropriation would unreasonably affect public recreation or the natural stream environment. The State Engineer may reject an application, approve it as presented, or approve a lesser quantity of water to be appropriated, as necessary to protect prior rights or other uses, including public recreation and the natural stream environment.

Although the Utah statute pertaining to channelization of streams does not affect instream flows in a direct way, it is important because it requires consideration of effects

on public recreation, aquatic wildlife and the natural stream environment in evaluating applications to channelize streams.⁷ Severe flooding in 1983 and 1984 throughout most of the state prompted widespread dredging, channelization, and other activities which, in many cases, only contributed to channel instability and caused further flooding problems. Interagency review of those conditions resulted in significant amendments to the statute in 1985, strengthening the law and eliminating vague language affording loopholes in previous versions. The Utah Division of Water Rights has substantially increased its commitment to the stream channel alteration program, and has involved other local, state, and federal agencies in its permitting process. In 1987, the U.S. Army Corps of Engineers granted the state a general permit to issue stream channel alteration permits under Section 404 of the Clean Water Act.⁸

Applicable Court Cases

The Utah Supreme Court ruled early in 1989 that the State Engineer is "required to undertake the same investigation in permanent change applications that the statute mandates in applications for water appropriations."⁹ The statutory provision regarding new water appropriations (discussed previously) explicitly requires the State Engineer to consider the effects of the appropriation on public recreation and the natural stream environment, in addition to several other criteria. However, the section of the statute pertaining to change of water right applications does not explicitly require the same considerations as for new appropriations. Prior to this decision, the State Engineer had limited his review of change applications to questions of impairment to other water rights.

Because Utah's surface waters are already virtually appropriated, the consideration of public recreation and the natural stream environment for new appropriations has not had significant applicability since it was added to the statute in 1971. Change applications likely will become the predominant mechanism for meeting changing water use patterns and demands in Utah in the future. The numerous changes necessary to accomplish many of Utah's future water projects now will be subject to the more broadly defined review obligations of the State Engineer. Protection of public recreation and the natural stream environment will be more assured because of this court decision. Exchange applications, however, authorized by distinct statutory provisions, are not subject to the review requirements of either new appropriations or changes.

The Future Of Utah's Instream Flow Program

Utah's instream flow legislation affords an opportunity for Wildlife Resources or Parks and Recreation to hold instream flow water rights. Efforts initially have been aimed at changing the nature of use of water rights already owned by Wildlife Resources. In 1989, Wildlife Resources established an internal task force to identify and prioritize

instream flow opportunities with water right holdings already owned by Wildlife Resources. A change application was filed in December 1990 to add instream flow as a use of a water right held by Wildlife Resources in Manning Creek, a tributary to the Sevier River. The change application was protested, a hearing was held, and Wildlife Resources addressed the concerns of the protestants. The State Engineer approved the change application in December 1991. To date, that change is the only one approved for instream flow since the laws were passed. There currently are no change applications pending by either division. Wildlife Resources expects to file one or more change applications in the coming year, pending transfer of properties and appurtenant water rights to the division in connection with ongoing Central Utah Project mitigation activities.

Further development of Utah's instream flow program will require close coordination among Wildlife Resources, Parks and Recreation, the Utah Division of Water Rights (State Engineer), other divisions in the Department of Natural Resources, public and private land managers and water users, and the state legislature. Utah has not yet acquired any water rights expressly for instream flow purposes. No formal rules or procedures have been adopted by Wildlife Resources or Parks and Recreation regarding acquisitions of water rights for instream purposes. The instream flow statute requires legislative approval of any use of state funds for acquisition of water rights for instream flow purposes. To date, funding limitations have precluded either division from making a request to the legislature for that purpose. Funding limitations will likely persist into the near future. In the next few years, objectives for an instream flow acquisition program will be developed in concert with appropriate state agencies.

Wildlife Resources also plans to explore the potential to acquire water rights from entities required by federal permitting stipulations to bypass fishery and recreation flows. Management of these bypass flows as water rights by Wildlife Resources or by Parks and Recreation would afford greater protection to the fishery and recreation flows because these rights would be established under state law. The potential of this option is being explored with the entities involved on a cooperative basis.

The recent Utah Supreme Court decision regarding the obligation of the State Engineer to consider potential effects of change applications on public recreation and the natural stream environment will necessitate a greater cooperative management of the State's water resources. Instream flow purposes may receive more attention in the planning stages of proposed projects. Public involvement will also play a greater role in determining the future use of Utah's water resources.

Several issues yet to be resolved in Utah, as elsewhere in the western United States, include reserved right claims by federal land management agencies and what is considered by some to be federal intervention in state water right issues via permitting requirements, such as Federal Energy Regulatory Commission hydroelectric licensing.

Notes

1. Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, 106 Stat. 4600 (1992). Titles II through VI contain the Central Utah Project Completion Act.
2. Streamflow Agreement between Governor of Utah, Central Utah Water Conservancy District, Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service, Utah Department of Natural Resources, and the U.S. Forest Service, (February 27, 1980) (amended 1990). The Streamflow Agreement (as amended) pertains to the Strawberry Aqueduct and Collection System of the Central Utah Project. The Agreement increased the original allotment of 6,500 acre-feet of water for fishery purposes to 44,400 acre-feet. Further, a one-time allocation of 10,500 acre-feet and dedicated storage space of carry-over fishery water in Strawberry Reservoir is provided by the Central Utah Water Conservancy District for fishery flows in Uinta Basin streams. Project water diverted from Uinta Basin streams is destined for transbasin diversion to the Wasatch Front.
3. UTAH CODE ANN. § 73-3-8 (1989).
4. House Bill 58 (1986), amended UTAH CODE ANN. § 73-3-3, pertaining to changing the point of diversion or nature of use of existing water rights. In addition to a few minor language clarifications to § 73-3-3, House Bill 58 added paragraphs 7 and 8 to the law. Further clarification of language in § 73-3-3 by the legislature in 1987 shifted the content of paragraph 7 to paragraph 11, and deleted the previous paragraph 8.
5. Senate Bill 7 (1992), amended UTAH CODE ANN. § 73-3-3, pertaining to changing the point of diversion or nature of use of existing water rights. In addition to a few minor language clarifications to § 73-3-3 and the changes discussed in the text, Senate Bill 7 clarified that a diversion structure was not required for an instream flow water right, and set forth the proof requirements for an instream flow right.
6. UTAH CODE ANN. § 73-3-8 (1989).
7. UTAH CODE ANN. § 73-3-29 (1989).
8. 33 U.S.C. § 1344 (1986).
9. Bonham v. Utah State Engineer, 788 P.2d 497 (Utah).

Protecting Instream Resources In Washington State

Kenneth O. Slattery and Robert F. Barwin

Introduction

Instream flow protection statutes have been in place in Washington State for over forty-four years. These laws were passed in recognition of losses of important instream resources and changing perceptions of their value. Historically, many streams in the state were reduced in flow or dewatered by extensive diversions of water for consumptive use. Many of these uses were initiated before the state water code established a centralized permit system in 1917, and most precede state instream flow laws.¹ While traditional off-stream uses grew, many in-place values and resources dependent on streamflow, such as fish, wildlife and recreation, were lost or depleted.²

The damage to instream resources has been dramatic in areas such as the Yakima River Basin where chronic low summer and fall flows have nearly eliminated once large salmon and steelhead trout runs.³ Many other Washington stream systems, including the Columbia River itself, have experienced a drastic reduction in the natural in-place resources that once thrived. Much of this decrease is due to unrestricted development of off-stream uses, impediments to passage created by irrigation and power dams, and inundation of aquatic habitat.⁴ The problem is serious enough in the Pacific Northwest to have merited the endangered or threatened listings of three runs of salmon native to the Snake River basin.⁵

Recognizing the potential for impairment of fishery resources, and the benefits to be derived from retaining a balance and diversity of off-stream and instream water uses, the State of Washington began in 1949 to systematically protect instream values through the water rights process. Passage of additional laws since that time has strengthened the status of instream resource values inherent in Washington streams. Under these laws, the Department of Ecology (Ecology) developed a water resources planning and management program, one objective of which is to protect instream values.

Rapid population growth and the attendant increase in demand for all beneficial uses of water have resulted in heated disputes among competing interests. From late 1985 to late 1991, these disputes caused a stalemate regarding instream flow and water allocation policy setting. In 1986, Ecology initiated a comprehensive review of its instream flow and water allocation program. Major changes in the program were proposed to increase the level of instream protection for most streams, and require that mitigation be provided by any new water developments that would diminish instream values.⁶

The resulting controversy surrounding Ecology's proposals prompted passage of a legislative bill in 1988 that called for a legislative review of the fundamental water resource policies of the state, particularly the instream flow and water allocation elements of the state water resources management program.⁷ This legislative review was no more successful in ending the controversy than Ecology's previous effort.

In 1990, the executive and legislative branches, in cooperation with Indian tribal organizations agreed to attempt a mediated dispute resolution process to address instream flows and water allocation issues. A landmark agreement resulted in 1991 which provides the basis for moving ahead on establishment of instream flows.⁸ By early 1993, implementation details had been worked out by a group established under the agreement.⁹

This chapter will examine recent developments in the context of historical legislative and administrative actions in the state to protect instream flows. First, the legal framework under which Washington state officials have administered water allocation, including instream flow programs, will be discussed. Second, there is a description of an innovative instream flow enforcement program implemented by Ecology in arid central Washington. The chapter concludes with an examination of the issues and controversies relating to instream flows that remain in the forefront of water resources in Washington.

The Legal Framework

Legislative Authorization

Unlike some western states, Washington has had strong legislation to protect instream values for many years. This may be explained by political realities in the state. The public in Washington has a high level of interest in and commitment to environmental protection as well as a strong economic and cultural attachment to fisheries, especially salmon and steelhead trout. Washington's economy has historically depended in part upon the commercial fishing industry and more recently upon water-based recreational activities.

The State Water Code

A centralized, state administered water rights system for surface water was established by the state water code in 1917.¹⁰ Under this law, appropriation became the exclusive means of obtaining a new water right. However, existing riparian rights were not eradicated; therefore Washington is viewed as having a dualistic water rights system.¹¹ The focus of the state water code, like legislation passed in many other western states during the early 1900s, was to provide a state controlled process for

allocating water to private use principally for economic development. It did not recognize non-diversionary instream uses as beneficial, nor did it provide meaningful protection of public values other than the general requirement that a new appropriation be denied if it would be detrimental to the public interest.¹²

Under the state water code (and aided by development oriented federal laws such as the Federal Power Act, the Reclamation Act and various Rivers and Harbors Acts), out-of-stream water development proceeded without regard to preserving instream values. The natural flow of numerous streams, especially in eastern Washington, became fully appropriated. Large dams for irrigation, flood control and hydroelectric power generation were built on many rivers throughout the state during the first half of this century. These developments brought substantial economic and social benefits. However, they also severely damaged the state's economically significant anadromous fish resources (salmon and steelhead trout). The destruction of fish habitat and fish passage problems caused by dam development remain key environmental problems today in Washington and throughout the Pacific Northwest.¹³ A number of fish runs have become extinct and three salmon runs native to the Snake River Basin have recently been listed as endangered or threatened under the Federal Endangered Species Act. Numerous other fish runs in the region are regarded as weak enough to merit listing as well, including over 100 stocks in Washington alone.¹⁴

1949 and 1967 Legislative Acts

The Washington Legislature responded to concerns about the effects of water development on fish by amending the State Fisheries Code in 1949. Included was a new provision requiring that the state water management agency solicit recommendations from the state departments of Fisheries and Wildlife regarding the disposition of proposed surface water appropriations. The statute allows Ecology to deny a permit application if the proposed appropriation would result in lowering the flow of water below that necessary to adequately support food or game fish populations in a stream. Existing water rights were not to be affected.¹⁵

Using general permit conditioning authority, Ecology and its predecessor agencies have attached low flow conditions to many new water rights in lieu of outright denial. Water rights on approximately 500 streams (mostly smaller streams) have been administratively denied or conditioned with instream flows on a case-by-case basis since 1949.¹⁶ Conditioned permits require the curtailment of the diversion when flows fall below a specified level. This case-by-case approach was eventually viewed as inadequate by those interests desiring a more systematic approach to water allocation and instream flow protection. The 1949 law has no provision for public involvement in the process of denying permits or attaching flow conditions to protect fish.

The Minimum Water Flows and Levels Act, passed in 1967, authorizes Ecology to establish minimum water flows and levels by administrative rule for streams and lakes when requested by the state departments of Fisheries or Wildlife. Ecology may also establish such flows or levels on its own initiative. Public notice and hearings are required prior to adoption of minimum flows or levels.¹⁷ Under this statute, Fisheries and Wildlife requested minimum flow establishment on several dozen streams, but only one minimum flow was established under this law alone. Ecology lacked the necessary resources and expertise to effectively implement this statute.

The Water Resources Act of 1971

The Water Resources Act of 1971 is a more comprehensive law than the 1967 Act. It provides specific direction to Ecology for developing a statewide water resources program addressing all beneficial uses including instream flows. It requires that "base flows" be retained in perennial streams except in cases of "overriding considerations of the public interest." The Act also declares a wide variety of water uses including instream uses to be beneficial, and requires that water for future uses be allocated to achieve "maximum net benefits" for the people of the state. It requires that the state water resources program be implemented by Ecology through rule-making procedures. Other important provisions require that the state vigorously represent its interests before federal and regional authorities and that the natural interrelationship between surface water and groundwater be recognized.¹⁸

Under the 1971 Act, Ecology developed both basin management and instream resource protection plans. From 1975 to 1979, Ecology developed a series of comprehensive basin management plans for basins experiencing intense competition for water. Most of the basin plans included establishment of instream flow levels in addition to other water allocation considerations. In 1979, Ecology began the Washington Instream Resources Protection Program, intended to focus on the establishment of instream flows. Instream resources plans developed under the program are less comprehensive than the earlier basin management plans in that they do not incorporate water allocation decisions involving any uses other than instream flows. Ecology has adopted six comprehensive basin management plans and eleven instream resources protection programs on some of the most heavily used streams of the state, including the main stem of the Columbia River. A majority of heavily used streams in eastern Washington and the Puget Sound region now have instream flows established for them. These regulations are reviewed periodically, and instream flows may be changed based on new information.¹⁹

The Process for Setting Flow Levels

The process outlined in this section generally reflects Ecology's approach to setting flow levels during the period from 1979 through 1986. As discussed in a later section, the establishment of new instream flows has been on hold since 1986 while a number of attempts have been made to resolve difficult policy issues relating to instream flows and water allocation.

When considering the establishment of instream flows, Ecology assessed the flow needs of fish, wildlife, recreation, scenic, aesthetic, and environmental values, water quality, and navigation. Ecology and the departments of Fisheries and Wildlife cooperated to carry out Instream Flow Incremental Method (IFIM) studies to determine fish habitat and streamflow relationships.²⁰ Fish flow recommendations received from agency and tribal biologists were a key consideration. These recommendations were usually at a level that would protect "optimum" flow conditions for fish.²¹ These fish and wildlife recommendations were then merged with what was known of the needs for the other instream uses as determined through consultation with persons knowledgeable about those uses.

Once the total flow needs for instream resources were known, the flows were evaluated with regard to the availability of water to meet these needs. Water availability was based on discharge duration hydrographs developed by Ecology from stream gaging records. If insufficient water were available to satisfy instream flow needs, Ecology often proposed to close the stream to further consumptive appropriation for all or part of the year. Ecology closed numerous streams, especially small ones, on this basis.²²

Alternatively, Ecology sometimes placed a hydrologic cap on the instream flow levels it was willing to propose for rule adoption. Usually this cap was the calculated median flow (50 percent exceedance flow—the flow that for any particular date of interest will be met or exceeded one half of the time) taken from a discharge duration hydrograph. In general, Ecology's proposed flows would protect from further degradation at least 90 percent of the optimum habitat for fish species of concern. The flows were frequently set at the "optimum" level for parts of the year depending upon a stream's hydrology and the value of the fishery produced there. Ecology attempted to reach agreement regarding the instream flows with the fish and wildlife agencies and interested tribes, but this was not always possible. They preferred optimum flows that would fully protect fish habitat from potential further degradation.²³

In adopting instream flow regulations, Ecology followed a standard agency rule-making process involving notice, hearings, and a public comment period.²⁴ The state Ecological Commission reviewed proposed regulations and could block adoption on a vote of five or more of the seven members.²⁵ If approved by the Ecological Commission, the proposed rules were subject to a final adoption decision by the Director

of the Department of Ecology. The rules went into effect 30 days after adoption. Aggrieved parties could appeal administrative rules to the state court system.²⁶

After the adopted rules went into effect, Ecology regional offices commenced considering water right applications for the affected streams. Any proposed consumptive use of water that would result in a diminishment of streamflow, including wells withdrawing groundwater in hydraulic continuity with a stream, were subject to the instream flow levels and stream closures established by the regulations.²⁷ The rules also applied to non-consumptive uses that bypass a reach of stream such as some hydropower projects and fish hatchery diversions.

These rules remain in effect today. Any new consumptive appropriation, storage appropriation, or bypass use is conditioned to require that the diversion or the capture of water for storage cease when the flow of the stream falls below the instream flow established in the regulation.²⁸ Applications for consumptive use, storage, or bypass uses on a closed stream are not approved for the period of closure. A 1979 amendment to the State Water Code clarifies that instream flows established by rule are an appropriation with a priority date as of the effective date of their establishment.²⁹ Consequently, conditioned junior water rights are regulated in times of water shortage to protect the instream flows.

Several types of water use were generally exempted from instream flow requirements in these instream flow rules. Applications for non-consumptive, non-bypass uses have been regarded as exempt because they do not have an effect on streamflow.³⁰ A categorical exemption has also been provided for minor uses such as domestic use by a single residence and riparian stock-watering.³¹ In addition, existing water rights are expressly not affected by newly established instream flow requirements.³²

Instream Flow Enforcement

Summary of Instream Flow Programs in Central Washington

Three basins in Central Washington have adopted instream flows. Rules were adopted 1976 for the Okanogan and Methow River basins. These basin plans call for the protection of resident and anadromous fisheries and recreational and aesthetic values in these tributaries to the Columbia River. Under the basin plans, minimum flows were established at several control points on the main stem of each river and on their major tributary streams. In addition, for smaller perennial tributaries where existing water-based development had severely depleted streamflows, new diversions were prohibited seasonally or throughout the year. In 1983, instream flows were adopted for the Wenatchee basin.

Program Similarities and Differences

These three programs are similar in concept. The minimum flows established in each program reflect the river's natural flow hydrograph. The adopted instream flow levels are at their highest in June or July and their lowest in September or later (see Table 1). The adopted minimum flows have greatest impact on new irrigation and public water supply proposals.

The Okanogan and Methow River basin plans are virtually identical and differ only in the level of the minimum flows adopted (see Table 1).³³ The Wenatchee River program differs primarily in allowing for case-specific exemption for group domestic and municipal water systems. These uses may be exempted from the minimum flow restrictions if a lengthy list of requirements is met.³⁴

Conflicts with Out of Stream Uses

Historical flow-duration data for the Okanogan, Methow, and Wenatchee Rivers indicate that the highest probability for conflict between new irrigation developments and minimum flow protection will occur during August and September. The expected frequency for the minimum flows to be exceeded on these rivers during August and September is approximately 70 years in 100.

After the minimum streamflow levels were established for the Okanogan, Methow, and Wenatchee Rivers, each permit for a new water right issued in these areas was made subordinate to the adopted instream flows. The late 1970s and early 1980s were active times in Washington for development of new agriculture, and a significant number of water right permits were issued for additional irrigation. In total, 74 permits in the Okanogan River basin, 64 permits in the Methow basin, and 20 permits in the Wenatchee basin are conditioned to protect instream flows.

Initial Enforcement Efforts

Enforcement of instream flow conditions was not actively undertaken until 1985 due to the relatively small number of conditioned permits and rights and staff and equipment limitations. Ecology's ability to effectively conduct an enforcement effort was improved by acquisition of a micro-computer. This purchase, combined with telemetered river gaging data available from the U.S. Corps of Engineers, enabled Ecology's Central Regional Office to make operational decisions to regulate junior water uses for minimum flow protection.

TABLE 1. Minimum Flow Levels (all flows in cubic feet per second).

		OKANOGAN R. NR. MALLOTT	METHOW R. NR. PATEROS	WENATCHEE R. NR. MONITOR
Jan.	1	860	350	820
	15	830	350	820
Feb.	1	820	350	820
	15	850	350	800
Mar.	1	880	350	800
	15	900	350	1040
April	1	925	590	1350
	15	1100	860	1750
May	1	1750	1300	2200
	15	3800	1940	2800
June	1	3800	2220	3500
	15	3800	2220	2400
July	1	2100	2150	1700
	15	1200	800	1200
Aug.	1	800	480	800
	15	600	300	700
Sept.	1	620	300	700
	15	700	300	700
Oct.	1	750	360	700
	15	960	425	700
Nov.	1	950	425	800
	15	950	425	800
Dec.	1	930	390	800
	15	900	350	800

River flows in Central Washington fell below the designated minimum levels in late July, 1985. This led Ecology to implement its instream flow enforcement strategy during the first week of August.³⁵ Central Region staff began contacting junior water users and posting Notices of State Regulation on their diversion headgates to curtail water use. Such postings are the standard way in which Ecology provides its instructions on rivers and streams to protect senior water rights from injury by junior diversions. These measures were met with less than full cooperation from water users, and the resulting controversy exceeded Ecology's expectations. By the end of August, Ecology faced a class action suit and found itself brought before a hostile public at a meeting called by state legislators.

Many lessons were learned by Ecology during its 1985 enforcement program. Technical, legal, and procedural limitations which made the efforts in 1985 less than fully successful and highly controversial are discussed in the following sections.

Limitations of Telemetered Monitoring Data

Streamflow data needed for enforcing the minimum flow restrictions was obtained from the Columbia River Operational Hydromet Monitoring System (CROHMS), coordinated by the U.S. Army Corps of Engineers. This system contains stage and discharge information for many United States Geological Survey (USGS) and public agency gaging stations in the Pacific Northwest. Rating curves for the gaging stations in the Methow, Okanogan, and Wenatchee Rivers for the 1985 season were obtained. It was soon apparent that these ratings were maintained primarily for flood stage or intermediate river flow stages and in some instances were not accurate for river flows at low stages.

Other problems with the system also impeded enforcement efforts. The data obtained through CROHMS was typically six to 24 hours old and only a few readings per day were available. Data was sometimes unavailable because of a problem with the stream gaging equipment or data transmission. It was sometimes impossible to obtain telemetered stage data for one or more of the stations of interest.³⁶ This made short-term river flow trends hard to identify and enforcement decisions difficult to formulate.

By August 15, 1985, problems were experienced with the principal stream gage being utilized for making enforcement decisions on the Methow River. The gage near Pateros was not capable of measuring river flows approximately equal to or lower than the adopted minimum flow of 300 cfs during August. The stilling well at the gage had silted in and the float came to rest on the bottom of the stilling well at approximately the same stage as the river at the 300 cfs level. This made enforcement difficult until the USGS installed a manometer at the gaging station so that flows could be recorded down to approximately 200 cfs.

Claims of Prior Water Rights

Unadjudicated water right claims were an issue in instream flow enforcement in all three river basins. A state administered water right permit system did not exist until 1917. The law establishing the system grandfathered in all vested rights established under a number of alternative doctrines and procedures. Claims for vested water rights were required to have been documented during a claims registration period extending from 1969 through 1974.³⁷ Claims may be determined as to validity and quantity through state general adjudications of water rights.

In the lower Methow River, a number of water right claimants had converted from ditch conveyance to individual pumps, pipes, and sprinkler systems. These individuals had never requested or received approval for a transfer of their points of diversion, but had instead filed applications for new (interruptible) water rights. They maintained they should not be regulated since they claimed valid water rights preceding 1917 from the now-abandoned ditches. The claims had not been adjudicated. Ecology analyzed the claims and supporting documentation for 20 orchards or farms and made administrative determinations as to the validity and extent of claimed senior non-interruptible water rights. Ecology was then able to act on applications for change of point of diversion to reflect the current situation.

Claims for prior non-interruptible water rights also were manifest in the Okanogan Valley. A class action suit seeking an order restraining the Department of Ecology from enforcing minimum flows for permits on the Colville Indian Reservation was brought in the Spokane District Court in August, 1985. A restraining order was issued by that court precluding the Department from taking enforcement action against water users on the reservation without permission having first been granted by the court.³⁸

In the Wenatchee basin, when Ecology staff posted the Notice of State Regulation affecting the diversion of a 1400 acre irrigation district, the district petitioned the Chelan County Superior Court for a stay of the Notice. The district's water right permit had issued during 1984 and was subject to minimum flows because it post-dated adoption of the Wenatchee River Instream Protection Program. The district had diverted water continuously since 1906; however, because it failed to file a claim under the claims registration Act, the original vested water right was deemed to have been forfeited.³⁹ A legislative bill passed in 1985 allowing water users a brief period in which to file a claim to any previously unregistered water right claim.⁴⁰ The irrigation district filed a claim and was then successful in having Ecology's enforcement order stayed. The Pollution Control Hearings Board ruled in the district's favor on its appeal of Ecology's Notice of State Regulation.⁴¹

The Lack of Prior Public Notice

Another problem arose from the fact that advance notice of these actions was not given to water users in the Methow Valley or the Wenatchee Valley. Up-to-date property ownership information and telephone numbers of affected Methow Valley water users had not been available. This was not a problem in the Wenatchee Valley (where no interruptible permits were more than two years old) or in the Okanogan Valley. Advance work in the Okanogan Valley included property ownership research at the county assessor's office and compilation of a telephone list of property owners. This work had just been completed for the Okanogan Valley when the river flows dropped below the adopted minimum flows. Telephone calls were made during the week prior to posting notices at the pumps of Okanogan Valley water users. This simple step made a major difference in the level of acceptance of the regulation decisions.

Methow Valley water users were extremely resistant to Ecology's attempts to enforce the minimum flow conditions on their water rights. Sentiment against the enforcement program was so strong that a number of water users contacted their state legislators. Within ten days of the commencement of the enforcement program on the Methow River, a state legislator called a public meeting for the purpose of having Ecology explain its minimum flow enforcement program. Ecology was intensely criticized for its lack of public participation and public notice of the impending enforcement program.

Wenatchee River water users did not express similar criticisms. This is most likely because no interruptible permit was more than two years old and the permit holders were well aware of the significance of the minimum flow conditions on their permits. Compared to many Methow River water users who acquired their permits during 1977, Wenatchee River water users received more practical and technical information regarding minimum flows conditions on their permits.

The Need for Changing Instructions as Conditions Change

Even during periods of low flow, conditions may briefly improve, raising the flow above minimum flow levels. During 1985, the total duration when minimum flows were not met on the Okanogan and Methow Rivers extended from the last week of July until September 6, a period of approximately six weeks. The Wenatchee River was below the minimum flows from the first week of August until September 6 and again from the last week of September until the middle of October. However, for three or four days during mid-August, the Okanogan, Methow, and Wenatchee Rivers rose above the adopted minimum flows.

These fluctuations revealed the difficulty of advising affected water users that they could resume their water use during the days of higher flows. Ecology's advance

preparation on the Okanogan River allowed for contact with water users to be made by telephone in a relatively efficient manner. However, the lack of preparation on the Methow and Wenatchee Rivers left Ecology without phone numbers to contact affected individuals. In many cases, by the time individuals were contacted to tell them they could resume irrigating, river flows had again fallen below the adopted minimum flows and the curtailments were again in effect.

Inadequate Civil Penalties

Not all water users abided by enforcement orders issued in 1985 to protect instream flows. For example, an individual diverting from the Okanogan River to irrigate a 100 acre apple orchard openly resisted attempts to regulate his diversion. Ecology penalized this individual \$1,300 over 13 days. Recognizing that he was willing to pay the state's maximum penalty of \$100 per day for violating the Notice of State Regulation for the entire remainder of the irrigation season, Ecology petitioned the Okanogan County Superior Court for a temporary restraining order.⁴² Immediately upon issuance of the temporary restraining order, the individual did, in fact, stop diverting water to the orchard. However, three to four weeks had elapsed between the time of initial enforcement action and when compliance was finally achieved.

Another water user diverting from the lower Methow River was penalized for violation of the Notice of State Regulation posted at his pump on August 2, 1985. The penalty levied for violations during August was \$400. The water user appealed the penalty. A hearing before the Pollution Control Hearings Board (PCHB) was not held until September 1986. The PCHB issued a decision upholding the full amount of the penalty. The Board supported the concept that instructions given to water users by Ecology representatives must be followed explicitly. The appellant claimed a prior uninterrupted water right and therefore chose to ignore the notice placed at his pump and verbal instructions given by Ecology staff. After further research it was determined that a prior right did exist for a portion of the property, but the PCHB found that the appellant should not have ignored Ecology's instructions. Instead, the PCHB held that the appellant should have worked with Ecology to resolve the difference of opinion.⁴³

This favorable opinion (which has since been reiterated in other appeals) is compromised to the extent that a penalty affirmed more than one year after it is levied does not provide an effective deterrent to violators. Civil penalties with a maximum amount of \$100 per violation were not effective as a tool to stop minimum flow violators during 1985. Since then, Ecology has without success proposed legislation to increase civil penalties.

Improvements to the Enforcement Strategy

Summary of the 1986-87 Modifications

Following the 1985 irrigation season, Ecology considered improvements to its enforcement program in anticipation of the next dry year. An opportunity to implement a new strategy arrived quickly, as 1986 and 1987 both proved to be years in which minimum streamflow levels were not met in Central Washington.

The foundation of the modified enforcement program was improved information, including better data for use by Ecology and better information transmitted to the public. Ecology implemented a number of additional steps in its enforcement process to facilitate the flow of information primarily to the junior water users regulated under the program. The goal was to educate affected water users so that they would understand their responsibilities under the program, appreciate the public values protected by the minimum flows, and have sufficient hydrologic data to manage their water use within the constraints of their interruptible water rights. The new elements in the enforcement procedures, as discussed in the following sections, included:

1. a better database for adjusting quickly to changes in streamflow;
2. a semi-monthly letter sent to water users to provide hydrologic data and enforcement information;
3. a toll-free telephone line for daily updates to river flow and enforcement information;
4. public meetings prior to initiation of enforcement measures;
5. mailing regulatory orders to each water user rather than posting notices at headgates; and
6. field checks supplemented by Notices of Violation issued to non-complying water users.

Better Data Management

To improve minimum flow enforcement, Ecology expanded its river flow and water user information. This required investment in hardware for data acquisition and in labor to review county records to determine the current property owners' names, addresses and telephone numbers so that they could be contacted efficiently.

During 1986 and 1987, Ecology cooperated with the USGS to establish telemetered GOES⁴⁴ streamflow gaging stations in each of the three river basins. The coop program with the USGS involves a 50/50 cost sharing for capital expenditures and annual operation and maintenance. The capital cost, including installation, of each GOES platform was approximately \$5,000. Annual operation and maintenance costs are approximately \$1,200 for each platform. The expenditure also allows Ecology access to the USGS computer in Tacoma, Washington.

Near real time telemetry data from GOES platforms at more than 100 Pacific Northwest hydrologic stations reside in a users file for USGS cooperators. Stage or discharge data is typically available within two hours. Readings are available at 15 minute intervals which is useful for determining river flow trends or operational changes by major water users. Overall reliability of the telemetry system is very high. There were only a few times during 1987 that both stage and discharge data for Ecology's three stations were not available.

Two data management systems are used by Ecology for the direct support of the minimum flow enforcement program. One system utilizes the stage and discharge data acquired through the various telemetry systems and stores the river, reach, date, stage, and discharge for later use to print tabular reports or create hydrographs. The second system contains information about the water right permits subject to minimum flow enforcement including a description of the water right, current property owner, mailing address, and telephone number. This data is used to quickly create a telephone list, mailing list, or report pertaining to the physical character of the water rights subject to enforcement. Maintaining the accuracy of the data in this system requires cooperation with the county assessor's office to obtain updated property ownership information.

The Semi-Monthly Letter

A semi-monthly letter is mailed to all affected water users, local government officials, and media from April through July during years of forecasted below-average runoff. Each letter provides a summary of information contained in the most recent U.S. Weather Service and Soil Conservation Service Water Supply reports. Also included is general river flow trend information for the preceding two weeks. With this information, the affected water users can formulate a water use strategy for the upcoming 30 to 60 days. Different letters are prepared for each basin to inform potentially regulated water users of the current local conditions.⁴⁵

The Toll-Free Information Telephone Line

If river flow forecasts during the spring indicate that river flows will probably fall below the adopted minimum flows, a toll-free information line is activated during June

and is operated through October. The information line provides a pre-recorded message advising water users of the actual gaged flow and the minimum flow for each river. Instructions are given regarding whether water users with minimum flow conditioned rights may divert water from each river or river reach.

The information line is designed to make daily river flow data available to anyone interested. The "800" telephone number is listed in the semi-monthly advisory letters. A pre-recorded message is placed on an answering machine every workday afternoon. The message is two minutes maximum length so that callers need not wait an excessive amount of time. A consistent format is maintained to allow callers to become familiar with the message and immediately recognize the portion pertinent to them. The message is an integral part of the enforcement program when minimum flows are not met. Every attempt is made by Ecology to minimize confusion in the message that might provide the basis for noncompliance by an interruptible permit holder.

Utilizing the current river flow trend and the United States Weather Service weather forecast, instructions are provided to water users for the following day. Many affected water users hold off-farm jobs during the day. These water users can call the information line after work and make any necessary adjustments that night or before leaving for work the following day.⁶

Public Meetings

A public meeting is held each year during June or July in each of the basins projected to be subject to water use curtailments. The purposes of the meetings are to provide information about the basin plan or instream flow program, explain the methods of enforcement, review the most recent runoff forecast and recent river flows, and provide the affected water users, local officials, and interested legislators an opportunity to question department staff.⁷

Notice of the public meeting is provided in the semi-monthly letters in a press release, and in a newspaper legal notice. The meetings are conducted in a semi-formal manner and are moderated by one of Ecology's public information officers. Ecology staff provide an overview of the purpose of and statutory authorities for Ecology's instream flow and basin planning program, and an overview of the minimum flow enforcement program. After Ecology's presentation, attendees may make a statement or ask questions pertaining to procedures, policies, or technical issues. Local elected officials and legislators often attend. Fisheries biologists from the departments of Wildlife and Fisheries have also attended to assist Ecology representatives with technical questions.

Regulatory Orders

Regulatory orders are sent to water users when it appears likely that river flows will fall below the adopted minimum flows.⁴⁸ These orders require the water user to follow the instructions provided by the toll-free information line.

Mailing the administrative orders to all of the water users with interruptible permits saves approximately four staff-weeks of labor compared to the previous practice of posting Notices of State Regulation at each diversion point. Preparation of the orders is simple because they differ only in the identity of the water user, the water right the order pertains to, and the river and reach at which the minimum flows on each water right permit are measured. The savings realized by the regional office are sufficient to offset much of the time spent on the informational letters, public meetings, and daily updates to the river flow information line.

Field Checks and Notices of Violation

During the initial periods of water use curtailment, one or two Ecology personnel contact all regulated permit holders to discuss and observe their actual water use. Random contacts are then continued on at least a weekly frequency for the remainder of the curtailment period.⁴⁹ If the water use is not consistent with the minimum flow curtailments then in effect, the problem is discussed with the water user and a Notice of Violation is issued. Based upon the response of the water user, further enforcement steps are taken or a penalty may be issued.⁵⁰ Table 2 is a chronology of significant actions comprising the 1987 enforcement program for the Okanogan Basin.

The same enforcement process for the Okanogan, Methow and Wenatchee River Basins remains in effect today. Due to a series of less than average flow years, the process has been invoked every year since 1985 in one or more of the three basins. Based on runoff forecasts available in the spring of 1993, it appears likely that regulation of conditioned water rights will be necessary this year too.

Recent Developments

Issues and Controversies

Instream flows became a controversial, divisive issue in Washington during the 1980s. As Ecology established more and higher instream flows and new stream closures on a basin-by-basin basis, prospective out-of-stream water users became increasingly concerned about securing water supplies to meet projected future needs. These users contend that the state's rapid population growth portends a need for more, not fewer,

TABLE 2. 1987 Enforcement Chronology in the Okanogan Valley.

March 1	April-September runoff forecasts indicate probable low flow conditions. Ecology encourages voluntary conservation.
March 31	Completion of water user database updating ownership of interruptible water right permits and related data.
April 15 - June 10	A series of five runoff forecast advisory letters is sent to permit holders.
June 15	Toll-free telephone line is activated, providing daily river flow messages to callers.
June 19	Okanogan River approaches minimum flow.
June 24	Enforcement orders sent to interruptible permit holders.
June 29	Okanogan River falls below minimum flow. Toll-free line instructs interruptible permit holders to cease diversion.
July 7	Okanogan River rises above the minimum flow enforcement level. Conditioned diversions allowed to resume. Okanogan public meeting held to discuss the instream flow enforcement procedures. Approximately 40 people attend.
July 21	Four Notices of Violation sent to water users found not in compliance with conditions on their water right(s).
July 25	Okanogan River falls below minimum flow. Toll-free line instructs interruptible permit holders to cease diversion.
August 14	Letter describing Ecology policy regarding water right transfers sent to all interruptible right holders.
August 17	Okanogan River rises above the minimum flow enforcement level. Interruptible diversions allowed to resume.
August 25	Similkameen River (tributary to Okanogan) falls below minimum enforcement level. Toll-free line instructs interruptible permit holders to cease diversion.
August 27	Okanogan River falls below minimum flow. Toll-free line instructs interruptible permit holders to cease diversion.
November 3	Toll-free telephone line inactivated following the end of the irrigation season.
December 31	Penalty sent to one water user (\$100).

options to secure water for human domestic needs, energy, industries, commercial use, and agriculture. They are concerned about the higher cost of water and energy that will result if they are forced to rely on sources other than natural flows (e.g., storage or groundwater). They advocate balancing the allocation of remaining surface waters between instream and out-of-stream use.

Fisheries, tribal, recreational and environmental interests, on the other hand, view Washington's growth and the new demands associated with it as a threat to important instream uses. They contend that out-of-stream use has historically received more than its fair share of water without regard to the loss of instream values, and that the remaining instream resource should be fully protected from further impacts. They are concerned that Ecology has proposed and adopted instream flows at a level lower than the optimum flow for fish, wildlife, recreation, and aesthetics. They assert that this will eventually result in further incremental losses of the instream resources that a growing population will need to perpetuate the quality of life that attracts people to the state in the first place. They oppose balancing the allocation of remaining surface waters between instream and out-of-stream uses. They assert that, historically, allocation has been unbalanced in favor of out-of-stream use and that expansion of these uses should be met through strict conservation of existing appropriations. Wherever possible they would like to see dewatered streams restored to their former productivity.

Washington's statutes contain ambiguities making it unclear what level of instream flow protection should be provided. While the use of the words "minimum flow" and "base flow" in the statutes seems to imply that a relatively low level of flow should be maintained, the statutory objective of such flows is the "protection" or "preservation" of instream resource values.⁵¹ With the advent and use of fish habitat modeling tools such as the Instream Flow Incremental Method, it became increasingly clear that full protection or preservation of fish habitat (and by implication fish populations) is not possible if only a relatively low level of flow is protected from diversions. The use of undefined terms in the legislation thus creates a difficult paradox.

It also is unclear in the statutes whether Ecology is required to balance among uses. Ecology's interpretation has been that the law requires that instream flows be regarded as a higher priority than future out-of-stream uses. All existing rights are, in turn, of higher priority than either new instream flows established by regulation or future out-of-stream rights. In attempting to strike a balance in the past, it is evident that Ecology has satisfied neither prospective water users nor fisheries and environmental interests.⁵²

During the mid-1980s, the state legislature considered but did not pass instream flow legislation that would have addressed these ambiguities.⁵³ Several of these bills, supported by fisheries and environmental interests, would have required Ecology to set instream flows at optimum levels for fish and other instream uses. These bills were met

with strong opposition from agricultural, municipal, and hydropower development interests. Even a relatively innocuous study bill failed to pass the 1986 session.⁵⁴

A Comprehensive Program Review

In January 1986, Ecology suspended establishment of new instream flow regulations and initiated an in-depth administrative review of its instream flow and surface water allocation program. A broad-based advisory committee representing the spectrum of water resource interests was established to assist in the review and to seek agreement on recommendations to Ecology on the course and form of future surface water planning in the state. Due to the divisiveness of the issues, the advisory committee was unable to reach consensus recommendations although a number of ideas were recommended for Ecology's further consideration.⁵⁵

Early in the program review process, Ecology decided to prepare a programmatic environmental impact statement under the authority of the State Environmental Policy Act (SEPA).⁵⁶ The SEPA process provides an excellent vehicle for identifying and evaluating alternatives and for involving the public in agency decision making. Compliance with SEPA would be necessary when it became time to implement program changes through adoption of state administrative rules.

Ecology published a Draft Environmental Impact Statement (DEIS) for the program review in February 1987. The DEIS evaluated five alternative planning approaches, including options for instream flow standards. These alternatives are summarized in the following section.

Initial Alternatives

Each of the five conceptual alternatives was based on different objectives, standards, and criteria. Implementation of some of these alternatives could require statutory changes as well as changes in existing Ecology regulations. The alternatives included (1) no action (continuation of the status quo), (2) emphasis on water supplies for out-of-stream development, (3) emphasis on instream resource protection, (4) a balanced assessment and allocation approach, and (5) an approach emphasizing coordination and consistency with other resource management plans.

Alternative 1 (no action) would continue the pre-1986 allocation system and instream flow protection objectives. The program would focus on preservation of instream flows to protect no less than 90 percent of optimum habitat for fish as indicated by an Instream Flow Incremental Methodology study, with instream flows generally not to exceed the 50 percent exceedance flow on a discharge duration hydrograph. Other instream resources would be informally assessed and factored into this flow

determination. Planning would be done for individual water resource inventory areas. Consideration of future out-of-stream needs would be minimal, and water conservation would not be emphasized. The maximum net benefits⁵⁷ test, required by the Water Resources Act for allocating water to future uses, would not be precisely defined and would be considered case by case.

Alternative 2 (out-of-stream use) would emphasize water availability for diversion. Instream resources would be addressed by adopting a "survival" level of instream flow predicated on preventing extinction of fish and other instream resources. Maximum net benefits would determine the preferred future uses of water remaining in excess of existing rights and the survival instream flows. Water conservation measures would be financed by the state.

Alternative 3 (instream protection) would emphasize preservation and enhancement of instream resources. Optimum instream flows would be set based on the needs of fisheries and other instream resources. Conservation measures would be required for new and existing uses of water. A maximum net benefits test which incorporated environmental as well as socioeconomic criteria would be developed and applied only to water allocations for future use in excess of the optimum instream flow.

Alternative 4 (balanced assessment and allocation) would assess and provide for the needs of both instream and out-of-stream uses. This strategy would emphasize a three-tiered planning approach. Statewide policies, guidelines, and priorities would be established; regional plans would assess water needs and evaluate use preferences; and basin plans would set instream flows consistent with the regional plans. No use priorities or criteria would be established. Instream flow levels could vary from survival to optimum levels depending on the outcome of regional and basin planning. A statewide conservation program would be implemented. Criteria for applying a maximum net benefits test would be developed and applied to allocations of water to future uses (including instream flows) in excess of the "survival" flow level.

Alternative 5 (coordinated resource planning) would establish instream flows consistent with the policies and resource management activities of agencies responsible for those instream resources. This alternative would focus on interaction with other agencies' planning for fish, wildlife, and other instream resources. Instream flows would be set at optimum when needed to support other agencies' management plans. On streams for which management plans do not require these levels, instream flows could be set as low as the survival level. If, at the time an existing instream flow was under review, full beneficial utilization of the instream flows had not occurred as a result of the management practices of the responsible resource management agency, Ecology could revise flows downward to as low as survival levels. Voluntary water conservation would be encouraged. A maximum net benefits test would be developed, but would not be applied to instream flows regardless of the level established.

Expected environmental and socioeconomic impacts of each of the five alternatives were evaluated. The DEIS also contains a detailed analysis of alternatives on specific water resources issues.⁵⁸

Approximately 700 copies of the DEIS were distributed to interested persons. Ecology received a large volume of public commentary regarding the DEIS alternatives through seven public hearings and by mail. Environmental groups, Indian tribes, fish and wildlife agencies, and private fisheries interests generally supported alternative two (instream emphasis). Water and electrical utilities for the most part supported alternative four (balanced assessment and allocation). Agriculture generally preferred alternative one (status quo).

The Preferred Alternative

Ecology did not select a preferred alternative in the DEIS. After a careful assessment of the public comments, a decision was made to publish a proposed preferred alternative as an intermediate step before publishing a final EIS. The proposed preferred alternative, published in November 1987, consisted of a combination of elements taken from several of the original DEIS alternatives. The objective of the proposed preferred alternative was to protect existing instream resources while addressing future off-stream needs and to promote conservation and efficiency of use in the management of state waters. Key elements of this alternative included the following:

1. Current levels of instream resources would be maintained through establishment of instream flows providing for full protection of these resources.
2. A strong conservation and efficiency program would be an integral part of the state's water resources program.
3. Both instream and off-stream needs would be assessed through regional or basin plans (as appropriate).
4. All reasonable alternatives to establishing new surface water diversions (such as groundwater and efficiency improvements) would be assessed before diversions are approved.
5. The proponent of any new surface water diversion approved with limitations less stringent than those that would provide full protection to existing instream resources would be required to provide acceptable mitigation for the loss of instream resources.

Compared to the status quo, this approach would improve instream flows while encouraging development of alternative supplies for future off-stream uses. It would

incrementally increase the level of protection for instream values and would attempt to direct new development to groundwater and increased efficiency under existing water rights. If no alternative source were available, Ecology could approve a new surface water diversion with lower instream flows if it found that "overriding considerations of the public interest would be served."⁵⁹

Under the preferred alternative, Ecology would develop basin and regional water resources management plans. The agency would be assisted by advisory committees consisting of representatives of a cross section of water interests in a basin or region. The advisory committees would be used to seek consensus on a broad range of issues including specific instream flow levels, preferred sources for new water developments, and preferred mitigation strategies.⁶⁰

Two public workshops and numerous meetings with interested groups were held to discuss the proposed preferred alternative. Ecology received numerous comment letters from a full range of water interests. The preferred alternative was generally supported by environmentalists, recreation interests, tribes, and fish and wildlife agencies. Objections were raised primarily by water supply utilities. Utilities believed the proposal could result in higher costs for development of new water sources due to the higher instream flow levels, the requirement to exhaust alternatives before considering new surface water development, and the requirement to mitigate for losses of instream resources if new developments were approved subject to flows that provide less than full protection.

Until February 1988, when legislative action became likely, it was Ecology's intention to refine the preferred alternative for inclusion in the final EIS. After publication of the final EIS, Ecology would have begun development of statewide implementing regulations. This probably would have involved amendment of existing outdated regulations that implement the 1971 Water Resources Act.⁶¹

1988 Legislative Actions

Examination of Water Resource Policies

During the 1988 legislative session, agricultural and municipal interests supported a legislative bill that would block implementation of the preferred alternative pending a process of mediation among all water interests and a subsequent legislative review of the fundamental water resources policies provided in the Water Resources Act of 1971. Environmental and fisheries interests opposed the bill, preferring that Ecology proceed with implementation of the preferred alternative. A compromise was struck that changed the mediation process to a "fact-finding" process with more direct involvement by a joint

select committee of legislators. The amended bill was passed by the Legislature and signed into law by the Governor.⁶²

Under the legislation, the joint select committee was to examine the fundamental water resources policies of the state, review Ecology's implementation efforts and proposals, and recommend any necessary statutory changes by the end of 1988. Ecology was prohibited from altering guidelines, standards, and criteria governing the instream flow and water allocation program. In addition, the bill prohibited Ecology from adopting any new water supply reservations (for future use) and issuing any new permanent surface water rights. These moratoria expired June 30, 1989.

Following passage of the bill, Ecology contracted with an independent fact finder. The fact finder interviewed representatives of all water interests, reviewed existing reports and data regarding water resources in Washington, and prepared a report of findings to the joint select committee. The report documents the results of the interviews and other research and contains the conclusions and recommendations of the fact finder.

The fact finder concluded that the development of Washington water law and policy has not kept pace with the increasing complexity of water resources issues and conflicts since passage of the Water Resources Act of 1971. He also concluded that competition for water is likely to continue among off-stream and instream interests. Sources to meet new demands are limited to new surface water diversions, more groundwater withdrawals, transfers of water and water rights, and conservation by existing uses. The fact finder recommended that the major policy issues for each of these possible sources be identified and addressed. He also urged that the state assure that its future allocation policies create more certainty for users, clearly define how instream flow rights are to be protected, assign costs of developing or protecting water resources, comport with federal law and treaty rights, and protect holders of vested rights.⁶³

The joint select committee received the fact-finders report, held a series of public hearings and work sessions, and established technical and policy advisory groups, but was unable to develop successful legislation to defuse the conflicts over instream flows. The committee's life was extended several times and is now due to expire in June 1993. The committee was successful in helping the state legislature authorize two pilot regional water resource planning efforts and in developing successful legislation addressing problems with small public water supply systems.

Water Use Efficiency Study

A key element in the preferred alternative that received almost universal public support was increased efficiency of water use. Consequently, Ecology drafted a legislative bill authorizing a water use efficiency study that was passed by the 1988 Legislature and signed by the Governor. The bill authorized and funded a nine month

water use efficiency study for the state.⁶⁴ The focal point of the study was to identify incentives and disincentives in the law that affect the state's ability to achieve improved efficiency of use. The study resulted in recommendations to the Legislature and the Governor for fostering greater water use efficiency.⁶⁵

A law passed by the 1989 legislature implements many of the recommendations of the water use efficiency committee. Among them were strengthened state policies favoring water conservation, linking state funding programs with improved water use efficiency, and plumbing code amendments.⁶⁶

The study and a separate effort to secure state and federal funding for a major water conservation effort in the Yakima River basin resulted in passage of landmark legislation in 1990 and 1991 which enables Ecology to acquire trust water rights for public purposes. Under these laws, Ecology may negotiate for the transfer of water savings to the state from persons undertaking water use efficiency improvements in return for state funding assistance. Ecology may also acquire trust water rights by purchase, lease or gift. These laws are expected to be an important tool for helping restore streamflows in dewatered streams.⁶⁷

Much progress has occurred as a result of these legislative initiatives. Water supply entities are now developing water conservation plans. Many now view water conservation as a potential source of supply to meet future needs. General agreement exists that water users should be required to show that they are making efficient use of existing water supplies before they propose to develop new sources.

The Chelan Agreement

A New Model for Conflict Resolution

In early 1990, it became apparent that the Joint Select Committee would be unable to unravel the conflicts among water interests that had stymied progress since 1986. The Governor's Natural Resources Subcabinet held discussions with the Joint Select Committee and with Indian Tribe representatives who all agreed to try a new approach to the problem through environmental mediation.

A large water resources retreat was held in May 1990 at Rosario in the San Juan Islands of Washington. Approximately 150 persons representing the full range of water interests were invited and attended. Attendees organized themselves into caucuses representing tribal, state and local government, and agriculture, business, environment, fisheries, and recreation. Two days of meetings were facilitated and mediated by the Northwest Renewable Resources Center (NRRC), a non-profit environmental mediation organization based in Seattle. At the end of the two days, the caucuses had agreed to

pursue a mediated framework for finally resolving instream flow and water allocation issues. They also established a 24 member "Interim Team" to develop a draft agreement for consideration by the larger group.

The interim team (also facilitated by the NRRC) held numerous meetings and finally developed its recommendations in October 1991. A second retreat of the full group was held in November 1991 in Chelan, Washington. After two grueling days of negotiations, the caucuses came to oral agreement on the landmark Chelan Agreement on Water Resources. No attempt was made to get signatures due to the sensitive nature of government-to-government relations between the state and local governments and the tribes. Among its provisions the Chelan Agreement provides for the following:

1. Future planning and decisions on water will be guided by the objective to achieve an overall net gain of the productive capacity of fish and wildlife habitats while accommodating growth in a manner that protects the environment of the state.
2. Conservation, enforcement, and public information shall be used to assure proper utilization of existing water supplies.
3. The Water Resources Forum, with representation of the eight Chelan Agreement caucuses, is established to make policy and statutory recommendations, assist implementation of pilot regional water resource plans, and monitor and evaluate implementation of the agreement. Forum's decision-making is to be by consensus.
4. Guidelines are provided for the implementation of pilot regional water resource plans which are to include establishment of instream flow protection measures. The regional plans are to be developed by local planning groups that mirror the make-up of the caucuses involved in the Chelan Agreement. The resulting plans are advisory, but if a plan is based on consensus, implementing agencies are to give it substantial weight.
5. For non-planning watersheds, a "critical situations" process is established to address disputes that may arise among state, tribal and local governments regarding water resources.
6. Strong support is given for improved water data collection and management to be carried out cooperatively among various government entities.⁶⁸

Recommendations of the Water Resources Forum

Soon after the Chelan Agreement was reached, the Water Resources Forum began meeting on a monthly basis. Its first task was to assist Ecology in selecting two pilot regional planning areas. Following a process of public notification and the receipt

of nominations, two areas emerged with the required agreement of tribal, local and state governments. These are the Methow River Basin in eastern Washington and the Dungeness and Quilcene basins on the Olympic Peninsula in western Washington. Instream flow protection and restoration are issues in each of these planning areas. Each area has been experiencing rapid land use and water use changes due to population growth. Meeting new water demands while attempting to restore instream flows will be a challenge in both pilot areas. Plans are due to be completed for these areas at the end of 1993.

Forum then assisted Ecology in developing guidelines for regional plan development⁶⁶ and guidelines⁷⁰ and rules for resolving critical water resource situations.⁷¹ The planning guidelines were used by the two pilot planning groups in developing scopes of work for the regional plans.

By far the most significant work of the Forum has been in developing recommendations for two key policy issues: instream flows and hydraulic continuity between surface and ground water. It completed work in these areas in early 1993. Forum's instream flow policy recommendations appear to break the long-standing deadlock over instream flows and water allocation. Following is a summary of Forum's instream flow recommendations:

- Retain instream flows in all streams.
- Enhance and restore flows in overallocated streams.
- Use regional planning as the preferred means for establishing instream flows.
- Permit variation in instream protection level by region.
- Use rule-making where possible, but determine flows case-by-case where necessary.
- Incorporate local, statewide and tribal interests in decisions on water.
- Consider tangible and intangible values.
- Regard streamflow as part of the overall ecosystem.
- Use conservation, trust water rights, enforcement, and voluntary transfers to improve streamflows.
- Retain some streams in a natural or free flowing condition.
- Improve water data and instream flow methods.

- Use stream closures as necessary to protect instream values and existing rights.
- Allow for instream flow waivers, but only in short-term situations.

Forum also recommended that Ecology, in cooperation with others, undertake a screening process to predict which Water Resource Inventory Areas are included in probable future regional planning areas. Ecology, in cooperation with others, would also evaluate existing information and consult experts to develop stream priorities for establishing new or reviewing existing instream flows. Three different processes and objectives would apply in establishing instream flows;

1. For streams not in a probable regional planning area, instream flows would be set by administrative rule that are optimum to protect, restore and enhance biological integrity of fish and wildlife.
2. For streams in a probable regional planning area (regional planning expected within four years), determine conservative interim flows primarily using existing information and professional judgment. Such flows would not be set by rule, but would be used to condition new water rights.
3. For streams in a designated regional planning area, instream flows would be set by rule as part of a comprehensive water allocation plan that considers instream and offshore needs and values.⁷

Forum's primary recommendations regarding hydraulic continuity between surface and ground water are as follows:

1. Interrelated ground and surface water should be managed as an integrated hydrogeologic system.
2. When hydraulic continuity exists, new appropriations should be approved only if existing rights and instream flows are not impaired. Existing law imposes a standard of no harm to existing rights and instream flows.
3. Cumulative effects of groundwater appropriations in hydraulic continuity with surface water should be considered when considering any new appropriation.
4. Basin hydrogeology should be assessed to determine the relative risk of impairment of existing rights and instream flows due to hydraulic continuity between surface and ground water.
5. The greater the risk to existing rights and instream flows, the greater the burden on the proponent of a new use to show no harm will result if the new use is approved.

6. In areas with high risk, prospective water users should be encouraged to pursue options other than development of new groundwater withdrawals.
7. Anticipated impacts to existing rights and instream flows may be mitigated at the expense of the proponent.⁷³

Ecology has begun to undertake the development of administrative rules and procedures for implementing the instream flow and hydraulic continuity policies.

Shortly after Forum delivered its instream flow policy recommendations to Ecology, the Washington State Supreme Court ruled on a long-standing legal dispute relating to instream flows. In this decision, the Court upheld Ecology's authority to establish instream flows at the "optimum" level for fish.⁷⁴ The decision is consistent with Forum's recommendations.

Conclusions

Washington's Instream Resources Protection Program and, more generally, its water allocation program have faced some nearly intransigent issues that have required a reexamination of the foundation and objectives of the program, and a redefinition of water planning and management objectives. The fundamental question is what the water future of the state of Washington will be. It required almost six years to finally reach a fundamental understanding among the major water interests in the state. This was only possible when those interests became convinced that no one could win under the traditional formats of the courts or the Legislature. Ironically, a recent State Supreme Court decision supports the historical position taken by the tribes, fisheries agencies, and environmental interests that Ecology can and should adopt instream flows that provide full preservation for instream values.

It became clear by the mid 1980s that further surface water development without sufficient protection of instream values would incrementally reduce those values, thus impacting economies and life-styles. Loss of instream resources is a cost that has been traditionally borne by the public at large. On the other hand, stricter controls on future water diversions could make expensive and environmentally problematic storage more necessary, transfer development pressure to already hard-pressed groundwater resources, and substantially increase the cost of water for out-of-stream water users, with those costs ultimately borne by consumers.

Ecology's Instream Flow and Water Allocation Program Review began the review process and the Joint Select Committee on Water Resource Policy continued it. Neither was able to succeed due to the highly charged political nature of the issue. However, those efforts established the foundation of a consensus seeking approach that resulted in

the historic Chelan Agreement on Water Resources among all of the principal parties interested in water in the state.

While this protracted policy debate was underway, major strides occurred in related areas, especially water conservation and instream flow enforcement. The state now has in place strong policy direction to implement water use efficiency improvements. New laws allow for the voluntary reallocation of water rights and water savings to public purposes, especially for instream flow restoration. Perhaps more importantly, attitudes about water conservation have dramatically changed. Water supply entities that were resistant to water conservation in 1988 are now among its strongest proponents. Cities and irrigation districts are developing water conservation plans addressing structural and nonstructural improvements.

Ecology has implemented an innovative instream flow enforcement program. A minimum flow enforcement program cannot realize its full potential without a permitting program that informs prospective water users of the need for minimum flows and their responsibility to follow directions during low flow periods to comply with the permit requirements. Having strong statutes is not enough. A state that lacks an effective enforcement program will fail to protect instream flows. An effective instream flow protection program is one that has adequate legislative "backbone," an open process for development of rules and regulations, a thoughtful water right permit process that identifies and resolves questions relating to existing claims and rights, and an enforcement program that has penalties sufficiently high to act as a deterrent to flagrant violations.

Notes

1. Irrigation is the predominant consumptive use of water in semiarid eastern Washington (about 1.5 million acres), while increasing municipal, domestic, energy and industrial demand for surface water is occurring in western Washington.
2. WASHINGTON STATE DEPT OF ECOLOGY, FISHERIES AND GAME, INSTREAM RESOURCES PROTECTION STUDY REP. 1 (1986) [hereinafter *Instream Resources Protection*].
3. NORTHWEST POWER PLAN. COUNCIL, 1987 COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM 109 (1987) [hereinafter *Northwest Power*].
4. WASHINGTON STATE DEPT OF ECOLOGY, COLUMBIA RIVER INSTREAM RESOURCES PROTECTION PROGRAM 25 (1980).
5. In 1991, the National Marine Fisheries Service (NMFS) listed Snake River Sockeye Salmon, Snake River Spring/Summer Chinook Salmon and Snake River Fall Chinook Salmon under the federal Endangered Species Act (ESA). The Northwest Power Planning Council has extensively modified its existing Columbia River Basin Fish and Wildlife Program to serve as the basis for a regional recovery plan for these and other weak fish stocks in the Columbia basin. NMFS is supposed to release its recovery plan in 1993. Under the ESA, drastic measures may be taken if necessary to assure recovery of a listed species.
6. WASHINGTON STATE DEPT OF ECOLOGY, PREFERRED ALTERNATIVE: INSTREAM RESOURCES AND WATER ALLOCATION PROGRAM REV. (1987) [hereinafter *Preferred Alternative*].
7. S. 6724, 50th Leg., 1st Sess., 1988 Wash. Laws, ch. 47.
8. NORTHWEST RENEWABLE RESOURCES CENTER, CHELAN AGREEMENT ON WATER RESOURCES (1991) [hereinafter *Chelan Agreement*].
9. WATER RESOURCES FORUM, INSTREAM FLOW POLICY RECOMMENDATIONS (1993) [hereinafter *Water Resources Forum*].
10. WASH. REV. CODE § 90.03.005 -.610 (1992).
11. Ralph W. Johnson, *Riparian and Public Rights to Lakes and Streams*, 35 WASH. L. REV. 580, 586 (1960).
12. WASH. REV. CODE § 90.03.290 (1992).
13. Northwest Power, *supra* note 3, at 3.
14. W. Nehlsen, et al., *Pacific Salmon at the Crossroads: Stocks at Risk from California, Oregon, Idaho, and Washington*, FISHERIES, March 1, 1991, at 4.
15. WASH. REV. CODE § 7520.050 (1992).

16. WASHINGTON STATE DEPT OF ECOLOGY, WASHINGTON'S WATER RESOURCES PROGRAM: EIGHT BIENNIAL REP. TO THE LEGISLATURE 5 (1985 and 1986).
17. WASH. REV. CODE § 90.22.010 to -.040 (1992).
18. WASH. REV. CODE § 90.54.010 to -.910 (1992).
19. WASH. ADM. CODE § 173-501, 173-563 (1992).
20. The Instream Flow Incremental Method (IFIM) was developed by the U.S. Fish and Wildlife Service, Aquatic Systems Branch in Fort Collins, Colorado. The method involves development of a hydraulic model of a stream and relating hydraulic conditions at various discharge rates to the known habitat preferences (for depth, velocity, substrate and cover) of fish species and lifestages of interest. The result of this analysis is a table or curve relating a habitat index to discharge for each species and lifestage. The Aquatic Systems Branch publishes numerous reports and technical manuals, and teaches short courses on the method.
21. "Optimum" flow is a term used by fishery biologists in Washington to denote the peak of a curve relating a fish habitat index to discharge. It is a term of convenience that evolved as a shorthand way of saying "the discharge that would result in the maximum amount of available fish habitat over the range of possible discharges, according to an IFIM study."
22. Stream closures are not specifically authorized by statute. The basis of authority claimed by Ecology for closing streams is the State Water Code (§90.03.290) wherein it is provided that an appropriation permit may be denied if it would be detrimental to existing water rights or the public interest. On streams that have been closed, Ecology is still obligated to fully evaluate and address appropriation applications, though they would normally be denied.
23. Instream Resources Protection, *supra* note 2, at 10-11.
24. Although Ecology has preferred to set instream flows by administrative rule, new water diversion applications continue to be conditioned for instream flow protection on a case-by-case basis in accordance with the Department's discretionary powers under the State Water Code and State Fisheries Code. This is necessary in areas of the state not yet addressed by instream regulations.
25. WASH. REV. CODE § 43.21A.170 -.210 (1992). On advice of the state Attorney General, Ecology no longer submits proposed water resource regulations to the Ecological Commission for review. WASH. REV. CODE § 43.21A.190 is interpreted as exempting all water resource matters from the Commission's purview.
26. WASH. REV. CODE § 43.21B.310 (1992). Ecology has successfully defended its adopted instream flows in several court challenges before the state Pollution Control Hearings Board.
27. WASH. REV. CODE § 90.03.247 (1992).
28. Ecology would not ordinarily require that water be drafted from storage to benefit instream flows unless flow augmentation was a specific project purpose.
29. WASH. REV. CODE § 90.03.345 (1992). This was passed as an amendment to clarify the legal status of adopted instream flows relative to junior water rights.

30. WASH. REV. CODE §§ 90.22.010 and 90.54.020(3)(a) (1992).
31. WASH. REV. CODE § 90.22.040 (1992). This specifically provides that riparian stock-watering is a use for which instream flows are to be established. Single domestic uses are normally granted for only 0.01 or 0.02 cubic feet per second and are usually regarded as having an insignificant effect on stream flow. However, a number of the instream flow regulations provide that such uses may be denied if cumulative effects would be significant.
32. WASH. REV. CODE §§ 90.22.030, 90.54.900 (1992).
33. WASHINGTON STATE DEPARTMENT OF ECOLOGY, WATER RESOURCES MANAGEMENT PROGRAM: OKANOGAN RIVER BASIN (1976); WASH. ADMIN. CODE §§ 173-549-010 - .900 (1976 and 1984); WASHINGTON STATE DEP'T OF ECOLOGY, WASHINGTON'S WATER RESOURCES MANAGEMENT PROGRAM: METHOW RIVER BASIN (1976), AT WASH. ADMIN. CODE § 173-548-010 - .100 (1976).
34. WASHINGTON STATE DEP'T OF ECOLOGY, WENATCHEE RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM (1982); WASH. ADMIN. CODE §§ 173-545-010 - .100 (1983); STANDARD OPERATING PROCEDURES FOR IMPLEMENTATION (1983). An applicant for group domestic use or municipal supply may request exemption from the instream flows contained in WASH. ADMIN. CODE chs. 173-545. To be considered, the request must be in writing and signed by the applicant. The request must include the following: a) a listing of other existing sources and quantities withdrawn by the supplier; b) the water supply service area and the number and type of customers to be served by the proposed withdrawal; c) a water conservation plan outlining means for effecting a significant reduction of water demand during low flow periods; d) alternative sources of water considered and the analysis performed leading to rejecting alternatives in favor of the applied for withdrawal; and e) all other data necessary, as determined by the Washington Department of Ecology, to evaluate the merits of the requested exemption.
35. Based on water supply forecasts provided by the Soil Conservation Service for the 1985 irrigation season, Central Region had reason to believe that the Okanogan River and Methow River would fall below the adopted minimum flows. Without any prior experience, the Region did not have a sufficient feeling for how severe the shortfalls would be, or how long the rivers were likely to remain below minimum flows. Over a period of less than two weeks, during late July, Okanogan River flows fell from more than 2,000 cfs to below 700 cfs. The adopted minimum flow for the Okanogan River during late July is approximately 800 cfs. The Methow River fell in a similar fashion during the same two week period.
36. The method of obtaining river flow information for the 1985 season was to utilize a modem equipped micro-computer to access the Columbia Rivers Operational Hydromet Monitoring System (CHROMS). River stage data from the system was then converted to river discharge utilizing the USGS rating curves for the particular stations of interest. TELEMAR installations were available at two gaging stations. This allowed determination of the river stage by direct dialing to a telephone at the gaging station and, by counting the number of beeps transmitted over the phone to determine the river stage. This provided a useful backup to stage data obtained over the CROHMS system when a failure was a result of a problem with the CHROMS telemetry system. TELEMAR allowed monitoring on a frequent basis providing the region with stage data sufficient to observe even minor trends in river flow.
37. WASH. REV. CODE §§ 90.14.010 - .910 (1992). Statewide, approximately 165,000 water right claims were filed during the five year period. No determination or judgment was made by the Department when these claim forms were submitted. They were simply stamped with a number, if complete, and filed in the State's Water Claims Registry. While these claims do not constitute

prima facie evidence of the existence of a right, when Ecology attempts an enforcement action on a claim, it must first make an administrative judgment as to the extent and validity of that claim.

38. *Louis Crowder, et al v. Department of Ecology*, No. C-85-650-RJM, not reported. (Wash. 1985). The Eastern District Court's order affected three different classes of water users. Class "A" were the four water users who brought the class action suit. Class "B" consists of all property owners within the reservation boundaries who withdraw water from or contiguous to the Okanogan River who are successors in interest to former Indian allotments, and who were acted against by Ecology. Class "C" is comprised of all property owners within the reservation boundaries withdrawing water from or contiguous to the Okanogan River who are successors in interest to Indian allottees who had not been specifically acted against by notice or other enforcement action of Ecology. The order granted the plaintiff's motion for preliminary injunction and required Ecology to contact each of the Class "A" and "B" water users to advise them that they may have a water right above and beyond that granted under state law. If water was put to beneficial use at the time the land passed from Indian ownership to non-Indian ownership or was put to use with reasonable diligence thereafter and the right had not been forfeited or relinquished, the water user was instructed to contact Ecology. Field inspections were then conducted to verify the water users' statement and a title history was obtained from the Portland Office of the Bureau of Indian Affairs. Prior to attempting any enforcement action for minimum flow conditions on permits held by Class "A" and "B" water users, Ecology was required to file with the court a report setting forth the water use history and property title history.
39. WASH. REV. CODE § 90.14.071 (1992).
40. WASH. REV. CODE §§ 90.14.043 - .044 (1992). This 1985 amendatory act authorized the acceptance of a petition for certification of claims filed during the period beginning on July 28, 1985 and ending on September 1, 1985.
41. Wenatchee Chiwawa Irrigation District, PCHB No. 85-215 (1985).
42. *Amos P. Bratrude v. Dep't of Ecology*, No. 85-2-00262-0, not reported (Wash. 1985). It is noteworthy in this case that the Department did not have to make a showing of specific damages as a result of this individual's diversion practices. The superior court found that by the adoption of the Okanogan River Basin Plan in 1976, it had met its requirements for establishing the benefits of those minimum flows adopted as a part of the basin plan. The court implied that if there were benefits associated with the minimum flows, there were damages associated with violation of the water right conditions when minimum flows were not met.
43. *Williams v. Dep't of Ecology*, PCHB No. 86-63, not reported (1987).
44. Geostationary Orbital Environmental Satellite (GOES). The satellite is owned by the National Oceanic and Atmospheric Administration's (NOAA) National Environmental Satellite Service (NESS). Individual transmitters are owned by the USGS and the cooperating agencies. The USGS owns and operates the ground station and computer system required to capture transmitted data and make it available to the cooperating agencies.
45. Local newspapers, radio stations, and television stations have shown consistent interest in the semi-monthly advisory letters. The newspapers and radio stations commonly call the regional office to conduct an interview for a print article or later on-air broadcast.

46. The message is updated every afternoon between 4 and 5 p.m. primarily for the convenience of the water user. When the disparity between actual river flows and the minimum flows is large and the trends are parallel or divergent, instructions will be given for the following three days, if necessary, to cover a weekend or holiday.
47. The meetings at Okanogan (for the Okanogan River) and Twisp (for the Methow River) are typically attended by 50 or 60 people, of which 50 percent are water users with minimum flow conditioned water rights. This type of meeting was also held in Leavenworth (for the Wenatchee River) in 1986 with an attendance of 15 to 20 people.
48. WASH. REV. CODE § 43.27A.190 (1992).
49. Field books were prepared to assist Ecology staff when conducting compliance inspections. The loose leaf binders contain copies of 7.5 minute USGS quad maps with the point(s) of diversion for each water right identified. A page for each water right describes the instantaneous and annual quantities of the right, legal descriptions of the point of diversion and place of use, pump and distribution system descriptions, directions to the pump, a narrative description of the place of use, and photographs of the diversion facilities. The books provide sufficient information for the compliance inspectors to be conversant with the water user about the water right and provide the basis for providing confident on-the-spot instructions to the water user to obtain compliance with the minimum flow provisions in the permit.
50. WASHINGTON STATE DEP'T OF ECOLOGY, GUIDELINES FOR ENFORCEMENT (1985).
51. *See supra* note 30.
52. Instream Resources Protection, *supra* note 2, at 11.
53. S.B. 4664, 46th Leg., 1st Sess. 1984 Wash. Laws; H.B. 1633, 46th Leg., 1st Sess., 1984 Wash. Laws; H.B. 757, 47th Leg., 1st Sess., 1985 Wash. Laws.
54. H.B. 233, 47th Leg. 1st Sess. 1985 Wash. Laws.
55. JANET CHALUPNIK, WASHINGTON DEPARTMENT OF ECOLOGY, REPORT OF THE INSTREAM FLOW AND WATER ALLOCATION ADVISORY COMMITTEE TO THE WASHINGTON STATE DEP'T OF ECOLOGY (1986).
56. WASH. REV. CODE §§ 43.21C.010 - .914 (1992).
57. WASH. REV. CODE § 90.54.020(2) (1992).
58. WASHINGTON STATE DEP'T OF ECOLOGY, INSTREAM RESOURCES AND WATER ALLOCATION PROGRAM REVIEW: DRAFT ENVIRONMENTAL IMPACT STATEMENT (1987).
59. WASH. REV. CODE § 90.54.020(3)(a) (1992). This section allows Ecology to waive instream flow conditions adopted under this statute. Ecology would develop administrative rules to guide the consideration of such waivers.
60. Preferred Alternative, *supra* note 6.
61. WASH. ADMIN. CODE §§ 173-500-010 - .070 (1992).

62. S.B. 6724, 50th Leg., 1st Sess., 1988 Wash. Laws.
63. SHUPE AND CHEUK, DRAFT REP. OF THE INDEPENDENT FACT FINDER TO THE JOINT SELECT COMMITTEE ON WATER RESOURCE POL'Y (1988).
64. H.B. 1594, 50th Leg., 1st Sess., 1988 Wash. Laws.
65. WASHINGTON STATE DEP'T OF ECOLOGY, FINAL REP. OF THE WASHINGTON STATE WATER USE EFFICIENCY STUDY COMMITTEE (1988).
66. H.B. 1397, 50th Leg., 2nd Sess., 1989 Wash. Laws.
67. WASH. REV. CODE chs. 90.38, 90.42 (1992).
68. Chelan Agreement, *supra* note 8.
69. WATER RESOURCES FORUM AND WASHINGTON STATE DEP'T OF ECOLOGY, REGIONAL PLANNING GUIDELINES, (1992).
70. WATER RESOURCES FORUM AND WASHINGTON STATE DEP'T OF ECOLOGY, CRITICAL SITUATIONS GUIDELINES, (1992).
71. WASH. ADMIN. CODE § 173.500.080 (1992).
72. Water Resources Forum, *supra* note 9.
73. WATER RESOURCES FORUM, HYDRAULIC CONTINUITY POL'Y RECOMMENDATIONS (1992).
74. *Dep't of Ecology, et al. v. Public Utility District No. 1 of Jefferson County, et al.*, 849 P.2d 646 (Wash. 1993).

Wyoming's Instream Flow Law

Gordon W. Fassett

Introduction

In March of 1986, the State of Wyoming enacted an instream flow law. This was the culminating legislative action on this issue that began with interest and debate in 1972. This bill made available to instream flow purposes the legal protections offered by the state's water right permit and regulation systems.

The 1986 legislation was considered a genuine product of education and compromise among the varied and conflicting interests involved. The agricultural, municipal, wildlife, environmental, and state regulatory views were heard, molded, balanced and modified into the enacted language. The first few years of implementation of the law have seen important issues addressed administratively during the permit application process. These comments will reflect the author's understanding of the legislative intent, review the key provisions of the Act, and discuss the seven years of experience with implementation of the law within Wyoming's water rights regulatory framework.

Background Discussion

Although debate, interest and activity regarding the instream flow issue began in 1972, serious legislative action in response to differing public pressures began in 1979. Between 1979 and 1985, 19 instream flow bills were introduced and failed for one reason or another due to plain stubbornness, organized opposition and misunderstandings. Initially, involvement by the Wyoming State Engineer's Office was one of opposition since the early proposals were not adequately blended into the existing body of Wyoming water law and administrative procedures. As the debates continued with many hours of work, the process evolved into a learning and creative experience. However, all players involved were educating themselves on the issues and possible resolutions.

Many of the legislative stumbling blocks preventing passage of a comprehensive bill were differences in understanding the instream flow problems and needs. Some authors of specific language supported the concept of instream flow releases from reservoir facilities. Others lobbied for a more comprehensive approach to authorize appropriations for instream flow on a direct (in-stream) flow basis, for releases from reservoirs and, under certain conditions, from conversion of existing rights to instream flow uses. While the Legislature seemed firmly stalemated over these differing strategies, work and effort continued during the interim periods to create a compromise bill.

Many early misunderstandings were based on the lack of knowledge of the existing water laws and the related legal and technical efforts needed to combine the new instream flow use requirements with the historic consumptive uses provided under the law for almost 100 years. Through continued hard work and compromise, the present law was framed in mid-1985 and modified slightly prior to passage early in 1986. The Act successfully fit the instream flow appropriation process and newly expanded beneficial use concept into the existing water rights system under the prior appropriation doctrine used in Wyoming. At the same time, it provided protections to other appropriators from potential injury as a result of instream flows.

Beginning several years before the final 1986 enactment, a citizen's group (Citizens Committee for Instream Flow, sponsored by Wyoming Wildlife Federation) began an initiative drive to place a 1983 version of a similar instream flow bill on the ballot. They collected over 32,000 signatures by 1985, more than the required number to place the issue before the voters during the 1986 General Election. During the 1985 and 1986 legislative sessions, the existence of the ballot bill, the first initiative ballot issue of its kind in Wyoming, was a continuing reminder that if the Legislature did not enact a "substantially similar" bill, the initiative process would go forward. The Citizens Committee representatives supported, although did not fully endorse, the final compromise language during the 1986 session. This enacted legislation was subsequently found by the Wyoming Attorney General to be substantially similar, as amended in final form, to the initiative bill and the initiative bill was accordingly dropped from the 1986 ballot.

The law, as discussed below, appears procedurally more complex than necessary and seemingly difficult to manage. However, this complexity arose as a consequence of long debate and compromise and out of a meaningful desire to address the concerns and fears of the public. With seven years of implementation experience, the three primary state agencies involved with the instream flow appropriation process all agree that the process is sound and not as complex as initially envisioned. The law is strongly supported by the State Engineer, Game and Fish Department, and Water Development Commission. Many of the early fears about instream flow have not materialized with the experience to date. The public reaction, as reflected in the hearings for each new appropriation, are positive. Most concerns have been addressed through this process, and major controversies have not arisen.

Overview Of Wyoming's Instream Flow Law

The statute includes 14 sections, some with subsections. As of June 1993, 42 instream flow water rights have been filed with the State Engineer and the process and decisions have not been contested through legal action. State agencies delegated authority to administer the instream flow program continue to evaluate interagency

procedures and to thoughtfully pursue instream flow water rights through the appropriation process.

Beneficial Use

The heart of the law is provided in the first section, where storage of water for a recreational pool or release for instream flows is declared a beneficial use.¹ In addition, the law states that all unappropriated flowing waters within streams are subject to appropriation for instream uses which are also declared a beneficial use of the state's waters. The storage flows are authorized to provide the minimum flow necessary to establish or maintain new or existing fisheries. The direct (in-stream) flows must be the minimum flow necessary to maintain or improve existing fisheries.

This language provides guidance to the state agencies involved regarding the collection of data and information for a "minimum flow necessary" determination for either the establishment, maintenance or improvement of a fishery. While allowing all types of desired fisheries, the language provides some assurance to other appropriators that the amounts flowing in these streams during times of regulation should be the minimum amount necessary to protect a fishery and not a subjective or idealized flow requirement. No other type of in-place uses would be permitted under this language, such as for aesthetic, recreational or wildlife values. Other public values, in many situations, may be protected incidentally by the instream flow quantities appropriated for fisheries.

As an interesting aside, in October of 1990, the U.S. Congress approved the designation of a portion of the Clarks Fork River in northwestern Wyoming as a Wild and Scenic River. Negotiated language in this federal law authorized the Secretary of Agriculture to apply, through the procedural requirements of State law, quantify and secure a water right for the protection of the wild and scenic values of this particular river. Congress specified these values as beneficial uses for the purpose of allowing Wyoming's procedural laws for instream flow to be used for the appropriation and adjudication of the river flows needed to meet the purposes of the federal designation. The Forest Service and the State are cooperatively addressing the technical issues required for the water right application, and plan to obtain a final water right in 1994.

With this definitional beginning, simply stated, the remaining sections of the law present limitations, procedural steps, and responsibilities and guidance to all parties involved in the new appropriation concept and process. Many of these sections will be briefly and summarily touched upon below.

Stream Segments

Instream flows are only to be granted for specific stream segments or reaches.² The minimum amount required for the instream flow purpose must also be specified. Although a number of alternative statutorily fixed maximum segment lengths were considered in the legislative debates, the language adopted allows the desired flexibility to review each water right application on its own merits. The law specifically provides that waters, after passing through the segment, are available for reappropriation and use. Segment lengths ranging from 0.10 miles to 22.30 miles have been filed since 1986.

Ownership

Wyoming's instream flow law specifically states that only the State of Wyoming can hold an instream flow water right.³ Since Wyoming's Constitution and case law say that the water of all natural streams and lakes within the state are declared the property of the state, it seems somewhat logical that the state should own the instream flow right. This provision lessened the concern expressed by existing diverters during the legislative debates that "radical" interests or organizations would acquire and appropriate all available waters of the state and cause shortages for future use and economic development.

Some interest has been expressed recently in having the legislature explore whether other private (existing) appropriators should be allowed to hold instream flow water rights. This issue may be reviewed and considered by the legislature in 1994 or years thereafter. For the majority of circumstances, interests supporting instream flow are comfortable with the process of appropriation by the Game and Fish Department and the State as the holder of the right.

Acquisition And Transfer

As mentioned previously, Wyoming's instream flow law allows appropriation of water either on a direct (in-stream) flow basis or for the storage and release of water for instream flow purposes. In addition, specific authority is given the state to acquire any existing water rights by voluntary transfer or gift for the purpose of establishing instream flow uses.⁴ Upon receipt of such rights, the state must then change the use of the right in accordance with applicable state law. Such changes from a consumptive to an instream use would, in conformance with state statutes, be limited to the historic amount consumed and must not interfere with or impair the value of existing water rights. Other related issues concerning the period of use, location of use, the historic return flow characteristics, and possible effects on other appropriators would all be routinely considered by the State Board of Control in these types of change in use proceedings. Transfers of this nature are typically guided by the "no injury to other appropriators"

concept and will also consider the potential effect upon Wyoming's apportioned water protected by various river basin compacts and U.S. Supreme Court decrees.

Change in use proceedings can be time-consuming and costly in some cases, such as with agricultural to municipal use transfers. Depending on the specific hydrologic circumstances, some investigation will be required to determine if such a change in use would be of benefit in providing the desired streamflows. Although the authority to allow this type of change in use under the instream flow law was strenuously debated, the protections offered to all appropriators under the existing water laws and State Board of Control procedures are adequate and should provide firm assurance to all users that their rights will not be harmed under such changed conditions. Since enactment of this law, no changes in use of existing rights to instream flow have been requested.

Condemnation And Litigation

To emphasize the voluntary nature of the acquisition authority granted under the statutory section discussed above,⁵ Wyoming's law succinctly denies any power of condemnation to the State Game and Fish Department for the purchase of existing rights for instream flow purposes.⁶ This section of the act also contains language regarding protections for existing water rights holders against any diminishment of the value of their property interests. Likewise, the Legislature, in a subsequent section of the law, provided an appropriator the ability to obtain all costs of litigation from the holder of an instream flow right, if the appropriator proves in district court that its right to use water has been impaired or diminished as a result of the instream flow right.⁷ Procedurally, such an action would most likely be initiated before the State Engineer or State Board of Control and, upon appeal, would go to the district courts. Without benefit of detailed legal analysis, this seemingly direct language, in combination with case law, may be subject to further interpretation and court testing. On its face, though, this section acts as a deterrent to an unreasonable quantification request for instream flows.

Abandonment

Wyoming law also prohibits the beneficiary of instream flow rights to file for abandonment against another appropriator.⁸ Companion language further limits the ability of the instream flow right holder to acquire a right for the purpose of providing instream flows through the process of abandonment. Since, under other state law, the State Engineer also has the authority to initiate an abandonment proceeding on his own, this language would certainly preclude such an action in an effort to establish an instream flow right. The prohibition against filing for an abandonment was included to alleviate concerns about wholesale or basinwide actions brought by an instream flow appropriator once established, in order to improve the water right's relative priority position on a stream. This section, by implication, also recognizes the fact that an instream flow right

would be difficult to abandon, based on existing standards of proof of non-use for five successive years, as provided in state abandonment statutes and by case law.

Right-Of-Way

Through the years of debate, a concern expressed by riparian landowners was potential conflicts over the right of ingress or egress through private property to streams and rivers with instream flow rights. The Legislature responded with wording derived from the 1983 initiative bill clarifying that no such rights-of-way can be construed from the new law. Ranchers and other private landowners along streambanks obtained assurance that the presence of an instream flow right is not accompanied by an easement to cross their private land.⁹ Specific provisions in the law also assure landowners that the power of eminent domain will not be used by the state to acquire access across private land to certain stream segments with flow rights. The State Game and Fish Commission has never intended to make such use of eminent domain authority. In fact, the Commission, in identifying candidate stream segments and selection criteria for instream flow appropriations, considers the existing availability of public access.

Interstate Compacts And Decrees

Repeatedly, concern and fears were raised by some opponents of instream flows that downstream states would reap the benefits of Wyoming's new law by making use of the extra streamflow that may be forced to leave the state under the guise of an instream flow right, exceeding the quantity apportioned by interstate compact and U.S. Supreme Court decree to the other states. In response, and after much discussion, the compromise bill as enacted provides three, and perhaps in a practical sense, four overlapping subsections containing protections against these fears. Specific language in the law offers a clear reading of the Legislature's intent and provides guidance to the State Engineer in his decision on instream flow water rights and the relation of the new law and Wyoming's ability to fully utilize waters allocated to the state.

The law succinctly states that no provision of the entire instream flow act can be construed to limit Wyoming's right to appropriate and beneficially use the waters preserved for the state's use under interstate compact or court decree.¹⁰ The great majority of all waters arising within the state's boundaries flow out of the state under allocations set by compact or decree. Aside from the North Platte River drainage, most river basins are not yet fully appropriated within Wyoming, resulting in streamflows to downstream states in excess of legal requirements. These surplus flows in many regions are typically stored, re-regulated for hydropower or other uses, and ultimately used by consumptive users in the downstream states, particularly within the Colorado River drainage. As Wyoming's population, industrial, and agricultural growth continues and water demands increase, these surplus flows will diminish, requiring additional water right

regulation. To allow continued consumptive uses in the future, without constraint by instream flows, the above limitation on an instream flow right must be considered.

An additional subsection of the law provides direct authority to the State Engineer to deny an appropriation for instream flow use where such a right would be considered or accounted as a part of Wyoming's allocated share of compacted or decreed waters.¹¹ Although similar in meaning to the previous section, this language affirms the state's intent to hold open all opportunities for the beneficial use of Wyoming's apportioned water in the future.

As a further protection relating to this issue, a companion subsection was enacted.¹² This portion of the law supplements the previous language specifying a limitation on the amount of water appropriated for instream flow within each river basin. This limit was set as an amount of appropriated water that results in no more water leaving the state than is allocated under interstate compact or U.S. Supreme Court decree for use in downstream states outside of Wyoming. This language may not present a serious limitation upon the state in the early years of implementation; however, unnecessary restrictions in appropriations may arise in the future. Consider an example where the headwater streams in mountainous regions of the state may have water available for appropriation for instream flows. After flowing through the designated stream segment, the water is then subject to appropriation before returning to the stream and leaving the state. This language may unnecessarily limit the amount of in-place flow rights in the upper reaches of the basin (where the protection is desired) to meet a prescribed level of compact flow requirement when, in a practical sense, the same waters are currently used and reused several times prior to crossing the state boundary. However, in the spirit of legislative compromise, this limitation was added and will be the subject of further commentary and potential legislative action with continued implementation, if problems or conflicts arise. This issue has not been a problem in the instream flow permits that have been approved since 1986.

Relating to this same issue is another section of the law providing strict limits on the appropriation of instream flow waters within certain specified reaches of rivers in the state. The legislatively delineated exclusions include a one-mile length of river immediately upstream of any of the state's boundaries or, in some cases, the one-mile river segment upstream of the larger reservoirs straddling the State Line on the Big Horn, Green, and Snake Rivers.¹³ Also set aside for further consumptive beneficial appropriations are one-mile-length river reaches above the point where any stream in the drainage joins the mainstem of the North Platte River. This section essentially prohibits any designated instream flow segment from touching the State Line between Wyoming and a downstream state, supporting the concept of allowing maximum beneficial consumptive use of the state's waters.

The Instream Appropriation Process

The commentary presented to this point has considered the major provisions of Wyoming's instream flow law. The remaining portions of the statutory scheme address the appropriation process, the responsibilities of the three state agencies involved, and the administration or stream regulation requirements for an instream flow right. The criticism of complexity that the Wyoming instream flow law received in the first few years after enactment was directed at the seemingly cumbersome and overly bureaucratic administrative approach of checks and balances, studies, public hearings and re-studies prior to granting a permit or rejecting the application by the State Engineer. At first reading of the law this argument appears to have merit; however, during the last seven years, the agency representatives involved have not experienced problems and the process is working smoothly. Real world actions have proven the law effective and the individuals, organizations and officials involved have adjusted to the process.

The statutory procedures are condensed and summarized briefly below. Many particulars of the precise sequence of events and of specialized interagency activities are of little consequence to understanding the framework of the law, except to those directly involved in the process, and thus are omitted from this discussion.

To review in a very simplified manner, the Game and Fish Department conducts fishery studies, in part to estimate the minimum flows necessary, identify stream segments and flow rates to be appropriated, and reports this information to the Wyoming Water Development Commission (WWDC). The Game and Fish Department has established their own criteria and priorities for candidate stream segments, including the necessary fishery, stream classification, existing public access, threat of use, and many other factors. With the information provided by Game and Fish, the WWDC files applications with the State Engineer for appropriation of natural flow in the identified stream segment. The WWDC also analyzes whether natural flow is available for instream flow purposes, whether storage is required, or a combination thereof. The water storage for instream flow purposes can be included in another water development project and pursued through the WWDC's own analytical procedures and the related legislative authorization process provided in state law. The water storage right obtained for instream flow purposes from the State Engineer can be a part of the WWDC's project right or a separate application for a permit to construct a reservoir, including the new instream flow uses.

The priority date for instream flow rights, like all other water rights in Wyoming, is established on the date the application for a permit is received and accepted in the State Engineer's Office. The State Engineer cannot issue a permit for an instream flow use until completion of the WWDC's hydrologic and feasibility report and conclusion of the mandated public hearing. He may conduct his own studies as necessary to determine water availability, potential injury to appropriators or effect on compact allocations. The State Engineer may condition the instream flow permit to require a later review of the

continuation of the permit, to provide for measuring devices, or other limitations as may be necessary. Lastly, in partial conformance with the concept that construction of works is a necessary feature of a Wyoming water right, the legislation provides that commencement and completion of construction of works and application of direct flow appropriations to beneficial use shall be deemed to be completed 30 days after the permit is granted. Adjudication by the Wyoming State Board of Control is not to be completed for at least three years.

Implementation Process

As of June 1993, a total of 42 applications for instream flow appropriations covering 240 miles of river length have been filed with the State Engineer. Seven instream flow permits have been issued for a total of 46 miles of river length, and four other applications have made it through the entire statutory process and are pending final decision by the State Engineer.¹⁴ The applications are being processed in sequential order. The required procedures, while taking time to complete due primarily to limits on staffing and funding, appear to be working very satisfactorily. The other applications are under various steps of analysis, hydrologic study, mapping or other activities while pending in the State Engineer's Office. Of course, the priority date is established upon acceptance of the application and, upon approval, the priority of the new water right relates back to this earlier date. None of the instream flow permits issued have yet been adjudicated by the State Board of Control.

The primary issues that have arisen on the first group of approved applications involve "minimum amount necessary" quantification, water supply availability, protection of the state's compact and decreed water entitlements, and subordination of instream rights to de minimus future diversions.

Under the statute, the quantity of water used for instream flow purposes shall be the minimum flow necessary to establish or maintain fisheries.¹⁵ The Wyoming Game and Fish Department has used several traditional and "state-of-the-art" fishery habitat-type models for each requested water right, coupled with the actual stream hydrology, to arrive at what some might believe more accurately reflect the "optimum" flows for habitat purposes. In applying the language of the statute, the Game and Fish Department requests an amount it believes necessary. The State Engineer, after all analyses and public comment are received has, in a few cases, found it necessary to approve an amount slightly less than Game and Fish's request.¹⁶ Other applications have been approved, as requested, consistent with the scientific documentation and public review and input. The expertise of the fisheries biologists with the Department carries great weight in the decision process and has held up against the public inquiry and concerns raised since 1986.

One of several technical issues that have arisen in the hydrologic evaluations concerns the exceedence probability; i.e., statistically how often are the streamflows likely to be physically available to meet the desired instream flow quantity. Depending on the stream segment, historic streamflow data may or may not be available. Many streams in Wyoming have had U.S.G.S. streamflow measuring stations in place for a number of years. River flows for a desired segment are estimated from actual data collected from along the subject river or correlated from a nearby gaged stream of similar characteristics. Once streamflow data is prepared for a specific period of historic years, say 20 years, a statistical analysis can be developed to analyze the frequency of certain streamflows. For some stream segments, this analysis indicates that during certain months, typically the winter season, the expected river flow meets or exceeds the desired instream flow water right only from 12 to 30 percent of the time. This fact has generated concern that, if approved for the requested amount, the instream flow water right would not be satisfied a great majority of the time. Conversely, the right would be met only during very high streamflow years and, as a result, act as a limit on any future junior appropriations in many years. Some interests have suggested the State Engineer reduce the water right request to an amount that more closely matches the water availability in an average streamflow situation.

The Game and Fish Department has indicated that, despite such predictions on water availability, they believe the request is valid since it is the existing fishery that is being protected by the water right. In circumstances such as these, the fishery has adjusted to the highly variable streamflow conditions that exist in mountain, snowmelt-based type streams in Wyoming. These natural fluctuations should be protected, according to the Department, to preserve the existing habitat. This issue will be analyzed further in the future, and solutions will be customized to fit each stream segment's circumstances and peculiarities.

As discussed above, several sections of the instream flow law are intended to protect Wyoming's options and flexibility to use its entitled share of compacted or decreed waters.¹⁷ In deciding whether a permit should issue, the State Engineer must find that the new permit will not impair the state's ability to protect its compact or decree entitlement by limiting future development as a result of enforcing the instream flow permit. To satisfy this requirement, several of the approved water right permits have been conditioned to revisit this specific issue ten years in the future. A determination was made that, at the time of approval, there was no impairment. This type of "revisiting" condition will not be routinely attached to all instream flow permits.

Most of the applications processed to date involved stream segments in headwater, high elevation mountainous areas. At almost all of the public hearings, ranchers expressed concern that the proposed instream use may prevent them from making stockwatering uses at some future time in areas upstream of or within the instream flow segment. The Game and Fish Department has indicated they are not overly concerned about this type of de minimus upstream junior diversion affecting the

habitat and values they seek to protect with the instream flow water right. As a result, several of the approved permits have been conditioned to subordinate the instream flow water right to future 20 acre-foot or less capacity reservoirs for stockwatering uses and to future 25 gallons-per-minute diversions for domestic uses. This condition may become standard where such concerns are noted.

This public hearing process has proven to serve more than its expected valuable purpose of allowing all interested views to be considered by the State Engineer. In the eleven hearings held to date, the process has served equally to educate the public on the process, purposes and effects of the proposed instream flow use. The public hearing process is unique in Wyoming's water allocation system, and has greatly enhanced the instream flow appropriation program.

There has, as yet, been no initiation of a procedure to purchase senior water rights and transfer them to instream use. However, several public interest groups have been exploring this option in areas where current-day priority appropriations would not be beneficial to the stream fishery habitat. Several reservoirs have been built with conditions for instream flow releases. These streamflows have been recognized as an appropriate beneficial use of water. Procedures to protect these flows through a designated river segment using the instream flow law process are being developed.

Conclusion

The years of debate over instream flows in Wyoming came to an end in early 1986. This new law brought contemporary change and modified theories and interpretation of nearly 100-year-old concepts deeply embedded in Wyoming water law. The recognition of instream flow purposes was a needed change to protect values important to Wyoming citizens now and in the future. The State Engineer's Office supports these new concepts and is committed to work with legislative guidance and for the continued implementation of this law alongside all other laws affecting water and its use.

General References

Comment, Wyoming's New Instream Flow Act: An Administrative Quagmire, 21 LAND & WATER L. REV. 455 (1986).

Instream Flow Act, 1986 Wyo. Sess. Laws 140, ch. 76 (codified as WYO. STAT. §§ 41-3-1001 - 1014 (Supp. 1992)).

C. Lummis, *Legislative History of Wyoming's Instream Flow Act* (July, 1985) (unpublished manuscript sent to Legislators before 1986 Session).

Communications between Game and Fish Commission and State Board of Control during Instream Flow Workshops, August 21, 1986.

Notes

1. WYO. STAT. § 41-3-1001 (Supp. 1992).
2. *Id.* § 41-3-1002
3. *Id.* § 42-3-1002(e).
4. *Id.* § 41-3-1007.
5. *Id.*
6. *Id.* § 41-3-1009.
7. *Id.* § 41-3-1010.
8. *Id.* § 41-3-1011.
9. *Id.* § 41-3-1012.
10. *Id.* § 41-3-1014.
11. *Id.* § 41-3-1006(g).
12. *Id.* § 41-3-1006(h).
13. *Id.* § 41-3-1002(d).
14. An instream flow permit was issued in May of 1988 for a segment of the Clarks Fork River, tributary to the Yellowstone River. The two applications near completion are for segments of the Tongue River near Sheridan, Wyoming and the Middle Fork of the Powder River near Kaycee, Wyoming.
15. WYO. STAT. § 41-3-1001(c) (Supp. 1992).
16. The request on the Clarks Fork was for 225 cfs; the permit was approved for 200 cfs.
17. *See supra* notes 10-13 and accompanying text.