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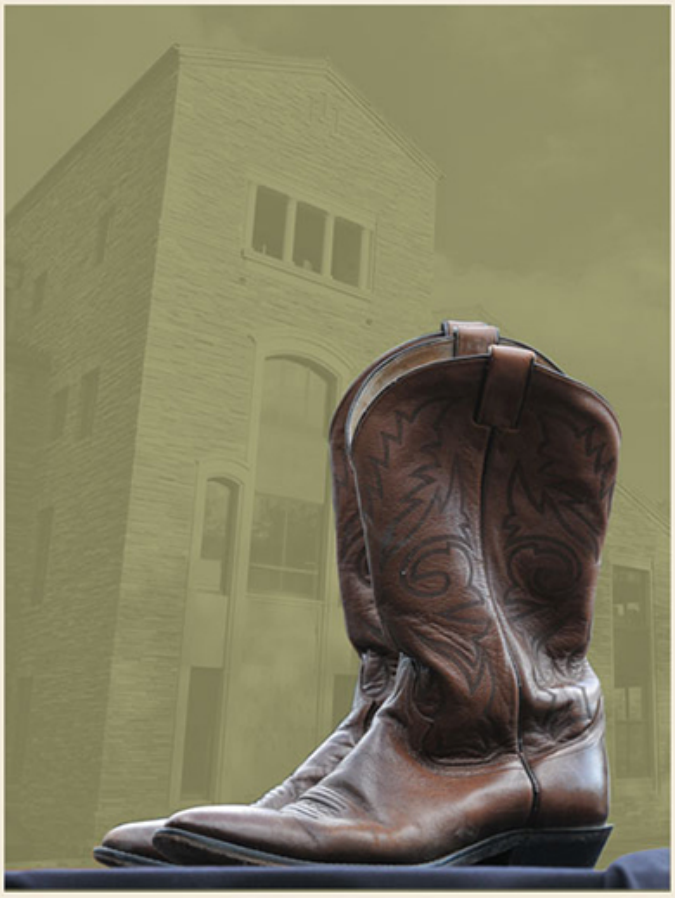

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David H. Getches, *Colorado River Governance: Sharing Federal Authority as an Incentive to Create a New Institution*, 68 U. COLO. L. REV. 573 (1997).

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COLORADO RIVER GOVERNANCE: SHARING FEDERAL AUTHORITY AS AN INCENTIVE TO CREATE A NEW INSTITUTION

DAVID H. GETCHES*

INTRODUCTION

The Colorado is one of the world's great rivers. Touching seven states, two nations, and dozens of Indian reservations, receiving visits from people around the world, and providing drinking water, food, and electricity to millions of people, it is claimed by almost everyone. But no one takes responsibility for accommodating all these uses; no one holds a vision of what the river can or must be for the future. Instead, the river has been the object of constant conflict. Only recently have there been signs that its problems can be resolved cooperatively and that its multiple, competing uses can be reconciled.

This article recommends a broader, more participatory process for exercising the substantial authority, which now rests

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with the Secretary of the Interior (the "Secretary"), to develop a comprehensive vision for the Colorado River's management. If the parties necessary to the success of that process do not convene voluntarily, the Secretary can use his powers to encourage and promote their participation. History teaches us that the Secretary must use those powers strategically to encourage voluntary action. Because the other parties necessary for this process may not readily accept governance responsibilities, the Secretary must be prepared to direct events.

In general, the federal government should exercise restraint in the use of its great statutory powers to manage the Colorado River. It should promote cooperative basin solutions that fulfill federal legal obligations. To accomplish this, the Secretary should share the authority recognized in statutes, treaties, and Supreme Court decisions with all the interests that are significantly affected. Constrained only by the requirements of existing legal mandates, the Secretary could heed the advice of a consortium of these interests, effectively delegating a degree of decisionmaking authority to them.

There have been two themes in the history of the Colorado River: legal and political combat over entitlements to quantities of water, and concentration of great authority over the Colorado River in the federal government. These themes are embodied in an array of federal laws known collectively as "the law of the river." The basic allocative laws—two congressionally approved interstate compacts,[1] a treaty,[2] a federal statute,[3] and a U.S.

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1. Colorado River Compact of 1922, COLO. REV. STAT. § 37-61-101 (1990). The compact allocates 7.5 million acre-feet of water per year, assumed to be less than half the average virgin flow, to the lower basin states of Arizona, California, and Nevada, and the balance to the upper basin states of Colorado, New Mexico, Utah, and Wyoming. *See id.* art. III(a); Upper Colorado River Basin Compact, ch. 48, 63 Stat. 31, 33 (1949) (allocating a percentage of upper basin water annually to: Colorado, 51.75%; Utah, 23%; Wyoming, 14%; New Mexico, 11.25%; Arizona, 50,000 acre-feet per annum); *see also* David H. Getches, *Competing Demands for the Colorado River*, 56 U. COLO. L. REV. 413, 419 (1985) (discussing assumptions of Compact drafters concerning available flows).

2. Treaty Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944, U.S.-Mex., 59 Stat. 1219, 1237 [hereinafter US-Mexico Treaty] (allocating 1.5 million acre-feet per year of the Colorado River to Mexico).

3. Boulder Canyon Project Act of 1928, 43 U.S.C. § 617 (1994) (authorizing construction of Hoover Dam and effectively dividing the lower basin's share as interpreted by *Arizona v. California*, 373 U.S. 546 (1963)).

Supreme Court decision[4]—essentially sort out rights to consume certain quantities of water.[5] After difficult negotiations early this century, the states achieved a gross division of rights by arbitrarily dividing the entire river basin into two sub-basins—upper and lower—and by purporting to allocate about one-half of the water to each sub-basin. After that, the states squabbled over every detail of the allocations, causing the leading historian of the Colorado River to call it the "River of Controversy."[6]

Lacking funds of their own to develop and use their apportioned water, states then competed for federal aid to build dams and other facilities to enable their consumption of Colorado River water. Because of their failure to reach negotiated solutions and their acceptance of massive federal charity, most of the authority for allocating and managing the Colorado River was legally vested in the federal government under statutes that authorized project construction.[7] Speaking of the Secretary's power to allocate Colorado River water, the Supreme Court said that where federal contracts "carry out a congressional plan for the complete distribution of waters to users, state law has no place."[8]

Plainly, Congress has preempted the operation of state water law in the allocation of water rights and the distribution of water from the Colorado River, the largest surface water source for the seven western states it touches—Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming. This may seem shocking in the context of western history and politics, which bristle with antagonism toward federal intervention, especially in matters that might infringe upon state autonomy to control water.[9] One might expect cries to liberate the states from the

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4. Arizona v. California, 373 U.S. 546, 579, 600 (1963) (construing Boulder Canyon Project Act to allocate the lower basin's share under the Colorado River Compact as follows: 2.8 million acre-feet to Arizona, 4.4 million to California, and .3 million to Nevada; recognizing and quantifying reserved water rights for five mainstream tribes).

5. *See* Lawrence J. MacDonnell & David H. Getches, *Colorado River Basin*, *in* 6 WATERS AND WATER RIGHTS 5, 51-55 (Robert E. Beck ed., 1994) (summarizing the law of the river, including several statutes and other laws that go beyond allocation of rights to use water).

6. *See* Norris Hundley, Jr., *The West Against Itself: The Colorado River—An Institutional History*, *in* NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY 9, 9 (Gary D. Weatherford & F. Lee Brown eds., 1986).

7. *See, e.g.*, Colorado River Storage Project Act, 43 U.S.C. § 620 (1994); Colorado River Basin Project Act, 43 U.S.C. § 1501 (1994).

8. *Arizona*, 373 U.S. at 588.

9. *See, e.g.*, NORRIS HUNDLEY, JR., THE GREAT THIRST: CALIFORNIANS AND

overbearing federal government's control of water. Yet the states generally resist any fundamental change in the law of the river as it stands. They have grudgingly accepted federal control of the water as a Faustian consequence of accepting tax dollars collected elsewhere to develop water projects for their use. Moreover, in practice, states have been included in some policy-making for the Colorado River. The Secretary has consulted with them in major policy issues, partly as a matter of comity; the law requires consultation with states and other parties in setting operating criteria for the federal facilities.[10]

Although federal policies for the Colorado River are narrow and fragmented,[11] Colorado River issues affect a broad array of interests. Colorado River issues include questions about the supply of water for cities or agriculture, generation of electricity, provision of fish habitat, preservation of endangered species, satisfaction of Indian treaty rights, and accommodation of white-water rafting. These issues create conflicting demands and implicate values that are not comprehensively represented in decisionmaking institutions for the Colorado River. The most pervasive problem in the governance of the Colorado River, then, has been the exclusion of diverse values and views.

Having grown out of a preoccupation with allocating rights to consume Colorado River water, the law of the river ignores the wider range of values that people in modern society hold for the Colorado River. The consequences of their exclusion are manifest

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WATER, 1770s-1990s (1992) (general history of water development and use in California); Robert W. Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973, 1016 (1995) (history of Reclamation Act); Gregory Harwood, *Forfeiture of Rights to Federal Reclamation Project Waters: A Threat to the Bureau of Reclamation*, 29 IDAHO L. REV. 153, 158 (1992) (state law and control of reclamation project water); Bennett W. Raley, *Chaos in the Making: The Consequences of Failure to Integrate Federal Environmental Statutes with McCarran Amendment Water Adjudications*, 41 ROCKY MTN. MIN. L. INST. 24-1, 24-13 to 24-21 (1995).

10. *See* Colorado River Basin Project Act, 43 U.S.C. § 1552(b) (1994).

11. *See, e.g.*, Adrian N. Hansen, *The Endangered Species Act and Extinction of Reserved Indian Water Rights on the San Juan River*, 37 ARIZ. L. REV. 1305, 1343 (1995); Larry MacDonnell & Bruce Driver, *Rethinking Colorado River Governance*, *in* THE COLORADO RIVER WORKSHOP: ISSUES, IDEAS, AND DIRECTIONS 181 (Feb. 26-28, 1996) (sponsored by the Grand Canyon Trust under a cooperative agreement with the Bureau of Reclamation) (on file with author); Sergio J. Viscoli, *The Resource Conservation Group Proposal to Lease Colorado River Water*, 31 NAT. RESOURCES J. 887, 906 (1991); Symposium, *Water Allocation Issues on the Colorado Plateau*, 13 J. ENERGY NAT. RESOURCES & ENVTL. L. 369, 382-84 (1993) (Duncan Patten speaking at the University of Utah's Symposium on the Colorado Plateau).

in economically wasteful, politically inequitable, and ecologically unsustainable uses of natural resources in the Colorado River basin. Some commentators blame the present condition of the Colorado River on existing laws and urge fundamental changes.[12]

Though the legal arrangements made early in the century to allocate Colorado River water may seem imperfect and incomplete, it is not necessary to revamp them in order to satisfy today's values and demands. The law of the river has evolved: a broad realm of policies addressing water quality, endangered species, and recreation temper the early preoccupation with consumptive uses.[13] These statutory additions to the law of the river call for a more integrated consideration of resource values. Unfortunately, some of them have been treated as subservient to the allocative laws,[14] and others have been applied as if they were part of an entirely disconnected body of law.[15] But such lapses need not lead inexorably to the conclusion that the law of the river must be replaced or reformed root and branch.

I believe that the awkwardness and the intractability of most of the Colorado River's problems reflect the absence of a venue to

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12. *See* JASON I. MORRISON ET AL., THE SUSTAINABLE USE OF WATER IN THE LOWER COLORADO RIVER BASIN x-xi, 2, 4 (1996) (noting that the law of the river "has been amended, modified, and refined throughout the century as unsolvable problems and unique circumstances have [occurred] . . . [and that further] improving or modifying the Law of the River . . . is a viable option."); *see also Lower Colorado River Oversight Hearings Before the Subcomm. on Water and Power of the Senate Comm. on Energy and Nat. Resources*, 103d Cong. 186-89 (1994) (statement of Gary D. Weatherford); Gilbert F. White, *A New Confluence in the Life of the River*, *in* NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY, *supra* note 6, at 215, 221-23; *Colorado Water Stirs Debate*, ENG'G NEWS-REC., Nov. 22, 1984, at 13.

13. *See, e.g.*, Endangered Species Act, 16 U.S.C. §§ 1531-1544 (1994); Colorado River Basin Salinity Control Act, 43 U.S.C. § 1572 (1994); Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, 106 Stat. 4669 (1992).

14. *See, e.g.*, Colorado River Basin Salinity Control Act, 43 U.S.C. § 1592 (1994). Although salt-loading is related to consumptive uses of Colorado River water allocated by the law of the river, *see infra* Part I.C.2, responsibility for dealing with its effects has been assumed by the United States, and the remedies are premised on a federal obligation to find solutions that do not require curtailing consumptive uses. *See* 43 U.S.C. § 1512 ("[S]atisfaction of the requirements of the Mexican Water Treaty . . . constitutes a national obligation."); *see also* TAYLOR O. MILLER ET AL., THE SALTY COLORADO 76-77 (1986) (discussing who should be required to pay for salinity control projects on the Colorado River).

15. *See, e.g.*, 16 U.S.C. §§ 1531-1544. There have been virtually no attempts to coordinate the endangered species recovery efforts in the basin with decisions on major river and dam operations. *See* discussion and recommendations *infra* Part III.B.3.

deal comprehensively with Colorado River basin issues. This has led me to call for the establishment of a new entity that recognizes and integrates the interests and people who are most affected by the outcome of decisions on major Colorado River issues.[16] One model for such an entity would be a Colorado River Basin Authority formed by the voluntary agreement of the seven states in the Colorado River basin and sanctioned by an act of Congress (or an approved compact).[17] Recently, others have

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16. *See* David H. Getches, A Colorado River Basin Authority: Opportunity for Sharing River Basin Management and Resources, *in* Boundaries and Water: Allocation and Use of a Shared Resource 2 (Natural Resources Law Ctr., University of Colo. Sch. of Law ed., 1989); David H. Getches, *Pressures for Change in Western Water Policy*, *in* WATER AND THE AMERICAN WEST: ESSAYS IN HONOR OF RAPHAEL J. MOSES 143, 159-60 (David H. Getches ed., 1988); Getches, *supra* note 1, at 479; David H. Getches, Water Allocation During Drought in Arizona and Southern California: Legal and Institutional Responses, *in* Severe, Sustained Drought in the Southwestern United States, Phase I Report, at Pt. 2 (1991) (on file with author); David H. Getches, *This Process is Out of Control*, HIGH COUNTRY NEWS, Nov. 16, 1992, at 14; *see also* Lawrence J. MacDonnell et al., *The Law of the Colorado River: Coping with Severe Sustained Drought*, 31 WATER RESOURCES BULL. 825, 835 (1995); MacDonnell & Getches, *supra* note 5, at 55.

The idea is not original. Several negotiators of the Colorado River Compact of 1922, COLO. REV. STAT. § 37-61-101 (1990), favored creation of a permanent Colorado River Commission. *See* NORRIS HUNDLEY, JR., WATER AND THE WEST: THE COLORADO RIVER COMPACT AND THE POLITICS OF WATER IN THE AMERICAN WEST 181 (1975). The proposal was not included in the compact but the idea of a Colorado River Authority was perpetuated and vigorously advocated in REUEL OLSON, COLORADO RIVER COMPACT 195-210 (1926). Gilbert White concluded, based on discussions at a 1983 conference, that "[a] means might be found to bring together from inside and outside the basin a group representative of the diverse interests in water and related land resources to assess possible actions beyond those specified in the compact." White, *supra* note 12, at 223. Others at the conference urged consideration of the idea. *See, e.g.*, Paul L. Bloom, *Law of the River: A Critique of an Extraordinary Legal System*, *in* NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY, *supra* note 6, at 139, 143; *see also* KAI N. LEE & JO S. CLARK, WESTERN GOVERNORS' ASS'N, THE WESTERN HYDRO SYSTEM 28 (1985) (report of a three-person task force, of which this author was a member, suggesting a basin council for the Colorado basin like the Northwest Power Planning Council in the Columbia basin, *see infra* note 19).

17. See David H. Getches, *A Colorado River Basin Authority: Opportunity for Sharing River Basin Management and Resources*, *in* Boundaries and Water: Allocation and Use of a Shared Resource, *supra* note 16, at 7, for the proposal that an "Authority" be constituted with representation by state, tribal, and federal governments, and interests such as water users, power customers, fish and wildlife, and recreation. The Authority would make decisions on reservoir operations, including power generation, flood control, and storage for compact deliveries, salinity control measures, water development projects, ecosystem protection, endangered species recovery, compact enforcement and interpretation, fulfillment of Indian reserved rights, interstate water marketing, drought planning, and use of power revenues. *See id.*

examined the issue in more detail and advocated the creation of a commission or council for Colorado River basin governance under an interstate compact.[18]

My purpose here, however, is not to prescribe a perfect model for Colorado River basin governance. Indeed, to design the "ideal" institution to govern the Colorado River would be easier than to persuade Congress and the states to accept the proposal. Absent a major financial crisis or natural disaster, in the short run it will remain politically infeasible to create an entirely new institution for Colorado River governance.[19] As the Supreme Court has said, "Government is a practical affair, intended for practical men."[20] Thus, I believe that more comprehensive management of the Colorado River is likely to occur incrementally, spurred by a federal policy of selectively delegating existing powers as an incentive for voluntary efforts to broaden the governance of the river.

Several recent events suggest that the time is ripe to encourage broadly inclusive, participatory problem-solving in the

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18. *See* Douglas Steven Kenney, River Basin Administration and the Colorado: Past Practices and Future Alternatives 439-58, 467-68 (1993) (unpublished Ph.D. dissertation, University of Arizona) (on file with author) (proposing "Colorado River Council" to be formed by compact, with participation by seven state governors and the Secretary). Dr. Kenney's work is a thorough and analytical study of the concept of the Colorado River basin governance; it deals with the subject after discussing established methods of governance and evaluative criteria for institutional performance, reviewing the legal and political control of interstate river basins generally, setting out the peculiar history and institutions of the Colorado River basin, and then evaluating those institutions. *See also* Charles W. Howe & W. Ashley Ahrens, *Water Resources of the Upper Colorado River Basin: Problems and Policy Alternatives, in* WATER AND ARID LANDS OF THE WESTERN UNITED STATES 169, 222 (Mohamed T. El-Ashry & Diana C. Gibbons eds., 1988) (discussing an interstate commission to do studies, monitor agreements, and promote dialogue); MacDonnell & Driver, *supra* note 11, at 210-12 (discussing "Colorado River Commission" to be formed by compact with representatives of seven states and other interests).

19. A new institution, the Northwest Power Planning Council, was created legislatively to deal with hydropower generation, power conservation, and salmon issues in the Columbia River basin. *See* Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. § 839b (1994). It was established only after the financial stability of the huge power-generating complex in the Northwest was thrown into doubt by improvident decisions to build expensive, unnecessary, and poorly planned nuclear power plants, and only with the aid of influential political representatives in Congress. *See* John M. Volkman & Kai N. Lee, *Within the Hundredth Meridian: Western States and Their River Basins in a Time of Transition*, 59 U. COLO. L. REV. 551, 562-65 (1988); *see also* Kai N. Lee, *The Path Along the Ridge: Regional Planning in the Face of Uncertainty*, 58 WASH. L. REV. 317 (1983).

20. United States v. Midwest Oil Co., 236 U.S. 459, 472 (1915).

Colorado River basin. There is a general trend toward collaborative, localized problem-solving, often within geographic areas defined by watersheds. Throughout the West, typically under pressure to comply with federal laws, citizens and local units of government have formed coalitions within particular watersheds and communities, and they have progressed in negotiating solutions to natural resources issues ranging from public land management and water quality to endangered species.[21] Within the upper Colorado River basin, a consortium of interests addresses endangered species issues.[22] Indeed, a broadly representative group now advises the Secretary on the operating policy for the Glen Canyon Dam.[23] Moreover, several proposals have been made to reallocate Colorado River water using market mechanisms ("water banks").[24]

Change is in the wind and virtually every interest in the Colorado River basin has needs that could be better met with new arrangements. Although the Colorado River basin states have participated in federal decisions and policies, each of them has motives for seeking the collaboration of other states and interests in the basin. California's water use has long exceeded its legal entitlement and California now demands even more water to fuel its rapid growth.[25] Nevada, too, is growing fast and expects to need more than its modest share of water soon.[26] Arizona seeks relief from the burdens of repaying the construction costs of the long-sought federal Central Arizona Project. It would also like to

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21. *See, e.g.*, Natural Resources Law Ctr., University of Colo. Sch. of Law, The Watershed Sourcebook: Watershed-Based Solutions to Natural Resource Problems (1996). The majority of examples in this study involved locally generated solutions to problems that would otherwise be subject to regulatory requirements and solutions developed by "outsiders." *Id.* at 1-27 to 1-31; *see also* William Goldfarb, *Watershed Management: Slogan or Solution*, 21 B.C. ENVTL. AFF. L. REV. 483 (1994).

22. *See infra* Part II.B. and accompanying text.

23. *See infra* notes 147-48 and accompanying text. Also, for several years, an interstate body has operated under statutory authority to deal with Colorado River salinity problems; it has operated successfully and cooperatively in dealing with issues under its limited rubric. *See* Colorado River Basin Salinity Control Act, 43 U.S.C. § 1571 (1994); *infra* notes 191-97 and accompanying text.

24. *See infra* Part II.A.

25. *See Emerging Water Shortages on the Colorado River: The Iron Law of Demand Growth and Supply Unreliability*, WATER STRATEGIST, Winter 1996, at 2 [hereinafter *Water Shortages on the Colorado River*]; Lawrence J. MacDonnell, New Options for the Lower Colorado River Basin 12-16 (Natural Resources Law Ctr., University of Colo. Sch. of Law, 1996).

26. *See Water Shortages on the Colorado River*, *supra* note 25; MacDonnell, *supra* note 25, at 16-18.

use cheap groundwater in the short run without losing its right to get Colorado River water through the CAP in the future.[27] The upper basin states of Colorado, New Mexico, Utah, and Wyoming underutilize their shares of the river's water, and it appears that they may never be able to consume those amounts of water or to build long-promised federal water projects without harming the habitat of endangered fish in violation of the strict requirements of the Endangered Species Act.[28] All the states worry about salinity problems and how to meet their obligation to deliver water to Mexico.[29] They are also concerned with water marketing schemes,[30] and they all care about rules for operating federal dams and facilities and allocating the river's water.[31] The stakes are high but, with some exceptions, even the states that have been invited to comment on proposed actions of the Secretary have failed to address solutions. When they have acted, they have addressed single problems but not comprehensive solutions, with all issues on the table, that enable trade-offs and mutual problem-solving. Most significantly, other affected interests have been left out of decisions, their "participation" relegated to responding to *Federal Register* notices. If they are displeased they must mount collateral attacks through lawsuits and lobbying. Presumably everyone would benefit if an equitable means were found to eliminate the uncertainty that results from the exclusion of other affected interests from decisionmaking.

In this article, I suggest several opportunities for the Secretary to rely on a multi-interest group to develop policies for governance of the resources of the Colorado River. Traditionally excluded interests such as tribal governments, recreationists, environmentalists, and scientists could cooperate in comprehensive efforts to solve Colorado River basin problems. Their cooperation could lead incrementally to a permanent, basin-wide institution, though that is neither a necessary outcome nor an indispensable motive for pursuing cooperative efforts now.

My preferred option is that Colorado River basin problems be addressed in consensus solutions that are developed by a group

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27. MacDonnell, *supra* note 25, at 7-12. *See generally* Robert Jerome Glennon, *Coattails of the Past: Using and Financing the Central Arizona Project*, 27 ARIZ. ST. L.J. 677 (1995).

28. *See infra* notes 276-99 and accompanying text.

29. *See infra* notes 163-71 and accompanying text.

30. *See infra* notes 198-255 and accompanying text.

31. *See infra* notes 355-65 and accompanying text.

representing parties both inside and outside the federal government, and that are consistent with existing federal legal mandates. The group, which would include one or more federal representatives as coequal members, could seek a delegation of federal authority or a federal agreement that their recommendation will be adopted as the federal solution. Alternatively, an independently convened group could petition the Secretary to adopt specific recommendations once it has reached agreement. States are well-positioned to convene all the affected parties and to collaborate in exploring and developing solutions because they are accustomed to meeting together and the Secretary has allowed them a consultative role in certain Colorado River policies. If states or other outside parties do not facilitate a process that widens the discussion, however, the Secretary should convene all the affected interests around specific issues and commission them to develop solutions. Such a process could produce creative and durable solutions, and once a group was convened, it could remain available to modify approaches to adapt to changing conditions. In the long run, including all affected parties in decisionmaking could move the Colorado River basin toward more equitable, efficient, and sustainable governance.

I. EVALUATING THE CONSEQUENCES OF FEDERAL DOMINANCE OF THE COLORADO RIVER

The law of the river legally allocates gross quantities of water to Indian tribes, among states, and between the United States and Mexico under compact,[32] statute,[33] treaty,[34] and Supreme Court decision.[35] Federal legislation has authorized the expenditure of public money to subsidize development,[36] enabling consumptive use of the water that has been allocated to the various states. The federal government has funded the construction of ten major Colorado River basin dams[37]—including Hoover,

32. Colorado River Compact of 1922, COLO. REV. STAT. § 37-61-101 (1990); Upper Colorado River Basin Compact, ch. 43, 63 Stat. 31, 33 (1949).

33. Boulder Canyon Project Act of 1928, 43 U.S.C. § 617 (1994).

34. US-Mexico Treaty, *supra* note 2.

35. Arizona v. California, 373 U.S. 546 (1963).

36. *See, e.g.*, 43 U.S.C. § 617; Colorado River Storage Project Act, 43 U.S.C. § 620 (1994); Colorado River Basin Project Act, 43 U.S.C. § 1501 (1994).

37. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF INTERIOR, OPERATION OF THE COLORADO RIVER BASIN 1995, PROJECTED OPERATIONS 1996, 25TH ANNUAL REPORT,

Glen Canyon, and Flaming Gorge—capable of generating vast quantities of electrical power and irrigating more than 1.6 million acres of farmland with an annual crop value of $1.7 billion.[38] Additionally, more than twenty-two million people in the West rely on Bureau of Reclamation projects in the basin for municipal and industrial water and for electrical power.[39]

All of the seven basin states (with the possible exception of Nevada) sought and obtained federal commitments for substantial federal subsidization of water projects within their borders. However, most of the Colorado River water stored in Bureau of Reclamation projects benefits California and Arizona. Typically, when a Colorado River basin state asked Congress to authorize a project for its benefit, the other basin states used every legal and political tool at their disposal to object, lifting their opposition only when Congress met their demands for projects.[40] A forty-five-year binge of congressional log-rolling ended in 1968 with the authorization of the Central Arizona Project ("CAP") along with a package of several upper basin projects that other Colorado River basin states demanded as a political quid pro quo.[41] Thereafter, few undeveloped sites remained where projects had not been authorized, and Congress became more sensitive to environmental impacts and became reluctant to spend enormous sums on public water projects.

The results of water development in the Colorado River basin can be evaluated from the perspectives of efficiency, equity, and sustainability. These are values that society respects, and satisfying them should be the objective of natural resource management.[42] Colorado River policy has thus far been deficient in serving each of these values.

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at 5-19 (1996).

38. *See id.* at 42-43 tbl.4.

39. *See id.* at 63-65 tbl.10.

40. *See* HELEN INGRAM, WATER POLITICS: CONTINUITY AND CHANGE (1990); MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER 281-316 (1986); *see also* RUSSELL MARTIN, A STORY THAT STANDS LIKE A DAM 280-84 (1989).

41. *See* Colorado River Storage Project Act, 43 U.S.C. § 620(a)(1); *see also* REISNER, *supra* note 40.

42. *See* SARAH F. BATES ET AL., SEARCHING OUT THE HEADWATERS: CHANGE AND REDISCOVERY IN WESTERN WATER POLICY 201 (1993).

A. Efficiency

Efficiency demands careful management to satisfy a variety of societal values for natural resources; it eschews waste. Efficiency can be measured by balancing the costs and benefits of a particular commitment of resources. Natural resource economists rely on cost-benefit analyses to screen out wasteful or inefficient water projects and uses. Sound conservation policy, however, must go beyond simple accounting to consider "benefits" and "costs" that are difficult to value economically but that are widely shared.[43] Resource values such as biological diversity, recreational uses, and scenic beauty are usually left to the political process. Economic analyses were prepared in advance of some of the development of the Colorado River, but these studies simply weighed the "hard" values of water distribution and power generation against construction costs.[44] Ultimately, federal subsidies enabled the development of water projects that were inefficient even by traditional cost-benefit accounting standards, which do not consider environmental and other social costs.[45]

The initial allocations of rights to consume Colorado River water were designed not to pursue efficient water uses but to achieve a politically acceptable division. At the time of the 1922 Compact, California was developing more rapidly than the other six Colorado River basin states.[46] Arizona feared that California would monopolize the federal largesse necessary to exploit the Colorado River. Colorado anticipated that California's prior use of most of the Colorado River's resources would give California water rights superior to other states, just as prior use established a hierarchy of rights between individual users within states that followed the prior appropriation water rights doctrine.[47] Thus, in 1922, the Colorado River basin states negotiated a compact reflecting an ostensibly equal division of rights to consume

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43. *See* BONNIE COLBY SALIBA & DAVID B. BUSH, WATER MARKETS IN THEORY AND PRACTICE: MARKET TRANSFERS, WATER VALUES, AND PUBLIC POLICY 1-33 (1987).

44. In contrast, environmentalists defeated dams in the Grand Canyon by invoking both economic analysis of dam operations and political concerns about destroying precious resources that are difficult to value. *See* REISNER, *supra* note 40, at 295-303.

45. *See* RICHARD W. WAHL, MARKETS FOR FEDERAL WATER: SUBSIDIES, PROPERTY RIGHTS, AND THE BUREAU OF RECLAMATION 44-45 (1989).

46. *See* HUNDLEY, *supra* note 16, at 178-80.

47. *See id.*

Colorado River water between the upper basin states (Colorado, New Mexico, Utah, and Wyoming) and the lower basin states (Arizona, California, and Nevada).[48]

Once the division was made, the states were challenged to put their water to use. California saw the Compact as a predicate to federal assistance in building the Hoover Dam.[49] The federal government built projects, first for California, then for the other states.[50] For the other states, the specter of California's development remained a threat. Because the Compact provided only theoretical protection of the states' ability to use water in the future, they eagerly sought physical means to develop, store, and distribute the water allocated to them. The Secretary typically contracted with water users and local districts to deliver water from federal facilities, charging them the negligible costs of operation and maintenance.[51] Although the projects were expensive to construct, many dams generated electric power that produced cash to repay much of the government's construction costs. By law, only the costs of generating power were included in the rate base charged to power customers,[52] and those costs were kept down in part by making project construction costs "non-reimbursable" to the extent that they were dedicated to national benefits like flood control.[53] Today, the Western Area Power Administration markets power from these projects at some of the lowest wholesale rates in the region.[54]

The economic benefits of water development projects, therefore, have been impressive. Generously subsidized by federal contributions and with costs repaid by hydroelectric power revenues, these water projects have provided agricultural irrigators and expanding cities with low-cost water. Power costs

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48. *See id.* at 192-95.

49. *See id.* at 226.

50. *See* REISNER, *supra* note 40, at 150.

51. *See id.* at 482; *see also* WAHL, *supra* note 45, at 52.

52. *See* 43 U.S.C § 617 (1994); 43 U.S.C § 620 (1994); 43 U.S.C § 1501 (1994).

53. *See generally* WAHL, *supra* note 45, at 27-46. The Reclamation program's total expenditures of $16.9 billion were considered 78% reimbursible. Of the reimbursible portion, irrigators were to repay $7.1 billion. They are now required to pay only $3.4 billion, however, because much of the burden has been shifted to others, mostly power customers. *See* BUREAU OF RECLAMATION, INFORMATION ON ALLOCATION AND REPAYMENT OF COSTS OF CONSTRUCTING WATER PROJECTS 4 (GAO/RCED-96-109 1996).

54. *See* Jim Bishop, *A Water-Based Electric Empire Is Hit by a Flood of Criticism*, HIGH COUNTRY NEWS, July 13, 1992, at 10; *see also infra* note 134.

have been so low that cheap, publicly generated power is widely available to assist the development of the desert Southwest.

The development of the Colorado River, however, has led to excessive use of natural resources. More water has been consumed because of the federal government's subsidies.[55] This was the purpose of the projects: to enable the states to make consumptive use of the water apportioned to them under compacts, statutes, and court decisions. Although the projects achieved that objective, they were not economically efficient.[56] Because of cheap irrigation water, some farmers benefited from higher profits while other farmers brought lands into agricultural production that would not otherwise have been economically viable.[57] Further, most cost-benefit analyses of water projects did not account for all costs, including losses of fish and wildlife, recreational opportunities, and ecological integrity.[58] Today, however, it appears that in parts of the Colorado River basin, recreation, fish, and wildlife have higher value than either hydropower or agricultural uses.[59]

Federal subsidies for irrigation in the Colorado River basin led to increased cultivation of marginal lands that otherwise would have had little or no agricultural output.[60] Some land is simply not well-suited to irrigated agriculture. In the upper basin, much of the land is located at high altitudes where growing seasons are short. Upper Colorado River basin land is also highly saline in many places. It can be kept productive only by flushing it with large quantities of irrigation water, by growing salt-tolerant crops, or by constructing drainage systems to "speed the flow of return water out of the soils."[61]

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55. *See* WAHL, *supra* note 45, at 45.

56. *See id.* By "economically efficient," it is meant that absent federal subsidies, the marginal returns on irrigation projects equal or exceed the marginal costs.

57. *See id.*

58. It was not until after most of the projects in the Colorado River system had been authorized that the United States government began attempts to account for environmental and social factors in water project criteria. *See* INGRAM, *supra* note 40, at 14-15.

59. A recent study estimated that in the upper Colorado River region the average values of an acre-foot of water, by types of use, were $51 for recreation, fish, and wildlife; $21 for hydropower; and $5 for irrigation. In the lower basin they were $597 for recreation, fish and wildlife; $35 for hydropower; and $88 for irrigation. *See* Kenneth D. Frederick et al., Economic Values of Freshwater in the United States, Discussion Paper 97-03, at 17 (Oct. 1996) (on file with author).

60. *See* WAHL, *supra* note 45, at 45.

61. MILLER ET AL., *supra* note 14, at 9.

The Wellton-Mohawk story is a legendary, if extreme, example of the perverse effects of subsidies in the Colorado River basin.[62] Farmers in the Wellton-Mohawk District took up homesteads on federal land in the Arizona desert.[63] The federal government then supplied them with irrigation water from the Gila River Project.[64] Years of heavy irrigation of lands resulted in salt build-up in soils and wells along the Gila River.[65] Farmers then beseeched the federal government to build facilities that would bring water from the Colorado River to flush salt from their lands.[66] The Bureau of Reclamation complied, providing respite until the groundwater basin filled with salty water that began killing crops. Again the farmers sought federal aid and got an expensive project to pump down the aquifer and pipe the brackish water to the Colorado River.[67] The new federal pipeline dumped the salty water into the Colorado River at the Mexican border, making the river water diverted by Mexican irrigators so saline that it was toxic to crops.[68] That precipitated an international incident when the Mexican government protested that it was unacceptable for the United States to deliver salty water in fulfillment of the 1.5 million acre-feet treaty commitment.[69]

To address the Mexican salinity problem and make peace with Mexico, the United States embarked on another costly construction project, extending the Wellton-Mohawk wastewater pipeline to a point below the Mexican intake.[70] However, the extension of the wastewater pipeline reduced the delivery of water to Mexico under the U.S. treaty.[71] To increase the amount

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62. *See* PHILIP L. FRADKIN, A RIVER NO MORE: THE COLORADO RIVER AND THE WEST 302-05 (1995); *see also* RICHARD L. BERKMAN & W. KIP VISCUSI, DAMMING THE WEST 41-45 (1973); David H. Getches, *From Ashkabad, to Wellton-Mohawk, to Los Angeles: The Drought in Water Policy*, 64 U. COLO. L. REV. 523, 531 (1993).

63. Homesteaders first settled in the Gila River bottomlands of the Wellton-Mohawk Valley in 1857. *See* FRADKIN, *supra* note 62, at 302; *see also* Act of Aug. 30, 1964, Pub. L. No. 88-511, 78 Stat. 686; Act of Oct. 28, 1965, Pub. L. No. 89-299, 79 Stat. 1101.

64. The Gila River Project was authorized by the Act of May 25, 1928, ch. 742, Pub. No. 508, 45 Stat. 739. The Act of July 30, 1943, Pub. L. 272, ch. 382, 61 Stat. 628, altered its boundaries to include the Wellton-Mohawk District.

65. *See* FRADKIN, *supra* note 62, at 302.

66. *See id.* at 302-03.

67. *See id.* at 303.

68. *See id.*

69. *See id.* at 303-15; *see also* US-Mexico Treaty, *supra* note 2.

70. *See id.* at 304.

71. *See id; see also* US-Mexico Treaty, *supra* note 2.

of acceptable-quality water delivered to Mexico, the United States then agreed to build several more projects to remove salt from the river upstream. The most ambitious and expensive feature of this program was an enormous desalination plant.[72]

Congress and the Bureau of Reclamation apparently did not reach their decisions based on economic considerations, nor did they weigh the foreseeable consequences for the environment or for relations with Mexico. Had they accounted for the consequences and costs imposed on the nation and the range of interests affected by their actions, the Wellton-Mohawk projects would have seemed foolhardy.[73] The economic value of crops produced by the farmers in the district could not justify even the interest-free capital costs of the facilities that the federal government built for their benefit.[74] In a free market system, where irrigators pay their own costs and are responsible for the consequences of their actions, most of the Wellton-Mohawk lands would not continue to be irrigated even if the impacts on natural systems and international relations were disregarded.

Federal subsidies have also assisted urban development. The benefits of urban uses better justify project costs than do those of agricultural uses. Nevertheless, it is doubtful that proponents of the Reclamation program contemplated subsidizing municipal growth.[75] Further, federal subsidies have not been necessary for

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72. *See* FRADKIN, *supra* note 62, at 313.

73. Assuming that the problems caused by the initial project could not have been foreseen, it would have been rational to curtail further subsidies once the negative consequences of the government's investment became apparent. A lower cost solution to the Mexican salinity problem would have been to pay the Wellton-Mohawk farmers to use efficient irrigation methods. *See* REISNER, *supra* note 40, at 482. It even would have been cheaper to retire land in the Wellton-Mohawk District from irrigated farming by purchasing it from the farmers. *See id.* The Bureau of Reclamation estimated in 1979 that it would cost $266 million to acquire *all* of the private property in Wellton-Mohawk, including the cost of retiring the federal investment in the district. *See* FRADKIN, *supra* note 62, at 313. At that time, the cost of the desalination plant had risen to $333 million with an annual operation cost of $14 million. *See id.* at 313-14. To solve the problem, it would not have been necessary to retire all of the land. *See* Getches, *supra* note 62, at 534 n.54.

74. The United States has not asked the 120 irrigators in the district to pay back the hundreds of millions of dollars spent to preserve the means to continue their livelihood. The irrigators have been excused from repaying virtually all of the cost of constructing even the facilities they use directly because of a federal policy that relieves beneficiaries of repayment responsibilities where costs exceed their ability to pay. *See* WAHL, *supra* note 45, at 33.

75. The chief proponent of the Reclamation Act of 1902, Congressman Francis G. Newlands of Nevada, stated, "[T]he very purpose of [the Reclamation Act] is to

cities because of the relative ease with which municipalities can finance water development independent of federal assistance.[76]

More than one-third of the water consumed from the Colorado River is used for municipal and industrial purposes, most of it exported out of the basin (for example, to Los Angeles).[77] Although the cities pay more for the water than agricultural users, the rates for municipal water from federally subsidized Bureau of Reclamation projects remain low. Since water exported to cities has high economic value, cities and their consumers, who both benefit from Colorado River water, do not need the federal subsidies. If cities paid the full costs of developing federal water, they would presumably continue consuming and paying for it unless and until they developed a comparable source at a better price.

Federal subsidies create incentives to consume Colorado River water. Promoting consumption may have served the original, single-minded goal of the Colorado River basin states as they raced to perfect their allocations through full use. Today, however, it makes no sense to perpetuate subsidies when California's use already exceeds its legal claim,[78] natural systems are in distress from depletions and damming of the Colorado River,[79] and competition among uses is great.[80] The federal subsidy only delays the cities' use of alternative sources of water.

Project facilities on the Colorado River continue to provide agricultural and municipal waters and flood control protection, but the everyday operating regime of releases is dictated largely by demands for hydroelectric power. The federal investment in water facilities has generated valuable electric power that has created substantial economic benefits and revenues to repay

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guard against land monopoly and to hold land in small tracts for the people of the entire country." FRADKIN, *supra* note 62, at 275.

76. Local governments can finance water projects using municipal bonds secured by tax and user charges. *See* NATIONAL WATER COMM'N, WATER POLITICS FOR THE FUTURE 448-49 (1973); *see also* RODNEY T. SMITH, TROUBLED WATERS: FINANCING WATER IN THE WEST 33-64 (1984).

77. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF THE INTERIOR, COLORADO RIVER SYSTEM CONSUMPTIVE USES AND LOSSES REPORT 1981-1985, at 19-22 tbls.C-2, C-3, C-4, C-5 (1991).

78. California consumed more than 5.2 million acre-feet in 1996. *See Water Shortages on the Colorado River*, *supra* note 25, at 2. It began exceeding its annual 4.4 million acre-feet entitlement in the 1950s. *See* REISNER, *supra* note 40, at 139.

79. *See infra* Parts I.B.2 and I.C.

80. *See generally* Getches, *supra* note 1.

project costs.[81] However, the operation of dams to maximize power output and the impact of their obstruction of the river have caused environmental damage, the costs of which are external to decisions about dam construction and dam operating policies. Like subsidies for western water users, providing federally subsidized power is difficult to justify on policy grounds.

B. Equity

The idea that water is a social good—something setting it apart from ordinary commodities and property—leads to the conclusion that it should be distributed fairly and in the broad interests of the public. From earliest times, individuals were given priorities in the use of water on the condition that they fulfill certain reciprocal obligations to society that were publicly enforced.[82] As the West developed, however, private water rights were elevated to the detriment of public values.[83] Today, western water law is evolving, albeit in fits and starts, toward a recognition that water is more than an economic good, and that it is essential to the vitality of natural systems, watersheds, and communities.[84] A greater consciousness of the public importance of water has led to calls for judging water institutions based on the equity, or justice, of the resulting allocation and distribution of the resource.[85] Ultimately, equity demands that water serve a broad range of public interests and a process for reaching decisions that is generally fair.

The history of the Colorado River is riddled with examples of clear winners and losers, haves and have-nots.[86] This history has led Professor Helen Ingram to recommend several principles for

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81. *See, e.g.*, Boulder Canyon Project Act, 43 U.S.C. § 617d (1994); 43 U.S.C. 618a(b) (1994); *see also* WESTERN GOVERNORS' ASS'N, THE WESTERN HYDRO SYSTEM i-ii (1985). "Water development was authorized to encourage economic development in the West which would in turn stimulate the nation's economy. . . ." *Id.* at 6. In the Southwest the principal purpose of the federal investment was to aid agriculture, but hydroelectric power has been a "valuable by-product . . . to repay . . . project construction [costs]." *Id.*

82. *See, e.g.*, ARISTOTLE, THE POLITICS 1330a-b.

83. *See, e.g.*, BATES ET AL., *supra* note 42, at 170-71.

84. *See, e.g., id.*; *see also* Charles F. Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317 (1985).

85. *See* BATES ET AL., *supra* note 42, at 182-87.

86. *See* INGRAM, *supra* note 40, at 8-23 (describing the winners and losers in the history of Colorado River development).

judging the equity of water policy. The principles include the ideals of sharing advantages and costs, respecting all legitimate uses, accommodating everyone in the allocation and decision-making processes, keeping promises, and being responsible to future generations.[87] In several respects, the history of governance of the Colorado River basin fails her tests for equity. Professor Ingram concludes that "[h]ad the principle of full and fair participation in allocation decisions been followed in the past, many of the most troublesome issues faced today in Indian water rights would have been avoided."[88] The same can be said of other issues—relations with Mexico, the allocation of the burdens of salinity control, development promises to the upper basin states, the deterioration of the natural environment, and the loss of recreational opportunities.

In the future, the claims and interests of Indian tribes and environmental and recreational interests will likely have great importance in decisions about the Colorado River. Therefore, it is instructive to consider the historical treatment of these two important interests in the Colorado River basin from the perspective of equity.

1. Indian Tribes

Since 1908, it has been clear that Indian tribes hold rights to significant amounts of water from sources near their reservations.[89] The Supreme Court, in *Winters v. United States,* held that when the United States and the tribes set aside lands as Indian reservations, they also impliedly reserved enough water to fulfill the purposes of the reserved land.[90] More than fifty years after the Supreme Court announced this principle, the United States asserted the reserved water rights of the five tribes along the mainstream of the Colorado River in litigation between the states of Arizona and California. The decision in *Arizona v. California*[91] was a landmark because it set the formula for quantifying reserved water rights: for reservations made for

87. *See* Helen M. Ingram et al., *Replacing Confusion with Equity: Alternatives for Water Policy in the Colorado River Basin, in* NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY, *supra* note 6, at 177, 186-89.

88. *Id.* at 192.

89. *See* Winters v. United States, 207 U.S. 564 (1908).

90. *See id.* at 576-77.

91. 373 U.S. 546 (1963).

agricultural purposes, water rights are to be measured according to what is needed to irrigate all the practicably irrigable acreage.[92] On that basis, the tribes won rights to some 900,000 acre-feet of water from the Colorado River, about six percent of the quantity allocated to the seven basin states by the 1922 Compact.[93]

Although the five mainstream tribes secured the right to use a large quantity of water from the Colorado River, the adjudication did not address the claims of dozens of other tribes in the Colorado River basin. Moreover, the apparent victory of the five tribes was qualified in several respects. First, the acreage that the United States claimed as irrigable was considerably less than the acreage that the evidence would have supported. Second, the tribes had to compete with subsidized non-Indian users in their use of Colorado River water. Third, the tribes were subsequently excluded from discussions among basin states about the Colorado River, and the federal government did not consult the tribes in its major decisions about the Colorado River and policies for the river's management.

The Supreme Court in *Arizona v. California* approved in most respects the recommendations of its appointed Special Master and retained continuing jurisdiction.[94] Years later, the five mainstream tribes, who had relied upon government attorneys to represent them in the case, hired their own lawyers and experts. They discovered that they could have claimed, in the earlier litigation, that additional lands were irrigable.[95] The tribes moved to intervene in the case, invoking the Court's continuing jurisdiction.[96] The United States joined with the tribes to assert claims for additional water. A new Special Master was appointed,[97] and he agreed with the tribes' and United States' claims that government attorneys could have claimed far more water for the tribes in the earlier litigation.[98] In his report, the

92. *See id.* at 600.

93. *See* Arizona v. California, 376 U.S. 340 (1964).

94. *Arizona*, 373 U.S. at 562-63.

95. Some of the reservation acreage had been calculated based on erroneous surveys, some had not been properly classified, and relevant circumstances with respect to other lands had changed since the decision.

96. *See* Arizona v. California, 439 U.S. 419 (1979).

97. *See id.* at 436.

98. *See* REPORT OF SPECIAL MASTER ELBERT P. TUTTLE 5, 13 (Feb. 22, 1982); Arizona v. California, 439 U.S. 419 (1979).

Special Master recommended that the tribes' annual entitlement to water be increased by about thirty-five percent, a total of 317,000 acre-feet for the five tribes.[99] However, in *Arizona v. California II,* the Supreme Court rejected this recommendation on the ground that it would upset the policy of providing water users (non-Indians) with "certainty" in water rights adjudications.[100] Thus the tribes, who had relied on the federal government's flawed legal representation of them, were forever locked into an adjudication that gave them less water than they were entitled to claim.[101]

Non-Indians have benefited far more from the use of Colorado River water claimed by tribes than have the tribes, resulting in one of the great inequities in federal-tribal relations. In large part, this is the result of the federal government's generous subsidies for the development of Bureau of Reclamation projects. In 1973, the National Water Commission opined that the government's failure to assert and protect tribal water rights, even as it induced the development of water by non-Indians with rights junior to those of tribes in the same rivers, was "one of the sorrier chapters" in federal relations with Indian tribes.[102] Despite the expenditure of billions of federal dollars to develop waters of the Colorado River, few tribes have enjoyed any direct benefit from federal projects.[103]

In addition to the five mainstream tribes whose water rights were adjudicated in *Arizona v. California,* another twenty-five reservations are located in the Colorado River basin, and many of them assert water rights to the Colorado River or its tributaries.[104] Although the full extent of tribal rights to Colorado River water has not been determined, it is potentially immense. For instance, the Navajo Nation, with its huge reservation, has

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99. *See id.* at 33-36.

100. *See* Arizona v. California, 460 U.S. 605, 620 (1983).

101. The tribes' attempts to assert a monetary claim against the government for the Justice Department's failure to fully represent their interests were denied. *See* Fort Mojave Indian Tribe v. United States, 32 Fed. Cl. 29 (1994).

102. *See* NATIONAL WATER COMM'N, *supra* note 76, at 474-75.

103. The National Water Commission concluded in 1973 that "with few exceptions [federal irrigation] projects were planned and built by the Federal Government without any attempt to define, let alone protect, prior rights that the Indian tribes might have had in the waters used for the projects." *Id.* at 475. In the West, only about one percent of all Indian agricultural lands are irrigated, compared with 5.1% of all agricultural lands. *See* FRADKIN, *supra* note 62, at 164.

104. *See* MacDonnell & Getches, *supra* note 5, at 31-36.

lands along the Colorado River in the Grand Canyon, and land on tributaries of the Colorado River. Some of the tribes along the Colorado River's tributaries are litigating their rights in state courts; others are not.[105]

The tribes are faced with a conundrum. If a state joins the United States as a defendant in a state court's general stream adjudication, the federal government is obliged to assert tribal reserved water rights.[106] If the government does not assert sufficient rights for a tribe or does not litigate the matter aggressively enough, the tribes nevertheless will be precluded from later claiming greater water rights.[107] The size and needs of the tribe may change in the future, and better information may become available, but the tribe will be bound by the quantification of water rights once it is made. However, if a tribe intervenes on its own behalf, it will waive its sovereign immunity in the subject matter,[108] incur enormous costs, and be forced to litigate its water rights based solely on its present situation. Most tribes nevertheless participate in water rights litigation to protect their rights, because a binding final judgment is likely to be reached with or without them. The expense and uncertainty of water rights litigation in state courts have led several tribes and states to seek negotiated settlements of their reserved water rights claims.[109]

Despite the magnitude of adjudicated Indian water rights and potential tribal claims, tribes have rarely participated in major Colorado River basin management decisions. The Secretary has plenary authority over the management of the Colorado River,[110] and he is charged with fulfilling the government's fiduciary responsibility to Indians.[111] Nevertheless, these parallel

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105. *See* ELIZABETH CHECCHIO & BONNIE G. COLBY, INDIAN WATER RIGHTS: NEGOTIATING THE FUTURE 3-6 (1993); *see also* David H. Getches, *Indian Water Rights Conflicts in Perspective*, *in* INDIAN WATER IN THE NEW WEST 7, 18-23 (Thomas R. McGuire et al. eds., 1993).

106. *See* Colorado River Water Cons. Dist. v. United States, 424 U.S. 800, 818 (1976); *see also* 43 U.S.C. § 666 (1994).

107. *See* Arizona v. California, 460 U.S. 605, 620 (1983); *see also* Nevada v. United States, 463 U.S. 110, 145 (1983).

108. *See* Arizona v. San Carlos Apache Tribe, 463 U.S. 545, 566 (1983); Northern Cheyenne Tribe v. Adsit, 668 F.2d 1080, 1089-90 (9th Cir. 1982).

109. *See* sources cited *supra* note 105.

110. *See* discussion and citations *infra* Part III.A.1.

111. *See* FELIX S. COHEN'S HANDBOOK OF FEDERAL INDIAN LAW 225-28 (Rennard Strickland ed., 1982) [hereinafter COHEN].

duties have not led the Secretary either to represent tribal interests particularly well or to involve the tribes significantly in decisionmaking processes. Several institutional constraints frustrate the Secretary's representation of the tribes on Colorado River issues. The most significant one is that the Secretary has responsibilities that conflict with his fiduciary duty to tribes, such as his responsibility to operate Bureau of Reclamation facilities for the benefit of contracting parties.[112]

Under a tradition of comity, the Secretary seeks advice from states and informs them of his discretionary decisions on the operation of dams and other facilities. However, the tribes have not enjoyed similar consideration. Partly because of this tradition of comity, the system of Colorado River water distribution and management serves primarily the interests and economies of non-Indians. The federal government has limited its advocacy of tribal rights to litigation where it has asserted reserved rights for Indian reservations with claims to the Colorado River.

Unwilling to depend exclusively on federal representation, the tribes have become more active in advocating their own water rights. Ten of them recently joined to assert their interests in an attempt to achieve political parity with the states.[113] However, it is clear that they have not achieved influence comparable to that of the states.

2. Environmental and Recreational Interests

The Colorado River carves a path through diverse, unique ecosystems that range from alpine headwaters to desert red-rocks country, and from crashing white water to the braided delta that ends in a trickle at the Sea of Cortez. These ecosystems have changed radically in the last century. Flora and fauna have been altered by development of the land, by depletion of the river's flow, and by the destruction of its natural systems. Even the landscape is dramatically different from its historical appearance.

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112. *See* Reid Peyton Chambers, Committee on the Judiciary, A Study of Administrative Conflict of Interest in the Protection of Indian Natural Resources, 92d Cong., 1st Sess. app. 5, 240-41 (1971) (prepared for Subcomm. on Administrative Practice and Procedure, Comm. on the Judiciary, 91st Cong., 2d Sess.); *see also* COHEN, *supra* note 111, at 227-28.

113. *See* Position Paper of the Ten Tribes with Water Rights in the Colorado River Basin (June 1992) (submitted to the seven states in the Colorado River basin) (on file with author).

"Lakes" behind giant dams inundate once-spectacular canyons and hide rich cultural resources. The river's flow fluctuates wildly as water is alternately stored and released according to customers' demands for electricity. This regime of power generation has changed sediment transport patterns, destroyed beaches and plant and animal habitat in the river corridor, and made recreational boating difficult, especially through the Grand Canyon. Today, most indigenous species of plants and fish are gone and new species have infiltrated the area. Water no longer reaches the mouth of the Colorado River in Mexico, which is now a sprawling, eerie wasteland. These losses were foreseeable. Naturalists and environmental activists warned of them.[114] However, in proposing projects and developing operating plans for them, the Bureau of Reclamation ignored their consequences for natural systems and recreational uses.

All the major dams on the mainstream of the Colorado River were built before the 1969 National Environmental Policy Act (NEPA),[115] which requires a statement of environmental impact ("EIS") for every major federal project that has a significant impact on the environment. Glen Canyon Dam was completed in 1963 and thus it, like the other great mainstream dams, was not subject to an EIS, and its planning did not benefit from the public participation and scrutiny that are accorded projects that do receive EISs. In the 1950s, environmentalists opposed a major dam near the confluence of the Green and Yampa Rivers. They successfully mounted a national campaign against the project but were unable to defeat another dam at Glen Canyon, for which plans had matured behind closed doors.[116] The environmentalists were determined not to be excluded from future plans to obstruct and control the river, but they had few legal devices until NEPA.

Once NEPA was enacted, citizens concerned about the environment and recreational uses of the Colorado River sought to use NEPA to open the doors of the agencies that made Colorado River policy.[117] NEPA requires that every proposal for

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114. *See* MARTIN, *supra* note 40, at 50-74.

115. 42 U.S.C. §§ 4331-4347 (1994).

116. *See* MARTIN, *supra* note 40, at 66-72.

117. Environmentalists also challenged the Environmental Protection Agency's approval of a program for controlling salinity in the Colorado River pursuant to the Clean Water Act, but their challenge failed because the court deferred to the agency's discretion. *See* Environmental Defense Fund, Inc. v. Costle, 657 F.2d 275 (D.C. Cir. 1981) (holding that the EPA Administrator need not require the establishment of

a major federal action significantly affecting the quality of the human environment include the preparation of an EIS that is subject to a full public airing.[118] Environmentalists charged that the federal government was not complying with NEPA's mandate because its actions in storing and releasing water at the Glen Canyon Dam injured the environment. The Bureau of Reclamation released more water from the dam when the demand for electric power was greatest and the prices highest, and less when the power prices were low. The Bureau's policy of maximizing the value of electrical power created sharp daily fluctuations in the Colorado River's flow that interfered with recreational uses and damaged natural systems in the Grand Canyon.

Although construction of the dams preceded the enactment of NEPA, pivotal decisions on their *operations* were necessarily made after its effective date.[119] Recreational users sued, alleging that changes in operation, not just construction activity, at Colorado River dams fell within the requirements of NEPA.[120] But the United States claimed that its ongoing operations were business as usual, consistent with an established regime that had long been encouraged by the entities buying electric power and consented to by the states.[121] The government argued that maintaining the status quo required no major policy changes and thus that there was no specific administrative "action" proposed that would trigger the EIS requirement, no matter how environmentally destructive the operations might be. The court agreed and denied any relief.[122]

The outcry against the federal government's dam operations on the Colorado River grew,[123] but the public lacked an effective

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salinity standards for each state through which the river passes).

118. *See* 42 U.S.C. § 4332(2)(C) (1994) (EIS must be made available to public under notice and comment provisions of Administrative Procedure Act); *see also* 40 C.F.R. pt. 1503.

119. The dams are operated according to long-range operating criteria that are periodically reviewed and revised, and annual operating plans. *See infra* Part III.A.1 and III.B.2.b. The first such review was reflected in operational rules made in 1970. *See* 35 Fed. Reg. 8951 (1970).

120. *See* Grand Canyon Dorries, Inc. v. Walker, 500 F.2d 588, 589 (10th Cir. 1974) ("The potential application of NEPA to the ongoing operation of a dam planned and constructed prior to the passage of the Act could be a substantial issue.").

121. *See infra* Part III.B.2.b.

122. *See Grand Canyon Dorries*, 500 F.2d at 591.

123. *See, e.g.*, COMMITTEE TO REVIEW THE GLEN CANYON ENVIRONMENTAL STUDIES, NATIONAL ACADEMY OF SCIENCES, RIVER AND DAM MANAGEMENT: A REVIEW OF THE BUREAU OF RECLAMATION'S GLEN CANYON ENVIRONMENTAL STUDIES x-xi

forum. More citizen lawsuits were brought to force the government to assess the environmental impacts of its Colorado River dam operations in compliance with NEPA's provisions for public participation. However, the courts often denied relief or deferred to the discretion of the Bureau of Reclamation in deciding the timing and scope of an EIS.[124]

A Bureau of Reclamation proposal for substantial uprating of the generating capacity at Glen Canyon Dam attracted the attention of environmentalists and recreation interests.[125] They pressured the Secretary to assess the proposal's environmental impacts. The Bureau of Reclamation went ahead with its plans but simultaneously prepared an environmental assessment. The environmental assessment found that the proposal would have significant impacts, warranting the preparation of an EIS.[126] That finding and the Bureau of Reclamation's own request for informal studies led Secretary James Watt to commission the $6.8 million Glen Canyon Environmental Studies ("Glen Canyon Studies") "to address the concerns of the public and federal and state agencies about possible negative effects of the operations of Glen Canyon Dam on downstream environmental and recreational resources."[127] The idea of scientific studies was generally well-received by the public but, unlike an EIS, the studies by the Bureau of Reclamation were not subject to the formal public input required of an EIS.[128]

However, the Glen Canyon Studies did not escape public scrutiny. A special committee of the National Academy of

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(1987) [hereinafter REVIEW OF GCES]; GRAND CANYON RIVER GUIDES, INC., PERSPECTIVES ON THE GLEN CANYON DAM ENVIRONMENTAL IMPACT DRAFT STATEMENT 4 (1994) [hereinafter PERSPECTIVES ON GLEN CANYON DAM EIS].

124. *See, e.g.*, Environmental Defense Fund, Inc. v. Higginson, 655 F.2d 1244 (D.C. Cir. 1981); Badoni v. Higginson, 638 F.2d 172 (10th Cir. 1980).

125. Uprating refers to rewinding the generators to increase the power-generating capacity of the dam's turbines and to increasing the discharge rate through the turbines.

126. *See* ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT FOR THE GLEN CANYON POWER PLANT UPRATING (Dec. 9, 1982); *see also* REVIEW OF GCES, *supra* note 123, at 9-10; PERSPECTIVES ON GLEN CANYON DAM EIS, *supra* note 123, at 3-4.

127. BUREAU OF RECLAMATION, U.S. DEP'T OF INTERIOR, GLEN CANYON ENVIRONMENTAL STUDIES REVISED FINAL REPORT, at Summary and Principal Conclusions (May 1989) [hereinafter GLEN CANYON REVISED FINAL REPORT]; *see also Colorado River Hydroelectric Rates To Rise 46 Percent*, ARIZONA-NEVADA REGIONAL NEWS, June 27, 1990, *available in* LEXIS, News Library, Arcnws file.

128. *See* PERSPECTIVES ON GLEN CANYON DAM EIS, *supra* note 123, at 4.

Sciences reviewed them and observed that their data and analysis had advanced understanding of the far-reaching and complicated effects of the dam's operations. The committee's report found that the Glen Canyon Studies raised many new questions but did not relate many of the findings to each other and possibly oversimplified the conclusions.[129] The report recommended that additional scientific studies be undertaken.[130] The quality and integrity of the studies were important because the information generated presumably would be used like an EIS—to inform important decisions on river operations.[131]

The Glen Canyon Studies confirmed that the dam adversely affected environmental and recreational resources along the Colorado River and through the Grand Canyon.[132] The final report based on the studies was careful to state, however, that the studies were not intended to lead to any change in dam operations.[133] That disclaimer was apparently intended to disarm any claims that the studies constituted an EIS and to rebut any suggestion that modifications in dam operations required such studies.

Further aroused by the disclaimer, environmentalists persisted in trying to get the Department of the Interior to establish an open public process for making operational decisions at Glen Canyon Dam. When the Western Area Power Administration[134] proposed to implement a new marketing plan, the environmentalists sued.[135] The court enjoined the agency from issuing proposed fifteen-year contracts with power customers without complying with NEPA.[136] In response, Secretary Manuel Lujan ordered the preparation of an EIS.[137] Preparing the EIS

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129. *See* REVIEW OF GCES, *supra* note 123, at 1-15.

130. *See id.* at 3.

131. *See id.* at 1-2.

132. *See* GLEN CANYON REVISED FINAL REPORT, *supra* note 127, at Summary & Principal Conclusions.

133. *See id.*

134. The Western Area Power Administration is the agency charged with marketing and distributing the power generated by the Bureau of Reclamation's facilities on the Colorado River. *See* 42 U.S.C. § 7152(a)(1)(D) (1996); *see also* WESTERN AREA POWER ADMIN., 1995 ANNUAL REPORT 7 (1995).

135. *See* National Wildlife Fed'n v. Western Area Power Admin., Civil No. 88-C-1175G (D. Utah Sept. 1989); Bishop, *supra* note 54, at 14.

136. *See National Wildlife Fed'n*, Civil No. 88-C-1175G.

137. *See* Analysis of the Operating Criteria and Alternatives of Glen Canyon Dam, AZ, Colorado River Storage Project, 54 Fed. Reg. 43,870 (1989) (notice of intent to prepare a draft environmental impact statement).

was to take two years, but it soon became clear that the process would take much longer because of the complexity of the environmental issues and because of the level of public concern with the continued destructive operation of the dam.[138]

The Glen Canyon Environmental Studies had corroborated the observations of environmentalists and recreational users.[139] In hearings on the scope of the EIS, these interests urged immediate changes in river operations to avert further losses during the long process that would continue the Glen Canyon Studies. Citizens wrote letters to the Secretary and pressed elected representatives to get the Secretary to make dam operations less destructive rather than wait years for the findings of the EIS.[140] Secretary Lujan responded in 1991 with interim criteria for dam releases that were more protective of environmental and recreational resources.[141] Acknowledging public dissatisfaction with the federal government's disregard of environmental, cultural, and recreational values, Congress also enacted the Grand Canyon Protection Act of 1992.[142]

Preparation of the EIS encompassed expanded scientific studies of the impact of Glen Canyon Dam's effects on the Colorado River through the Grand Canyon, continued for five years, and resulted in a draft that was the subject of extensive public comment and debate.[143] Then, in 1996 Secretary Bruce Babbitt adopted revised operating criteria based on the Glen Canyon Dam EIS's preferred alternative.[144] Although some scientists and other members of the public were displeased with

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138. *See* Barry Burkhart, *Glen Canyon Study Requires More Time*, ARIZ. REPUBLIC, Nov. 12, 1989, at D12.

139. *See* REVIEW OF GCES, *supra* note 123; PERSPECTIVES ON GRAND CANYON DAM EIS, *supra* note 123.

140. *See Glen Canyon Dam Nudging Secretary Lujan*, ARIZ. REPUBLIC, July 1, 1990, at C4; Lisa Jones, *Reaction to Grand Canyon Controversy*, CHRISTIAN SCI. MONITOR, July 10, 1990, at 12.

141. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF THE INTERIOR, OPERATION OF GLEN CANYON DAM, FINAL ENVIRONMENTAL IMPACT STATEMENT, Mar. 1995, at 3 [hereinafter GLEN CANYON DAM FINAL STATEMENT].

142. *See* Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, Tit. XVII, 106 Stat. 4669 (1992).

143. GLEN CANYON DAM FINAL STATEMENT, *supra* note 141, at 6.

144. *See* Operating Criteria and 1997 Annual Plan of Operations for Glen Canyon, 62 Fed. Reg. 9447 (1997); *see also* SECRETARY OF THE INTERIOR, RECORD OF DECISION, OPERATION OF GLEN CANYON DAM, FINAL ENVIRONMENTAL IMPACT STATEMENT (Oct. 9, 1996) (on file with author) [hereinafter GLEN CANYON DAM RECORD OF DECISION].

the outcome,[145] the process for reaching it involved much wider public participation than ever before.[146] Secretary Babbitt created an Adaptive Management Work Group (the "Group") comprised of diverse interests including the basin states, tribes, power purchasers, recreational users, federal agencies, and environmental organizations.[147] The Group will propose modifications of operating criteria and mitigation activities, among other things, related to Glen Canyon Dam.[148] Never before has there been a formalized decision process for Colorado River issues that has been so broadly inclusive of different interests, albeit for operations of single facility.

C. *Ecological Sustainability*

The ideal of sustainability concedes that natural resources will be used and that, in a world of human demands, complete preservation of natural resources is unlikely. Sustainability has ethical and natural science dimensions. It would avoid unnecessarily sacrificing the welfare of future generations to accommodate present needs. In addition, it recognizes the realities of ecosystems; it demands that we not use one resource without considering the effects of that use on the supply and vitality of other resources and on the balanced operation of natural systems. In the end, sustainability connects long-term human survival with ecological health.[149]

Past policies do not meet the standard of ecological sustainability. The natural systems of the Colorado River basin are distressed because the river has been fully controlled by dams and heavily used for agricultural, municipal, and power genera-

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145. *See* William Stevens, *Ecologists Find Artificial Floods Can't Restore Grand Canyon*, N.Y. TIMES, Feb. 25, 1997, at A13. *See generally* GLEN CANYON DAM RECORD OF DECISION, *supra* note 144 (summarizing comments on final EIS and Secretary's comments).

146. *See* Jones, *supra* note 140, at 12; *see also* Notice of Public Meetings for Glen Canyon Dam Draft EIS, 56 Fed. Reg. 10915 (1991).

147. SECRETARY OF THE INTERIOR, CHARTER FOR THE ADAPTIVE MANAGEMENT WORK GROUP 3-4 (1997) (on file with author). The Adaptive Management Work Group is a federally chartered advisory committee to advise the Secretary on Glen Canyon Dam operations.

148. *See id.; see also* GLEN CANYON DAM RECORD OF DECISION, *supra* note 144.

149. *See, e.g.*, PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, SUSTAINABLE AMERICA: A NEW CONSENSUS 6-7 (1996); P.S. Elder, *Sustainability*, 36 MCGILL L.J. 831, 836 (1991).

tion purposes.[150] The federal government pursued development of the Colorado River single-mindedly, without anticipating or accounting for the consequences.[151] The result is a river incapable of sustaining native fish species through much of its reach, a river so salt-laden in its lower reaches that it kills plants and defies human uses, and a river so depleted as it leaves the United States that it has rearranged the natural landscape and everything that depends on it.

1. Endangered Fish

Endangered species can be a bellwether of collapse in ecological systems; they signal threats to biological diversity.[152] Thus, the large number of threatened or endangered species in the Colorado River system raises serious concerns about the viability of the entire Colorado River basin ecosystem. Damming, depletion, and the operation of power generation facilities on the river have caused the extinction and near extinction of several species of fish.[153] Fish habitat has been radically modified, stream channels degraded, water temperatures lowered, and capacity for transporting sediment reduced. Wildlife agencies have exacerbated problems by introducing non-native species of

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150. For a discussion of the unsustainability of current water management in the Colorado River, see JASON I. MORRISON ET AL., THE SUSTAINABLE USE OF WATER IN THE LOWER COLORADO RIVER BASIN x-xi (1996). The authors note that long-term, planned use of the Colorado River's water exceeds the available supply and that long-term pumping of groundwater exceeds the rate of replenishment in major portions of the lower basin. Additionally, there are currently 24 federally listed threatened or endangered species in the lower Colorado River "ecoregion." *See id.* at x. The survival of these populations is threatened by the physical destruction of their habitat caused by water withdrawals and the construction of major dams. *See id.* Finally, global climatic changes have the potential to affect the Colorado River basin water supply, hydroelectric generation, reservoir levels, and salinity, but these potential changes have yet to be considered by water planners. *See id.* at xi.

151. *See supra* notes 11-12 and accompanying text.

152. *See* EDWARD O. WILSON, THE DIVERSITY OF LIFE 258-60 (1992) (explaining that the demise of many species is often part of a "holocaust" destroying an entire ecosystem and numerous species endemic to it, while for others extinction is a "rifle shot" where a single species is eradicated and its ecosystem is left intact).

153. *See* FISH & WILDLIFE SERVICE, U.S. DEP'T OF THE INTERIOR, RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN (Sept. 29, 1987) (on file at the Bureau of Reclamation, Region Six, Denver, Colo.) [hereinafter RECOVERY IMPLEMENTATION PROGRAM]; *see also* 50 C.F.R. § 424 (1980) (determining criteria and providing rules for endangered species and designating critical habitat).

sport fish that compete with and prey upon native fishes.[154] The U.S. Fish and Wildlife Service (the "Service") has designated nearly all of the 1980 river and reservoir miles of the Colorado River as critical habitat for endangered native fishes.[155]

2. Salinity

The Colorado River carries about nine million tons of salt each year.[156] About half of this salt content is human-induced, mostly from irrigation practices.[157] Irrigation degrades water quality and can lead to increased salinity in the soil as well.[158] For example, return flows from irrigation in the Grand Valley of Colorado add an estimated 580,000 tons of salt to the Colorado River each year.[159] Consumption of water also creates higher concentrations of salt in the river.[160] As water is consumed, there is less of it in the river to dilute salty agricultural return flows and the seepage of saline water from natural sources. Even the storage of water in reservoirs increases salinity because it is subject to evaporation, which consumes about two million acre-feet of water per year in the Colorado River System.[161]

After dams were built on the Colorado River, salinity dramatically increased, causing difficulties for users lower on the river where concentrations of salt were greatest. Salinity increases water treatment costs for municipalities and reduces the crop yields of irrigators. It is estimated that salinity causes damages in excess of $750 million per year in the lower basin states.[162]

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154. *See* RECOVERY IMPLEMENTATION PROGRAM, *supra* note 153, at 1-3.

155. *See* 50 C.F.R. § 17 (1994). The ESA, 16 U.S.C. § 1533 (a)(3)(A), requires the Secretary to designate habitat that is critical to the survival of any species listed as endangered or threatened.

156. *See* MILLER ET AL., *supra* note 14, at xiii.

157. *See id.*

158. *See id.*; *see also* COMMITTEE ON IRRIGATION-INDUCED WATER QUALITY PROBLEMS, NATIONAL ACADEMY OF SCIENCES, IRRIGATION-INDUCED WATER QUALITY PROBLEMS 37-41 (1989) [hereinafter IRRIGATION-INDUCED WATER QUALITY PROBLEMS].

159. *See* MILLER ET AL., *supra* note 14, at 39.

160. *See id.* at xiii.

161. *See* Colorado River Board Salinity Control Forum, Water Quality Standards for Salinity—Colorado River System 2-6 (1996) (on file with author).

162. *See id.* Losses to agriculture alone have exceeded $100 million per year. *See* IRRIGATION-INDUCED WATER QUALITY PROBLEMS, *supra* note 158, at 16.

The delivery of saline water to the Mexican border led to strong objections from Mexico, as discussed earlier.[163] Negotiations between the United States and Mexico culminated in promises by the United States to reduce the salinity of water entering Mexico in fulfillment of the treaty entitling Mexico to 1.5 million acre-feet of water per year.[164]

To address increasing salinity in the Colorado River, Congress enacted the Colorado River Basin Salinity Control Act ("CRBSCA") in 1974, directing the Secretary to institute a program both to enhance water quality in the Colorado River for United States uses and to meet the United States' obligations to Mexico.[165] However, the CRBSCA lacked a comprehensive watershed approach to the problem. The Act was passed to address a single pollutant and relied primarily on specific, expensive engineering solutions that intercepted or de-salted saline water rather than land-use solutions. The CRBSCA also provided for irrigation improvements and some nonstructural controls, such as reduced return flows and water conservation.[166]

The federal government has shouldered seventy percent of the costs of salinity control, effectively subsidizing water users.[167] In the past, the federal government's salinity control program has relied on expensive elaborate structural methods like desalination because they are more palatable politically than are measures that would change water use practices, such as retiring farmland. As the marginal utility of structural measures declines, congressional tolerance for further spending may run out. Recently, Congress amended the CRBSCA, authorizing the Secretary to implement a basin-wide program of salinity control rather than simply to construct individual projects.[168] Appropriations for salinity control have declined since 1991, and Congress is

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163. *See supra* notes 62-72 and accompanying text.

164. *See* US-Mexico Treaty, *supra* note 2.

165. *See* Colorado River Basin Salinity Control Act, 43 U.S.C. §§ 1571-1599 (1986).

166. *See id.* § 1571(f) (return flow reduction); § 1572 (canal lining); § 1573(a)(2) (land acquisition). The salinity control efforts of the Department of Agriculture have now been consolidated with other assistance programs for on-farm conservation. *See* Federal Agriculture Improvement and Reform Act, Pub. L. No. 104-127, 110 Stat. 888 (1996).

167. *See* MILLER ET AL., *supra* note 14, at 76.

168. *See* Colorado River Basin Salinity Control Act Amendments, Pub. L. No. 104-20, 109 Stat. 255 (1995).

pressing for more cost-effective measures.[169] Thus, as the marginal cost of new structural salinity control measures increases, it is timely to consider shifting more of the financial burdens of salinity control measures to water users. For instance, lower basin interests (especially southern California, where much Colorado River water is used) have the greatest need to reduce salinity, but a principal source of salt-loading is the irrigation of saline soils in the upper basin.[170] Market considerations could lead to transactions in which lower basin users pay upper basin irrigators to reduce the upper basin's contribution of salts to the Colorado River through, for example, better irrigation methods and the retirement of low-value irrigation.[171]

3. Colorado River Delta and the Gulf of California

The Colorado River ends in a wide delta of interlaced channels where flowing water is now rare. The Colorado River Delta is located below the Mexico-United States border at the head of the Gulf of California (also known as the Sea of Cortez). The delta's physical appearance, hydrology, fish, and wildlife have changed markedly since the United States asserted full control over the Colorado River. It was once one of the world's great desert estuaries,[172] supporting 780,000 hectares of wetlands.[173] However, in the last 100 years, much of the upper delta has been converted to farmland, and many of the lower delta wetlands are now barren mud or salt flats.[174] Historically, the United States has made water management decisions and constructed water projects without regard for the impacts of depletions and saline returns on the delta and the Gulf of Mexico. In consequence, annual flows from the United States to the Gulf

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169. *See* COLORADO RIVER BASIN SALINITY CONTROL FORUM, WATER QUALITY STANDARDS FOR SALINITY, COLORADO RIVER SYSTEM, 1996 REVIEW, at 6-4 tbl.6-1 (1996); *see also* Pub. L. No. 104-20, 109 Stat. 255 (1995) (directing Secretary to initiate cost-effective measures).

170. *See* MILLER ET AL., *supra* note 14, at 39.

171. *See* Howe & Ahrens, *supra* note 18, at 207-08, 219-22.

172. *See generally* ALDO LEOPOLD, A SAND COUNTY ALMANAC 141-49 (1987).

173. *See* Edward P. Glenn et al., *Effects of Water Management on the Wetlands of the Colorado River Delta, Mexico*, 10 CONSERVATION BIOLOGY 1175, 1176 (1996).

174. *See* Edward P. Glenn et al., *Cienega de Santa Clara: Endangered Wetland in the Colorado River Delta, Sonora, Mexico*, 32 NAT. RESOURCES J. 817, 817-18 (1992).

of Mexico have dwindled and the quality of water feeding the delta has diminished over time.[175]

Despite the pollution and dewatering of the delta from upstream activity, some wetland areas remain.[176] These vestigial habitats have survived because of occasional excess flows that occur when the major reservoirs in the United States are filled, and because of the brackish drainage water provided by the Wellton-Mohawk Outlet Drain Extension.[177] The delta and its associated wetlands provide critical habitat for shorebirds, migratory waterfowl, and several endangered species, including the desert pupfish and the Yuma clapper rail.[178]

Upstream Colorado River management has a reduction in the gulf habitat of the totoaba fish. Together with fishing in the upper gulf, the changed flow regime has pushed the totoaba, which was listed as an endangered species in 1979,[179] to the brink of extinction.[180] However, the United States is obligated under its own Endangered Species Act[181] ("ESA"), as well as under international treaties, to prevent harm to threatened and endangered species.[182] All government agencies and officials are required to ensure that activities under their control neither jeopardize the continued existence of threatened or endangered species nor adversely modify their habitats.[183]

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175. *See* Sandra Postel, *Where Have All the Rivers Gone?*, WORLD WATCH, May-June 1995, at 9.

176. *See* Glenn et al., *supra* note 174, at 817-18.

177. *See id.*

178. *See id.* at 817-18, 822-23.

179. *See* 50 C.F.R. § 17.11 (1996).

180. *See* J.C. Barrera Guevara, *The Conservation of* Totoaba macdonaldi *(Gilbert), (Pisces: Sciaenidae), in the Gulf of California*, 37 J. FISH BIOLOGY 201, 201 (Supp. A), *in* THE BIOLOGY AND CONSERVATION OF RARE FISH (Alwyne Wheeler ed., 1990) ("[D]iversion of the Colorado River has . . . drastically alter[ed] the nursery grounds of the totoaba."); *see also* Frank Wilson, *A Fish Out of Water: A Proposal for International Instream Flow Rights in the Lower Colorado River*, 5 COLO. J. INT'L ENVTL. L. & POL'Y 249, 253-55 (1994); *cf.* Miguel A. Cisneros-Mata et al., *Life History and Conservation of* Totoaba macdonaldi, 9 CONSERVATION BIOLOGY 806, 811-12 (1995) (concluding that although the effects of Colorado River control on the totoaba have not been demonstrated, they should not be disregarded).

181. 16 U.S.C.A §§ 1531-1544 (West 1985 & Supp. 1997).

182. *See* Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243, as amended, T.I.A.S. No. 11079 and Treaty Doc. No. 98-10 (1983).

183. *See* Endangered Species Act § 7(a)(2), 16 U.S.C. § 1536(a)(2) (1994).

Recently, environmental groups have begun to express concern for the delta and the upper gulf ecosystem.[184] In 1993, the area was designated the Alto Golfo de California y Delta del Rio Colorado Biosphere Reserve.[185] Thus, environmental advocates could assert that U.S. actions are destroying the habitat of species south of the border, such as the totoaba, in violation of the ESA.[186] In the future, Mexico may also object based on the impacts of United States' actions on the biosphere reserve as well as on endangered species and wetlands in Mexico. Mexico similarly protested when excessive salinity in waters delivered by the United States caused difficulties for Mexican irrigators.[187]

The United States would benefit from integrating international considerations into its decision processes. This is amply demonstrated by the historic battle with Mexico over salinity and its avoidable "surprises."[188] The United States first ignored the issue and then adopted extraordinary measures to placate Mexico. It is only a matter of time before legal or diplomatic challenges will be made to the operating regime for the Colorado River. By acting now to reverse environmental destruction, the United States could avert these challenges and possible disruptions of its domestic uses of the Colorado River. Mexican representatives thus could be engaged in problem-solving forums. Binational efforts could lead to comprehensive study of the delta and upper gulf region and an exploration of ways to implement management approaches to supply additional Colorado River waters needed for endangered species and wetland habitats.[189]

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184. *See* Glenn et al., *supra* note 174, at 818 n.4. *See generally* CONSERVATION INT'L, 1995/1996 GULF OF CALIFORNIA PROGRAM.

185. *See* U.S. MAN AND THE BIOSPHERE PROGRAM, BIOSPHERE RESERVES IN ACTION: CASE STUDIES OF THE AMERICAN EXPERIENCE 44 (1995).

186. For a discussion of extraterritorial application of the ESA, see Wilson, *supra* note 180, at 260-63 (arguing for such application to the totoaba). *See generally* Scott A. Powell, *Global Protection of Threatened and Endangered Species: Rethinking Section 7 of the Endangered Species Act*, 31 WILLAMETTE L. REV. 523 (1995) (recommending that the ESA should apply to federal agency action outside the United States).

187. *See supra* notes 68-72 and accompanying text.

188. *See supra* notes 62-72 and accompanying text, and discussion, *supra* Part I.C.2.

189. *See generally* Glenn et al., *supra* note 174.

II. STIRRINGS OF COLLABORATION IN THE COLORADO RIVER BASIN

Typically, the federal government has considered Colorado River basin issues narrowly and without regard for all the foreseeable consequences. At the same time, basin states have competed for the right and ability to consume the river's resources.[190] However, there are notable exceptions.

The Colorado River Basin Salinity Control Forum (the "Forum") is an example of interstate cooperation in problem-solving. After the CRBSCA was passed in 1974,[191] the seven basin states sought to implement it consistent with their obligations under the Clean Water Act.[192] They voluntarily formed the Forum to pool their efforts and resources, to put together a plan for satisfying the water quality standards under the Clean Water Act, and to seek funding from Congress for the salinity control program.[193] The Forum has furnished important advice to the federal government regarding which projects should be pursued. The basin states' cooperative efforts, however, have been limited to addressing the single problem of salinity. Furthermore, Forum membership is restricted to the states; other interested parties have only the opportunity to appear at meetings and to address the Forum.[194]

Other cooperative efforts have emerged. For instance, water marketing proposals have led to incipient cooperative efforts. The federal government, states, and tribes have conducted a robust debate about how to satisfy emerging needs by transferring water allocations.[195] In addition, the strong mandate of the ESA has induced various interests to cooperate in avoiding a freeze on further water development in the basin.[196] Further, the Adaptive Management Work Group created to monitor and advise the Secretary on Glen Canyon Dam operations is a remarkable departure from the historically piecemeal approach to Colorado

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190. *See, e.g., supra* notes 6-7 and accompanying text.

191. Colorado River Basin Salinity Control Act, 43 U.S.C. §§ 1571-1599 (1994).

192. 33 U.S.C. §§ 1251-1387 (1994).

193. *See* MILLER ET AL., *supra* note 14, at 31, 33-35; *see also* COLORADO RIVER BASIN SALINITY CONTROL FORUM, *supra* note 169, at 1-2.

194. *See* COLORADO RIVER BASIN SALINITY CONTROL FORUM, *supra* note 169, at 1-2.

195. *See infra* Part II.A.

196. *See supra* Part I.C.1.

River issues that the basin states have followed.[197] These new efforts at participatory problem-solving are resulting in more cooperation and comprehensive treatment of river basin issues than in the past. They may presage a wider approach to Colorado River basin resource governance that could be institutionalized.

A. Water Marketing Becomes Politically Correct

Economists have long urged that water rights be freely traded to improve efficiency of use and natural resource conservation.[198] For a time, some basin interests resisted suggestions that Colorado River water could be allocated by negotiated market transactions, arguing that such transactions would be contrary to the law of the river.[199] Their argument was made with special force against proposals to market water across state lines, because a complex web of compacts, laws, and treaties allocates quantities of water among states.[200] But it appears that much of the dogmatic resistance to marketing Colorado River water has yielded to compelling practical arguments. States and water users now realize that flexible uses of river water can be accommodated in market transactions. Even interstate markets appear to be on the horizon.

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197. *See supra* notes 147-48 and accompanying text.

198. *See* TERRY LEE ANDERSON, WATER CRISIS: ENDING THE POLICY DROUGHT (1983); L.M. HARTMAN & DON SEASTONE, WATER TRANSFERS: ECONOMIC EFFICIENCY AND ALTERNATIVE INSTITUTIONS (1970); SCARCE WATER AND INSTITUTIONAL CHANGE 9-11 (Kenneth D. Frederick ed., 1986); WATER AND AGRICULTURE IN THE WESTERN U.S.: CONSERVATION, REALLOCATION, AND MARKETS (Gary D. Weatherford ed., 1982); WESTERN GOVERNORS' ASS'N, WESTERN WATER: TUNING THE SYSTEM 51-56 (Bruce Driver ed., 1986); David H. Getches, *Water Use Efficiency: The Value of Water in the West*, 8 PUB. LAND L. REV. 1 (1987); Charles W. Howe et al., *Innovative Approaches to Water Allocation: The Potential for Water Markets*, 22 WATER RESOURCES RES. 439 (1986).

Commentators have discussed ways to make the use of markets compatible with equitable and environmental concerns. *See, e.g.*, SALIBA & BUSH, *supra* note 43; Lawrence J. MacDonnell & Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, HASTINGS WEST-NORTHWEST J. ENVTL. L. & POL'Y 27 (1994).

199. *See, e.g.*, COMMITTEE ON W. WATER MANAGEMENT, NATIONAL ACADEMY OF SCIENCES, WATER TRANSFERS IN THE WEST 240-41 (1992) (discussing negotiations between Imperial Irrigation District ("IID") and Metropolitan Water District of Southern California ("MWD")).

200. *See* David J. Guy, *When the Law Dulls the Edge of Chance: Transferring Upper Basin Water to the Lower Colorado River Basin*, 1991 UTAH L. REV. 25, 31-51.

The seven basin states' positions on Colorado River water marketing have sharply changed over the past ten years. In the past, California water interests generally took the position that any marketing or "sale" of Colorado River water was legally impossible.[201] After years of posturing on both sides, Metropolitan Water District of Southern California ("MWD"), serving the urbanized area from Los Angeles to San Diego, and the Imperial Irrigation District ("IID"), serving large farms in the fertile desert north of Mexico, eventually consummated a huge intrastate exchange of Colorado River water. It was based on MWD's cash payments to IID and physical improvements in the inefficient IID system in return for the right to use the water conserved.[202] Although it was unmistakably a market transaction, the parties assiduously avoided calling it that.[203]

In 1984, all the basin states adamantly opposed a private interstate water transfer initiated by a private entrepreneur, insisting that it was contrary to the law of the river.[204] By 1991, amidst a serious drought, California retreated from its anti-marketing position and proposed an aggressive interstate water marketing proposal.[205] The other basin states roundly rejected the California proposal.[206] Then the Department of the Interior

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201. *See* MARC REISNER & SARAH BATES, OVERTAPPED OASIS: REFORM OR REVOLUTION FOR WESTERN WATER 154-59 (1990) (discussing negotiations and eventual agreement between IID and MWD).

202. *See id.* at 158-62.

203. *See id.* at 156.

204. *See Epilogue* to NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY, *supra* note 6, at 225, 230; Sharon P. Gross, *The Galloway Project and the Colorado River Compacts: Will the Compacts Bar Transbasin Water Diversions?*, 25 NAT. RESOURCES J. 935, 959 (1985); Howard K. Holme, Obstacles to Interstate Transfers of Water: Many a Slip 'Twixt the Cup and the Lip, *in* Natural Resources Law Ctr., University of Colo. Sch. of Law, Tradition, Innovation and Conflict: Perspectives on Colorado Water Law 267, 273 (Lawrence J. MacDonnell ed., 1986); David Elliot Prange, *Regional Water Scarcity and the Galloway Proposal*, 17 ENVTL. L. 81, 83 (1985).

205. *See* California, Conceptual Approach for Reaching Basin States Agreement on Interim Operation of Colorado River System Reservoirs, California's Use of Colorado River Water Above Its Basic Apportionment, and Implementation of an Interstate Water Bank (Aug. 28, 1991) (prepared for the Colorado River basin states meeting in Denver, Colorado) [hereinafter Conceptual Approach] (on file with author).

206. *See* California, Comments of the State of Colorado on the Conceptual Approach for Reaching Basin States Agreement on Interim Operation of Colorado River System Reservoirs, California's Use of Colorado River Water Above Its Basic Apportionment, and Implementation of an Interstate Water Bank (Oct. 23, 1991) (on file with author); Letter from D. Larry Andersen, Director, Utah Department of

circulated proposed regulations that envisioned a water bank to market some Colorado River water. Spurred on by this activity, both Nevada and Arizona designed water banking proposals.[207] In 1994, Utah announced that it was prepared to lease water.[208]

This rapid shift in the basin states' attitudes began in 1990. Representatives of the seven basin states began meeting when California anticipated that its demands for Colorado River water could exceed the lower basin's allocation of 7.5 million acre-feet.[209] For many years, California had consumed more than its apportionment of the Colorado River's water, but 1991 marked the first year that the aggregate requests by the lower basin states exceeded the entire lower basin's apportionment of 7.5 million acre-feet.[210] During the height of a five-year drought, California requested the Secretary to deliver more water to the lower basin than its basic allocation under the 1922 Compact.[211] The four upper basin states agreed to waive their objections to the Secretary's release of up to 400,000 acre-feet of additional water to satisfy California's drought needs, provided that the seven states would continue meeting to address how California would reduce its future requests for Colorado River water.[212]

Later in 1991, California presented a proposal under which it would continue diverting the full capacity of the MWD pipeline

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Natural Resources Division of Water Resources, to Gerald Zimmerman, Executive Director, Colorado River Board of California 2 (Oct. 24, 1991) (on file with author); Letter from Gordon W. Fassett, Wyoming State Engineer, to Gerald Zimmerman, Executive Director, Colorado River Board of California 2 (Oct. 28, 1991) (on file with author); Letter from Eluid L. Martinez, New Mexico State Engineer, to Gerald Zimmerman, Executive Director, Colorado River Board of California 2 (Oct. 25, 1991) (on file with author); Letter from Elizabeth Ann Rieke, Director, Arizona Department of Water Resources, to Gerald Zimmerman, Executive Director, Colorado River Board of California 1 (Oct. 23, 1991) (on file with author); Letter from Jack Stonehocker, Director, Colorado River Commission of Nevada, to Gerald Zimmerman, Executive Director, Colorado River Board of California 2-3 (Oct. 22, 1991) (on file with author).

207. *See infra* notes 222-23 and accompanying text.

208. *See, e.g., Utah Revives Water-Lease Possibility; Colorado River Deal with Las Vegas, Other Cities, Could Generate $20 Million a Year*, ROCKY MTN. NEWS, Nov. 17, 1994, at 34A.

209. *See id.*

210. *See id.* at 1; *see also* David E. Lindgren, *The Colorado River: Are New Approaches Possible Now That the Reality of Overallocation Is Here?*, 38 ROCKY MTN. MIN. L. INST. 25-1, 25-27 (1992).

211. *See* MacDonnell, *supra* note 25, at 1-2.

212. *See* Letter from Wayne E. Cook, Executive Director, Upper Colorado River Commission, to Gerald R. Zimmerman, Executive Director, Colorado River Board of California (Jan. 31, 1991) (on file with author).

(about 1.3 million acre-feet) and exceeding the state's annual share, as it had for many years.[213] In return, it offered to cut its consumption back to its 4.4 million acre-feet allocation within twenty years, and to make payments into an escrow account to compensate for any water it consumed that caused the lower basin's total consumption to exceed the Compact entitlement.[214]

California's proposal included a framework for an interstate water bank that could temporarily redistribute states' rights to use Colorado River water.[215] Although California, the only state with unmet needs, presumably intended to be the primary customer, users in any basin state could buy the water. Under California's proposal, the water available through this market would be limited according to a formula setting the maximum amounts users could purchase.[216] A forum of the seven basin states would fix the price of water.[217]

Basin states' responses to California's water bank proposal were generally negative.[218] They raised legal, practical, and economic problems, and none of the states suggested exploring the concept further to solve those problems. Since only California then used its full apportionment of water, the other basin states were all potential sellers of water to the bank, but the potential economic rewards did not seem to tempt any of them. Perhaps this was because the price suggested by an example in California's proposal was only $100 per acre-foot of water.[219] However, it is more likely that the basin states were focused on their common ideal of having California reduce usage to its basic Colorado River entitlement. This concern pervades the letters and statements directed at California.[220] The other states' focus

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213. *See* Conceptual Approach, *supra* note 205. California's proposal for water banking went beyond the state's earlier, more modest suggestions that the MWD be permitted to store water in an existing reservoir in years when it was not needed, and then to extract it in later years. *See* Myron Holburt, *Maximum Beneficial Use of Colorado Sought,* COLORADO RIVER ASS'N NEWSLETTER, Spring 1983, at 2 (Colorado River Ass'n, L.A., Cal.).

214. *See* Conceptual Approach, *supra* note 205, at 13-15.

215. *See id.* at 15-19.

216. *See id.* at 17.

217. *See id.*

218. *See* sources cited *supra* note 206.

219. *See* Conceptual Approach, *supra* note 205, at D-3.

220. *See* sources cited *supra* note 206; *see also* Letter from Roy Romer, Governor of Colorado, to Pete Wilson, Governor of California (Feb. 21, 1991) (on file with author) (insisting that California limit future uses to no more than its entitlement).

on reducing California's demands reflects their apparent insecurity about the durability and enforceability of the law of the river if California were to remain dependent on water in excess of its apportioned share. They were willing to let California use their unused apportionments[221] for free in the short-run but sought to avoid allowing it to use the water in the long-run, even for a price. Eventually, however, the advantages of profitable concessions to California (or other states) became clearer to some basin states.

Later, both Nevada[222] and Arizona[223] put forth their own water bank proposals, which were limited to the lower basin states.[224] Arizona's proposal, the essentials of which became law in 1996,[225] enables the acquisition and sale of entitlements to use water from the CAP[226] as well as any other water (not only from the Colorado River) from tribes, irrigation districts, or farmers with land fallowing programs.[227] Nevada's plan also proposed authorizing a water bank to market water from any source, not only water from the Colorado River.[228] It even called for marketing previously *unused* entitlements to Colorado River water that tribes and others hold under the law of the river.[229] Nevada

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221. Article III(e) of the Colorado River Compact, COLO. REV. STAT. § 37-61-101 (1990), states that if the lower basin has a use for water, the upper basin cannot withhold water from the lower basin that the upper basin cannot reasonably apply to domestic or agricultural uses. Thus, absent some banking or contractual agreement, water would pass downstream to lower basin states with no consideration in return.

222. *See* COLORADO RIVER COMM'N OF NEVADA, NEVADA'S APPROACH TO A LOWER DIVISION REGIONAL SOLUTION (1994) [hereinafter NEVADA PROPOSAL]; AMPLIFICATION OF NEVADA'S APPROACH TO A LOWER DIVISION/BASIN REGIONAL SOLUTION (1994) [hereinafter AMPLIFICATION OF NEVADA PROPOSAL].

223. *See* ARIZONA DEP'T OF WATER RESOURCES, ARIZONA WATER BANK PROPOSAL (1994) [hereinafter ARIZONA PROPOSAL].

224. *See* NEVADA PROPOSAL, *supra* note 222, at 3-4; ARIZONA PROPOSAL, *supra* note 223, at 1-2.

225. *See* ARIZ. REV. STAT. §§ 45-2401 to -2472 (West Supp. 1996) (codifying Arizona's water banking authority).

226. CAP was conceived in the 1940s to solve Arizona's groundwater overdraft problem. The basic works, which were completed in 1986, pump water from the Colorado River 2000 vertical feet and over two mountain ranges into Central Arizona. The majority of water from the $4.4 billion project was to be delivered to farmers for irrigation, but the cost of the water is prohibitively expensive. CAP now operates at less than half of its capacity and delivers water mostly to cities for municipal use. *See* REISNER, *supra* note 40, at 281-316. The CAP is authorized under the Colorado River Basin Project Act, 43 U.S.C. § 1521 (1986).

227. *See* ARIZONA PROPOSAL, *supra* note 223, at 3.

228. *See* AMPLIFICATION OF NEVADA PROPOSAL, *supra* note 222, at 4-5.

229. *See* NEVADA PROPOSAL, *supra* note 222, at 3-4; *see also* Getches, *supra* note

proposed that a lower basin commission be established; Arizona created a state-controlled bank.[230] Nevada attempted to address the most apparent lower basin water needs: its own projected demand for more water in Las Vegas, California's desire to maintain full diversions to the MWD, and Arizona's insecurity about future supplies.[231] Arizona's proposed bank seems to be a defensive measure intended to exert as complete state control as possible over its unused entitlements to the Colorado River and over potential transfers of Colorado River water. Both states' proposals had provisions to mitigate the impacts from the water bank transactions, including local economic problems and environmental harms from transferring water out of areas of origin.[232] Nevada's proposal, however, required state legislation and special rules promulgated by the Secretary, neither of which was forthcoming.[233]

To date, only Arizona has implemented a water bank.[234] The version enacted by the Arizona legislature effectively subsidizes farmers by providing them with imported Colorado River water, which they could not otherwise afford because of the charges for CAP deliveries.[235] The farmers can then reduce their pumping from wells so that aquifers will not be depleted, conserving groundwater for future uses in years when Arizona does not or

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1, at 472-77 (discussing legal and policy obstacles to water marketing on the Colorado River). The explicit inclusion of unused entitlements distinguishes Nevada's proposal from others. The absence of such provisions from other proposals suggests that their drafters may presume that non-users (like many tribes who lack delivery facilities) cannot withhold water, and thus that there is no point in downstream users paying them not to use or withhold the water. This position is short-sighted as well as inequitable to those who have not developed their water. Requiring that a party invest in diversion facilities and use the water for a time, even an instant, in order to make it marketable, is a formality that simply increases the seller's sunk costs, thus reducing profits or increasing price, or a combination of both.

230. *See* NEVADA PROPOSAL, *supra* note 222, at 3-4; ARIZONA PROPOSAL, *supra* note 223, at 1.

231. *See* NEVADA PROPOSAL, *supra* note 222, at 1-2.

232. *See* NEVADA PROPOSAL, *supra* note 222, at 3-4; AMPLIFICATION OF NEVADA PROPOSAL, *supra* note 222, at 11-12; ARIZONA PROPOSAL, *supra* note 223, at 7.

233. *See* NEVADA PROPOSAL, *supra* note 222, at 2.

234. *See* ARIZ. REV. STAT. §§ 45-2401 to -2472 (West Supp. 1996). The Secretary has promised to promulgate the regulations necessary to allow operation of federal facilities consistent with water banking operations. *See* Bruce Babbitt, Address to Colorado River Water Users Ass'n (Dec. 19, 1996) [hereinafter Babbitt Address] (on file with author).

235. *See Meeting the Challenge: Arizona's Water Recovery*, WATER STRATEGIST, Fall 1995, at 3, 8-9.

cannot take its full entitlement from the Colorado River.[236] Though the profitability of the scheme is uncertain, the bank provides Arizona with a means of selling its unneeded water to Nevada and California in the future, possibly at prices sufficient to recoup its expenditures.[237] Arizona's legislature rationalized the considerable cost of the program as a way of depriving California of the water that it would (and legally could) take if Arizona did not find a use for it. The program was thus intended to force California to solve its chronic problem of using more water from the river than its basic entitlement.[238]

Another water bank proposal was made by a group of ten Indian tribes, the Colorado River Basin Tribes Partnership.[239] Beginning in 1992, the basin states admitted representatives of the tribal partnership to some of their meetings. These joint gatherings were called "7-10 meetings" after the seven states and

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236. *See Arizona Water Banking*, WESTERN STATES WATER NEWSLETTER (Western States Water Council, Midvale, Utah), Jan. 31, 1997, at 2.

237. *See Meeting the Challenge: Arizona's Water Recovery*, *supra* note 235, at 20.

238. *See Arizona Water Banking*, *supra* note 236, at 2 (quoting Rita Pearson, Director of Arizona's Department of Water Resources, as saying, "The creation of the Arizona Water Bank should send a loud wake-up call to California . . . ."). The first year's appropriation of $9.4 million seems like an expensive message to send to California. *See Arizona Water Banking Authority Will Bank 436,000 AF in 1997*, WATER INTELLIGENCE MONTHLY, Nov. 1996, at 4. It is difficult to justify the cost of the program to the state as necessary for the conservation of groundwater that may be needed in the future even as it makes relatively expensive CAP water available for low-valued agricultural uses. In any event, state law contemplates phasing out overdrafts through planned depletion of the aquifer until 2025. *See* ARIZ. REV. STAT. ANN. § 45-562(a) (West 1994 & Supp. 1996). Agricultural uses may continue under existing rights until then. *See* Robert Jerome Glennon, *"Because That's Where the Water Is": Retiring Current Water Uses to Achieve the Safe-Yield Objective of the Arizona Groundwater Management Act*, 33 ARIZ. L. REV. 89, 90-91 (1991).

If Arizona faced a serious likelihood of having its entitlement of Colorado River water curtailed *and* actually needed to use its full entitlement, perhaps this extraordinary expense could be justified as *insurance*. Arizona is vulnerable to cutbacks in a severe, sustained drought because it was required to subordinate its rights to CAP water to California's rights as a condition of getting the federal government to build the project. *See* 43 U.S.C. § 1521(b) (1994). However, the possibility of a reduction in deliveries in the short run is small; it would be likely only in extreme circumstances. *See* MacDonnell et al., *supra* note 16, at 829 (recognizing that Arizona and the upper basin would suffer the consequences of a severe, sustained drought because the lower basin has a higher priority).

It would seem far more rational simply to agree that California (and eventually Nevada) can take Arizona's unused entitlement for a period of years in exchange for payments to Arizona.

239. *See* Position Paper of the Ten Tribes with Water Rights in the Colorado River Basin, *supra* note 113, at 2.

ten tribes who attended.[240] The admission of the tribes to the states' deliberations was historic. Their admission makes it less likely that tribes can be excluded from discussions that affect their interests in the future.[241] Their inclusion in discussions with the states has increased the tribes' awareness of the states' needs for additional water and has presented an opportunity for the tribes to offer states some of their presently available tribal water.

The Colorado River Basin Tribes Partnership proposed a water bank that would draw on a variety of sources—the tribes' unused entitlements as well as tribal water freed-up by land fallowing and other conservation measures—for marketing to non-Indians who need it.[242] The tribes' proposal actually suggests two banks, one for the upper basin and one for the lower basin,[243] recognizing the different attitudes in the states of the two sub-basins.[244]

Both the Arizona and the Nevada banking proposals were motivated by the Bureau of Reclamation's publication of two proposed sets of progressively detailed and aggressive water marketing regulations for the lower Colorado River.[245] Effectively the "watermaster" for allocating and administering water controlled by federal facilities on the river, the Secretary circulated the first set of proposed regulations in 1991, signaling his intention to promote market transfers of water.[246] The proposal was limited to intrastate transactions among water contractors

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240. *See* MacDonnell, *supra* note 25, at 24.

241. Apparently the states do continue to meet without including the tribes. *See, e.g., Water Resources/Water Rights; California/Colorado River Basin*, WESTERN STATES WATER NEWSLETTER (Western States Water Council, Midvale, Utah), Sept. 1996.

242. *See* Colorado River Basin Tribes Partnership, Proposed Fundamental Components of Colorado River Water Marketing/Banking (Oct. 11, 1994) (on file with author).

243. *See id.*

244. *See supra* sources cited notes 206, 212.

245. *See* MacDonnell, *supra* note 25, at 29.

246. *See* Bureau of Reclamation, U.S. Dep't of the Interior, Proposed Regulations for Administering Entitlements to Colorado River Water in the Lower Colorado River Basin (1991) (on file with author) [hereinafter 1991 Proposed Regulations]. The 1991 draft was informally circulated for comment, but was not officially published to initiate rulemaking.

The transfer provisions expanded on the Bureau's general policy statement in 1987, which said it would facilitate water transfers among willing buyers and sellers. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF INTERIOR, ASSESSMENT 87 . . . A NEW DIRECTION FOR THE BUREAU OF RECLAMATION 5 (1987) [hereinafter ASSESSMENT 87].

in the three lower basin states[247] and included major new requirements for water contractors.[248] As a whole, the proposed regulations attracted less criticism than they would have if attention had not been diverted by California's drought.[249]

The 1991 draft regulations did not address the contemporary drought situation. At roughly the same time that they were released, the Bureau of Reclamation circulated a discussion paper suggesting how lower basin facilities could be used to facilitate a "water bank."[250] The paper thus offered a modest, practical approach to the drought problem. It paled next to California's more ambitious conceptual approach, which had just been circulated. For instance, the Bureau's proposed bank would simply allow states to accumulate credits for unused shares of the lower basin entitlement that could be transferred among the lower basin states.[251] California proposed a seven-state commission for the whole basin and enabled freer marketing of water.[252] Consequently, the basin states focused their attention and criticism on California's initiative.

In 1994, the Bureau of Reclamation circulated informational copies of a set of proposed regulations that were far more detailed than the 1991 draft.[253] Building on the earlier draft, the regulations included a more elaborate proposal for a lower basin water bank that expanded the realm of market transactions and the sources of water. The regulations also extended use of the water

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247. *See* 1991 Proposed Regulations, *supra* note 246, §415.1.

248. *See id.* §§ 415.7, -.8. The draft covered a variety of issues related to water contracts; it stated that unused, or not beneficially used, contract rights would be lost; it demanded conservation plans as required by the Reclamation Reform Act of 1982; it dealt with tributary groundwater pumping; it set requirements for wheeling non-project water through the system; and it defined the terms to be included in several types of contracts involving the Bureau (including contracts for surplus water).

249. *But see Rules of the River: BuRec's Proposed Regulations for the Lower Colorado*, WATER STRATEGIST, Fall 1991, at 1 (lengthy analysis and criticism of proposed rules).

250. *See* Bureau of Reclamation, U.S. Dep't of the Interior, Lower Colorado River Basin: Water Banking Concept for Colorado River Water Discussion Paper (Oct. 4, 1991) (on file with author).

251. *See* 1991 Proposed Regulations, *supra* note 246, § 415.11.

252. *See* Conceptual Approach, *supra* note 205, at 10.

253. Bureau of Reclamation, U.S. Dep't of the Interior, Proposed Regulations of Administering Entitlements to Colorado River Water in the Lower Colorado River Basin (May 6, 1994) (on file with author) [hereinafter 1994 Proposed Regulations]. These were not published as part of actual rulemaking but were designed to stimulate comment and discussion.

bank to facilitate interstate water sales[254] among the three lower basin states and set rules for off-reservation leasing and banking of rights to use conserved tribal water.[255] To comport with the *Arizona v. California* decree that charges water "consumptively used" by a state to its apportionment,[256] the regulations also provided that conserved water placed in the bank for use by others was effectively consumed by the selling state. Finally, the proposed regulations declared that banked water is free from the priorities of the law of the river and of state water law.[257]

A few months after the release of the second set of proposed federal regulations, the three lower basin states and the Bureau of Reclamation formed a so-called Technical Committee to discuss the issues raised by the Bureau's proposal.[258] In June 1995, after several meetings, the Technical Committee issued a final report.[259] The Technical Committee rejected the concept of marketing unused entitlements, which Nevada and the tribes had embraced. Nor was the Technical Committee quite ready for tribal off-reservation water leasing, which appeared variously in the proposals advanced by the Bureau of Reclamation, Arizona, Nevada, and the tribes; its report conceded only that tribal off-reservation leasing could be "phased in" over time. Much of the report dealt with truly technical aspects of water banking.[260] The

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254. *See id.* § 415.23(f).

255. *See id.* §§ 415.8(d)(3), -.23(d)(5). The regulations presumed that sales of Indian water did not require the consent or approval of Congress. There is an issue whether such sales constitute an interest in real property that is subject to the Indian Non-Intercourse Act, 25 U.S.C. § 177 (1994). *See* David H. Getches, *Management and Marketing of Indian Water: From Conflict to Pragmatism*, 58 U. COLO. L. REV. 515, 542 (1988).

256. 1994 Proposed Regulations, *supra* note 253, § 415.23(h). The regulations anticipated that users could free up water for sale by "extraordinary" conservation efforts and land fallowing. *Id.* § 415.23(d)(2).

257. *See id.* § 415.23(h). By freeing the water of these priorities, the Secretary would treat it as a commodity that he could store and release from the reservoirs without entities that are entitled to water under the law of the river, claiming a right to it. It would, however, have to be released to make space for flood waters. *See id.* § 415.23(e). So that these flood releases would not count against those with priorities under the law of the river, the banked water would be considered the first water released for flood control. This is called "top water" banking.

258. *See* Colorado River Lower Basin Technical Committee, Progress Report 1 (Oct. 11, 1994) (on file with author).

259. Lower Colorado River Basin Technical Committee, Progress Report No. 4, at 4 (June 1, 1995) (on file with author); *see also Troubled River*, WATER STRATEGIST, Spring 1995, at 1, 5, 16.

260. The report suggested different classes of storage for banked water, defining the security of storage and timing of releases according to water source. The

Technical Committee thus skirted the important questions of conflict resolution and avoidance, long-range planning, and policy matters. It is remarkable, nevertheless, that the Technical Committee implicitly agreed to the idea of interstate water marketing, found there was nothing unlawful about marketing unused entitlements, though it did not favor them, and suggested that off-reservation leasing of tribal water might eventually be acceptable.

Nearly all the water banking proposals that have been offered involve interstate water transactions, and, as discussed above, a majority of basin states have at least shown interest in the concept. Moreover, formerly solid upper basin state resistance to interstate water marketing was broken when Utah informally but publicly proposed marketing—even to the lower basin—its right to consume up to 100,000 acre-feet of Colorado River water per year for a price of $200 per acre-foot.[261] The potential economic advantage from such schemes suggests that it is only a matter of time before interstate water marketing becomes acceptable to the other three upper basin states. In addition to the economic incentive for them to participate, they would gain the security of having purchasing states confirm the legal viability of the upper basin's unused apportionments. That confirmation is implicit in any lease or other transaction involving paid consideration for use of another state's apportioned water.

By gaining security through leasing, upper basin states can fulfill a purpose of the 1922 Compact. Slower growing states pursued the Compact as a way to preserve shares of Colorado River water to meet the needs of future generations of their citizens.[262] A state seeking to lease water must be cautious, of course, that it does not lease water for out-of-state uses for such

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committee also dealt with how to account for water inadvertently used in excess of entitlements. Determination of when a "surplus" exists, which is an important issue for reservoir operation, also occupied the committee's attention. *See* Lower Colorado River Basin Technical Committee, *supra* note 259, at 3-8; *see also infra* notes 368-74 and accompanying text.

261. *See* Jim Woolf, *Leasing Water May Help Utah Cash Flow Liquid Assets: Utah May Lease Its Water*, SALT LAKE TRIB., Nov. 16, 1994, at A1. Ted Stewart, the Executive Director of Utah's Department of Water Resources, suggested that Utah explore the concept of leasing water to Las Vegas, as the concept would enable Utah to raise about $20 million per year. *See id.*

262. *See supra* text accompanying notes 46-48.

a long period that it will lack water to meet its future demands during the lease term.

A state may risk having sufficient water in the future if it failed to control private interstate water marketing. In the 1980s, the Galloway Group, owned by an out-of-state entrepreneur, proposed to sell water developed under Colorado rights to users in the lower basin.[263] With the support of other basin states, Colorado successfully resisted the proposal.[264]

A variant of the Galloway proposal re-emerged a few years later under the sponsorship of the Resource Conservation Group, Inc. (RCG). Attempting to overcome the political discredit that the Galloway Group had suffered, RCG claimed the backing of several influential citizens of the basin states.[265] It offered refinements and advantages over the Galloway Group's original plan. The Galloway Group had proposed building reservoirs to store water under its acquired water rights before shipping it to San Diego under lease to the regional water supplier. In contrast, RCG would acquire contractual rights from farmers to curtail uses of water periodically, paying them for the right to curtail and for any consumptive uses actually foregone. RCG also proposed to pay into a fund for each upper basin state whose water could be used for future water development.[266] RCG's scheme was complicated, however, by also purporting to market undeveloped water (that is, water not now used consumptively in the upper basin).[267] Like its predecessor, the RCG proposal did not advance.

In 1993, oil companies, which had excess rights to Colorado water after the collapse of the anticipated market for shale oil, promoted another export idea. They proposed to develop, store, and release their Colorado River water for uses in Nevada.[268] The

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263. *See* Guy, *supra* note 200, at 26-27; Prange, *supra* note 204, at 82.

264. *See Epilogue* to NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY, *supra* note 6, at 225, 230; *see also* Guy, *supra* note 200, at 26-27; Prange, *supra* note 204, at 83-84; Barton H. Thompson, Jr., *Interstate Transfers:* Sporhase, *Compacts, and Free Markets*, C616 A.L.I.-A.B.A. 79 (1991); Sergio J. Viscoli, *The Resource Conservation Group Proposal to Lease Colorado River Water*, 31 NAT. RESOURCES J. 887, 890 (1991).

265. *See* Viscoli, *supra* note 264, at 890. Former Arizona Governor, now Secretary of the Interior, Bruce Babbitt was among those reportedly backing the proposal.

266. *Id.* at 890-92.

267. *Id.* at 896-99.

268. *See Ex-Governor Is New Hired Gun Behind Proposal to Sell Water*, ROCKY MTN. NEWS, Aug. 4, 1994, at 30A; Jennifer Gavin & Adriel Bettelheim, *Western*

idea was officially opposed,[269] but apparently it has not been withdrawn.

A special problem could arise if private appropriators market water out-of-state in unlimited quantities for an undefined term. The Interstate Commerce Clause of the United States Constitution[270] limits the states' restrictions on water marketing. However, states have constitutional means to prevent a private water rights holder from defeating a state's legitimate interest in water allocated to the state by interstate compact. For example, a state can impose even-handed limitations on the appropriation, use, and change of use of water that apply to in- and out-of-state uses.[271] All of the basin states except Colorado have administrative procedures and public interest criteria for screening water rights applications and changes of use that allow them to assert and protect their legitimate interests.[272] Perhaps because of Colorado's lack of a process to assert the public's interest in Colorado's waters for present or future public benefits,[273] entre-

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Water Showdown; Open Colorado Market Feared, DENV. POST, Sept. 18, 1994, at A1; *Las Vegas Eyes Colorado for Water; Officials Call Roan Creek Reservoir a Short-Term Source for Booming City*, ROCKY MTN. NEWS, Sept. 18, 1994, at 26A.

269. *See Don't Bet the Farm on Plan to Lease Water to Las Vegas*, DENV. POST, Feb. 13, 1993, at 7B; Bob Ewegen, *Love Note from Colorado to the Boycotters in L.A.: Drink Sand and Die*, DENV. POST, Mar. 29, 1993, at 7B.

270. U.S. CONST. art. 1, § 8, cl. 3.

271. *See, e.g.*, City of El Paso v. Reynolds, 597 F. Supp. 694, 708 (D.N.M. 1984) (holding that a New Mexico statute that applied conservation and public welfare criteria equitably to in- and out-of-state water transactions would pass constitutional muster). Furthering the purposes of a congressionally approved interstate compact also would appear to be a legitimate motivation for state legislation. *Cf.* Intake Water Co. v. Yellowstone River Compact Comm'n, 590 F. Supp. 293, 297 (D. Mont. 1983) (stating that Congress has the power to regulate interstate commerce and that its approval of an interstate compact restricting exports without state consent is immune from attack).

272. *See* ARIZ. REV. STAT. ANN. §§ 45-152 to -155 (West 1994); CAL. WATER CODE § 105 (West 1971); NEV. REV. STAT. ANN. §§ 533.030, 533.324-.435 (Michie 1995); N.M. STAT. ANN. §§ 72-5-1, 72-5-5 to -7 (Michie 1978); UTAH CODE ANN. §§ 73-3-1, 73-3-8 (1989); WYO. CONST. art. 8, § 3. Of course these criteria and procedures cannot become a subterfuge for restraining commerce. *See* Sporhase v. Nebraska *ex rel.* Douglas, 458 U.S. 941, 954-58 (1982). *Sporhase* allows for constitutionally permissible restrictions. *See id.* at 958-60.

273. Colorado has made two attempts to assert the state's interest in interstate water markets. Colorado's first attempt requires a finding of the water court that the export be credited against interstate water compact delivery obligations to other states or not conflict with the state's ability to comply with those requirements. *See* COLO. REV. STAT. § 37-81-101(3)(a) (1996). Further, the export must be consistent with the reasonable conservation of Colorado's resources, *see* § 37-81-101(3)(b), and must not deprive Colorado users of beneficial uses of waters that are apportioned to

preneurs have targeted several schemes to develop and export water on sources in that state.[274] Until Colorado enacts controls on water uses that preserve its interest in waters allocated by interstate compacts, it must rely on blanket arguments against the legality of all such interstate or interbasin water marketing to prevent improvident interstate sales by enterprising private appropriators.

The legal objections to interstate water markets (including interbasin markets between states in the upper and lower basins) are not insurmountable.[275] Nevertheless, legal challenges by any

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Colorado. *See* § 37-81-101(3)(c). To comply with these requirements, the applicant must demonstrate that the export will be accounted for as a credit to Colorado's compact delivery requirements. *See* § 37-81-103(1),(2). Section 37-81-103 would presumably lead to denial of the application if and when Colorado approached the limits of its compact share. In any event, this process gives Colorado little effective control. The state is now using only about 1.994 million of a possible 3.079 million acre-feet per year of Colorado River water. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF THE INTERIOR, CONSUMPTIVE USES AND LOSSES REPORT 1981-1985 (June 1991) (on file with author); Colorado River Compact Water Development Work Group, Final Report: Colorado River Compact Water Development Projection of Endangered Fish Flow (Nov. 2, 1995). Therefore one million acre-feet of Colorado's compact entitlement can be marketed in the sole discretion of private appropriators before in-state beneficial uses are impaired. If the state attempted to enforce the provision against an exporting appropriator for excessive exports, there likely would be a challenge to the constitutionality of this provision under *Sporhase*. *See supra* note 272. Because the very purpose of the Colorado River compacts was to ensure that upper basin states could enjoy the future beneficial use of water, a judicious application of this provision to protect existing beneficial uses would probably be upheld. *See supra* notes 46-48.

Colorado's second attempt to assert its interest in compact water by controlling interstate water markets was to pass a law taxing transfers of water to out-of-state (but not to in-state) uses. *See* COLO. REV. STAT. § 37-81-104(1) (1996). However, the state attorney general has opined that this would be unconstitutional because it violates the interstate commerce clause. *See* Op. Colo. Att'y Gen. No. 850 4066/AON (1985). In any event, the tax is a mere $50 per acre-foot, which is small compensation to the state and the public for the resource and little inhibition to the seller in a market where the exporter is likely to charge many times that amount. *See* § 37-81-104(1).

274. *See supra* notes 263-69 and accompanying text.

275. The interstate compacts do not directly bar interstate water marketing, although their terms reflect that it was not within the contemplation of the negotiators. *See* Getches, *supra* note 1, at 475. The key requirement of the Colorado River Compact is that the upper basin states deliver 75 million acre-feet of water to Lee Ferry every 10 years (art. III(d)), as well as the upper basin's portion called for the U.S.-Mexican Treaty requirement (art. III(c)). *See* Colorado River Compact of 1922, COLO. REV. STAT. § 37-61-101 (1990); US-Mexico Treaty, *supra* note 2. The Compact makes it necessary to account for whether a sale from an upper to a lower basin party is considered within or outside the minimum delivery requirement, but it should not otherwise impede such transfers. Sales from lower to upper basin

state could delay and complicate interstate transactions. Thus, it would be wise to obtain the consent of all basin states based on reasonable consideration, monetary or otherwise.

B. Endangered Species Act Recovery Plans Bring Diverse Interests Together

1. Upper Basin

Interests in the upper Colorado River basin engaged in one of the first efforts in the nation to reach a consensus on how to comply with the ESA. The U.S. Fish and Wildlife Service (the "Service") issued a "jeopardy opinion"[276] concluding that further depletions of the upper Colorado River would jeopardize the continued existence of several species of fish that are indigenous

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parties, which are less likely because demand is higher in the lower basin, would contradict the Compact's terms if they resulted in too little water being delivered.

The most substantial legal objection that can be raised against interstate water marketing is a potential inhibition on the delivery to users in a lower basin state that results in different apportionments from the 1964 Decree in *Arizona v. California*, which sets the terms for the Secretary's releases for facilities on the river. *See* Arizona v. California, 376 U.S. 340, 343 (1964). Article II(B)(4) of the decree states that "mainstream water consumptively used within a State shall be charged to its apportionment, regardless of the purpose for which it was released." *Id.* The decree, which is framed as an injunction, also says that the three lower basin states and named water users in California are enjoined "[f]rom consuming or purporting to authorize the consumptive use of water from the mainstream in excess of the quantities permitted under Article II." *Id.* at 347. The water also must be delivered pursuant to valid contracts with the Secretary. *See id.; see also* Memorandum from Karen L. Tachiki, Gary D. Weatherford, and William H. Swan to the Technical Committee (Sept. 7, 1995) (on file with author) (examining the legal framework for interstate transfers within the lower basin). The provisions of Article II of the decree would apply to water transferred from one lower basin state to another, or from an upper to a lower basin state. Legal challenges to transfers presumably could be forestalled by appropriate secretarial regulations and contracts designed to facilitate transfers that are adopted without a lower basin objection. Any such objection could be resolved by a litigated decision or a stipulation of the parties approved by the court under *Arizona v. California*. Regulations would also have to cover reservoir operations and releases consistent with the Colorado River Basin Project Act, discussed *infra* Part III.A.2 and Part B.2.b.

276. Section 7 of the ESA requires all federal agencies to consult with the Fish and Wildlife Service ("Service") about whether an agency action is likely to jeopardize the continued existence of a listed species or its habitat. *See* 16 U.S.C. § 1536(a)(4) (1994). If, after this consultation, the Service issues a biological opinion that the proposed federal action is likely to jeopardize the species, then the Service must also suggest what reasonable and prudent alternatives can be taken to avoid the likelihood of jeopardy. *See* 16 U.S.C. § 1536(b)(3)(A) (1994).

to the river.[277] The Service considered a plan to prevent new depletions and attempted to restore the river's flows to levels that existed many years earlier.[278] Because federal actions, such as approvals of water projects, are prohibited if they would jeopardize an endangered species,[279] Colorado officials were concerned about the impact of the jeopardy opinion and doubted the efficacy of the Service's approach. Colorado therefore initiated discussions with the Service in 1984. The agency then agreed to meet with a group of interested parties to discuss the issues. That meeting led to a multi-interest, multi-state working group and the establishment of a parallel technical group.[280] The working group grew to include representatives of Colorado, Utah, and Wyoming, water users' organizations, power distributors; three federal agencies, and, later in the process, environmental groups. After long negotiations, in 1987 the group agreed to an endangered fishes recovery program.[281]

The major program to mitigate some of the impacts of dams and water diversions began in 1988 with the goal of recovering the Colorado River's endangered species of fish within fifteen years.[282] Measures to accomplish that goal included releasing water from federal dams to mimic seasonal flow patterns,[283] providing for flows through state instream flow programs,[284] restoring stream channels and wetlands,[285] building fish passages at major diversion structures,[286] controlling competing non-native fish,[287] stocking endangered fish reared in hatcheries,[288] research-

277. *See* Robert Wigington & Dale Pontius, *Toward Range-Wide Integration of Recovery Implementation Programs for the Endangered Fishes of the Colorado River, in* THE COLORADO RIVER WORKSHOP: ISSUES, IDEAS, AND DIRECTIONS, *supra* note 11, at 43, 50.

278. *See id.; see also* Getches, *supra* note 1, at 447.

279. *See* 16 U.S.C. § 1536(a)(2) (1994).

280. *See* RECOVERY IMPLEMENTATION PROGRAM, *supra* note 153.

281. *See id.* at 1-1.

282. *See* FISH & WILDLIFE SERVICE, U.S. DEP'T OF THE INTERIOR, REVISED RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN 3 (1994) (on file at the Bureau of Reclamation, Region Six, Denver, Colo.).

283. *See id.* at 5.

284. *See id.* at 5-7.

285. *See id.* at 8.

286. *See id.* at 8-9.

287. *See id.* at 9-10.

288. *See id.* at 10-11.

ing further improvements,[289] and monitoring.[290] Costs of the program are paid mostly from federal hydropower revenues and from congressional appropriations to the Service and the Bureau of Reclamation.[291] From a water developer's perspective, the program is beneficial because it may allow new dams and diversions to proceed.[292] Today, the plan has support from all the parties to the negotiation. They have collaborated on developing the plan and they are generally supportive of efforts seeking to fund and implement it effectively.

2. Lower Basin Multi-Species Conservation Program

In 1994, the Service designated critical habitat for four endangered fishes in the lower Colorado River basin.[293] In response, representatives of Arizona, California, and Nevada, together with various water and power agencies, formed a regional partnership to develop a program to protect threatened and endangered species of fish and wildlife and their habitats.[294] The program covers the mainstream of the lower Colorado River from Glen Canyon Dam to the international boundary with Mexico.[295] In all, the program aims to protect more than 100 federal- and state-listed species, candidate species, and sensitive species and their associated habitats through a comprehensive, ecosystem-based approach.[296]

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289. *See id.* at 11-12.

290. *See id.* at 11-12.

291. *See* Wigington & Pontius, *supra* note 277, at 56.

292. *See* Tom Pitts, *Colorado River Fish Recovery Program Benefits Water Users*, COLORADO WATER RIGHTS, Summer 1995, at 5.

293. *See* 50 C.F.R. pt. 17 (1994).

294. *See* Wigington & Pontius, *supra* note 277, at 64.

295. *See id.*

296. Participants in the program include the Service, Bureau of Reclamation, National Park Service, Bureau of Land Management, Bureau of Indian Affairs, Arizona Department of Water Resources, Arizona Department of Game and Fish, Colorado River Board of California, California Department of Fish and Game, Colorado River Commission of Nevada, Nevada Division of Wildlife, Lower Colorado Indian Tribes, and various water and hydroelectric power resource management agencies within the three lower basin states. The program is also seeking participation by a broad array of conservation groups. They have been reluctant to participate because they were excluded from the conceptual phases and the process was broadened only after litigation over the exclusiveness of the process seemed inevitable. *See* Lower Colorado Multispecies Conservation Program Agreement Between the U.S. Department of the Interior and the Lower Colorado River Multispecies Conservation Program Steering Committee (June 22, 1996) (on file with

The federal, state, and power-producing entities signed a Memorandum of Agreement[297] ("MOA") to develop the species conservation program on August 2, 1995. The MOA set a three-year period for development of a multi-species conservation plan ("MSCP"). It further provided that the Service and the Bureau of Reclamation work with the parties to meet the requirements of the ESA while accommodating interim water diversion and power needs.[298] For a time, planning activities were stalled. Environmental organizations objected to delaying ESA section 7 consultation on the effects of lower Colorado River operations on endangered species, and power organizations hesitated to commit to the program without a federal agreement to share costs. The parties resolved those issues and decided to invite participation by environmental representatives who earlier had been left out of the discussions.[299]

In May 1997 the Secretary of the Interior approved a proposal emerging from the process. A $4.5 million study will be conducted over five years, thus extending the time for developing the multi-species plan. The plan would guide river operations over a 50-year period and in a way that accommodates economic needs and protects 102 species of rare plants and animals.[300]

C. *The Adaptive Management Work Group*

When the Secretary of the Interior implemented a new plan for operating the Glen Canyon Dam in 1996, he created an entity to monitor the plan and to recommend modifications in it.[301] This

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297. *See id.*

298. *See id.* at 1-2.

299. *See* Memorandum from General Manager to Board of Directors, MWD of Southern California, on the Lower Colorado River Multi-Species Conservation Program (Aug. 6, 1996) (on file with author). The objections have been addressed in a Memorandum of Clarification ("MOC"). The MOC reaffirmed the goals of conserving habitat, recovery of listed species, and prevention of additional species within the 100-year floodplain of the lower Colorado River from being listed pursuant to the ESA. It reiterated the commitment to accommodate current water diversion and power production, and to optimize opportunities for future water and power development with immediate section 7 consultations. The Department of the Interior also agreed to split the costs of the program equally between the federal government and the states. *See id.*

300. Steve Yozwiak, *Southwest River Plan Criticized*, THE ARIZ. REPUBLIC, May 6, 1997, at A1.

301. *See supra* notes 147-48 and accompanying text.

was a revolutionary step in two respects. First, it employs the relatively new concept of adaptive management and second, it involves more diverse interests in Colorado River decisionmaking than ever before. The Secretary constituted an Adaptive Management Work Group to monitor progress, assist in coordinating technical information, and recommend mid-course adjustments in Glen Canyon operations.[302]

The process of adaptive management allows decisions to be modified as experience warrants.[303] It admits the realities of an uncertain milieu of changing natural conditions, multiple variables, and uncertain data. Based on its monitoring of how well the Secretary's criteria are working, the Group is expected periodically to propose modified operating criteria.

While major decisions concerning Glen Canyon Dam operations will be subject to a higher level of public input, it remains unclear how and to what extent the Group will be consulted in other matters relating to Colorado River operation and policy. Glen Canyon Dam operations affect other issues of public importance on the Colorado River like salinity control, reallocation of consumptive water rights among basin states, and endangered species protection. Similarly, each of those issues cannot be addressed without considering Glen Canyon operations.

Although the purposes of the Group that grew out of the Glen Canyon Dam EIS process are limited,[304] adaptive management is

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302. *See supra* note 147 and accompanying text.

303. For a discussion of the theory of adaptive management, see KAI N. LEE, COMPASS AND GYROSCOPE 53-55 (1993).

304. When the Glen Canyon Dam EIS was initiated, it appeared to be designed to consider a range of operational changes to be reflected in the LROC, or the annual operating plans, or both, and it dealt with all the complicated issues of operating a major dam with lucrative hydroelectric power-generating capacity at the head of the Grand Canyon consistent with the entire law of the river. In the meantime, Congress passed the Grand Canyon Protection Act of 1992, requiring that the Secretary operate the dam to protect the cultural and natural values of Grand Canyon National Park. *See* Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, § 1804, 106 Stat 4669. When the EIS was complete, the Secretary decided to prepare a set of operating criteria (separate from the LROC) specifically to respond to the Grand Canyon Protection Act. *See* BUREAU OF RECLAMATION, U.S. DEP'T OF INTERIOR, OPERATING CRITERIA FOR GLEN CANYON DAM IN ACCORDANCE WITH GRAND CANYON PROTECTION ACT OF 1992 (1997). Furthermore, the Charter for the Adaptive Management Work Group can be read to limit its advisory role to those criteria and not to the Secretary's broader decisionmaking functions that impact the issues covered in the EIS. *See supra* note 147. Tying the Group's role to the Act could be unnecessarily limiting, even as to the operations of Glen Canyon Dam, depending on the degree to which the Secretary is or is not willing to hear the Group

a concept that could be more broadly considered in planning for basin-wide management and in implementing LROC and the annual operating plans for all dams in the system.[305]

An entity comparable to the Glen Canyon Adaptive Management Work Group is needed to influence the Secretary's determination of five-year operating criteria for all Colorado River facilities and the annual operating plans that are adopted to implement the five-year criteria. Such a group could help ensure that the public is fairly and appropriately included in decisions that affect them, and it could help to guide the sustainable use of basin resources. Perhaps the Glen Canyon Adaptive Management Group can be a model for more inclusive decisionmaking on issues throughout the basin.

III. MOVING TOWARD BASIN GOVERNANCE BY SHARING FEDERAL AUTHORITY

In the past, the Secretary has been patient and deferential, assuming that once problems were identified, the basin states would be motivated by self-interest to resolve them. This approach has produced only limited results. Unless the states act rapidly and use processes that include participation by other affected interests, the Secretary should take more decisive action. The legal authority exists for the Secretary to step in and supplant the states and other interests. There is, however, an option that lies between the laissez-faire approach of the past and wholesale preemption of the decisionmaking process. It is for the Secretary to provide inducements to move the states and others toward comprehensive, inclusive decisions that are the product of the full range of affected interests.

The Secretary should promote cooperative approaches to the problems of the Colorado River basin by assigning selected tasks to a representative group of basin interests. Following a review of the basis for the Secretary's authority, this section identifies five areas that are ripe for immediate secretarial action. Each

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on broader questions.

305. The Group includes one representative from each of five federal agencies, the Arizona Game and Fish Department, six tribes, seven states, and two representatives each from environmental groups, recreation interests, and federal power contractors. All are appointed by the Secretary with input from stakeholder groups. *See* SECRETARY OF THE INTERIOR, CHARTER FOR THE ADAPTIVE MANAGEMENT WORK GROUP, *supra* note 147, at 3-4.

area is an opportunity for the Secretary to promote basin-wide, multi-interest problem-solving. I conclude this section with the suggestion that the Secretary establish a coordinating council to facilitate the process of providing input to the Secretary and, ultimately, to take responsibility for addressing specific issues.

A. The Legal Basis for Federal Authority

1. Management Authority Under Statutes Authorizing Development of the River

The federal government historically has stepped in to defuse highly contentious battles over entitlements to consumptive use of Colorado River water. The United States subsidized water uses and assumed responsibility for the consequences of over-development. This insulated interests in the Colorado River basin from the economic, social, and environmental impacts of the single-minded policy of enabling the consumption of Colorado River water.[306] Federal development of water has relieved pressure for cooperation; it has actually been a disincentive to the assumption of responsibility for the Colorado River by non-federal interests.

Federal largesse was the key to forestalling conflict in the basin but with it came federal control of many aspects of water allocation and distribution. The awesome federal powers over Colorado River management are rooted in congressional mandates that direct the Secretary to operate dams and reservoirs constructed with federal funds[307] and to allocate the water stored in those projects to users by contract.[308] Under these laws, the Secretary can determine by regulation the administration of the

306. *See supra* notes 1-11 and accompanying text.

307. *See* Boulder Canyon Project Act, 43 U.S.C. § 617 (1994); Colorado River Storage Project Act, 43 U.S.C. § 620 (1994); *id.* §§ 620c, 620f (relating to power plant operations and contracts); Colorado River Basin Project Act, 43 U.S.C. § 1501 (1994); *id.* § 1521(b) (limitation on water use from CAP); *id.* § 1524 (water furnished from CAP); *id.* § 1552 (criteria for long-range operation of reservoirs).

308. *See* 43 U.S.C. §§ 617d, 617g(b) (1994). The contracting provisions of the Boulder Canyon Project Act were extensively interpreted in *Arizona v. California*, 373 U.S. 546, 579 (1962), leaving no doubt about the Secretary's far-reaching powers. This largely obviated the need for judicial interpretation of similar provisions in the Colorado River Storage Project Act. There is no reason to think that Congress intended any different meaning for the mandates in the later statute.

river and the guiding principles for contracts allowing use of water from federal facilities.

When Congress passed the Reclamation Act and decided to build the great projects of the Colorado River, it intended to aid the settlement of the West. Congress believed that economic expansion depended on enabling the West to support small family farms that required irrigation works.[309] But settlement of the West moved quickly and the destiny of the West was not to remain an agricultural society, despite the myths and images perpetuated for tourists. Instead, the region served by the Colorado River has become highly urbanized, its growing cities separated by vast open spaces that draw tourists from all over the world.[310] Necessarily, the Reclamation program has evolved into a vehicle to support a multiplicity of national interests. Now, under the changed circumstances that characterize the New West, the challenge of meeting multiple objectives has never been greater.

By the time the Colorado River Basin Project Act of 1968 was passed, the nation had moved beyond the simple days when Bureau of Reclamation projects were designed and operated primarily to further agricultural expansion in the arid West. The earlier acts providing for development in the Colorado River basin also had navigation, flood control, and, incidentally, power generation purposes.[311] In the 1968 Act, however, Congress revised the mandate for the system of water projects in the Colorado River basin by listing a dizzying array of values and uses to be furthered.[312] The mission of the Colorado River basin's water projects was expanded to include

> comprehensive development of the water resources of the Colorado River Basin . . . for the purposes, among others, of regulating the flow of the Colorado River; controlling floods; improving navigation; providing for the storage and delivery of the waters of the Colorado River for reclamation of lands, including supplemental water supplies, and for municipal, industrial, and other beneficial purposes; improving water

309. *See* 35 CONG. REC. 6673-74 (1902) (statement of Sen. Francis G. Newlands, sponsor of the Reclamation Act of 1902).

310. *See* FRADKIN, *supra* note 62, at xv-xvi.

311. *See* Boulder Canyon Project Act, 43 U.S.C. § 617 (1994); Colorado River Storage Project Act, 43 U.S.C. § 620 (1994).

312. *See* Colorado River Basin Project Act, 43 U.S.C. § 1501(a) (1994).

> quality; providing for basic public outdoor recreation facilities; improving conditions for fish and wildlife, and the generation and sale of electrical power as an incident of the foregoing purposes.[313]

2. Responsibility for Basin Planning

In the 1968 Colorado River Basin Project Act, Congress also charged the Secretary with developing "a regional water plan" and setting criteria to coordinate the operation of all the dams.[314] The planning mandate was included in the Act[315] to articulate a pattern of future project development and to pursue the idea, current in the 1960s, that new sources of imported water should be found to augment the Colorado River basin's limited supply. The goal then was to enable full, economic use of the Colorado River's water while broadening project purposes beyond irrigation.[316]

Today, although the Bureau of Reclamation does not have a current basin-wide plan for the Colorado River, the need for planning has increased and evolved. It may no longer be appropriate to promulgate the regional water plan that Congress originally envisioned. Further, preferred approaches for natural resources decisionmaking generally have moved from central federal control to inclusive, regional, and locally based processes.[317] The planning mandate provides an opportunity, however, to redefine Colorado River management in light of new values, especially non-consumptive uses.

While the nature of the planning needed for the Colorado River basin has become more complex and challenging, existing law furnishes a vehicle for carrying out diverse federal responsibilities in a way that meets today's needs. A basin plan could be

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313. *Id.*

314. *Id.* The Colorado River Basin Project Act required the Secretary to "propose criteria for the coordinated long-range operation of the reservoirs constructed and operated" on the Colorado River under various statutes. *Id.* § 1552(a).

315. *See id.* § 1552(a).

316. *See* REISNER, *supra* note 40, at 290-93; *see also* Helen M. Ingram, *The Political Economy of Regional Water Institutions*, 55 AM. AGRIC. ECON. 10 (1973). Some of the authorized projects were known to be infeasible from the start and became even less practical as time passed.

317. *See, e.g.*, PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, *supra* note 149, at 113-15.

as broad as the Secretary's current authorities and responsibilities. It could be a vehicle for relating and coordinating all of these functions. The Secretary should now implement the planning mandate in light of modern demands and deal in a forward-looking, dynamic way with pressing questions of how to manage comprehensively the resources of the Colorado River basin.

3. Expanded Environmental Protection Responsibilities

The purposes of the projects on the Colorado River and the planning responsibilities of the Secretary have been supplemented by three major environmental laws. First, the year after Congress passed the Colorado River Basin Project Act, which substantially expanded the purposes of Colorado River projects, it passed the National Environmental Policy Act,[318] "requiring all federal agencies to consider values of environmental preservation in their spheres of activity."[319] Besides its well-known requirement that a comprehensive and interdisciplinary environmental impact statement be prepared for every proposed major federal action, NEPA also created a process of public participation and input to precede major environmental decisions.[320] The struggle of citizens groups to use this process to gain input on Colorado River operations was recounted earlier.[321]

Second, a few years later, in the ESA, Congress assigned every federal agency responsibility for ensuring that no action would be likely to "jeopardize the continued existence" of an endangered species.[322] As previously discussed, the ESA has a pervasive impact on river and reservoir operations in the Colorado River basin.[323] The ESA encourages ecosystem planning

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318. National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C.A. §§ 4321- 4370 (West 1994 & Supp. 1997)).

319. Calvert Cliffs' Coordinating Comm., Inc. v. United States Atomic Energy Comm'n, 449 F.2d 1109, 1111 (D.C. Cir. 1971).

320. *See* Council on Environmental Quality, 40 C.F.R. § 1502.19(c) (1978) (requiring circulation of a draft and final EIS to anyone requesting it); 40 C.F.R. § 1503.1(a)(4) (1978) (requiring an agency to solicit comments from the public regarding any draft EIS).

321. *See supra* notes 115-42 and accompanying text.

322. Endangered Species Act, 16 U.S.C. 1536(a)(2) (1994).

323. *See supra* Part II.B.

and other measures that can avoid the crises that develop once a species is jeopardized and heroic measures are mandated.

Finally, the Grand Canyon Protection Act of 1992 added a new, specific directive that Glen Canyon Dam shall be operated "in such a manner as to . . . mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use."[324] Although some prior acts authorizing projects identified recreation as a purpose, this new mandate sent an important message to federal managers that environmental and recreational values are important considerations in every Colorado River management decision.

B. Opportunities for Sharing Federal Responsibilities

It is time to use the ample federal power over the Colorado River in a new way. That power should not be wielded to create federally designed solutions to problems. Instead, the Secretary should enable and induce interests in the Colorado River basin to develop solutions to their problems through participatory, inclusive processes.

The Secretary should gradually and opportunistically delegate authority for planning, problem-solving, and negotiated rulemaking. Of course, the Secretary must ensure that any non-federal proposal to implement federal responsibilities protects national interests. Statutory and treaty commitments necessarily dictate the standards and outer limits bounding Colorado River basin governance. Within those limits, however, states, tribes, the power industry, conservation interests, recreationists, communities, and participants from federal agencies can take the lead in working out programs, plans, regulations, and solutions for virtually all aspects of Colorado River management, matters that lie within the legal authority of the federal government.

It would be preferable for all interests affected by the Colorado River to come together on their own initiative. The states, who already meet occasionally, are well-positioned to initiate inclusive processes for problem-solving. They can invite

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324. Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, 106 Stat. 4669 (1992).

others to participate with them in dealing with specific issues. Once a voluntarily convened, fully representative group has reached consensus, it can request the Secretary to put an imprimatur on the result. If Colorado River interests do not act voluntarily, however, the Secretary has the duty and responsibility to act within the great scope and extent of authority vested in that office by the law of the river.[325]

Voluntary processes have begun to produce some results, especially in the area of endangered species protection.[326] Some states and tribes have also responded to proposed regulations on water marketing.[327] However, progress has been slow[328] and participation has been limited. This suggests that the Secretary should initiate activities that result in bringing parties together.

Below I identify a number of areas where the participation of nonfederal interests in decisionmaking and problem-solving could greatly benefit the Colorado River basin. The Secretary should consider creating a more structured process to address these areas and others where advice and problem-solving by nonfederal interests would be beneficial. In the final section, I urge that the Secretary create a committee for this purpose under the Federal Advisory Commission Act.

1. A New Water Marketing Initiative

The Bureau of Reclamation proposed regulations in 1994 to permit water transfers and to establish a water bank.[329] The Bureau's release of the regulations coincided with water banking proposals by Nevada and Arizona, and was preceded by a proposal from California. A Technical Committee of lower basin

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325. *See supra* Part III.A.

326. *See supra* Part II.B.

327. *See supra* Part II.A.

328. In December 1996, the Secretary expressed disappointment that progress had not been made by the states and other interests toward voluntary resolution of water management issues. *See* Babbitt Address, *supra* note 234. A year before, he spoke to the same group and encouraged them to proceed with several promising efforts to deal with water banking and marketing to implement the San Luis Rey Indian Water Settlement and to resolve the problem of excessive water use in California. *See* Bruce Babbitt, Address to Colorado River Water Users Ass'n (Dec. 8, 1995) (on file with author). He pledged to support these voluntary efforts. The initiatives discussed in the Secretary's 1995 speech had stalled or collapsed by the time of his 1996 speech.

329. *See* 1994 Proposed Regulations, *supra* note 253.

state and tribal interests developed four progress reports that commented on aspects of the regulations.[330] Upper basin states, environmentalists, and others, however, have not been fully consulted.

It is timely for the Bureau of Reclamation to publish a new notice of intent to engage in rulemaking regarding water in the Colorado River basin. The Bureau should especially encourage input from constituencies that have not previously contributed their views. It should solicit comments from people with diverse interests and relevant expertise in water policy, ecology, engineering, and economics. The forum for this consultation could be a committee assembled either by an expanded body based on the ongoing meetings of the states, by initiation of the concerned interests themselves, or, failing voluntary initiation, by the Secretary's creation of a consultative body.

The differences of opinion that have emerged in the comments on the water marketing regulations signal that it is unlikely that a consensus will be reached on all the details. The Secretary could encourage parties to adopt the regulations with a forceful message that he would prefer to adopt them based on a consensual process, but that he will adopt them with or without consensus.[331] Ultimately, the Secretary must be prepared to make difficult decisions and to fill gaps whenever the participants in the rulemaking forum cannot agree. Where disagreement exists, the Secretary's choice should be guided by a policy of furthering the integrated management of the Colorado River basin through the inclusion of all interests and consideration of all relevant disciplines. If parties disagree whether to expand or limit water marketability, the Secretary should choose expanded marketability because it leads to more efficient water uses.

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330. *See supra* notes 258-60 and accompanying text.

331. The Secretary indicated in December 1996 that he would proceed with another round of proposed regulations but would limit their coverage to intrastate water banking and to facilitate the interstate water banking concept in the new Arizona legislation. He left the door open to broadening the coverage of the regulations, based on a public scoping process if it could be done "without generating significant controversy or delay." Babbitt Address, *supra* note 234, at 5. Thus, it is unlikely that more extensive water banking issues or Indian water marketing proposals, which were treated in the 1994 proposed regulations, will be part of the new proposal.

Moreover, promoting water marketability comports with present Department of Interior policies.[332]

The Secretary must ensure that both statutory mandates and policies are fulfilled. Thus, even if nonfederal parties reach consensus on a proposal, it must satisfy legal standards. Perhaps it is unlikely that a well-constituted rulemaking forum would give short shrift to requirements such as those found in the ESA. Yet it is possible that even with a diverse range of participants, the Secretary may be required to make choices that conflict with those recommended by the forum. For example, the forum might agree on a scheme for storage that facilitates water banking and transfers and provides for mitigation of the third-party effects, but neglects to provide sufficient storage of flood waters. If the forum's scheme did not provide sufficient flood protection, it would nevertheless be the Secretary's statutory duty to operate projects to fulfill that goal.[333]

A rulemaking on water marketing should address the policies to be reflected in the Bureau of Reclamation's repayment contracts. The Bureau has hundreds of contracts with districts, and it participates in contracts between districts and users; many contracts provide that transfers are subject to federal approval.[334] New regulations should address necessary and desirable transfer provisions to be included in new and renewed water service contracts. This is important because the terms of water service contracts will either encourage or frustrate the Bureau's recent policy to facilitate water transfers.[335]

When most existing water service contracts were drafted, current water marketing concepts were beyond the consideration of the parties to the contracts. In renewing those contracts, the Bureau of Reclamation has an opportunity to further water marketing in ways that will give the Bureau of Reclamation greater flexibility in serving the needs of the Colorado River

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332. *See* ASSESSMENT 87, *supra* note 246; *see also* DANIEL P. BEARD, BUREAU OF RECLAMATION, BLUEPRINT FOR REFORM: THE COMMISSIONER'S PLAN FOR REINVENTING RECLAMATION app. 1 (1993).

333. *See supra* Part III.A.1.

334. For a description and discussion of such contracts, see Bruce Driver, *The Effect of Reclamation Law on Voluntary Water Transfers*, 33 ROCKY MTN. MIN. L. INST. 26-1 (1988); Guy, *supra* note 200, at 48; Richard Roos-Collins, *Voluntary Conveyance of the Right to Receive a Water Supply from the United States Bureau of Reclamation*, 13 ECOLOGY L.Q. 773, 836 (1987).

335. *See* ASSESSMENT 87, *supra* note 246, at 5.

basin. Moreover, since the negotiation of many water service contracts, Bureau of Reclamation law and policy have modified acreage limitations and required conservation measures.[336] Parties to Bureau of Reclamation contracts usually must anticipate revisions that are necessary to keep pace with changing policy.[337] Water marketing regulations should address these issues, as did the 1991 and 1994 Bureau of Reclamation proposals.[338] The policies expressed in the regulations then can be implemented through appropriate contractual provisions.

2. Coordinated Development and Operation of Projects

a. Development—Animas-La Plata?

Planning for water project development in the Colorado River Basin—generally considered passe—may have continuing viability. Although the Boulder Canyon Project Act authorized five upper basin projects and gave birth to the now-completed CAP, it is now widely accepted that some of the projects will never be built.[339] However, one project that remains in discussion and that would benefit from further planning is the Animas-La Plata Project, which, as originally planned, now faces apparently insurmountable legal, economic, and political barriers to its construction.[340]

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336. *See, e.g.*, Reclamation Reform Act of 1982, 43 U.S.C. §§ 373a, 390aa-390zz-1, 422e, 425b, 485h, 502 (1996).

337. *See, e.g.*, Peterson v. United States Dep't of the Interior, 899 F.2d 799 (9th Cir. 1990) (upholding "hammer clause" requiring denial of water service to more than 160 acres owned or leased by a single owner, unless the water service contract was amended to reflect higher prices).

338. *See* 1991 Proposed Regulations, *supra* note 246; 1994 Proposed Regulations, *supra* note 253; *see also* BUREAU OF RECLAMATION, U.S. DEP'T OF THE INTERIOR, PRINCIPLES GOVERNING VOLUNTARY WATER TRANSACTIONS THAT INVOLVE OR AFFECT FACILITIES OWNED OR OPERATED BY THE DEPARTMENT OF THE INTERIOR (1988).

339. *See* Getches, *supra* note 1, at 450.

340. *See* Mark Obmascik, *Criticism of Animas Growing: N.M. Cites Dam Concerns*, DENV. POST, Mar. 20, 1995, at B1. The project was first approved in 1968, but was delayed for years by cost concerns. *See id.* It remained controversial, but its funding was approved in 1988 as part of a negotiated settlement of the water rights of the Ute Mountain Ute and Southern Ute Tribes. *See* H. Josef Hebert, *Animas-La Plata Battle Hasn't Ended; Doubt About Benefits, Fear of Development Undermine Costly Plans*, ROCKY MTN. NEWS, Dec. 26, 1996, at 38A. Project water would be taken from the Animas River and pumped up to a reservoir built on top of

The Animas-La Plata project would have shared the fate of other vestiges of the expired big dam era but for the fact that it was the key element in a negotiated resolution of major Indian tribal water rights claims. If, as appears to be the case, the project cannot be built consistent with that negotiated resolution, another means of fulfilling the water rights of the Southern Ute and Ute Mountain Ute Tribes on the Animas and La Plata Rivers must be found. Otherwise, the enforcement of those tribal rights will threaten the established farming operations of families in southern Colorado that depend on those streams. Colorado Governor Roy Romer and Lieutenant Governor Gail Schoettler have initiated a process to explore alternatives to Animas-La Plata.[341] The process includes not only the federal, state, and tribal officials who participated in the original negotiated agreement, but also includes interests that were unrepresented in the negotiating process such as environmentalists and the U.S. Environmental Protection Agency.[342]

Although it surely complicates matters to include more parties as the Animas-La Plata project is reconsidered, their exclusion could undermine the viability of any settlement. Environmental objections based on the ESA and other grounds emerged after Congress had approved the settlement, and they

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a mountain. It would then be released into project works, which would distribute it in the watershed of the La Plata River. *See id.* About 190,000 acre-feet of water would be diverted for irrigation and municipal uses, with a third of the water being delivered to the Ute tribes. *See id.* The project would take 1000 workers and 15 years to complete. *See id.*

The Animas-La Plata Project would cost more than $700 million to build; federal taxpayers would pay about $458 million. A recent government study estimates that every dollar spent on the project would produce about $.36 worth of benefits. The cost of delivering water to irrigate land is more than $7000/acre, not including pumping costs. Much of the land to be irrigated is semi-arid. *See A Dam Foolish Investment*, ST. LOUIS POST-DISPATCH, Dec. 5, 1996, at 6B; *see also* Hydrosphere Resource Consultants, Animas-La Plata Alternatives Study 10-11 (Oct. 8, 1995) (unpublished report, on file with author).

Recently a diverse, bipartisan group of environmentalists, tax-reform groups, and consumer advocates formed the Stop Corporate Welfare Coalition. *See 'Corporate Welfare' Is Targeted by Liberal-Conservative Coalition*, CHI. TRIB., Jan. 29, 1997, at 8. The group has been lobbying Congress to curtail wasteful spending. The group included the Animas-La Plata Project in its "Terrible Twelve" group and has called for its elimination from the budget. *See id.*

341. *See* Ed Marston, *Cease-fire Called on Animas-La Plata Front*, HIGH COUNTRY NEWS, Nov. 11, 1996, at 1.

342. *See id.*

eventually led to the present need to reconsider the project.[343] Some of these problems might have been foreseen and avoided had fish and wildlife advocates and other interests participated in the negotiation process. If these interests are not represented now, as parties return to the table, they may upset a negotiated solution later. By contrast, almost any package that is presented to Congress with broad acceptance by diverse constituencies will be more favorably received.[344]

Before Congress approved the settlement, it altered the terms of the agreement. When the parties—two tribes, the state, and the federal agencies—presented their negotiated settlement to Congress in 1987, the MWD and other non-parties opposed it. Congress responded by unilaterally changing a provision regarding off-reservation water transfers.[345]

One option for fulfilling tribal rights in a new agreement might be to provide tribes with physical facilities and legal authority to market their water off their reservations and possibly out of state.[346] Perhaps basin-wide interests should join in deliberations on how to address the claims of the two Ute tribes in Colorado, thereby forestalling legal and political challenges to any off-reservation marketing that is included in a new settlement.

In crafting options for resolution of the Colorado Ute claims, it may further help to draw on the recent experiences of others in the Colorado River basin. For instance, by reconfiguring the Central Utah Project ("CUP"), Utah, the federal government, local water users, and diverse interests concerned with recreation, fish,

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343. *See* Steve Hinchman, *Animas-La Plata: The Last Big Dam in the West*, HIGH COUNTRY NEWS, Mar. 22, 1993, at 1; *see also* Adrian N. Hansen, *The Endangered Species Act and Extinction of Reserved Indian Water Rights on the San Juan River*, 37 ARIZ. L. REV. 1305, 1327-28 (1995).

344. In the 10 years since it authorized the project, Congress has appropriated only about $20 million toward the $710 million construction cost. President Clinton has included $6 million in his FY 1998 budget for the project. *See* Adriel Bettelheim, *Interior Asks for 6.6% Budget Hike*, DENV. POST, Feb. 7, 1997, at A16; Marston, *supra* note 341.

345. Settlement agreement as modified, Colorado Ute Indian Water Rights Settlement Act of 1988, Pub. L. No. 100-585, 102 Stat. 2973 (1988). For House debate, see 134 CONG. REC. H27,878 (1988). For Senate debate, see 134 CONG. REC. S30,998 (1988). For MWD's opposition, see *Utes, California Clash on Water-Project Plans*, ROCKY MTN. NEWS, Aug. 23, 1987, at 6B. For a discussion of the lower basin states' opposition to the original settlement agreement, see Warren J. Abbott, *California Colorado River Issues*, 19 PAC. L.J. 1391, 1427 (1988).

346. *See* Hydrosphere Resource Consultants, *supra* note 340, at 14-15.

and wildlife developed a complex solution to a multiplicity of problems.[347] The CUP had become cumbersome, expensive, and ill-suited to emerging municipal demands and changing standards of efficiency.[348] Moreover, tribal rights were virtually ignored in its development.[349] Future funding to complete the project grew increasingly tenuous, casting doubt on whether the nation could keep faith with its commitments to the tribe.

Then the Central Utah Completion Act was passed, based on locally developed, federally approved solutions. It revamped the project plans, establishing an extensive agricultural water conservation program,[350] a program to protect minimum stream flows,[351] and measures to mitigate environmental problems.[352] Further provisions for settling the Ute Tribe's water rights allow the tribe to market some of its water off-reservation using Bureau of Reclamation facilities to transport its water to cities.[353]

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347. *See* Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, 106 Stat. 4669 (1992), amending Colorado River Storage Project Act, 43 U.S.C. §§ 620(a)-(o) (1996).

348. *See* WATERS OF ZION: THE POLITICS OF WATER IN UTAH 67-68 (Daniel C. McCool ed., 1995).

349. *See* Getches, *supra* note 1, at 440-41.

350. The Central Utah Completion Act was passed as part of the Reclamation Projects Authorization and Adjustment Act on Oct 30, 1992. *See* Pub. L. No. 102-575, Tits. II-VI, 106 Stat. 4600 (1992). The Act mandates that Wasatch County conserve 5000 acre-feet of water. *Id.* § 206(b). This is implemented under the Wasatch County Water Efficiency Study Preliminary Planning Report. James M. Montgomery, Consulting Engineers, Inc., Wasatch County Water Efficiency Study Preliminary Planning Report (1993) (on file with author). The study proposes measures that could conserve 50,000 acre-feet per year by conversion from flood irrigation to sprinklers with conserved water dedicated to environmental purposes such as stream flows and wetlands. *Id.* at 2-7. Municipal and industrial users will also be able to extend their water supply through conservation measures and to forestall construction of new treatment facilities by utilizing water exchanges. *See id.* at 3-28, 3-34 to -36.

351. *See* Pub. L. No. 102-575 § 303, 106 Stat. at 4632-35.

352. The Act established a Utah Mitigation and Conservation Commission and a financial account for its use for a comprehensive, integrated program to address the environmental effects of Bureau of Reclamation projects in Utah. The fund receives contributions from several sources including the federal government, hydropower revenues from the Colorado River Storage Project, the state, and water users. *See* §§ 301, 401, 106 Stat. at 4625-32, 4648-50. The Wasatch County Water Efficiency Study, *supra* note 350, also allows for restoration of dewatered streams and associated riparian areas, and for reestablishment of thousands of acres of wetlands.

353. *See* Pub. L. No. 102-575, § 503, 106 Stat. at 4652-53 (1992). Water marketed off the reservation is subject to Utah state water laws, and sales to lower basin states require agreement of all seven parties to the Colorado River Compact.

Now, the CUP is moving ahead and a major Indian water rights settlement has been achieved in Utah because innovative solutions were found. The interests who were excluded from the original project planning subsequently participated in reconfiguring the project so that it would be more efficient and environmentally beneficial. When the details of the project and the Indian settlement were negotiated, the package had a broad coalition of support.[354] Although the CUP process was neither carefully premeditated nor particularly smooth in its execution, it suggests elements of an approach that could be useful as the Animas-La Plata Project is reconsidered.

b. Operating Criteria

The rules for operating the reservoirs that control all of the waters of the Colorado River, known as criteria for the coordinated long-range operation of the Colorado River reservoir system, were adopted in 1970,[355] as required by the Colorado River Basin Project Act of 1968.[356] These criteria, in turn, require annual operating plans for the projects in the system.[357] Substantial revision of either the long-range operating criteria ("LROC") or the annual plans has never occurred, and public participation in reviewing them has been limited.[358] Basin states, which have been systematically consulted on both LROC and annual operating plans, prefer not to open them to change.[359] Although in recent years the public review process has expanded, few interests other than the states have attempted to use periodic promulgation of these criteria as opportunities to influence Colorado River policy.[360]

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354. *See* WATERS OF ZION: THE POLITICS OF WATER IN UTAH, *supra* note 348, at 66, 181-86.

355. 35 Fed. Reg. 8951 (1970).

356. 43 U.S.C. § 1552 (1968).

357. *See id.* § 1552(b).

358. *See* Review of Existing Coordinated Long-Range Operating Criteria for Colorado River Reservoirs, 61 Fed. Reg. 56,246 (1996).

359. *See id.*; *see also Public Hearings Yield No Support for Change in Long-Term Criteria for Operation of Colorado River Reservoirs*, WATER INTELLIGENCE MONTHLY, Dec. 1996, at 2 [hereinafter *Public Hearings Yield No Support*].

360. In connection with the latest review of operating criteria, two public meetings were held. However, few people attended. *See Public Hearings Yield No Support*, *supra* note 359. It is not surprising that the public does not view the operating criteria as a vehicle for producing changes in the way that the river is

Federal law provides that the proposed LROC are to be submitted to the seven basin states' governors "and to such other parties and agencies as the Secretary may deem appropriate for their review and comment."[361] Modifications of the LROC can be made from time to time, with review initiated by the Secretary every five years following this process.[362] The Secretary also must give annual reports to the governors and Congress.[363] Beyond this, however, there is no prescribed process for public input. Less consultation could be challenged as unlawful; more is not mandated but seems well within the scope of the Secretary's discretion.

Although they have strict numerical requirements for quantities of water to be released, the LROC have provided little guidance on coordinated management. The LROC's explicit requirements and guidance for reservoir releases reflect the singular policy objective of ensuring the delivery of water from the upper basin to the lower basin consistent with the law of the river.[364] The LROC leave the details to annual plans of operation. According to the LROC, it is in the annual plans that uses like "flood control, river regulation, beneficial consumptive uses, power production, water quality control, recreation, enhancement of fish and wildlife, and other environmental factors are to be considered."[365] But the annual plans have given little systemwide attention to these factors. The Secretary could expand the coverage of both the LROC and the annual plans, and could enlarge the discussion of proposed modifications.

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operated. The notice of the meetings said: "Previous reviews of these Criteria were initiated in 1975, 1980, 1985, and 1990. They resulted in no changes to the operating criteria." 61 Fed. Reg. 56246 (1996).

361. 43 U.S.C. § 1552(b).

362. *See id.*; Review of Existing Coordinated Long-Range Operating Criteria for Colorado River Reservoirs, 61 Fed. Reg. 56,246 (1996).

363. *See* 43 U.S.C. § 1552(b).

364. Even this could be done more effectively and compatibly with the law of the river. The LROC actually limit the flexibility inherent in a compact that allows averaging of deliveries over a moving, ten-year window of time. The LROC, however, establish an objective annual release requirement for most years. This has not operated to the detriment of the upper basin but has the potential to do so in the future under conditions of drought and full utilization of apportionments. *See* MacDonnell & Getches, *supra* note 5, at 22.

Others have suggested modifying the operating criteria to facilitate interstate water marketing. *See* Guy, *supra* note 200, at 45.

365. Operating Criteria and 1997 Annual Plan of Operations for Glen Canyon Dam Part I(2), 62 Fed. Reg. 9447 (1997).

The Glen Canyon EIS process described above is a precedent for structuring a process to develop and modify basin-wide LROC and project-specific plans. The EIS led to the Secretary's acceptance of a new operating regime designed to reduce the adverse impacts of Glen Canyon Dam by changing the frequency and timing of releases.[366] It required sacrificing some of the power-generating capacity of the dam, but allowed for the enhancement of endangered fish habitat and for the improvement of recreational uses of the Colorado River in the Grand Canyon.[367]

The Secretary can properly carry out responsibilities for planning, operating facilities, and allocating water by contract from the Colorado River system only by considering the basin-wide impacts of major changes in how the facilities on the Colorado River are operated. There are wide-ranging and sometimes conflicting public values that must be served by the projects in the system. In addition, the public demands a balanced fulfillment of those values. Thus, it is surely advisable to plan and set LROC with the benefit of full public participation by affected interests and relevant areas of expertise. Operating criteria for Colorado River basin projects potentially affect every aspect of the environment and economy in the basin. Thus, the LROC should be expanded beyond their primary concern with allocation issues. As regulations, they would be a fitting subject for negotiated rulemaking. Their implementation should be monitored and modified with input from a representative group employing adaptive management principles.

c. Surplus Water

The Bureau of Reclamation's regulations should address more definitively whether and when "surplus water" can be released from Glen Canyon Dam for the use of the lower basin states. A declaration of a surplus condition under the Colorado River Basin Project Act allows the Bureau to allocate water to the lower basin states in excess of 7.5 million acre-feet in a single year.[368] This is especially important to California because its

366. *See supra* note 144 and accompanying text.

367. *See* GLEN CANYON DAM FINAL STATEMENT, *supra* note 141, at 61-63.

368. *See* 43 U.S.C. § 1552 (1994). The LROC adopted under this act provide for a minimum objective release of 8.23 million acre-feet. *See* Operating Criteria and Annual Plan of Operations for Glen Canyon Dam Part II, 62 Fed. Reg. 9447 (1997).

present water demands exceed its nominal apportionment of 4.4 million acre-feet. In fact, the Secretary has contracts with water users in California amounting to 5.362 million acre-feet of water per year.[369] California's excessive water use presented no problem when Arizona and Nevada used less than their annual apportioned shares. Beginning in 1991, however, the lower basin states' total demand for Colorado River water was first anticipated to exceed 7.5 million acre-feet:[370] Arizona was expected to take more water upon completion of the CAP, and Nevada was growing and taking more of its entitlement. Initially, California's excess demands, which pushed lower basin usage over the lower basin allocation, were accommodated with an arrangement that assumed California was "borrowing" water that it would pay back later.[371]

For 1996, however, the Bureau of Reclamation officially declared a surplus, allowing California to take 5.2 million acre-feet, well over its entitlement of 4.4 million acre-feet.[372] The surplus is technically shared by the three lower basin states.[373] Thus, California used Arizona's and Nevada's portions of the

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This includes the 7.5 million acre-feet of average annual delivery to which the lower basin is entitled at Lee Ferry, plus .75 million acre-feet, which is one-half of the annual U.S. obligation to deliver 1.5 million acre-feet to Mexico, minus the 20,000 acre-feet that naturally flow into the river above Lee Ferry from the Paria River. The Secretary, if certain requirements are met, may release additional "surplus" water from the upper basin to the lower basin and from Lake Mead to the lower basin states for their use. First, the Secretary considers whether there is water in storage in the upper basin greater than the quantity considered "necessary" under the annual operating plan. If there is, releases can be made in excess of the 8.23 million acre-feet for lower basin uses, to equalize storage in Lake Mead (behind Hoover Dam) and Lake Powell (behind Glen Canyon Dam), or to avoid spills from Lake Powell. The amount "necessary" is determined pursuant to Part II(1) of the Operating Criteria and upon consideration of several historical and predicted hydrologic factors set forth in § 602 (a) of the Colorado River Basin Project Act, 43 U.S.C. § 1552(a) (1994). If greater than normal quantities of water are available, the Secretary can then allocate water from Lake Mead for use in the three lower basin states in excess of their annual allocation. *See* § III(3). This surplus is to be divided among the states according to the formula approved in *Arizona v. California*, 376 U.S. 340, 342 (1964) (California, 50%; Arizona, 46%; Nevada, 4%).

369. *See* ARTHUR L. LITTLEWORTH & ERIC L. GARNER, CALIFORNIA WATER 290 (1995). These contracts have meaning when and if other contractors do not use their full amount, when California uses water that is apportioned to but unused by other lower basin states, and when surplus water is released for the lower basin.

370. *See supra* notes 211-12 and accompanying text.

371. *See* Letter from Wayne E. Cook, *supra* note 212, at 2.

372. *See Reclamation Increases Water Available to Lower Colorado Basin States*, WATER INTELLIGENCE MONTHLY, Sept. 1996, at 2-3.

373. *See Arizona*, 376 U.S. at 342.

surplus as well as the unused basic entitlements of those two states.

It is clear that parties beyond the three lower basin states have an interest in the surplus water issue. The upper basin states are potentially affected by the circumstances and terms of additional releases of stored water by the Bureau of Reclamation. Every release beyond required deliveries and flood control requirements potentially removes water from Lake Powell that otherwise would be available to fulfill the upper basin's required delivery to the lower basin of 7.5 million acre-feet in future years.[374] Under a liberal policy of surplus releases, the upper basin states could negotiate a system of payments to the upper basin states from the benefiting lower basin states. These payments would be justified as consideration for the upper basin states' giving up a measure of "insurance" in the form of stored water that is available to meet their future Compact delivery obligations to the lower basin. Furthermore, the Bureau of Reclamation could condition surplus releases on the lower basin beneficiaries' mitigating problems created by their past and future use and development of Colorado River water, problems like degraded fish habitat and salinity that pervade the lower Colorado River basin. Mitigation could be effected by specific projects or by payments into a fund or trust established for that purpose.

In addition, recreational interests, hydropower customers, environmental groups, scientists, and the tribes all have a stake in the release of surplus water. Environmentalists, for instance, may want to ensure that a share of any actual surplus is dedicated to protection and enhancement of natural systems. The Bureau of Reclamation should involve all interested parties in developing the surplus regulations.

3. Unite Approaches to Endangered Species Protection

Two major efforts to deal with endangered species protection in the Colorado River basin are described above.[375] The upper

374. Indeed, the upper basin states have expressed their concerns with the 1996 surplus releases. *See Reclamation Increases Water Available to Lower Colorado Basin States*, *supra* note 372, at 2-3.

375. *See supra* Part II.B.

basin recovery implementation program has accumulated almost ten years' experience. It was one of the first efforts in the country to convene federal and state agencies, water users, and conservation groups in planning and implementing such a program. The lower basin program is in the formative stages. It is among a new wave of negotiated responses to the requirements of the ESA.[376] The lower basin multi-species program seeks to avoid future listing of species that may be affected by future development.[377] In addition, two separate implementation programs address the endangered fish of the San Juan River (a tributary to the Colorado) and the Grand Canyon.[378]

Federal responsibility for recovery of endangered fish in the Colorado River basin is widely dispersed. Programs, or parts of programs, are under the jurisdiction of two regional offices of the Service and two regional offices of the Bureau of Reclamation.[379] Some of the programs also involve participation by the Bureau of Land Management, the Bureau of Indian Affairs, and the National Park Service.[380] Although they deal with habitats for some of the same species, the programs are uncoordinated. The fragmentation of responsibility for protecting related species and habitats is not in the best interests of the fish, and it creates inconsistent requirements for agencies and water users.[381] Indeed, the two regional offices of the Service define "recovery" differently for the same species in different parts of the Colorado River basin.[382]

Each of the seven basin states is involved in at least one of the four endangered species programs, but no state is involved in all of them. Recovery efforts also affect several Indian tribes.

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376. *See* Albert L. Lin, *Participants' Experience with Habitat Conservation Plans and Suggestions for Streamlining the Process*, 23 ECOLOGY L.Q. 369, 372 (1996) (noting that while only 39 habitat conservation plans ("HCPs") were approved between 1982 and 1994, 45 HCPs were approved between January and September 1995).

377. The participants in the lower basin states' partnership signed an MOA, which specified a three-year period for the development of a multi-species conservation program ("MSCP"). The MOA assured the participants that the Service and the Bureau of Reclamation would work with the states through the MSCP process to meet the requirements of the ESA. *See supra* text accompanying note 298.

378. *See* Wigington & Pontius, *supra* note 277, at 58-61, 66.

379. *See id.* at 44.

380. *See id.* at 61, 64-65.

381. *See id.* at 67.

382. *See id.*

The San Juan program, which deals with habitat just upstream of Lake Powell, has pitted the interests of the Navajo Tribe against those of the Southern Ute and Ute Mountain Ute Tribes.[383] These governments need a process for orderly, coordinated consideration of integrated efforts to recover the same species.

The four programs to promote recovery of the Colorado River's endangered fish species should be linked. A recent report criticizes the "compartmentalized" approach taken to recovery of the Colorado River's listed, big-river fishes and recommends that there be true range-wide recovery planning for endangered fish species.[384] The report concludes that "[l]eaving such range-wide planning unattended invites overlap or . . . counter-productive competition between these programs."[385] Addressing this criticism seems both sensible and necessary if recovery efforts are to comply effectively with the ESA.

A coordinating entity, formal or informal, should be established to provide regular exchanges among all the Colorado River endangered fish programs and to pursue linkages among related plans. While each species' recovery plan would continue to be separately implemented, planning and design of the programs could be coordinated to achieve maximum effectiveness. From the start, the incipient lower basin multi-species program should consider fully the habitat needs of the species with which it deals and consider proposing a coordinating mechanism. In the course of periodic updating and revision, the programs need to account for their interrelationships with one another and for their respective implementation of plans. Ultimately, all the implementation programs could share some common staff and funding to help them better pursue a comprehensive approach.

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383. *See Water Problems Facing the Lower Colorado River Area: Hearings Before the Subcomm. on Water and Power of the Senate Comm. on Energy and Nat. Resources*, 104th Cong. 166 (1994) (testimony of George Arthur, President of the Colorado River Basin Tribes Partnership); Michael Haederle, *Threat to Fish May Put New Mexico Irrigation Project in Hot Water Environment: Dispute Has Drawn in Federal Agencies, Indian Tribes, and Environmentalists*, L.A. TIMES, May 25, 1991, at A21.

384. *See* Wigington & Pontius, *supra* note 277, at 67-68.

385. *Id.* at 68.

4. A Colorado River Science and Data Center

If multiple and diverse economic and ecological goals are to be attained, management decisions in the Colorado River basin must be based on the best available knowledge. A Colorado River Science and Data Center (the "Center") could publish annual statistics for all decisionmakers and serve as a single repository for data. Colorado River issues could be referred to the Center if it were an independent science entity, with a permanent staff of scientists and technicians. The Center could coordinate the work of a peer review board or a network of experts in considering the design of proposed studies and the integrity of reports. For instance, if it were necessary to decide on a method of calculating seepage return flows to the Colorado River in order to determine consumptive uses, the Center could convene a panel to develop the necessary information and resolve the relevant scientific questions.

The framework for the Center could be developed by a blue ribbon committee of scientific experts from federal and state government agencies, environmental organizations, and private industry. It could seek to have the many entities that now hold and manage data, studies, and computer programs turn them over to the Center or pool those resources in a clearinghouse arrangement.[386] All of these data, as well as ongoing studies, could be well-managed under the U.S. Geological Survey, an agency respected for its objectivity and scientific rigor: its mission has been expanded recently, by creation of the National Biological Service, to include all of the natural sciences.[387]

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386. Federal sources potentially include data collected by Bureau of Reclamation, some in the Denver Headquarters office, some in the upper and lower basin regional offices; data and information developed by the Glen Canyon Environmental Studies and EIS process; studies and data on fish habitat and related information produced and maintained by the Service in connection with the upper basin endangered fish recovery program; and data and studies related to salinity problems and control measures that are kept by the Bureau of Reclamation and the Department of Agriculture's Natural Resources Conservation Service. The Bureau of Reclamation also manages a computer program that simulates the river system, using it to analyze effects of varied flows, diversions, and conditions. The program could benefit from updating and inclusion of additional parameters, a project that could be properly undertaken by the proposed center.

Each of the states also has data, information, and computer models that could be shared with a trusted central repository. Similarly, data and studies developed by universities, institutes, states, tribes, and other interests could be assembled.

387. *See* Balanced Budget Downpayment Act, Pub. L. No. 104-99, § 123, 110

The Department of the Interior has already established a Grand Canyon Monitoring and Research Center to furnish scientific and technical information to the Group established pursuant to the Glen Canyon EIS.[388] It is also responsible for monitoring and research programs under the Grand Canyon Protection Act.[389] The Grand Canyon Center could be expanded to address the broader mission of the Center recommended here.

5. Study Transfer of Federal Facilities

Numerous commentators have called for the defederalization of federal water and power facilities in the West.[390] Of course, this would require legislation. In recent years, although no proposals have been passed, Congress has taken up several issues regarding the sale of federal power facilities.[391]

In 1985, Congress considered raising prevailing below-market rates for the power facilities to increase revenues for the benefit of the treasury and to reduce the national budget deficit.[392] The Western Governors' Association then published a

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Stat. 26, 32-33 (1996).

388. *See* Office of the Assistant Secretary for Water and Science, U.S. Dep't of the Interior, Guidelines for the Grand Canyon Monitoring and Research Center 1 (1996) [hereinafter Guidelines] (on file with author). For discussion concerning the Adaptive Management Work Group, see *supra* notes 147-48 and accompanying text.

389. *See* Guidelines, *supra* note 388, at 1-2.

390. *See Transfer of Reclamation Facilities: Hearings Before the Subcomm. on Water and Power Resources of the House Comm. on Resources*, 104th Cong. (1995) (statements of Roger Patterson, Regional Director of the Mid-Pacific Region, Bureau of Reclamation, Department of the Interior, and Scott L. Campbell); *see also Reclamation Facilities Transfer Act: Hearing on S. 620 Before the Subcomm. on Forests and Pub. Land Management of the Senate Comm. on Energy and Nat. Resources*, 104th Cong. 6-8 (1995) (statement of Daniel P. Beard, Commissioner, Bureau of Reclamation, Department of the Interior); *Taking over the CVP*, SACRAMENTO BEE, Aug. 14, 1995, at B6.

391. *See* Federal Power Administration Privatization Act of 1995, H.R. 310, 104th Cong. (1995); Power Marketing Administration Privatization and Reform Act of 1996, H.R. 3878, 104th Cong. (1996); Reclamation Facilities Transfer Act, S. 620, H.R. 1232, 104th Cong. (1995).

For a general discussion of privatization issues surrounding federal power facilities, see the testimony in *Power Marketing Administrations Transfer: Oversight Hearing Before the Subcomm. on Water and Power Resources of the House Comm. on Resources*, 104th Cong. 56-58 (1995) (statement of Bruce C. Driver, Special Counsel to the Land and Water Fund of the Rockies).

392. *See Defending OMB's Plan to Quicken and Increase PMA Payments*, INSIDE ENERGY/WITH FEDERAL LANDS, Mar. 11, 1985, at 6b, *available in* LEXIS, News Library, Inenergy File.

report considering a basin council for the Colorado River that would manage water and power resources, including power generation.[393] If power rates were raised, the benefit of the increased revenues could be kept and used in the basin. The proposed basin council then would perform strategic resource planning; examine economic, social, and environmental issues; and finance water-related needs in the Colorado River basin with power revenues.[394] The idea of a basin council was inspired by the Northwest Power Planning Council in the Columbia River basin and, like that council, its activities would be funded by power revenues.[395]

More recently, the Clinton Administration and some members of Congress have proposed transferring ownership of federal water and power facilities to private or local interests.[396] Motives for transferring their ownership include promoting the efficient operation of federal water and power facilities, capturing the value of federal investments in these projects to reduce the deficit, and furthering ideologies opposed to federal ownership of property. The federal government could reduce current budget deficits with the proceeds from the sale of water and power facilities, and also eliminate the annual expenditures that subsidize them. In addition, new streams of tax revenue would be created if facilities were transferred to taxable private entities.[397] Proponents of transferred ownership or defederalization also argue as a matter of principle that the

393. *See* LEE & CLARK, *supra* note 16, at 25-26.

394. *See id.*

395. *See id.* at 26-27.

396. This was proposed as a part of the National Performance Review under Vice President Gore, a program that has led to substantial downsizing of government. VICE PRESIDENT AL GORE, THE BEST KEPT SECRETS IN GOVERNMENT: A REPORT TO PRESIDENT BILL CLINTON (1996). As part of the review, the Administration considered a program of transferring title, operation, and maintenance responsibilities for federal Bureau of Reclamation facilities. *See, e.g., Hearings on S. 620 Before the Subcomm. on Forests and Public Land Management of the Senate Comm. on Energy and Nat. Resources*, 104th Cong. (1995) (testimony of Daniel P. Beard, Commissioner, Bureau of Reclamation, Department of the Interior). The Reclamation Facilities Transfer Act, S. 620, H.R. 1232, 104th Cong. (1995) was introduced in Congress, but it did not pass.

397. *See, e.g.*, U.S. GENERAL ACCOUNTING OFFICE, POWER MARKETING ADMINISTRATIONS: COST RECOVERY, FINANCING, AND COMPARISON TO NONFEDERAL UTILITIES ch. 0:3 (GAO/AIMD-96-145 1996).

federal government should not be in the business of developing power and water.[398]

Critics of defederalization contend that the sale of such facilities on terms that simply recovered the outstanding federal investment would be a windfall for the buyers, and that seeking a one-time gain for the federal treasury would be short-sighted.[399] Opponents also argue that transfers of public assets, such as federal dams into non-federal hands could devastate the environment unless they are accompanied by strict, protective conditions. For example, the unrestrained defederalization of facilities in the Colorado River basin could lead to a return to the practice of maximizing power production and profits by releasing water at widely fluctuating levels that harm the Colorado River's ecosystem.[400]

A major difficulty with defederalization is that many federal water and power projects, especially multi-purpose, multi-state systems like those in the Colorado River basin, typically serve a variety of public concerns, not merely economic concerns with power generation, water storage, and water distribution. The federal government is obliged to recover a portion of the costs of project construction and current operation and maintenance.[401] But it also is required by law to operate the projects to further

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398. The notion that energy production is not an appropriate governmental role has led to privatization of utility systems around the globe. *See Privatizing Federal Functions; A Federal Privatization Agenda, 1995: Hearings Before the Senate Budget Comm.*, 104th Cong. (1995) [hereinafter *Privatizing Federal Functions*] (statement of Robert W. Poole, Jr., President of the Reason Foundation). In 1994, electric utilities worth almost $11 billion were privatized worldwide. *See id.*

399. *See Transfer of Power Marketing Administrations: Hearings Before the Subcomm. on Water and Power Resources of the House Comm. on Resources*, 104th Cong. (1995) (statement of Bruce C. Driver, Special Counsel to the Land and Water Fund of the Rockies); *see also Reclamation Facilities Transfer Act: Hearings on H.R. 1232 Before the Subcomm. on Water and Power Resources of the House Comm. on Resources*, 104th Cong. (1995) [hereinafter *Hearings on H.R. 1232*] (statement of Steven Malloch, Environmental Defense Fund).

Opponents of defederalization argue that it could lead to higher electric rates. One reason why is that government entities, unlike private entities, are exempt from local, state, and federal taxes, and have other advantages such as the ability to borrow at below-market rates from the Treasury and to issue tax-free bonds. Proponents of divestiture respond that the low rates provided by government-run entities lead to inefficient resource use. *See Privatizing Federal Functions*, *supra* note 398 (statement of Robert W. Poole, Jr.).

400. *See Hearings on H.R. 1232*, *supra* note 399 (statement of Steven Malloch).

401. *See, e.g.*, Colorado River Basin Project Act, 43 U.S.C. § 1543(d) (1994); Colorado River Storage Project Act, 43 U.S.C. § 620e (1994); Boulder Canyon Project Act, 43 U.S.C. § 617d (1994).

governmental interests like flood control, navigation, water quality, recreation, and fish and wildlife.[402] Furthermore, the federal government has overarching legal obligations imposed by statutes, treaties, and contracts that can be advanced by proper management of the facilities. These include such governmental functions as mediating interstate relations, honoring commitments to Indian tribes, protecting national heritage resources such as the Grand Canyon, furthering international relations with Mexico, and satisfying national environmental concerns such as the protection of endangered species.[403] For the federal government to relinquish some or all of its control of water and power facilities to non-federal entities, it must have assurance that those national interests will be carried out at least as well as they are now.

The concept of Colorado River basin governance, in which the full range of interests—including national interests—are well-represented, suggests an opportunity for defederalization with governmental functions informed by, and perhaps in some respects assigned to, an entity representing diverse interests and expertise. By including in the rate base the costs of basin governance and the activities and investments of a governing entity, power generation would provide an ample self-financing mechanism. Alternatively, without changing ownership or operation of the facilities, Congress could simply direct that a portion of power revenues be dedicated to a fund to finance operations and projects of the process (or entity) created to undertake shared governance of the Colorado River basin's resources. The fund could be maintained with a small increase in power rates.

Today, the Colorado River power system generates more than $157 million per year.[404] Because it must not charge more than the "cost" of generating power,[405] it sells power to its customers well below market rates.[406] The federal government has a financial interest in recovering the taxpayers' investment in the

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402. *See supra* notes 311-13 and accompanying text.

403. *See supra* Part III.A.3.

404. *See* BUREAU OF RECLAMATION, 25TH ANNUAL REPORT: OPERATION OF THE COLORADO RIVER BASIN 1995 AND PROJECTED OPERATIONS 1996 25 (1996).

405. *See, e.g.*, 43 U.S.C. § 618 (1994) (listing the various costs associated with the project).

406. *See* WESTERN AREA POWER ADMIN., *supra* note 134, at 25, 36; *see also* Bishop, *supra* note 54, at 12.

facilities. Beyond that, the great "cash cow" hydroelectric system in the basin could be operated to provide revenues to support basin governance activities and to carry out obligations for furthering other national interests now assumed by the federal agencies. With appropriate changes in federal law, the revenues could be spent for everything from endangered species recovery and the operation of a water bank to project construction and the resolution of tribal water claims. In a sense, all these expenditures are for "costs" indirectly imposed by the system that generates the power. Thus, using power revenue to compensate for these effects is consistent with economic theory. In addition, power revenues could help finance water conservation measures to help reduce demand for consumptive water uses throughout the Colorado River basin.

There is a further advantage to placing control of the hydropower system in the hands of an entity charged with responsibility for reconciling competing demands for water delivery, wildlife, environmental protection, and other interests. The entity could make decisions about whether, when, and how much power to generate in light of the consequences for all affected interests and the impacts on power revenues. Forgoing generation of power for environmental purposes could be weighed against the loss of revenues that could be used for basin benefits.

A bolder, more comprehensive form of control, emulating true defederalization, could also be considered. A public-private consortium might take control and ownership of the water and power facilities under a trust arrangement, which would require the consortium to use the assets and profits for the long-term stewardship of basin resources on terms that would further the federal government's mandates. For improper or inadequate performance, there would necessarily be enforceable consequences, including the reversion of control and ownership.

C. Convene a Colorado River Basin Coordinating Committee

An attractive option for dealing with the Secretary's Colorado River responsibilities would be to establish a coordinating committee to advise the Secretary. The Secretary could appoint members to a coordinating committee that represented the most important interests in the Colorado River basin. The Glen Canyon EIS process recognized the need for such multi-

faceted representation.[407] Thus, the Adaptive Management Work Group, which is charged with responsibilities specific to Glen Canyon Dam, is an appropriate model for the kinds of interests to include on a basin-wide committee. Those interests should include not only the states and water supply interests, but also representatives of Indian tribal governments, fish and wildlife interests, the ecological sciences, public land managers, local government officials, environmental groups, recreational boaters, and agriculture.[408]

The coordinating committee would be chartered as an "advisory committee" in compliance with the Federal Advisory Committee Act ("FACA").[409] FACA has rigorous requirements that presumably can be satisfied.[410] Indeed, the purpose of FACA would be advanced by such a coordinating committee.[411] Where

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407. *See supra* notes 137-48 and accompanying text.

408. There are, of course, many separate and even conflicting interests within each of these classifications. For instance, recreationists include fishers whose notion of acceptable release patterns differs from that of white-water boaters. Even more problematic is the fact that there are some 33 tribes with reservations in the basin, all of which are independent sovereigns. As a practical matter, a workable committee could not include a representative from each and every tribe, let alone a representative of every type of recreation, and so on. Perhaps tribes with land on the river or its tributaries, and tribes with quantified water rights deserve separate or more heavily weighted representation. Others might be represented by classification (for example, tribes with unquantified rights). Presumably, some of the non-governmental interests could also be successfully grouped.

409. *See* 5 U.S.C. app. 2 § 2 (1994).

410. FACA governs the activities of advisory committees. *See id.* These committees are usually comprised of private citizens who are asked to provide an agency with advice or recommendations. Citizen members may be technical experts or represent diverse political constituencies. Under FACA, advisory committees must hold their meetings in public, subject to the same exemptions that apply to meetings of multi-member agencies under the Sunshine Act. *See id.* FACA resulted in part from a congressional belief that the advisory committees had proliferated excessively and wastefully.

411. Although the FACA has been blamed for impeding current efforts to involve broader representation of the public in federal natural resources management, there are ways to avoid some of the impediments. *See* Dover A. Norris-York, *The Federal Advisory Committee Act: Barrier or Boon to Effective Natural Resource Management?*, 26 ENVTL. L. 419 (1996).

The intent of FACA is to curb the expansion of advisory committees, which tend to increase the influence of powerful, vested interests on federal agencies. Accordingly, it requires that detailed requirements be met in the formation and operation of such committees as safeguards against abuses. President Clinton has further discouraged routine creation of such committees. *See* Exec. Order No. 12,838, 58 Fed. Reg. 8207 (1993), *reprinted in* 5 U.S.C. app. 2 § 14 (1994). Unless the committee is required by statute, the agency head must find that there are "compelling considerations for such a committee," and the Director of the Office of

the task of the committee is to propose policies or decisions that can be embodied in agency rules and regulations, it could be established under the Negotiated Rulemaking Act of 1990.[412] Such tasks could include promulgating operating criteria, annual plans of operation, surplus and shortage definitions, and water marketing regulations.

The several measures recommended in this article could be assigned to the coordinating committee. The Secretary's "side boards," in terms of ultimate objectives, statutory responsibilities, and time deadlines would provide the rules of the game. The coordinating committee could first be given responsibilities for one of the tasks. Later, the Secretary could give it additional responsibilities as it proved its capabilities. For instance, an initial purpose of the committee might be to assist in the preparation of a revised version of the water marketing regulations. If successful, the committee could be assigned the role of developing options for dealing with other urgent issues in the basin. As a means of resolving Indian tribal claims, the coordinating committee could identify, study, and recommend options for dealing with the stalled effort to construct the Animas-La Plata water project. Success in dealing with initial issues would equip and encourage the coordinating committee's participants to tackle other Colorado River issues. A longer range role for the committee would be to monitor and provide feedback for adaptive management under the operating criteria for all projects in the Colorado River system. The committee, or an appropriate subcommittee, could also coordinate the several endangered species recovery plans and could initiate plans for and oversee a Science and Data Center for the basin.

Whether and when to expand the role of the committee would depend on how well it performed, which would be a function of the quality and commitment of its members. If it were

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Management and Budget must find its creation is compelled by national interests. *Id.*

412. 5 U.S.C. §§ 561-70 (1994). Negotiated rulemaking is a process used by federal agencies in which interested parties are convened essentially as an advisory committee to draft proposed regulations. *See generally* Lawrence Susskind and Gerard McMahon, 3 YALE J. ON REG. 133 (1985). The agency publishes the regulations drafted by the committee for public comment in a notice of proposed rulemaking under the Administrative Procedure Act, *see id.* § 553. *See* DAVID M. PRITZKER & DEBORAH S. DALTON, ADMINSTRATIVE CONFERENCE OF THE U.S., NEGOTIATED RULEMAKING SOURCEBOOK 99 (1990).

especially successful in negotiated rulemaking and in dealing with adaptive management under the rules adopted, the committee could become the nucleus for a permanent, independent entity for comprehensive and coordinated governance of the basin's resources.

CONCLUSION

The Secretary of the Interior plays the pivotal role in managing the resources of the Colorado River basin. The law of the river vests the Secretary with responsibility for storing and releasing water to satisfy the demands of seven states and Mexico, and to accomplish a variety of environmental goals and recreational uses. In the process, the Secretary contracts directly with some water users; in other cases, the Secretary contracts with districts who in turn contract with water users. The Secretary generates and markets electrical power, and ensures that there is space in reservoirs to store water for flood control. The Secretary also has legal responsibilities to fulfill the United States' trust relationship with the numerous Indian tribes in the basin, to protect all endangered species, and to preserve the recreational, ecological, and cultural resources of Grand Canyon National Park. Other secretarial responsibilities range from controlling salinity levels in the river to managing data. Many of the secretarial powers were delegated by Congress as part of solutions to dissension among states over basic allocations, part of the "price" of federal public works projects.

The results of management under this regime have been unsatisfactory when measured against standards of economic efficiency, equity, and ecological sustainability. The development and management of the river's resources have been in the hands of a few, with ultimate responsibility falling on the Secretary. Subsidies have led to economically unwise and wasteful decisions. Many parties with a substantial stake in the outcome of decisions have been left out. Indian tribes are notable examples. And the environment has been radically altered as a consequence of damming, diverting, and polluting the Colorado River. It is not surprising that the Secretary's job is controversial. The interests affected by the management of the Colorado River are numerous and diverse. The issues individually are politically charged; collectively they demand extremely difficult choices and trade-offs.

As competition for the basin's resources becomes keener, it is reasonable to expect more of the dissension and rivalry that has marked the history of the Colorado River. Those who are at the table on some issues—primarily state governments—will fight harder for what they believe they need. Those who are not part of the process will use litigation or any political means at their disposal to gain advantage. As a result, uncertainty will reign and resources will continue to suffer. Realizing this, parties who have been consulted in past decisions, as well as those who have not, are beginning to seek consensus on an array of difficult issues.

Several promising initiatives suggest approaches to the basin's problems. They include water marketing, endangered species protection, and operation of Glen Canyon Dam under adaptive management principles. It is the thesis of this article that those experiments can be expanded through the use of broader, more collaborative decisionmaking. If, indeed, that does not occur voluntarily, the Secretary should promote new mechanisms to achieve collaborative governance by sharing his authority and decisionmaking prerogatives.

Especially ripe opportunities for shared governance in the Colorado River basin include drafting new water marketing regulations, defining the circumstances warranting surplus and shortage declarations, revising operating criteria for the coordinated operation of all the major dams in the system, and synthesizing multiple implementation programs to recover endangered species of fish. The Secretary can enhance these and other multi-interest efforts by creating a Science and Data Center to conduct studies and distribute information, and by initiating a study of transferring federal facilities and the use of power revenues to fund such efforts. One means of accomplishing these tasks would be to convene a Colorado River Basin Coordinating Committee, chartered as an advisory committee under the Federal Advisory Committee Act.

This incremental approach to better, more inclusive governance of the Colorado River basin is more realistic than expecting Congress or the various interests to create a new, all-purpose institution according to the best design political science can offer. Processes that accomplish specific tasks successfully could evolve into a new, permanent institution or at least inform the process of designing one. But the primary motive for undertaking the incremental tasks identified in this article is to

address issues that are too serious and urgent to await acceptance of a completely new institution. The issues are also too important to tolerate the plodding efforts of interests that are not committed to a solution, or processes that are narrow in either their scope of issues or in the number of parties at the table. Failing to develop comprehensive solutions will mean more environmental degradation, the risk of abrupt federal interventions under the Endangered Species Act, protracted, costly litigation, and federally imposed solutions that founder because they are lack participation from all the concerned groups.

The Secretary therefore should not hesitate to press the parties to propose solutions and decisions based on comprehensive consideration of all the resources and interests affected. The Secretary's promise to accept the legally justifiable outcome of such a process would encourage reluctant parties. If they do not act based on that incentive, the Secretary should convene them under his existing authority. Regardless of how it is convened, the reward for a successful process will be long term results that are more efficient, equitable, and ecologically sustainable.