MAPPING THE HUMAN RIGHT TO WATER ON THE COLORADO RIVER

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Colorado River systems–both ecological and legal–are facing a coming crisis. The river snakes its way from the Rocky Mountain crest to the Gulf of California, draining 245,000 square miles encompassing parts of seven of the United States ("U.S.") and two Mexican states. The river and its tributaries provide drinking water for growing population of thirty million in an even larger area because some of its water is diverted to serve out-of-basin demands in both the U.S. and Mexico.[1] Aside from bringing life-sustaining water to people for personal use, it provides irrigation water for some of the most valuable agricultural lands in the world. Dams on the river system generate enough power to supply the partial needs of some nine to twelve million people.[2] Quite simply, the Colorado River is the lifeline of the region, both literally and economically.

It is increasingly clear that the Colorado River is not likely to sustainably provide enough water to satisfy all of the uses demanded of it under the legal regime currently allocating its water. Already, its natural systems have been severely degraded by the manipulation of

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1. Transfers of water to other watersheds extend from the headwaters of the Colorado nearly to its mouth in Mexico. At the top of the basin, water is diverted across the continental divide in Colorado to serve users in Denver, Fort Collins, and elsewhere along the eastern front of the Rocky Mountains. Further downstream, additional water is moved out of the basin to serve Salt Lake City and central Utah, Albuquerque and other parts of New Mexico along the Rio Grande, southern California population centers from Ventura to San Diego, productive California agricultural regions, including the Imperial Valley, and the Mexican cities Tijuana and Mexicali and proximate agricultural lands. *See generally* U.S. DEP'T OF INTERIOR, BUREAU OF RECLAMATION, FINAL ENVTL. IMPACT STATEMENT – COLO. RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAN, ES – 4 (2007) [hereinafter FEIS–INTERIM GUIDELINES].

2. The Colo. River power plants generate 12,197,000,000 kilowatt hours (kWh) of electricity annually. COLO. RIVER WATER USERS ASS'N, http://www.crwua.org/Colorado River/RiverUses/Power.aspx (last visited May 9, 2011).

water by an extensive network of dams and diversions.[3] Research in recent years has demonstrated that the river historically has produced considerably less water than is presently allocated under the "Law of the River," including, most notably, the Colorado River Compact of 1922 and the 1944 treaty between the U.S. and Mexico.[4] Well-founded predictions of the impacts of climate change on the Colorado River basin draw an even gloomier picture. The predictions suggest that average flows on the river will continue to decline even as droughts become more frequent, and that declines in runoff will result in amplified reduction of water stored in dams on the system.[5] At the same time, a growing population will likely demand more water from the over allocated system.[6] All this leads to the inescapable conclusion that the Colorado River's water budget is broken.[7]

The purpose of this paper is to consider the allocation of water in the Colorado River basin from a human rights perspective and to assess the human rights implications of the most significant fault lines in the coming crisis. Just as the basin-wide conditions on the Colorado River are evolving and the Law of the River is evolving in reaction, so is the notion of a human right to water in international human rights law. This paper attempts to take stock of where these two issues might intersect. To do this, Part I will provide a summary overview of the Law of the River, a complex and evolving set of legal rules derived from interstate compacts, Supreme Court decrees, administrative decisions, and other sources. This overview will show that a legal system that was based on overly optimistic understandings about the availability of water continues to bend, and may eventually break, as climate change lays bare the mistaken assumptions of its

3. *See generally* ROBERT W. ADLER, RESTORING COLO. RIVER ECOSYSTEMS: A TROUBLED SENSE OF IMMENSITY (2007).

4. Stream gauge data that served as the basis for the American states'1922 river water allocation reflected one of the wettest periods of the twentieth century. NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES, COLO. RIVER BASIN WATER MANAGEMENT: EVALUATING AND ADJUSTING TO HYDROCLIMATIC VARIABILITY 1 [hereinafter COLORADO. RIVER BASIN WATER MANAGEMENT]. Historical tree ring records over the past several hundred years indicate that the river has been subject to long periods of drought and that the long term average flow of the river is less than the amount of consumptive use presently allocated. *Id.* at 110.

5. *See, e.g.*, RETHINKING THE FUTURE OF THE COLORADO RIVER: DRAFT INTERIM REPORT OF THE COLORADO RIVER GOVERNANCE INITIATIVE, app. B at 70–73 (2010) [hereinafter RETHINKING THE FUTURE OF THE COLORADO RIVER] (summarizing recent research on the effects of climate change).

6. *Id.* at 59–60.

7. *Id.* at 3.

foundation. Part II will then identify four fissures already roiling the Law of the River and discuss the issues they present relating to the human right to water.

I. THE LAW OF THE RIVER

The allocation of water in the Colorado River basin is governed by a unique and complex legal regime. Like many legal regimes governing the allocation of natural resources, the Law of the River, as it is known, arose over the past century in response to various crises and developments that each posed some new challenge to individuals and states whose future depended on water from the river. The predictable result is a legal regime that is at once layered with complexity, as reflective as it is determinative of power, and infused with historical concern for vested rights. To date it has been resilient, resisting change yet somehow adapting just enough to prevent utter collapse under the strain of ever more powerful challenges.

A. The Colorado River Compact

The Colorado River Compact[8] and its implementing legislation[9] form the backbone of the Law of the River. The Compact, which was negotiated among the seven U.S. states in 1922, divides the river into Upper and Lower Basins and allocates to each 7.5 million acre-feet (m.a.f.) consumptive use per year in perpetuity.[10] The Compact effectuates the allocation by requiring the Upper Basin to let flow to the lower basin an average of 7.5 m.a.f. per year at Lee Ferry, Arizona, a spot just upstream of the Grand Canyon that is the arbitrary dividing line between the basins.[11] The Lower Basin is allocated an additional one m.a.f. per year, but there is no requirement for the Upper Basin states to deliver water in excess of the 7.5 m.a.f. per year average.[12] Although the U.S. had not yet recognized any legal obligation to deliver water to Mexico, the Colorado River basin

8. Colo. River Compact of 1922, 70 CONG. REC. 324 (1928).

9. Boulder Canyon Project Act of 1928, Pub. L. No. 642, 45 Stat. 1057 (1928) (partially codified as amended at 43 U.S.C. §§ 617–617(t) (1994)).

10. Colo. River Compact, art. II(c), (d), (f), (g), and art. III(a). The Upper Basin states are Colo., Utah, Wyo. and N.M. (though a small portion of its allocation drains into the Lower Basin). The Lower Basin states are Cal., Nev., and Ariz. (though a small portion of the state lies in the Upper Basin).

11. *Id.* at art. III(d).

12. *Id.* at art. III(b).

states recognized that Mexico would likely have some entitlement. The states agreed that any Mexican share that could not be satisfied by waters in surplus of those allocated under the Compact would be satisfied by equal reductions in the Upper and Lower Basin allocations.[13]

The Compact does not specifically allocate water among the individual states, focusing solely on dividing water between the Upper and Lower Basins. Congress effectively allocated water among the Lower Basin states by means of the Boulder Canyon Project Act of 1928, which conditionally approved the Compact, authorized the construction of Boulder Dam, and empowered the Secretary of the Interior to enter into contracts for the delivery if its impounded water. The Supreme Court later held, in *Arizona v. California*,[14] that California was entitled to 4.4 m.a.f., Arizona 2.8 m.a.f., and Nevada 300,000 acre-feet of water annually, with California also having an entitlement to half of any water in excess of 7.5 m.a.f. in the Colorado at Lee Ferry.[15] The Upper Basin states entered into a separate compact in 1948, allocating approximately 3.9 m.a.f. to Colorado, one m.a.f. to Wyoming, 1.7 m.a.f. to Utah, and 850,000 acre-feet to New Mexico, as well as 50,000 acre feet to Arizona.[16]

The Colorado River Compact was the direct result of the Supreme Court's announcement in 1922 that it would apply the principles of prior appropriation to the equitable apportionment of water among Western states.[17] Along the Colorado River, the biggest early users of water were at the bottom of the basin.[18] California farmers in the Imperial Valley had been irrigating with Colorado River water, which was delivered through a canal that diverted river water in California but dipped into Mexico before delivery to the farmers. When the farmers proposed an "all-American" canal and sought federal funds to build itm along with Boulder Dam and its massive reservoir, sparsely developed Upper Basin states balked.

13. *Id.* at art. III(c).

14. 373 U.S. 546, 579 (1963).

15. *Id.* at 565, 584.

16. Upper Colo. River Basin Compact, art. III(a), 47 Stat 34, 35 (1949). Except for Arizona's allocation, the compact expressed these allocations as percentages of available water.

17. Wyoming v. Colorado, 259 U.S. 419 (1922).

18. NORRIS HUNDLEY, JR., THE GREAT THIRST: CALIFORNIANS AND WATER: A HISTORY, 212–13 (rev. ed. 2001).

Such a canal would likely enable even greater water use in California, which under the rule of "first in time, first in right," would potentially foreclose future water development upstream. The Compact, with its ostensible reservation of then (and still) unused water for the benefit of Upper Basin states, was the price of early 20th century development in California.

B. Other Statutes and Administrative Mechanisms

The allocations made by the Colorado River Compact, of course, are made only on paper. The Compact does not put water in people's faucets or farmers' fields. Indeed there are few fields or faucets geographically proximate to the Colorado River, which runs mostly through remote desert areas. Making use of Colorado River water, as with many rivers in the west, requires infrastructure–dams, reservoirs, canals, hydroelectric facilities, and pipelines. The law authorizing and governing the operation of this infrastructure constitutes much of the "Law of the River."

Understanding the pervasiveness of the law of administration of the Colorado River requires an overview of the architecture along the river. So extensive an architecture is it that Philip Fradkin famously concluded the Colorado is "a river no more,"[19] but rather an extensively managed system of built and natural conveyance channels. The twin centerpieces of that architecture are Glen Canyon Dam/Lake Powell, located at the bottom of the Upper Basin, and Boulder Dam (now Hoover Dam)/Lake Mead (at the top of the Lower Basin), with a combined storage capacity of more than fifty m.a.f. Hoover Dam, authorized by the Boulder Canyon Project Act, by which Congress also endorsed the Colorado River Compact, enables the storage and delivery of water to users in the Lower Basin. Water flowing from the Upper Basin is stored first in Lake Mead before it is delivered to users in Nevada (primarily by pipelines), Arizona (primarily through the Central Arizona Project), and California (chiefly by means of the Colorado River aqueduct and All-American Canal). Glen Canyon Dam, authorized in 1956 by the Colorado River Storage Project Act, sits just fifteen miles upriver of Lee Ferry. Its chief function, as a matter of plumbing, is to store water to allow the Upper Basin to meet its Compact delivery obligations to the Lower

19. Philip L. Fradkin, A RIVER NO MORE: THE COLO. RIVER AND THE WEST (1996).

Basin without having to curtail Upper Basin uses during dry spells.[20] There are other facilities along the main stem of the Colorado River in both the Upper and Lower Basins, but none are as essential to the "Law of the River" as Glen Canyon and Hoover Dams.[21]

The myriad legal rules regarding the operation of Glen Canyon, Hoover, and other dams on the Colorado River add considerable complexity to the skeletal scheme of the Compact. First, as discussed above, Congress's direction to the Secretary of the Interior to enter into water delivery contracts with Lower Basin users for water stored in Lake Mead served as the basis for the Supreme Court's determination of Lower Basin states' shares of the river. Second, the Secretary of the Interior and the federal Bureau of Reclamation operate the dams on the Colorado River. Various statutes direct the Secretary to manage the dams in certain ways, including to provide for the "greatest practicable amount of power that can be sold at firm power and energy rates,"[22] and "to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established,"[23] all while complying with Compact, treaty and other statutory obligations. At the direction of Congress, the Secretary has also developed long term operating criteria for the dams on the Colorado.[24] These criteria call, importantly, for an annual release from Glen Canyon Dam of 8.23 m.a.f. and for the maintenance of roughly equal storage water in Lake Powell and Lake Mead when storage of additional water in Lake Powell is not needed to ensure required Upper Basin deliveries for Lower Basin and Mexican uses.[25]

20. *See* U.S. BUREAU OF RECLAMATION, ANNUAL OPERATING PLAN FOR COLO. RIVER RESERVOIR, 9–11 (2009). Colorado River flows in the historical record fluctuate from as low as 4.4 m.a.f. to twenty four m.a.f. Storage is necessary to ensure that the Upper Basin is able to deliver 7.5 m.a.f. plus half of the 1.5 m.a.f. obligated to Mexico (*see infra*) at Lee's Ferry on an annual basis.

21. *Id.* In the Upper Basin, additional upstream storage is provided by numerous smaller dams, including the Fontenelle and Flaming Gorge Dams on the Green River and Navajo Dam on the San Juan River in New Mexico. Other upstream reservoirs serve as the point of diversion for out-of-basin transfers of water. Below Hoover Dam, in the Lower Basin, Davis and Parker Dams provide additional storage.

22. 43 U.S.C. § 620(f).

23. Grand Canyon Protection Act of 1992, Pub. L. No 102–575, § 1805, 106 Stat. 4600 (1992).

24. *See* Colo. River Basin Project Act of 1968, Pub. L. No 90–537, § 1004, 82 Stat. 886 (1968), codified at 43 U.S.C. §§ 1501–1556.

25. *See* U.S. Bureau of Reclamation, *Criteria For Coordinated Long–Range Operation of Colo. River Reservoirs Pursuant To The Colo. River Basin Project Act of Sept. 30, 1968*

Even with the numerous statutory mandates – or perhaps because of them – much of the operation of the Colorado River facilities falls to the discretion of the Secretary or the Bureau of Reclamation. Of course, their discretionary decisions are subject to both the National Environmental Policy Act[26] and the Endangered Species Act,[27] which impose both procedural and substantive limitations on the management of the river. Not only must the Bureau of Reclamation evaluate the environmental impacts of its river operations and consult with the Fish and Wildlife Service regarding threatened and endangered species, but it must also constrain its operations to avoid "jeopardiz[ing] the continued existence" of any such species.[28] Not surprisingly, given the extent of human interference with the natural systems of the Colorado River Basin, significant endangered species issues confront the Lower Basin, the boundary between the Lower and Upper Basins, and the Upper Basin.

C. Side Agreements by the States

The terse Colorado River Compact and the extensive federally administered architecture of the river still leave some important allocation issues unresolved on the U.S. side of the border. Some of these gaps have been addressed by agreements between the basin states. Chief among these is the compact among the Upper Basin states allocating among them water that is not guaranteed to the Lower Basin by the 1922 Compact.[29] More recently, however, as water development has increased in the Upper Basin, Nevada, and Arizona, the basin states have entered into several side-agreements that have important implications for the future of the river.[30] Functionally, these agreements are adopted by the Secretary in the exercise of his discretion to manage the storage facilities on the river.

(P.L. 90–537), *available at* http://www.usbr.gov/lc/region/pao/pdfiles/opcriter.pdf. The 8.23 m.a.f. amount constitutes the delivery obligations to the Lower Basin under the Compact (7.5 m.a.f.), plus the delivery obligations for the Upper Basin share of Mexico's water guaranteed its 1944 treaty with the U.S. (0.75 m.a.f.), less the inflow of the Paria River which enters the Colorado River in the Upper Basin below Glen Canyon Dam (200,000 acre-feet). The long-range operating criteria call for water to be released to equalize storage in Lake Powell and Lake Mead only when the level of Lake Powell exceeded 3630 feet.

26. 42 U.S.C. § 4321.

27. 16 U.S.C. § 1531.

28. Endangered Species Act (ESA) § 7, 16 U.S.C. § 1536.

29. Upper Colo. River Basin Compact, 63 Stat. 31 (1949).

30. These agreements are encompassed within discretionary Secretarial actions rather than entered into as interstate compacts.

The first agreement, known as the Interim Surplus Guidelines,[31] addressed a situation that now seems unlikely to occur but that highlights an important historical fact. That fact is California, although allocated only 4.4 m.a.f. under the Law of the River, had for many years been using about twenty percent more than that amount. This had been possible because the Decree in *Arizona v. California* permits the Secretary to redirect to another state water that a Lower Basin state has been allocated but does not use.[32] Until the last decade, Arizona and Nevada used less than their allocated shares, benefiting California, to which unused water was redirected. As Nevada reached and Arizona neared full use of their allocated shares, it became clear that California's use of more than 4.4 m.a.f. would have to come from water in surplus of the Lower Basin's 7.5 m.a.f. and Mexico's 1.5 m.a.f. allocations. By the surplus criteria agreement, California users sought to enhance the predictability of whether water would be available to them for particular uses while California weaned itself from reliance on water in excess of its 4.4 m.a.f. share. The surplus guidelines essentially tied the determination of whether surplus water would be available to Lake Mead levels, and it conditioned the redirection of surplus water to California on that state's implementation of specific measures to limit its reliance on Colorado River water to 4.4 m.a.f.[33]

The grips of the present deep drought soon led the basin states to confront the ambiguities in the Law of the River respecting shortages, resulting in an agreement known as the Interim Shortage Guidelines.[34] The Interim Shortage Guidelines do three important things. First, it provides a framework for allocating the burden of any shortages that might occur before 2026. Second, it adjusts the rules regarding "equalization" of Lake Powell and Lake Mead to provide additional

31. Colo. River Interim Surplus Guidelines, 66 Fed. Reg. 7772 (Jan. 25, 2001).

32. Arizona v. California, 547 U.S. 150, 156 (2006).

33. For both human and natural reasons, the Interim Surplus Guidelines were short-lived in its original form. In 2002, the first year after adopting the guidelines, California failed to meet its benchmark toward reducing its use to 4.4 m.a.f., leading the Secretary to suspend them. She later reinstated them, but 2002 was the last year that water levels in Lake Mead permitted any surplus determination. *See* Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 974 (2008).

34. Wash. Dep't of Interior, *Record of Decision, Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead* (Dec. 2007), *available at* http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.

security that Upper Basin users will not be shut off in order to provide water to the Lower Basin or to Mexico under the Compact or the Treaty. Third, the Interim Shortage Guidelines adjust the Law of the River to provide incentives for users to maximize water available to the system by augmentation or extraordinary conservation measures. These incentives operate by permitting water users to capture the benefit from "intentionally created surplus" (ICS), water that, without the extraordinary measures, would be lost to the system.[35] Rather than such surplus water being apportioned under the decree in *Arizona v. California*, the water user who creates ICS is entitled to 95 percent of the additional system water. The result is to powerfully incentivize conservation and other measures that prevent "waste."

In addition to the Interim Guidelines, there are several other side agreements, mostly directed toward conservation and water banking to alleviate the impacts as Arizona achieves full use of its share. The ICS regime in the Interim Shortage Guidelines, for example, is predicated on agreements by the Lower Basin states to waive enforcement of its rights under the *Arizona v. California* decree. Similarly, Nevada and Arizona have agreed to a water banking arrangement in which Nevada and Arizona are storing presently unused portions of their joint 2.8 m.a.f. share in groundwater basins. In the future, Nevada will be permitted to divert extra water from Lake Mead while Arizona meets its growing demand from stored water.[36]

D. Mexico

The Colorado River Compact envisioned that the U.S., "as a matter of international comity," might later guarantee Mexico a share of Colorado River water.[37] It provided that water for any Mexican share would be supplied first from any surplus water not allocated to the U.S. basin states and, if the flows were insufficient, equally from

35. Under the decree in *Arizona v. California*, any water in the main stem of the Colorado River or its storage facilities was subject to apportionment under the decree. If Nevada had paid farmers to fallow land, resulting in less consumption and thus more water to enter Lake Mead, it would have benefited only a small amount, since California is entitled to half the water in excess of 7.5 m.a.f. and Arizona and Nevada share the other half. *See*, Grant, *supra* note 33 at 976–78.

36. Douglas L. Grant, *Interstate Water Allocation Compacts: When the Virtue of Permanence Becomes the Vice of Inflexibility*, 74 U. COLO. L. REV. 105, 119 n. 97 (2003).

37. Colo. River Compact, *supra* note 8, at art. III(c).

the Upper and Lower Basin apportionments.[38] Although the states had discussed allocating Mexico a share of water, they had been urged by the State Department not to do so, on the grounds that the U.S. had a legal right to use the entire flow of the river within its boundaries.[39]

In 1944, the U.S. and Mexico entered into a treaty guaranteeing the delivery of 1.5 m.a.f. per year at the border between the countries.[40] The U.S. agreed to "undertake" to provide an additional 200,000 acre-feet of water if surplus flows allowed the satisfaction of uses in the U.S., but the determination of any such surplus was left to the U.S.[41] In regard to potential shortages, the treaty is ambiguous. It provides for a reduction in the Mexican share in the event of an "extraordinary drought or serious accident to the irrigation system in the United States," that makes it "difficult" for the U.S. to supply Mexico's 1.5 m.a.f. share.[42] Any reduction in Mexico's share is required to be "in the same proportion as consumptive uses in the United States are reduced."[43] The treaty does not define "extraordinary drought," "serious accident," or "difficult[y]," and it does not suggest any method of determining the proportionality of reductions in the U.S. or Mexico.[44]

A number of physical attributes of the Colorado River system offer important context. First, there are no significant storage facilities, nor the potential for any, within Mexico. As a result, water delivered to Mexico must be used upon delivery, or it will be lost to its intended uses.[45] To reduce these losses, the U.S. and Mexico coordinate deliveries on an annual and weekly basis through the International Boundary and Water Commission.[46] The lack of storage

38. *Id.*

39. *See* NORRIS HUNDLEY, JR. DIVIDING THE WATERS: A CENTURY OF CONTROVERSY BETWEEN THE UNITED STATES AND MEXICO 51 (Univ. of Cal. Press 1966).

40. Treaty Between the United States of America and Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., art. 10(a), Feb. 3, 1944, 59 Stat. 1219 [hereinafter *1944 Treaty with Mex*ico"].

41. *Id.* at art.10(b).

42. *Id.* at art. 10.

43. *Id.*

44. *See generally* Charles J. Meyers & Richard L. Noble, *The Colorado River: The Treaty with Mexico*, 19 STAN. L. REV. 367, 411–15 (1967).

45. Water released to but not diverted by Mexico flows to the Colorado River delta, where it has some environmental and associated human benefits. *See infra* at note 108.

46. *See* Int'l Boundary Water Comm'n, http://www.ibwc.gov/Water_Data/Colorado /Index.html (last visited May 16, 2011).

within Mexico increases the importance of storage in the U.S. (particularly Lake Mead) for water that might be used in Mexico.

Due largely to the extensive use of water upstream in the Colorado River and its tributaries, water in the lower Colorado River is highly saline and of potentially poor quality for irrigation in Mexico, reducing crop productivity. Much of the salinity is the result of the irrigation of saline soils throughout the watershed, but it is exacerbated by the inflow of water from the Gila River system just above the boundary with Mexico. The U.S. has agreed to deliver Colorado River water to Mexico of equivalent quality as that delivered to farmers in the Imperial Valley in California.[47] To date, the U.S. has met that obligation by a combination of two measures: a basin-wide program that pays for farmers to implement salinity control measures and by shunting highly saline water from the Wellton-Mohawk Irrigation and Drainage District through canals to wetlands in Mexico rather than delivering it to the Colorado River.[48]

A third measure, operating a desalination plant to treat saline water from the Gila River system and then discharging it into the Colorado River, has been authorized and tested, but not yet pursued beyond pilot runs. Operation of the Yuma Desalting Plant could annually desalt 78,000 acre-feet of water that would be available for delivery to Mexico. The chief beneficiaries of the plant's operation would be Lower Basin water users, including Las Vegas, who would be able to use water that otherwise must be released from Lake Mead to meet the U.S.' obligation to Mexico. But the likely loser would be the Santa Clara wetland in Mexico, one of the Colorado River delta's largest remaining wetlands that is currently fed primarily from saline water shunted away from the delivery point to Mexico.

II. THE IMPLICATIONS OF A HUMAN RIGHT TO WATER FOR FOUR COLORADO RIVER FAULT LINES

A. The Emergent Human Right to Water

The primary focus of human rights law generally is to protect citizens from violations of their basic rights by their own

47. Int'l Boundary and Water Comm'n, Minute 242, Aug. 30, 1973, *available at* http://www.ibwc.gov/Treaties_Minutes/Minutes.html.

48. To implement Minute 242, Congress enacted the Colorado River Basin Salinity Control Act of 1974, codified at 43 U.S.C. § 1571.

governments.[49] Similarly, human rights law may impose affirmative obligations on governments to protect or otherwise provide for the fulfillment of their citizens' human rights. In most instances, those obligations are only owed to their own citizens, not to citizens of other states.[50] In its most basic form, then, human rights law offers citizens a bulwark against repression by their own governments and a basis for demanding that their own governments take measures to secure the basic right. Because of the transitory nature of water and its essentiality to human life; however, it has been suggested that the human right to water might impose obligations on upstream countries to provide for (or at least not impede) the realization of the right by citizens of downstream countries.[51]

1. The Human Right to Water and the Focus on Basic Needs and Sanitation

The notion of water as a human right, as it has been recognized thus far, is centered on the most basic human needs regarding water – the need for safe drinking water and water for basic sanitation. As recently declared by the United Nations General Assembly, "the *right to safe and clean drinking water and sanitation* [is] a basic human right that is essential for the full enjoyment of life and all human rights."[52] Similarly, General Comment 15 of the Committee on Economic, Social and Cultural Rights ("Comment 15"), which, to date, provides the fullest description of the right, its bases, and its implications for governance, states: "[t]he human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses."[53]

This narrow focus on drinking water and sanitation has important implications for how it might impact the allocation of water from a highly developed river system in a wealthy industrialized nation like the U.S., or even a developing nation like Mexico. First, the narrow focus, not surprisingly, shrinks the size of the "problem."

49. John Knox, *Diagonal Environmental Rights*, UNIVERSAL HUMAN RIGHTS AND EXTRATERRITORIAL OBLIGATIONS 82, 82 (Mark Gibley and Sigrun Skogly, eds., 2010).

50. *See* Stephen C. McCaffrey, *A Human Right to Water: Domestic and International Implications*, 5 GEO. INTL. ENVTL. L. REV. 1, 19 (1992–1993).

51. *See id.* at 19–20.

52. The Human Right to Water and Sanitation, *Draft Resolution*, U.N. GAOR, A/64/L.63/Rev.1, (July 26, 2010) (emphasis added).

53. Committee on Economic Social And Cultural Rights, U.N. ESCOR, Gen. Comment No. 15, ¶ 2 (Nov. 29, 2002) [hereinafter *Comment 15*].

To be sure, there are pockets within the U.S. where there is still no access to basic water necessary for personal and domestic use.[54] As discussed below, one of these pockets is in Indian country along the Colorado River.[55] But this number reflects a small proportion of the overall population of the Colorado River Basin.

Second, because the amount of water necessary to fulfill basic drinking water and sanitation needs is small, it would appear that most vital human needs could be fairly easily met without major disruption of existing allocations. After all, nearly eighty percent of Colorado River water in both the Upper and Lower Basins is put to agricultural use, and much of this use is inefficient, because of either the marginal quality of the lands to which it is applied or the use of inefficient methods of conveyance or irrigation. This suggests that, to the extent that an over appropriated river is a problem, it should be a problem susceptible to a solution in which water saved by improving the efficiency of agricultural water use is redirected to serve vital human needs.[56]

2. Alternative Views of a Human Right to Water

Despite the narrow thrust of the human right to water to provide basic drinking water and sanitation, there has been some recognition that the human right to water might extend beyond sanitation. Both scholars and the U.N. Committee on Economic, Social and Cultural Rights ground the emergent human right to water in an array of other recognized human rights. These include the right to life, the right to health, the right to housing, and the right to food.[57] Comment 15, for

54. A study by the Rural Community Assistance Project found that 1.7 million people in the U.S. lived in housing units that lacked full plumbing facilities. RURAL COMMUNITY ASSISTANCE PARTNERSHIP, STILL LIVING WITHOUT THE BASICS IN THE 21ST CENTURY: ANALYZING THE AVAILABILITY OF WATER AND SANITATION SERVICES IN THE UNITED STATES 12–13 (2009).

55. *See, infra* p. 15. The Rural Community Assistance Project estimates that about 8,600 homes lack full plumbing in northeastern Arizona, where many Navajo, Hopi and Apache people live. *Supra* note 65.

56. The ICS program in the Interim Guidelines is an example of a legal mechanism through which this can be accomplished. *See* Colorado River Interim Surplus Guidelines, *supra* note 31.

57. *Comment 15*, *supra* note 53, at ¶ 3; SALMAN M.A. SALMAN AND SIOBHAN MCINERNEY–LANKFORD, THE HUMAN RIGHT TO WATER: LEGAL AND POLICY DIMENSIONS 56–57 (2004); Peter Gleick, *The Human Right to Water*, PACIFIC INSTITUTE, 6 (July 9, 1999), http://www.pacinst.org/reports/basic_water_needs/human_right_to_water.pdf ; Stephen C. McCaffrey, *A Human Right to Water: Domestic and International Implications*, 5 GEO. INTL. ENVT'L L. REV. 1, 1 (1992–1993).

example, notes that "the importance of ensuring sustainable access to water resources for agriculture to realize the right to adequate food" and calls upon nations to "ensure that there is adequate access to water for subsistence farming and for securing the livelihoods of indigenous peoples."[58]

A human right to water that encompassed the right to water for food production would not necessarily have significant implications for the allocation of Colorado River water. Irrigation water from Colorado River is an essential input for farms that produce a high proportion of the nation's winter produce. But the farms served by Colorado River water are not subsistence farms; rather, at least within the U.S., they are generally large operations that produce food not for the subsistence of the farmers or even local populations but for the national market. A human right to water based on a right to adequate food would seem too constrained to ensure water for the production of commodity produce.

B. Fault Lines on the Colorado River from a Human Rights Perspective

1. Lower Basin Foreclosure of Upper Basin Development

Under the Law of the River, the Upper Basin within the U.S. bears the primary risk of shortage. Specifically, should conditions on the river decline to the point that the natural flow and storage in the Upper Basin reservoirs are insufficient to supply the required deliveries to the Lower Basin and to Mexico in a given year, the Upper Basin would have to forgo using its apportioned share in order to meet delivery obligations at Lee Ferry. This is the result of the Compact's expression of the allocation in terms of the Upper Basin's obligation to deliver water to the Lower Basin and for Mexico.[59] In

58. *Comment 15*, *supra* note 53, at ¶ 7.

59. Upper Basin states could argue that the Compact bars them only from depleting the river's flow or otherwise withholding water from the Lower Basin, rather than requiring a delivery of 7.5 m.a.f. even in the event of natural reduction in the flow. *See, e.g.*, RETHINKING THE FUTURE OF THE COLORADO RIVER, *supra* note 5, at 43 (Dec. 2010), http://www.rlch.org/archive/wp-content/uploads/2010/12/CRGI-Interim-Report.pdf (citing E. Kuhn, *The Colorado River: The Story of a Quest for Certainty on a Diminishing River (Roundtable Edition)*). Most scholars disagree, viewing the operation of the Compact to, in fact, impose a delivery obligation of an average 7.5 m.a.f. plus one half of Mexico's 1.5 m.a.f. share. *Id.* (citing David Getches, *Colorado River Governance: Sharing federal authority as an incentive to create a new institution*, 68 U. COLO. L. REV. 573 (1997) and D. Wegner, *Environmental Restoration: Challenges for the New Millennium: Looking Towards the Future:*

essence, this gives all Lower Basin uses priority over Upper Basin uses developed after the Compact.[60] One recent policy review concludes that "it is now possible to foresee a situation in which Upper Basin users could be curtailed to the point of . . . those uses already in existence when the Compact was signed."[61]

It is difficult, maybe even impossible, to predict the impacts on Upper Basin water deliveries if such a curtailment occurs,[62] but it seems plausible that water agencies serving residential customers in the Upper Basin could be forced to seek water elsewhere. This could implicate the human right to water, especially if the right is expressed more broadly than addressing only clean drinking water and sanitation, by depriving local water agencies and municipalities the ability to provide basic water services to their populations. Of course, as the reality of a declining river flow eroded optimism that water utilities would be able to continue to supply their customers, strong political and economic incentives would likely spur them to develop alternative supplies, perhaps from groundwater or from transfers of protected preexisting water rights. These incentives would be consistent with obligations to protect the water supply imposed by the human right to water.

Another possibility, though it seems remote, is that the Law of the River, including the Compact, could be reshaped to provide for the fulfillment of the human right to water. This might be accomplished by adjusting the priorities of any domestic or other uses that are necessary to provide minimum sufficient water for drinking and sanitation to relieve them from the squeeze the Upper Basin would suffer in the event of an extreme reduction in flows. Although interstate water compacts are generally regarded as being permanent, there are plausible arguments that support a state's withdrawal from a

The Time has Come to Restore Glen Canyon, 42 ARIZ. L. REV. 239 (2000); *see, also,* Douglas L. Grant, *Interstate Water Compacts: When the Virtue of Permanence Becomes the Vice of Inflexibility*, 74 U. COLO. L. REV. 105, 118 (2003).

60. The Compact explicitly protects preexisting uses in the Upper Basin. Colorado River Compact of 1922, *supra* note 8, art. VIII ("Present perfected rights to the beneficial use of waters of the Colorado River System are unimpaired by this compact.").

61. RETHINKING THE FUTURE, *supra* note 59, at 14–15. The authors of the report suggest that such a point might be reached if the long term average flow of the river declines below 10.5 m.a.f. *Id.* at 16.

62. The U.S. Dep't of the Interior recently launched a basin wide review of existing and projected water uses. The Colorado River Water Supply & Demand Study is due to be completed by the end of 2011. *See* http://www.usbr.gov/lc/region/programs/crbstudy.html.

compact when faced with dire consequences[63] such as inability under the compact to provide its citizens the minimum amount of water required by human rights law. The threat of withdrawal, or even litigation over the ability of a state to withdraw from the Compact, could induce the other basin states to permit a limited adjustment in priority.[64]

2. Ecological Collapse

Even with flows well above the range that climate change portends, the extensive plumbing and human interference with the natural flow regime has wreaked havoc on the ecological systems of the Colorado River. The fate of river dependent species up and down the river indicates a system in ecological peril. The ecological crisis has brought about a combination of litigation and collaboration by stakeholders in the river, but demonstrated progress in reversing the decline of species and restoring habitat and ecological functioning has been spotty at best. Even if it is too soon to conclude that existing laws are not up to the task of saving endangered Colorado River fishes, it is still worth considering whether emergent notions of a human right to water can provide an additional impetus for ecological stabilization and restoration.

The extensive human manipulation of the Colorado River and its flows is the common cause to the endangered species problems up and down the river. There are currently major multiparty efforts proceeding in both the Upper Basin and Lower Basin to address the plight of endangered Colorado River native fishes.[65] One of these is the Colorado River Endangered Fishes Recovery Program, which seeks to recover the Colorado pike minnow, the humpback chub, the razorback sucker, and the bonytail. This program permits water users to contribute financially to a coordinated set of recovery measures, including native-fish stocking and controlling non-native predator fish, to avoid having their water use blocked by "jeopardy" determinations under the Endangered Species Act.[66] In the Lower Basin, a multi-species habitat conservation plan adopts a similar

63. Grant, *supra* note 33 at 990 and *passim*.

64. *See id.* at 971.

65. Professor Robert Adler extensively evaluates the causes and responses to ecological decline in his excellent 2007 book calling for ecological restoration of the Colorado River. Robert W. Adler, RESTORING COLORADO RIVER ECOSYSTEMS: A TROUBLED SENSE OF IMMENSITY (2007).

66. *See id.* at 121–23.

approach to ESA compliance by allowing payments into a fund to support habitat conservation efforts, which include both habitat restoration and fish stocking.[67] Both of these programs, in which water users essentially make payments for permits, have been criticized as likely being inadequate to recover the imperiled species.[68]

Also instructive is the increasingly apparent inadequacy of the current legal and cooperative regime to adequately address the decline of the endangered humpback chub and other species of native Colorado River fish downstream of Glen Canyon Dam. In this stretch of the river, intractable conflicts between endangered species, water rights, and hydroelectric power generation, combined with opaque statutory requirements about how to address those conflicts led to legal confusion about how to lawfully operate Glen Canyon Dam.[69] Facing a determination that the operation of Glen Canyon Dam would jeopardize the continued existence of the humpback chub in violation of the ESA, the Secretary of Interior created the Glen Canyon Adaptive Management Work Group (AMWG) in 1997.[70] A multiparty stakeholder group, the AMWG's purpose is to provide advice to the Secretary regarding the formulation and implementation of an adaptive management program for Glen Canyon Dam in order to assist the Secretary in meeting environmental and other obligations under the law.[71] The work of the AMWG includes recommending research and monitoring plans to enhance knowledge of how the operation the dam affects the environment in the Grand Canyon, including the humpback chub.[72] Although the AMWG has overseen the experimental use of alternative flow regimes, the dam still operates under the same default fluctuating flow regime that the Fish and Wildlife Service determined in 1994 was jeopardizing the

67. *Id.* at 187.

68. *Id.* at 188 ("[T]he MSCP is really just a program to *mitigate* the impacts of incremental harm caused by proposed future changes in river operations. . . ." but "does not constitute comprehensive environmental restoration."); *Id.* at 123 ("population trends for the four listed species [in the Upper Basin] are not encouraging.").

69. Alejandro E. Camacho, *Beyond Conjecture: Learning about Ecosystem Management from the Glen Canyon Dam Experiment*, 8 NEV. L. J. 942, 947–49 (2008).

70. Joseph M. Feller, *Collaborative Management of Glen Canyon Dam: The Elevation of Social Engineering over Law*, 8 NEV. L. J. 896, 917–921 (2008).

71. U.S. DEP'T OF THE INTERIOR, GLEN CANYON DAM ADAPTIVE MANAGEMENT WORK GROUP CHARTER (1997), *available at* http://www.usbr.gov/uc/rm/amp/amwg/pdfs/amwg_charter.pdf.

72. *Id.*

humpback chub.[73] And the ecological resources of the river remain in jeopardy, despite two recent lawsuits to force the Bureau of Reclamation to comply with its obligations under the ESA.[74]

Overall, the ability of the existing legal regime to effectively respond to the ecological collapse of Colorado River and its dependent species is in reasonable doubt. The famously toothy ESA, with its outright prohibition of harm and jeopardy to endangered species, has failed to ensure any sustained recovery of imperiled Colorado River fish despite two decades.Indeed, the Bureau of Reclamation continues to assert that its ability to respond is severely limited by the Law of the River, which narrows its discretion respecting the delivery of water to the Lower Basin and to Mexico. As with the other major fissures on the Colorado River, the problem of ecological collapse seems likely to worsen with climate change.[75]

If the current legal regime seems unfit to address the threatened ecology of the Colorado River, it is fair to ask whether some other regime–one, say, based on a human right to water–might offer assistance. Unfortunately for the native fish of the Colorado River, a human right to water offers little to depend on. The problem is the expression of the emergent human right to water in minimalist and utilitarian terms. It is a right that is narrowly focused on *human* needs, specifically clean drinking water and sanitation.[76] But the conditions that threaten the river's native fish–including the disruption of the natural flow regime, dam blockage of fish passage, and the deprivation of sediment necessary to their habitat–are simply too far removed from the concerns of providing a minimal source of clean water to be fruitfully addressed by a legal regime focused so narrowly on the latter.

It is certainly possible to hypothesize situations in which the ecological stability of a river system might more fully overlap with a human right to water. There might be river systems in the world in which preserving the ecological functioning of the river is integrally linked with providing clean water and sanitation to people relying on the river, such as where wetlands provide "ecosystem services" such

73. Lawrence Susskind, Alejandro E. Camacho, and Todd Schenk, *Collaborative Planning and Adaptive Management in Glen Canyon: A Cautionary Tale*, 35 COLUM. J. ENVT'L L. 1, 25 (2010).

74. *Id.* at 27.

75. *Id.* at 28 (citing research conducted by the University of Colorado indicating that the Colorado River could run dry by 2057).

76. *Comment 15*, *supra* note 53 and accompanying text.

as cleansing or hydrographic benefits. But the Colorado River within the U.S. is a river for which that connection is not easily made. There are also likely rivers in which human subsistence is linked with non-sanitation functions of natural systems, such as fish habitat for species that provide food for local populations. If the human right to water includes the right to use water to produce adequate food,[77] and if this right includes safeguarding the ability of ecological systems to provide food, rather than solely for subsistence agriculture,[78] then it might reach environmental systems. But there is scant evidence that any of the native fish species ever provided a significant food source for humans along the Colorado River in the U.S.[79]

3. Indian Water Rights

The faultline in Colorado River governance that strikes closest to the core of a human right to water is the issue of water rights for Native Americans. Many Native Americans living in the arid Colorado River Basin lack access to running water in their homes, and many of the tribes lack confirmed, quantified water rights and the infrastructure to put water to use for agriculture and economic development, or to deliver it to their people for basic domestic use. This is the case even though, for more than a century, it has been clear that the tribes own water rights.

As they do elsewhere in the West, Indian water rights pose a significant problem for non-Indian Colorado River water users, largely because of their early priority, uncertainty as to their quantity, and their place in the Colorado River legal regime. Two settlements of Navajo water rights claims in recent years–one just completed, and another at the beginning of a long trail of approval by interested parties–demonstrate the difficulties and trade-offs involved in providing a basic supply of water to thousands of the region's most disadvantaged residents. They also demonstrate the potential for a

77. *Id.* ¶¶ 2, 6.

78. *See id.* ¶ 7.

79. Lastly, some have theorized that a human right to the environment is linked to the human right to water. *See* SALMAN & MCINERNEY–LANKFORD, *supra* note 57, at 57–58. The very existence of a human right to the environment, however, is disputed. *See id.* at 58. Notably, Comment 15 omits any reference to a human right to the environment even while referencing rights to life, food, and housing. It seems improbable that a human right to water derived from a human right to the environment would offer any basis for addressing the ecological decline of the Colorado River.

quasi-human rights approach to Indian water rights with the potential to lead to a secure "wet" water supply for Indian people.

a) The Legal Basis for Navajo Water Rights

The Supreme Court recognized in 1908 that tribes held water rights in lands set aside by Congress as reservations in the amount necessary to fulfill Congress's purpose in creating the reservations, and that those rights had priority as of the date of the reservation.[80] The place of Indian federal reserved water rights in the Colorado River regime has been uncertain and a source of great trepidation for non-Indian water users along the river. When the basin states forged the Colorado River Compact, they excluded the tribes from the negotiations and agreement. The Compact dispatched with potential Indian water rights by vaguely stating: "Nothing in this Compact shall be construed as affecting the obligations of the U.S. of America to Indian tribes."[81]

More than half a century after the Compact, the Supreme Court clarified two significant issues that potentially gave Indian water rights in the Colorado River Basin the status of sleeping giants. In *Arizona v. Colorado*,[82] in which the Court recognized the apportionment of water among the Lower Basin states, the U.S. had asserted and sought to quantify reserved rights on behalf of five tribes with reservations along the lower Colorado River. First, Indian water rights to Colorado River water are charged against each state's apportioned share.[83] Giving that finding punch, the Court also approved the Special Master's decision to quantify the tribes' rights based on the amount of "practicably irrigable acreage" that exists on the reservations, which had been set aside to provide Indians with agricultural homelands.[84] Quantification of water rights using the "practicably irrigable acreage" standard, which has become the most widely applied standard for quantifying Indian reserved rights, is a factually-intensive but variable process, involving the assessment of soils for arability, analysis of the engineering feasibility of delivering irrigation water to arable lands, and consideration of economic costs

80. Winters v. United States, 207 U.S. 564 (1908).

81. Colo. River Compact, art. VII (1922).

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

83. *See id.* at 601.

84. *Id.* at 600–601.

and benefits of actually delivering technically deliverable water to technically arable lands.[85]

The rights of the five tribes quantified in *Arizona v. California* under the practicably irrigable acreage standard totaled about one million acre feet of water diverted to be applied to about 135,000 acres of arable land, about 500,000 acre feet of which may be consumed.[86] In the Colorado River Basin, about two dozen other tribes likely hold federal reserved water rights that may affect the availability of water to other users. Only some of these water rights have been quantified or settled. Most significant among the outstanding claims is that of the Navajo Nation, whose reservation is the largest in the country, covering some 24,000 square miles, or nearly ten percent of the entire Colorado River Basin. Although counsel for the Navajo estimated in 1997 that Navajo rights could total five m.a.f.,[87] the tribe did not voluntarily assert any water rights in court until 2003, when it sued the U.S. to enjoin its further facilitation of water development in the Lower Basin before quantifying and considering Navajo rights in the Colorado River.

Despite the potentially large quantity of Navajo and other Indian reserved water rights in the Colorado River Basin, considerable uncertainty has always characterized the extent of potential Navajo rights. First, although the PIA standard can result in large awards of water to Indians in arable lands close to the water source, this may not be the case with Navajo rights. Diverting water from the Colorado River and moving it to Navajo lands would be difficult and expensive, even if technically feasible. A court applying the PIA standard could find that the cost, for example, of pumping water from the canyons of the Colorado River hundreds of feet in elevation to Navajo lands, would diminish or negate the economic value of the water, rendering the lands not "practicably" irrigable. Second, although the Supreme Court accepted the special master's use of the PIA standard in *Arizona v. California* as "the only feasible and fair way" to measure the Indian reserved rights then at issue, it stopped short of mandating

85. *See, e.g.*, Barbara A. Cosens, *The Arizona Homeland Standard Measure of Indian Water Rights*, *in* TRIBAL WATER RIGHTS: ESSAYS IN CONTEMPORARY LAW, POLICY, AND ECONOMICS 50 (John E. Thorson, et al, eds., 2006).

86. Arizona v. California, 373 U.S. at 596.

87. Water Education Foundation, 75th Anniversary Colorado River Compact Symposium Proceedings 60 (1997) (remarks of Stanley Pollack, Water Rights Counsel, Department of Justice, Navajo Nation).

that the standard be used generally for Indian reserved rights, or even all Indian reserved rights in the Lower Basin.[88]

The Arizona Supreme Court's decision in the Gila River adjudication, rejecting the PIA standard as the sole method of quantifying Indian reserved rights,[89] added to the uncertainty surrounding Navajo rights. In that case, the court rejected a focus on the agricultural potential of reservations in favor of a broader view of reservations as permanent homelands. Under such a view, Indian reserved rights are to be quantified for actual and proposed feasible uses that serve the permanent homeland purpose. Although quantification may be accomplished by developing a master land and water use plan, as is common in Indian reserved rights settlements, tribes may also present evidence of other water uses and needs.[90] Such evidence may address such factors, non-exclusively, as (1) the tribe's history, (2) tribal culture, including water use, (3) the geography, topography, natural resources of the reservation, including groundwater availability, (4) the tribe's economic base, (5) past water use on the reservation, and (6) the tribe's present and projected population.[91]

In reaching its conclusion, the Arizona court recounted several inequities built into the PIA standard. The first inequity is that the standard provides ample water for tribes whose reservations include large amounts of easily irrigable land, but it ensures little, or possibly none, for tribes who cannot show that water may be economically developed, even for basic human uses such as drinking water and sanitation.[92] A second inequity is that it treats Indians differently than non-Indian water users, who have long benefited from federally-funded irrigation projects that were never subjected to the kind of stringent cost-benefit analysis called for by PIA.[93]

88. Arizona v. California, 373 U.S. at 601, Special Master Tuttle, who served the Court during the second incarnation of Arizona v. California, culminating in its decision, Arizona v. California, 460 U.S. 605 (1984), observed: "Although the Court did not necessarily adopt this standard as the universal measure of Indian reserved water rights, it constitutes the law of this case *for the five Reservations under consideration.*" Elbert Tuttle, Special Master Report at 90 (1982) (citations omitted) (emphasis added).

89. *In re General Adjudication of All Rights to Use Water in the Gila River System and Source*, 35 P.3d 68 (Arizona 2001).

90. *Id.* at 79.

91. *Id.* at 79–81.

92. *Id.* at 78.

93. *Id.*

The wet-water issue presents further difficulties for Indian water rights. Even if tribes in the Colorado River Basin secured quantified water rights through adjudication, the water rights are useful only if water can actually be delivered to users on the reservation or leased to users off the reservation.[94] As with any other water in the West, infrastructure is needed to accomplish this, and infrastructure, even if economically feasible, requires capital resources that tribes often do not have. This is one reason that most tribes choose to settle rather than litigate water rights claims; federal or other money to pay for needed infrastructure can be made one of the terms of settlement.

b) The Recent Navajo Water Rights Settlements in the San Juan basin and Northeastern Arizona

For much of the past decade, the Navajo Nation has been seeking to settle its reserved rights claims in the Colorado River Basin. There have been pressing reasons to secure an adequate supply of useable water, including a poverty rate of more than fifty percent, a widely dispersed population on arid lands that is expected to double by 2040, and a lack of water infrastructure to deliver clean water to more than forty percent of Navajo households.[95] At the same time, although the tribe's rights by law would have a priority of 1868 (the date of establishment of the Navajo reservation), the practical ability to realize those rights was being diminished by continued non-Indian development, particularly in the Lower Basin, with Nevada reaching and Arizona approaching the full use of their apportionments.

The Navajo reservation straddles the dividing line between the Upper and Lower Basins of the Colorado River, with about half of its territory situated in each. In part because the Law of the River artificially treats the basins as distinct,[96] and in part because tribal water rights are subject to adjudication in state court proceedings,[97] a

94. It is the prevailing view that tribes may lease their rights to Colorado River water for non-agriculture uses off the reservation.

95. U.S. DEP'T OF INTERIOR, BUREAU OF RECLAMATION, NAVAJO-GALLUP WATER SUPPLY PROJECT, PLANNING REPORT AND FINAL ENVTL. IMPACT STATEMENT, at II-1, II-2 (2009) [hereinafter *NGWSP EIS*].

96. The Compact establishes a default rule that water must be used within the basin from which it is diverted. Colo. River Compact, art. VIII ("All other rights to beneficial use of waters of the Colorado River System shall be satisfied solely from the water apportioned to that Basin in which they are situate.").

97. *See* 43 U.S.C. § 666 (waiving federal sovereign immunity for the adjudication of federal water rights claims in general stream adjudications in state court).

comprehensive settlement of Navajo reserved rights presented special problems. In 1975, New Mexico initiated a general adjudication of all waters in the San Juan River, a major tributary of the Colorado River along the northeastern boundary of the Navajo reservation, leading to extended negotiations over Navajo rights in New Mexico. As mentioned, the tribe did nothing to assert its claims to Colorado River water in the Lower Basin until 2003.

After years of negotiation, the Navajo Nation, the U.S., and New Mexico, along with other interested parties, reached an agreement regarding Navajo claims to water from the San Juan River system. The complex agreement has four main components.[98] First, overall it secures to the Navajo a right to divert about 600,000 acre-feet and to consume about half of that. Most of this water would be used for irrigation. Second, the federal government will pay approximately $700 million to construct a network of pipelines to carry about 20,000 acre-feet of water to areas in the eastern area (Upper Basin) of the Navajo reservation, the Jicarilla Apache reservation, and the city of Gallup for municipal and industrial use. This project will carry clean water for household use, for the first time, to thousands of Navajo and who have relied on hauling water to their homes from distant points. Third, the Navajo agree to subordinate their early priority to some of the water, including the bulk of their irrigation water and all of the Navajo-Gallup pipeline water to a date that would require them to share in any shortages with other non-Navajo users of water stored in Navajo Dam. The settlement became final in December 2010, after Congress authorized and funded the Navajo-Gallup Water Supply Project, the Interior Department decided to implement it, and the Secretary signed the agreement.[99]

The Navajo Nation has also recently approved settling its claims to water in the main stem of the Colorado River (Lower Basin), the Little Colorado River and groundwater within its reservation in Arizona. The Northeastern Arizona Indian Water Rights Settlement[100] continues the approach of the San Juan Basin settlement

98. Exec. Summary of the San Juan Basin in N.M. Navajo Water Rights Settlement Agreement, Office of the N.M. State Eng'r, (Apr. 19, 2005) *available at* http://www.ose.state.nm.us/legal_ose_proposed_settlements_sj.html.

99. George Hardeen, *Navajo President Joe Shirley, Jr., joins Interior Secretary Ken Salazar to sign San Juan River Water Settlement; will bring $1 billion project*, NAVAJO NATION, Dec. 26, 2010 *available at* http://www.navajo.org.

100. Northeastern Ariz. Indian Water Rights Settlement Agreement, Navajo Nation Council, 2010 *available at* http://nnwrc.org/docs/20100716settlementagreement.pdf

to focus on securing wet water to Navajo homes, many of which are presently un-served. If finalized, which is contingent upon approval by the Hopi and other entities, as well as congressional authorization and funding, it will authorize the use of the Navajo-Gallup pipeline to deliver about 6,400 acre feet to Navajo communities in the Lower Basin in Arizona. Under the settlement, federal money will pay for an additional pipeline from Lake Powell (in the Upper Basin) to carry about 11,000 acre-feet per year to several Navajo communities and an additional 4,000 acre-feet per year to Hopi villages. Federal dollars will also pay for two groundwater projects to deliver nearly 10,000 additional acre-feet per year to other Navajo communities. The agreement guarantees Navajo nearly unfettered use of groundwater from two aquifers on the reservation, as well as difficult-to-use unappropriated water in the Little Colorado River. Lastly, it secures just 31,000 acre-feet per year from the main stem of the Colorado, water that may be used, marketed or leased.

These settlements reflect a significant departure from the PIA-based quantification methods prevalent in Indian water rights settlements toward a quasi-human-right-to-water approach.[101] They seem fundamentally structured to ensure that a shamefully underserved Navajo population gain actual access to clean water for household and other uses. Together, these settlements provide for a vast expansion of the availability of drinking water to Navajo communities, paid for mostly by the federal government. Yet it bears emphasis that securing that basic access to water comes at a price. In the case of the Northeastern Arizona Indian Water Rights Settlement, that price is the relinquishment of claims of what some had, perhaps

101. I use the term "quasi-human-right-to-water" because the quantity of water secured for Navajo communities is likely more than justified by the narrowest measures of water needed for drinking and sanitation. In a video posted on their website, the Navajo Nation Water Rights Commission notes that the amounts are sufficient to secure 160 gallons per person per day based on estimates of population growth to 2040. Northeastern Ariz. Indian Water Rights Settlement, *Water Infrastructure Projects* (Oct. 25, 2010), http://nnwrc.org/; *See also* Navajo Nation Water Rights Commission, *Colo. River Basins* (Sept. 30, 2010), http://www.youtube.com/watch?v=JYQP1JRh7gY&feature=player_embedded. Estimates the amount of water needed to satisfy an individual's human right to water based on clean drinking water and sanitation range from as low as 7.5 liters per day to 100 liters per day, far lower than the 160 gallon per day figure. Amy Hardberger, *Whose Job is it Anyway?: Governmental Obligations Created by the Human Right to Water*, 41 TEX. INT'L L. J. 533, 540–41 (2006). The quantity of 160 gallons per person per day was also used to estimate the demand for water delivered to Navajo communities by the Navajo-Gallup Water Supply Project, a figure that the City of Gallup also used in its water demand projections. NGWSP EIS at II-3.

unrealistically, expected to be vast amounts of water from the Colorado River in order to secure what might be seen as an entitlement under basic principles of human rights.[102]

4. The Bottom of the Basin: Mexico's Reliance on Colorado River Water

The international boundary with Mexico presents a fourth potential problem in the existing Law of the Colorado River. The potential for drought and increasing pressures on the river raise two issues potentially within the scope of the human right to water.

One issue, of course, is the security of Mexico's share of the Colorado River under the current regime. The ability of the U.S. to deprive Mexico of water, especially water promised under the 1944 treaty, would raise substantial human rights concerns. The existing legal regime, however, minimizes (though it does not entirely eliminate) the risk of any curtailment of the Mexican share of Colorado River water. The 1944 treaty's "guarantee" of 1.5 Mexico's share establishes Mexico's share as first priority on the river.[103] As a general matter, then, U.S. is obligated to deliver water to Mexico even if it must curtail uses within the U.S. Yet the ambiguous provisions leave open the possibility that the U.S. could claim "extraordinary drought" and reduce water delivery to Mexico. Modeling shows that this could result in significant and relatively frequent reductions in deliveries to Mexico, depending on whether Mexico deliveries are curtailed only when Lower Basin deliveries are curtailed, or more frequently when Upper Basin shortages exist.[104] Whether such curtailments to Mexico would affect Mexico's ability to provide clean drinking water to its people or to ensure subsistence agriculture is not known, but such results could raise significant concerns respecting the human right to water and the basic obligations owed by the U.S. to its southern neighbor.[105]

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102. A number of Navajo community groups and some Navajo lawmakers opposed the settlement of Colorado River reserved rights. Felicia Fonseca, *Navajo lawmakers approve water rights settlement*, DESERET NEWS (Nov. 5, 2010) http://www.deseretnews.com/article/700079134/Navajo-lawmakers-approve-water-rights-settlement.html.

103. 1944 Treaty with Mexico, *supra* note 40, art. 10.

104. *Modeling Assumptions with Regard to Future Water Deliveries to Mexico, Sensitivity Analysis*, Appendix Q to FEIS- INTERIM GUIDELINES, *supra* note 2 at Q–8 – Q–14.

105. *See* Stephen C. McCaffrey, *A Human Right to Water: Domestic and International Implications*, 5 GEO. INTL. ENVTL. L. REV. 1, 17–23 (1992–1993) (arguing that an upstream state's use of water for irrigation and power generation resulting curtailment of a downstream

There are other issues in the border region that could also give rise to human rights concerns. Most notable of these is the plight of the Colorado River delta in Mexico, which has been perhaps the most severely impacted of the ecological resources of the entire Colorado River. Once a vast and productive network of estuarine wetlands, the delta is a shadow of its former self. Due to water storage in the U.S. and diversions in both the U.S. and Mexico, flowing water fails to reach the delta in most years, and perhaps as few as 40,000 acres are all that remain of 1.8 million acres of functioning wetlands in the historic delta.[106] Here, however, unlike the Grand Canyon, indigenous people have long relied on the delta for subsistence and commercial fishing, as well as for a water supply. About 200 remain of the Cucapa people, and the devastation of the delta has imperiled their traditional food sources, livelihood and access to clean water.[107]

This has obvious human rights implications, but they are complicated by the limitations of human rights law, which usually applies only to impose obligations on a government to provide for its own people. Under the traditional construct of human rights law, in which states owe duties to their people, Mexico would have an obligation to provide access to water for drinking and sanitation, and perhaps for the subsistence needs of the Cucapa and other delta residents. Whether it can, or should be required to, meet these needs from its small allocation of Colorado River water, however, raises other issues. Presumably, the U.S., with its vastly larger legal claim to the river's water and its sophisticated water storage apparatus, would be better suited to provide water for the delta. Yet it would be an extension of accepted human rights norms for citizens of one state to be able to assert the human right to water to require water deliveries from an upstream state.

Whatever the legal obligations under human rights law to provide water for the delta and the people who depend on it, several

states' water for vital human needs raises significant, though unresolved, human rights issues); Amy Hardberger, *Whose Job is it Anyway?: Governmental Obligations Created by the Human Right to Water*, 41 TEX. INT'L L. J. 533, 541–546 (2006) (discussing government to government obligations in relation to the human right to water).

106. *See* Robert Jerome Glennon and Peter W. Culp, *The Last Green Lagoon: How and Why the Bush Administration Should Save the Colorado River Delta*, 28 ECOLOGY. L. Q. 903, 907 (2002).

107. *See, e.g.*, Frank Clifford, *Troubled Waters*, L. A. TIMES, May 25, 2008, http://articles.latimes.com/2008/may/25/local/me-newcolorado25; DANIEL LUECKE, ET AL., A DELTA ONCE MORE: RESTORING RIPARIAN AND WETLAND HABITAT IN THE COLORADO RIVER DELTA 2, 7–8 (1999).

recent agreements between the U.S. and Mexico reflect a new level of cooperation between the countries. These agreements show promise that diplomacy and cooperation between the countries might successfully be deployed to address human rights concerns that develop in the future as a result of declining water supply in the Colorado River. The most important of these agreements, Minute 318 of the International Water and Boundary Commission, allows Mexico, for the first time, to store water in U.S. reservoirs for future delivery to Mexico.[108]The agreement was precipitated by last year's devastating earthquake in northern Mexico, which destroyed water delivery facilities in the Mexicali region of the delta, making it impossible for Mexico to beneficially use its full share of Colorado River water for a projected three years. Under Minute 318, a maximum of 260,000 acre-feet of water will be held in Lake Mead for delivery beginning in 2014 after Mexico's infrastructure is repaired. In addition to benefiting Mexico by banking water for delivery when it can be beneficially used, the agreement will help elevate the level of water in Lake Mead, decreasing the risk that a shortage will occur under the Interim Guidelines.

Minute 318 comes on the heels of another reflecting increased cross-boundary cooperation that can address water shortage, environmental decline, and water quality in Mexico. In June 2010, Mexico and the U.S. reached agreement on a conceptual framework for future discussions about cooperative measures, such as using U.S. infrastructure to store water for use in Mexico and identifying water for environmental purposes.[109] Environmentalists have advocated using programs like ICS to ensure that the benefits of efficiency gains or system augmentation flow to the Colorado River delta, and this agreement holds the potential to realize those hopes.Also, in April 2010, the countries agreed to dedicate water to the Santa Clara wetland in Mexico during a pilot run of the Yuma Desalting Plant.[110] This agreement will ensure that this important wetland will not be deprived of inflow during the operation of the plant.

108. Int'l Boundary and Water Comm'n, U.S.–Mex., Minute No. 318, Dec. 17, 2010 *available at* http://www.ibwc.state.gov/Files/Minutes/Min_318.pdf.

109. *Id.* at Minute No. 317.

110. *Id.* at Minute No. 316.

III. CONCLUSION

The Colorado River is surely one of the most utilized rivers on the planet. We have manipulated it to accomplish many things, including providing a basic water supply for millions of people in the U.S. and Mexico and irrigating millions of acres of land to provide food and fiber. The Colorado River's extensive infrastructure, both physical and legal, has arisen in response to human needs but without any particular attention to the notion of a human right to water. So, too, have developed the deep problems, both human and ecological, that now plague the system. With the recent emergence of the human right to water in international law, the basic question is: What does the human right to water do for the problems along one of the most developed rivers in the richest nation on earth? Does it add anything that might help frame the problems of the river system in a helpful new light as we head toward new crises hastened by climate change?

As important as the human right to water may be in less developed areas of the world, I remain ambivalent about its role in the Colorado River system. On the positive side, it seems apparent that the core concerns of the human right to water – basic access to clean water for drinking and sanitation – have been fairly well served by the Law of the River and the physical infrastructure it supports. The one major exception is the fact that so much of Indian country is so poorly served. But the recent Navajo water rights settlements, striking a new direction in the settlement of reserved water rights claims, will go some distance toward closing that gap.

On the less optimistic side are the increasingly critical and stubbornly intractable ecological problems that attend a river system so heavily manipulated for human uses. The Law of the Colorado River, like western water law in general, developed to promote utilitarian values, particularly the human use of water to support economic activities such as agriculture, natural resources development, energy generation and industry. Water that has been deployed for human use has come at the expense of the natural environment. Given the fact that scarcity, ecological values and uses of water stand in opposition to human uses, ecological protection and restoration demands a redeployment of water from human uses to the environment. Because of its narrow focus on basic human needs, the human right to water seems unlikely to provide a new tool for addressing ecological problems in the Colorado River basin. Indeed, because of the imperative power of its focus–basic human needs–

there is some risk that it could create a further human demand for water that will come at the expense of the environment. As the human right to water gains force–politically or legally–it will be important to see that its demands are met first from existing human uses rather than from water essential for the ecological integrity of the system. This will be no easy task for a legal system founded largely on priority and the protection of prior uses.