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# REPUBLICAN RIVER COMPACT

**FEDERALISM, THE COMPACT, AND THE SERIAL CRISES OF STATE WATER LAW**

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### INTRODUCTION

> As to ground water, practically speaking, we do not have any law. There is no question but what in the future something will have to be done about that, probably the sooner the better.
> John L. Riddell, Assistant Attorney General for Nebraska, 1944

In *Kansas v. Nebraska & Colorado*, No. 126 Orig., (1998-2003), the United States Supreme Court (Supreme Court) held that the Republican River Compact (Compact) required an accounting of groundwater depletions that affected surface flows. In response to that threshold decision, the States and the Federal Government cooperated to produce the Final Settlement Stipulation (FSS) — a comprehensive settlement document that incorporates groundwater into the Compact by providing detailed accounting procedures for the quantification and allocation of groundwater supplies across the Republican River Basin (Basin).

Almost as soon as the Supreme Court approved the FSS by decree, however, Nebraska relapsed into a pattern of noncompliance, due to its excessive groundwater pumping. In April 2011, the Supreme Court agreed to return its attentions to this dispute, and Kansas now seeks a series of remedies to enforce the decree. Kansas' proposed remedies include: a contempt finding; damages and preset sanctions; reductions in Nebraska groundwater use; and a federal river master. In response, Nebraska has counterclaimed, attacking the accounting procedures of the FSS itself as an obstacle that inhibits Compact compliance. If such a claim succeeds, the FSS may prove to be neither final, nor a settlement, nor a stipulation.

Nebraska's noncompliance with the Compact is a serious problem. Kansas asserts that this problem is longstanding and structural, and will worsen in future dry years unless Nebraska fundamentally amends its groundwater law. Until then, Kansas believes that federal supervision of the Nebraska portion of the Basin is imperative to ensure Nebraska's compliance. According to Nebraska, its noncompliance has little to do with law, but is rather the temporary consequence of an extraordinary drought that is now past. Because Nebraska claims to have resolved any future compliance challenges through recent changes to its water law, it believes that no federal involvement is necessary. Both of these States' opposing positions honor the same hallowed principle: namely, federal law should respect the sovereignty of state water law unless Congress has stated otherwise. *See, e.g., California v. United States,* 438 U.S. 645, 670-71 (1978). The Supreme Court will determine which state is honoring that principle in the breach.

## Republican River Basin Compact

**Compliance Issues**

**Allocation Alternatives**

**Federal Power**

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This article provides a survey of the tensions between federalism and state water law within the Basin. The first part places the problem of Nebraska's noncompliance within the historical context of federal-state interactions that: substantially allocated the waters of the Basin long before the Compact; produced the Compact; and enabled the Basin's development after the Compact. Together, these interactions generated a crisis in Kansas water law that produced the Kansas Water Appropriation Act of 1945. Part two of the article explains the development of the Basin and the groundwater boom that led to the 1998-2003 litigation. Kansas' crisis of the 1940's resembles Nebraska's present situation: while Nebraska regulates surface waters under the Prior Appropriation Doctrine, there is no central administration of groundwater. The third section surveys the divergent approaches to Nebraska's future compliance with the Compact. While Kansas and the US Bureau of Reclamation share a common concern about the long-term effects of excessive groundwater pumping in Nebraska, Nebraska believes it has produced a system that will ensure compliance. This difference of opinion returns us to the Compact, and to the principles and federal-state relationships upon which it is based.

## THE PAST AS PROLOGUE

### FEDERAL ALLOCATION OF REPUBLICAN RIVER BASIN INTERSTATE WATERS, 1854-1945

### Apportionment: Federal Power and State Water Law

Textbooks and treatises typically present the mechanisms of interstate water allocation in a survey arranged in neat procedural order. *See, e.g.,* George A. Gould and Douglas A. Grant, *Cases and Materials on Water Law* (6th ed., 2000), v; A. Dan Tarlock, *Law of Water Rights and Resources*, (West, 2010 ed.), §§ 10:2, 10:15, 10:24, 10:28. Alternatives for interstate water allocation include: the Supreme Court can "equitably apportion" interstate waters (Colorado, Kansas, and Nebraska all have long experience in equitable apportionment cases and the standard-bearer for the Supreme Court's equitable powers to apportion interstate waters remains *Kansas v. Colorado,* 206 U.S. 46 (1907)); States — with or without the United States as a party — can form interstate compacts to apportion waters (U.S. Const., Art. I, Sec. 10, cl. 3); or Congress can apportion waters by a statute other than an interstate compact. *See Arizona v. California,* 373 U.S. 546 (1963).

Yet, long before interstate litigation made the above apportionment mechanisms relevant, federal power had already allocated most of the interstate waters in the West. From the Reclamation Act of 1902 up through the 1940s, western water development interwove the principles underlying these apportionment mechanisms. A different sort of survey is therefore undertaken in this article — one that stresses the relationship between federal power and state water law.

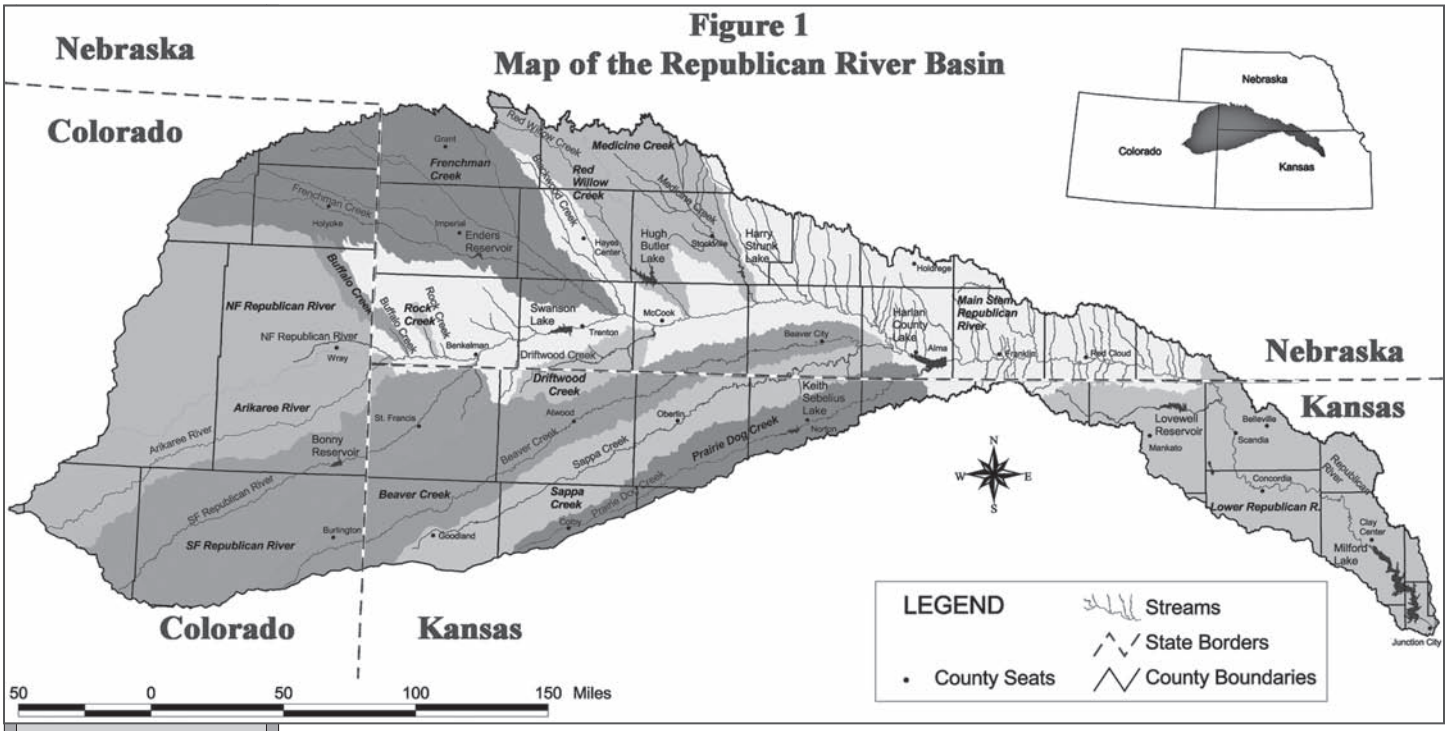
This article will illustrate how, historically, federal-state relationships regarding western water development have consistently placed a weaker downstream state (such as Kansas) in a position of permanent and structural inferiority. In the case of Kansas, this occurred long before the Compact became federal law in 1943. When the rivers run dry, the equal footing doctrine, coequal sovereignty, and other noble principles all risk becoming little more than judicial platitudes. An approach to the Compact that fails to recognize the history that produced this interstate inequality is seriously deficient, because the Compact allocates the Basin's waters — and thereby the Basin's interstate inequities — in perpetuity. Interstate compacts can help "stop the race" to imprudent water development that would likely occur if the only allocation option was equitable apportionment— a method of water allocation which usually rewards states that have developed their water resources earlier, and punishes states that have developed theirs later. In such a situation, priority, more than anything else, *is* equity." Frank J. Trelease, *State Water and State Lines: Commerce in Water Resources,* 56 U. Colo. L. Rev. 347, 349 (1985). Such is the case with the Colorado River, where California held a significant advantage over younger upstream rights, and with the South Platte, where Colorado held both a developmental and hydrological advantage over downstream Nebraska. However, in the Republican River's case, the Compact did not stop the race — instead, it handicapped the race in Nebraska's favor.

### The Original Congressional Apportionment of Interstate Waters

Before there were interstate compacts allocating western rivers, there were the western states, and before them the western territories from which they emerged. Government surveys and state boundaries since the Jefferson administration had followed Cartesian grids that paid little regard to the West's river basins. "They followed rivers for convenience, then struck out in a straight line, bisecting mountain ranges, cutting watersheds in half. Boxing out landscapes, sneering at natural reality, they were wholly arbitrary and, therefore, stupid." Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* 47 (Rev. ed. 1993).

**Figure 1**
**Map of the Republican River Basin**




## Republican River Basin Compact

### State Boundaries

The Republican River Basin exemplifies this congenital defect. It extends for 430 miles, draining 25,000 square miles across the high plains, low plains, and uplands that lie south of the Platte River Basin, west of the Missouri River Basin, and north of the Arkansas River Basin. The North Fork of the Republican flows into Nebraska from Colorado, while the South Fork of the Republican and the Arikaree River flow first into Kansas and then into Nebraska, where they join the North Fork to form the main stem of the Republican. From Benkelman, Nebraska, the Republican flows east, traversing southern Nebraska before turning south into Kansas. From the state line near Hardy, Nebraska, the Republican flows southeasterly, where it joins the Smoky Hill River to form the Kansas River at Junction City, Kansas. Originally, the Basin was split by the boundaries set forth in the Kansas-Nebraska Act (10 Stat. 277-290 (May 30, 1854)), within the national struggle over slavery that dominated American politics during the 1850's. Kansas, Nebraska, and New Mexico territories originally extended to the Continental Divide; Colorado Territory, established in 1861, was carved out of the territories of Kansas, Nebraska, New Mexico, and Utah. Present at the creation was a glaring inequality between Kansas Territory and the much greater Nebraska Territory, which extended north to the forty-ninth parallel and encompassed all lands between the Missouri River and the Continental Divide.

### Imaginary Boundaries

Amid the politics of antebellum boundary-setting, some raised concerns about the Kansas-Nebraska border, which had been set at the fortieth parallel. Envoys from Nebraska Territory attended the Kansas constitutional convention of 1859 and sought to move the boundary to the Platte River. As Mr. Reeves of Nebraska stated, "[t]he Platte River is the natural northern boundary of Kansas while our present boundary is only an imaginary one." The convention drafted a resolution requesting Congress to change the boundary accordingly, but it failed. Had the resolution passed and gained Congress' assent, Kansas could have entirely contained the Republican River Basin. From the Kansas' perspective, Mr. Reeves' proposal remains one of the most enlightened water-management ideas in history.

National politics and federal interests later informed the federal acts that created the states of Kansas (1861), Nebraska (1867), and Colorado (1876), which together established the boundaries trisecting the Republican River Basin. The original apportionment of the Basin's water supply took place when Congress drew these boundaries — i.e., long before any interstate water compact was negotiated.

### Development Laws

**Federal Disposition and Development Law as an Apportionment Mechanism**

Another avenue of federal apportionment of interstate waters involves the federal acts that provided for the disposition of the public domain. While grants under the Preemption Act (5 Stat. 453 (September 4, 1841); repealed by the Land Revision Act of 1891) and various railroad acts continued unabated, the Homestead Act of 1862 enabled settlers to obtain 160 acres in fee simple by proving up their claim through settlement and five years' cultivation. Homestead Act of May 20, 1862, 43 U.S.C. § 161 *et seq.* (repealed 1976).

## Republican River Basin Compact

### Aridity Boundary

Across the Republican River Basin, homesteaders proved up dryland farms on both sides of the boundary of the West's aridity, where crops could not mature without supplemental irrigation. This aridity boundary — usually described as the 100th Meridian — is in fact farther east. John Wesley Powell chose the 100th Meridian in his 1878 Report because it was roughly equivalent to the twenty-inch isohyet — the cartographic line connecting points receiving twenty inches of annual precipitation. That isohyet had been established by Charles Schott, and his "Rain Chart of the United States" was included in Powell's *Report on the Arid Lands of the United States (1878)*. Donald Worster, *A River Running West: the Life of John Wesley Powell* 355, 348-49 (2001). Later geographers and legislation moved that line one to two degrees east. *See, e.g.,* K.S.A. 42-301 to 42,311 (relating to the use of water for industrial purposes west of the 99th Meridian). The Flood Control Act of 1944, 33 U.S.C. §§ 701- 709, drew the line between western consumptive use and eastern navigation use at the 98th Meridian. 33 U.S.C. § 701-1(b).

### Rain Follows the Plow?

As land hucksterism raced westward, hucksters explained away the problem of aridity by finding a causal connection between the plow and rain — a theory with particular currency in Nebraska. Samuel Aughey, a member of the Hayden Survey during the 1860's and later a professor at the University of Nebraska, promoted the idea that "rain follows the plow"— i.e., that farming generates precipitation. Samuel Aughey, *Sketches of the Physical Geography and Geology of Nebraska (1880)*. Four decades later — despite the drought of the 1890's that gave the lie to Aughey's convictions — Nebraskan agronomist Hardy Webster Campbell reaffirmed Aughey's basic principles, newly alloyed with Social Darwinism. *See* Hardy Webster Campbell, Campbell's *1907 Soil Culture Manual. A complete Guide to Scientific Agriculture as adjusted to the Semi-Arid Regions 125 (1907)*.

### Homestead Expansion

Inflated by the unusually wet years of 1879-1882, homesteading ballooned the population of central and western Kansas during the 1880's. Drought then cut the population of western Kansas almost in half by 1897. *See* Richard White, *Railroaded: the Transcontinentals and the Making of Modern America,* 209-211 (2011). Congress responded by increasing the acreage that could be claimed, plowed, and grazed. The Enlarged Homestead Act of 1909 doubled the maximum acreage to 320 acres for homesteads west of the 100th Meridian. Enlarged Homestead Act of 1909, 43 U.S.C. §§ 218-221 (repealed 1976). Diversification into cattle was another course: the Kinkaid Act of 1904 allowed a full section for grazing and cultivation in the Nebraska panhandle. 33 Stat. 547 (Apr. 28, 1904), 43 U.S.C. § 224 (repealed 1976). Congress reached its dispositive peak with the Stock Raising Homestead Act of 1916, authorizing entry on a section for grazing, mandating minimal range work to prove up the claim, requiring no farming, and making these provisions applicable to all public land, not just in Nebraska. Stock-Raising Homestead Act of 1916, 43 U.S.C. §§ 291-301 (repealed 1976).

### Desert Land Act

The second line of federal acts dealt with water explicitly. The Desert Land Act of 1877, 43 U.S.C. §§ 321-323, placed irrigation at the center of disposition. It recognized western aridity, but continued the federal tradition of arbitrary and unequal boundaries. While Colorado fell within the Act's purview in 1891 (Act of Mar. 3, 1891), Kansas and Nebraska never did, even though their western regions are climatologically indistinguishable from eastern Colorado. The Act granted right of entry to any person to 640 acres (amended to 320 acres in 1890) on condition that they "reclaim a tract of desert land" by irrigating it for three years. Upon proof of irrigation, the claimant obtained a patent to the land. *Id.,* § 321. The Act defines "desert land" as "all lands exclusive of timber lands and mineral lands which will not, without irrigation, produce some agricultural crop," a fact ascertained either by the sworn testimony of two credible witnesses, or by the Secretary of the Interior or his designee. *Id.,* § 322. The vague and ambiguous language has been repeatedly ridiculed by all commentators. Unfortunately, the Act did not recognize that individual initiative, no matter how heroic, lacked the means to reduce western waters to agrarian obedience on a scale that could make investment in irrigation pay. Little land was irrigated under the Act, while fraud, failure, and the market — all operating with their usual harmony — delivered many claims into the portfolios of corporate landowners. At least ninety-five percent of the final proofs were fraudulent. Reisner, *Cadillac Desert*, 44.

### Fraud

### Carey Act Inequities

The Carey Act attempted to overcome the limitations of individualism, by allowing private companies to pursue irrigation. 28 Stat. 372 (1894), as amended at 43 U.S.C. §§ 641-48. It made available one million acres of "desert lands" in the western states (as defined by the Desert Land Act), on condition that the state, whether directly or through private companies, develop large-scale irrigation works within ten years and sell off the appurtenant land in 160-acre tracts. Like the Desert Land Act, it applied unequally: its provisions were made available to Colorado, but apparently not to Kansas or Nebraska. The geographical boundaries in which the Carey Act applied are unclear in the text of the act. 43 U.S.C. § 641. Subsequent amendments to the Carey Act enlarged eligible lands considerably. Colorado was allowed up to two million acres, including the treaty lands formerly held by the Uncompahgre and White River Utes. 37 Stat. 38, codified at 43 U.S.C. § 645; 34 Stat. 1056 (1907), 35 Stat. 644 (1909), codified at 43 U.S.C. § 647.

## Republican River Basin Compact

The Carey Act mostly failed: the high cost of developing irrigation works translated to high mortgages for individual irrigators, and few could pay the note. As Spencer Baird, a lawyer for the US Bureau of Reclamation, remarked in 1944, private contractors "had in mind the profit motive…And the interest-bearing contracts of the water users were hypothecated with some Eastern trust companies. Thus many of the Carey Act projects were pinched off between the contractor taking shortcuts resulting in inadequate works and inexorable interest." Conference of the Governor's Committee on the Appropriation of Water in Kansas, Topeka, October 16-17, 1944, p. 6 (Remarks of Mr. Spencer L. Baird) (hereinafter "Conference Transcript") (transcript on file with author).

**Reclamation and the Compact**

**Federal Financing**

The Reclamation Act of 1902 sought to remedy the flaws of earlier acts and the abuses they generated. 32 Stat. 388 (codified as regularly amended throughout 43 U.S.C.A.). Because private enterprise frequently lacked the resources necessary to construct effective irrigation projects, the Reclamation Act provided for federal financing instead. *See, e.g.,* James Earl Sherow, *Watering the Valley: Development along the High Plains Arkansas River, 1870-1950* 79-92 (1991). It established a revolving fund generated by the sale of public lands, and directed the Secretary of the Interior to survey, locate, and build irrigation projects, and then open these improved public lands to settlement under the homestead laws. *See* Frank J. Trelease, *Reclamation Water Rights,* 32 Rocky Mtn. L. Rev. 464, 465 (1960). In its original version, the Reclamation Act retained all of the optimism of earlier reclamation law — such as assuming that the new landowners could pay off the costs of construction in ten annual, interest-free installments.

**River Basin Planning**

During the 1930's, the States and US Bureau of Reclamation (Reclamation) exploited the Dust Bowl's disasters to plan a comprehensive federal system in the Republican River Basin. The sod-busting and mechanized agriculture of the second boom period (roughly between 1905 and 1925) fundamentally destabilized the soils of the Basin. The Dust Bowl blew much of that soil away, while the great flood of 1935 eroded it yet further. These disasters contributed to Reclamation's interest in multipurpose reservoirs, and forced local boosters to recognize that only federal means and federal power could construct the infrastructure capable of long-term irrigation and flood control. Because the Basin was relatively undeveloped, water planners from both the States and Reclamation were able to consider it as a whole, without regard to pre-existing irrigation works. Such a situation was ideal for Reclamation's New Deal focus on river basin planning and river basin accounting. Reisner, *Cadillac Desert*, 134-36. Wiped clean by disaster, the Basin offered a blank slate for planned development.

**Compact Negotiations**

The cooperative response to these disasters produced a decade-long process by which federal planning and the allocation of the Basin's water supplies operated in tandem, culminating with the Compact itself: a guarantee among the States that their allocations and federal water infrastructure would be protected at the same time. As a condition of receiving that infrastructure, the United States required the States to enter into a compact that would allocate the water in the Basin to protect federal investments. Republican River Compact Administration, *29th Annual Report*, p. 14 (1989) (Statement of Robert D. Kutz, Area Manager, Bureau of Reclamation, Kansas-Nebraska Area Projects Office). Indeed, President Roosevelt first vetoed the Compact, because he believed it lacked sufficient protections for the US, which had not yet participated in Compact negotiations. After the US entered the negotiations, the parties revised the Compact to include Articles 10 and 11, which provide explicit protections for federal interests. Meanwhile, proxy negotiations took place in the form of budget appropriations for Reclamation projects, alongside direct negotiations following the specific consent of Congress. The States agreed to the Compact in 1942 (Act of August 4, 1942, 56 Stat. 736), and it was ratified by the state legislatures. Colorado by Act of March 15, 1943 (Colo. Rev. Stat. §§ 37-67-101, 102 (2009); Kansas by Act of February 22, 1943 (Kan. Stat. Ann. § 82a-518 (1997); and Nebraska by Act of February 24, 1943 (Neb. Rev. Stat. Vol. 2a, App. 1-106 (1995). Congress consented to the Compact, and President Roosevelt approved it on May 26, 1943. 57 Stat. 86 (1943).

**Waters Divided**

The Compact divides the waters of the Basin among Colorado, Kansas, and Nebraska, according to its sub-basins and mainstem. Specifically, the Compact allocates the "virgin water supply," defined as the water supply of the Basin that is "undepleted by the activities of man," and the "beneficial consumptive use," or use by which human activity consumes the water supply, including evaporative loss. Compact, arts. II-IV. When a state's consumptive use exceeds its allocation, it deprives the downstream state of its share — water allocation compacts are a zero-sum game. *See Hinderlider v. La Plata River & Cherry Creek Ditch Co*., 304 U.S. 92, 102 (1938). This obligation was well known at the time; indeed, M.C. Hinderlider represented the State of Colorado at the Compact negotiations. In 1959, the States formed the Republican River Compact Administration (RRCA). RRCA, *First Annual Report,* 1961.

**Republican River Basin Compact**

**Riparian Doctrine**

**Prior Appropriation Doctrine**

**Administrative System**

**Groundwater Regulation**

**Conflict of Laws**

**Riparian Issue**

**The Compact and the Crisis in Kansas Water Law, 1943-45**

The Compact enabled federal water-supply infrastructure, but it also produced a crisis in Kansas water law that forced the wholesale revision of that law between 1943 and 1945.

Prior to the Compact, Kansas followed two water doctrines. Eastern Kansas followed the Riparian Doctrine, by which the reasonable use of water was an inherent common-law attribute of riparian (streamside) property. In 1855, the Kansas Territorial legislature adopted the common law of England (as it stood in 1606), including the riparian doctrine of water rights. By 1855 that doctrine had evolved in response to the water-power demands of the industrial revolution. *See* Joshua Getzler, *A History of Water Rights at Common Law*, esp. 271-79 (2004). The Riparian Doctrine suited the wetter climate of eastern Kansas, its many streams and rivers, and industrial uses of water at the riverbank. Early cases usually concerned such uses. *See, e.g., Shamleffer v. Peerless Mill Co.,* 18 Kan. 24 (1877); *City of Emporia v. Soden,* 25 Kan. 588 (1881). By contrast, as early as 1866, Western Kansas followed the Prior Appropriation Doctrine, which formally entered Kansas statutes in 1876. Under this doctrine, water rights appropriated for beneficial use are severable from riparian land, and are protected in times of drought according to a priority allocation regime which favors earlier appropriations. Prior Appropriation formally entered Kansas' statutes in 1876 at L. 1876, Ch. 58 (early Kansas irrigation laws impliedly endorse prior appropriation, *e.g.* L. 1866, Ch. 57; L. 1923, ch. 144, sec. 5). In 1886, the Kansas legislature made the State's adherence to this doctrine clear in the State's first notice-posting statute, which prescribed: "as between appropriators, the first in time is the first in right." L. 1886, Ch. 115. Subsequent statutes elaborated on the 1886 law (L. 1889, Chs. 95 and 165). The 1891 legislature appears to have collected the extant water statutes and placed them in some sort of order. *See, e.g.,* K.S.A. 42-301 *et seq.,* which cite L. 1891, Ch. 133. In western Kansas, the main irrigation canals on the Arkansas River had been developed by the 1880's, irrigating around 65,000 acres — entirely diverting whatever flows that managed to escape from Colorado. Tellingly, no riparian owner in Kansas between the Colorado and Oklahoma state lines ever challenged the irrigators' right to divert. Henry S. Buzick, Jr. et al., *The Appropriation of Water for Beneficial Purposes: A Report to the Governor on Historic Physical and Legal Aspects of the Problem in Kansas,* 44 (1944) (hereinafter "*1944 Report*"). Between 1886 and 1945, riparianism and prior appropriation coexisted in Kansas, and the Kansas Supreme Court repeatedly declined requests to adopt prior appropriation exclusively. *See, e.g., Clark v. Allaman,* 71 Kan. 206 (1905); *Feldhut v. Brummitt,* 96 Kan. 127 (1915); *Frizell v. Bindley,* 144 Kan. 84 (1936); *Smith v. Miller,* 147 Kan. 40 (1938).

Left unanswered, however, amid this coexistence of doctrines were two pressing questions. First, there was the question of the power of Kansas law to regulate Kansas waters. In 1941, the Kansas legislature repealed the notice-posting statutes of 1886, made obsolete by the formation of the State's Division of Water Resources (DWR) and the establishment of an administrative system of water rights in their place. L. 1941, ch. 261, § 1. Most revisions to Kansas water law (Chapter 42) between 1923 and 1945 consist of adjustments made necessary by the Kansas Water Commission Act of 1917 (L. 1917, ch. 172), the formation of the Division of Water Resources (L. 1927, ch. 293), and the authorization of the Kansas Chief Engineer (L. 1933, ch. 271, § 7). Nonetheless, in 1944, the Kansas Supreme Court ruled that Kansas water law, for all of its doctrinal, region-specific sophistication, was ineffectual to regulate the water resources of the State as a whole, especially when it came to groundwater. *State, ex rel., v. Board of Agriculture,* 158 Kan. 603 (1944). This decision prompted Governor Andrew F. Schoeppel to order a comprehensive review of Kansas water law. *See 1944 Report,* 6-7.

Second, there was the question of how the federal reclamation laws, the federal law of the Compact, and the diverse water laws of the compacting states all worked together. This question occupied a separate conference of water law experts whom Governor Schoeppel also convened in 1944. *Conference Transcript*, n. 27 *supra.* Notable among them were Spencer L. Baird, District Counsel for Reclamation; Wells A. Hutchins, Senior Irrigation Economist for the US Department of Agriculture and one of the pre-eminent authorities in western water law (s*ee, e.g.,* Wells A. Hutchins, *Water Rights in the Nineteen Western States* (1971).; John Riddell, Assistant Attorney General for Nebraska; and Dan S. Jones, Assistant Chief of the Nebraska Bureau of Irrigation, Water Power and Drainage. George S. Knapp, Kansas Chief Engineer, chaired the Committee.

Spencer Baird (Reclamation) repeatedly stated a threshold problem: because the riparian law of Kansas made it virtually impossible to quantify the waters put to beneficial use, "we are rather at a loss to determine…whether or not there is water in excess of vested riparian rights for any reclamation project." *Conference Transcript* at 15. Reclamation's statement made an immediate impact. One Kansan summarily recognized that until Kansas law could quantify vested water rights, Reclamation would not be justified in "coming into Kansas on a project because of the uncertainty as to source of supply." *Id.* at 22-23 (statement of Frederic H. Guild).

By contrast, Reclamation was confident that water rights in Nebraska were sufficiently well defined to enable the development of projects there. *Id.* at 36-37 (comments of Mr. Baird). Riddell praised Nebraska, where the Prior Appropriation Doctrine was in force "with its full vigor…. ." *Id.* at 91 (comments of Mr.

## Republican River Basin Compact

**Water Availability**

**Reclamation's Benefits**

**Conjunctive Regulation**

**Kansas' Principles**

**Impact of Federal Law**

Riddell). Because the State Engineer of Nebraska determined the quantities of all surface water rights, a centralized system of water rights administration made it easier for Reclamation to determine the amount of water available to develop irrigation districts. *Id.* at 130-131 (interchange between Jones and Watkins); *Id.* at 135-39 (Hutchins on the virtues of a centralized administrative system). Mr. D.J. Robinson, of the Federal Land Bank of Wichita, Kansas, similarly voiced strong support for a centralized system "that would clarify the situation here in Kansas." *Id.* at 142. Such a system clearly appealed to the Kansans, who were seeking support from Reclamation and the US Army Corps of Engineers to develop projects within Kansas. *Id.,* at 145-48 (comments of Knapp and Mr. Porter Ahrens of Scandia, Kansas).

Without both the certainty of right enabled by the Prior Appropriation Doctrine, and the power of centralized administrative authority over appropriation rights, the Compact's allocation of the waters of the Basin would not bring as many of Reclamation's benefits to Kansas as it had to Nebraska. *Id.* at 151-57 (Comments of Knapp and Mr. John M. Gray of Kirwin). This was the lesson set by the example of Nebraska, and Kansas paid close attention to it. *1944 Report*, 27-40. The success of Nebraska law under the Compact and with Reclamation motivated Kansas to emulate that law, so that there would be a common legal approach on both sides of the border. *Conference Transcript*, at 21. Such a reformation would create the happy condition where "[t]he state line is obliterated; we disregard the state line. So therefore our state law would have to be comparable with the working conditions in Nebraska… ." *Id.* at 148 (comments of Mr. Ahrens).

The chorus of praise for Nebraska, though, fell silent when the score turned to groundwater. Hutchins emphatically recommended that groundwater pumping be placed within the same legal regime as surface water diversions, because of their hydrological connections and the commensurate need to regulate both with equal rigor. *Conference Transcript*, n. 42 *supra,* at 63, 81-83 (Hutchins). Riddell of Nebraska candidly conceded the point: "[a]s to ground water, practically speaking, we do not have any law. There is no question but what in the future something will have to be done about that, probably the sooner the better." *Id.* at 95 (Riddell). By contrast, a reformation of Kansas water law required that "the waters of a given drainage area, both ground water and surface water…be considered one system. [Y]ou can not deal with one, practically speaking, to the exclusion of the other." Otherwise, excessive groundwater pumping would be allowed to intercept baseflows to the river, extinguishing rights to the latter. *Id.,* at 177-78 (Comments of Mr. Rogers).

The Compact and Nebraska's immediate success within it forced Kansas to study Nebraska law; that study was instrumental in building the Kansas Water Appropriation Act of 1945, the modern water law of Kansas. K.S.A. 82a-701 *et seq*.

The Kansas Water Appropriation Act was built on three related principles:

- It established the Prior Appropriation Doctrine, repudiating the Riparian Doctrine but allowing pre-existing water uses to be recognized as vested water rights. *Id.,* 82a-706; *Id.,* 82a-704 (repealed 1978).
- It endowed the Kansas Chief Engineer with clear statutory authority to grant, protect, and administer water rights according to prior appropriation. *Id.,* 82a-711; *Id.,* 82a-706b.
- It made clear that the Chief Engineer's powers extended to all of the waters of Kansas, including groundwater. *Id.,* 82a-702.

The story of this Act has been well told with regards to its intrastate context (s*ee, e.g.,* John C. Peck, *The Kansas Water Appropriation Act: A Fifty Year Perspective,* 43 Kan. L. Rev. 801 (1995)), but that narrative has not acknowledged the equally important role played by federal reclamation law and the Compact. As the 1944 conference reveals, Kansas reformers quickly realized the imperative need to harmonize Kansas water law with federal water law, to assuage the effects of the interstate inequality that the Compact had unwittingly imposed upon Kansas.

### Federal Power and State Law, 1854-1945: Some Preliminary Conclusions

With the Compact in mind, these acts of boundary-making, disposition, and development together invite two provocative if preliminary conclusions.

First, federal law played a dominant role in promoting interstate inequality in water supplies between the territorial period and the Compact. Federal disposition acts applied unequally across the Basin, creating an unequal development of its waters.

Second, the Compact handicapped that development in favor of Nebraska, whose water law enabled Reclamation to commit to Nebraska projects early. Such a legal discrepancy may have also affected the bargaining power of the respective States in negotiating the Compact.

These conclusions raise a chronic problem of federalism: the diversity of compacting States' water law placed them in often unequal positions relative to both the Compact and to the whole of federal water development law of which the Compact is a part. That unequal relationship provoked an immediate crisis in Kansas water law. The crisis in Nebraska was longer in coming. *See Spear T Ranch v. Knaub,* 691 N.W. 2d 116 (2005).

**Republican River Basin Compact**

**Irrigation Projects**

**Compact Allocation**

**Federal & State Law Coexistence**

**Groundwater Pumping Dominance**

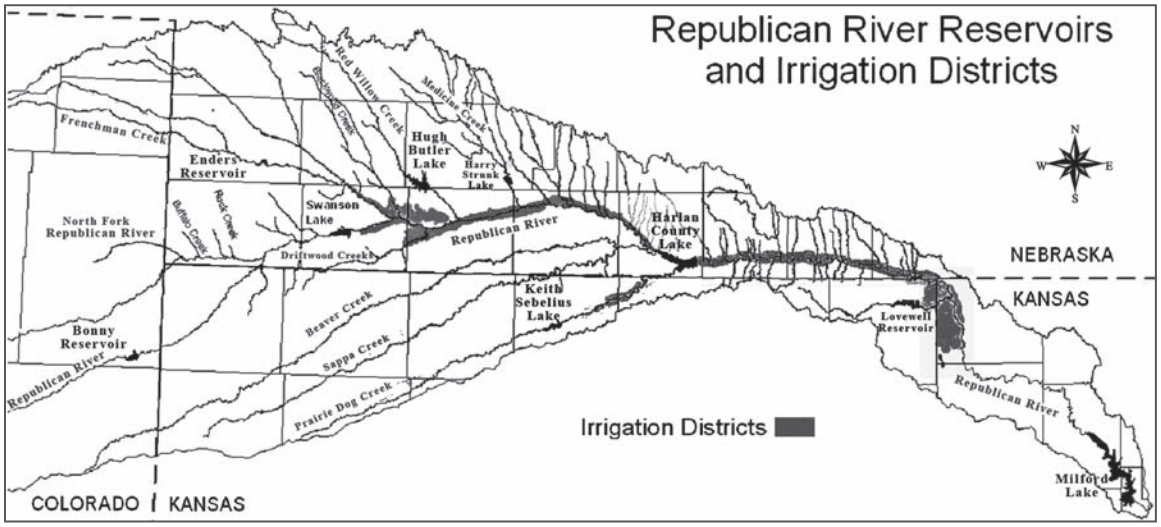
**Over-Pumping Effects**

## THE PRESENT PROBLEM: STATE LAW, HYDROLOGY, AND NEBRASKA'S NONCOMPLIANCE

### Post-Compact Surface Water Development

After ratification of the Compact, the federal government developed a system of reservoirs and irrigation districts consistent with the plan that motivated the Compact. *See, e.g.,* Flood Control Act of December 22, 1944, P.L. 534 (now codified at 43 U.S.C. 390b). Between the 1940's and the 1960's, Reclamation constructed seven flood control and irrigation projects in the Basin: Bonny Reservoir in Colorado; Enders Reservoir, Swanson Lake, Hugh Butler Lake, and Harry Strunk Lake in Nebraska; and Keith Sebelius Lake and Lovewell Reservoir in Kansas. The US Army Corps of Engineers (Corps) also completed two other reservoirs in the Basin: Harlan County Lake in Nebraska and Milford Lake in Kansas. Reclamation and the Corps operate and maintain these projects for flood control, irrigation, and other purposes, in cooperation with the States. The Compact explicitly relies on this federal presence — for example, it provides that federal surface water development in each state be charged to that State's allocation. Compact, Art. XI(a). See Figure 2 below.

**Figure 2: Republican River Reservoirs and Irrigation Districts**



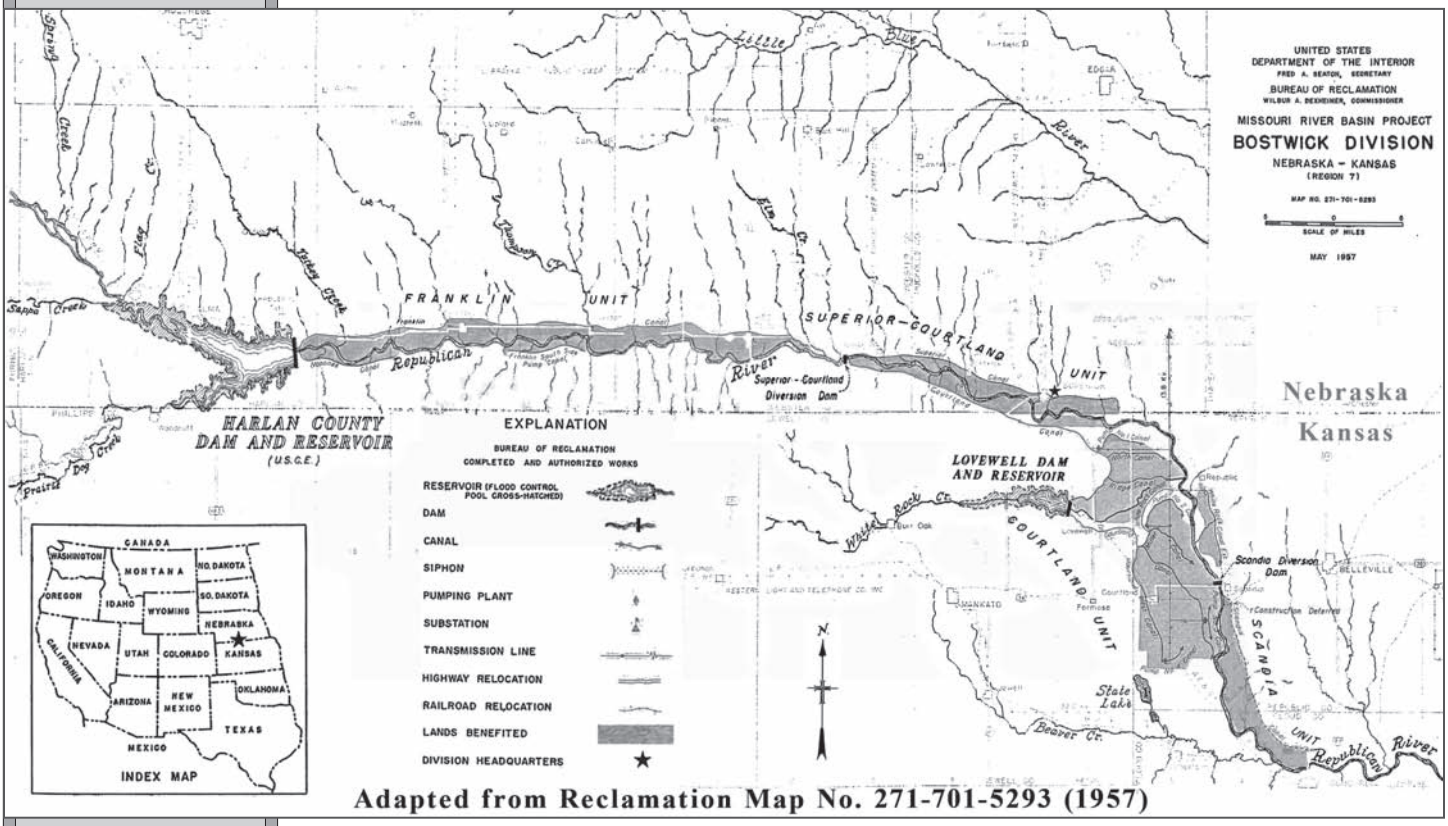

More than any other project, the Bostwick Division Project (Bostwick Project) reveals the difficult coexistence of federal reclamation law and diverse state water law within the Basin. Relying on the Compact, the Bureau constructed the Bostwick Project, which began operations in the early 1950's. It supplies irrigation water to nearly 65,000 acres, of which roughly 23,000 acres are in Nebraska and the remainder in Kansas. Releases from its primary storage facility, Harlan County Lake in Nebraska, together with direct flow, are diverted at Guide Rock into the Superior Canal for irrigation in Nebraska, and into the Courtland Canal for irrigation in both Nebraska and Kansas. See Figure 3, next page.

### Goundwater Development in the Basin and Nebraska's Noncompliance

If the belief that "rain follows the plow" was Nebraska's enduring contribution to water supply management of the nineteenth century, Frank Zyback's invention of center-pivot irrigation was its enduring contribution of the twentieth. Even the postage stamp for the State of Nebraska features a center-pivot system traversing a vast field of irrigated corn. Starting in the 1950's, the development of large-scale groundwater pumping transformed the Basin. An agricultural area previously consisting primarily of surface-water irrigation projects and dryland farming became dominated by groundwater pumping. Eager to exploit groundwater, all three Basin States allowed substantial groundwater development in the Ogallala aquifer and the alluvial valleys of the Basin.

The effects of over-pumping became evident during the 1970's, in the decline of groundwater levels and streamflows that derive from groundwater outflows. By the late 1970's, Colorado and Kansas had effectively closed their respective portions of the upper Basin to new groundwater development, limiting their groundwater wells to about 4,000 each. (Kansas officially closed its upper basin in 1984.) By contrast, Nebraska had few restrictions on the drilling of wells and the use of groundwater, despite the RRCA's determination that Nebraska had overused its allocation beginning in 1968 and more regularly during the

**Figure 3: The Bostwick Project**



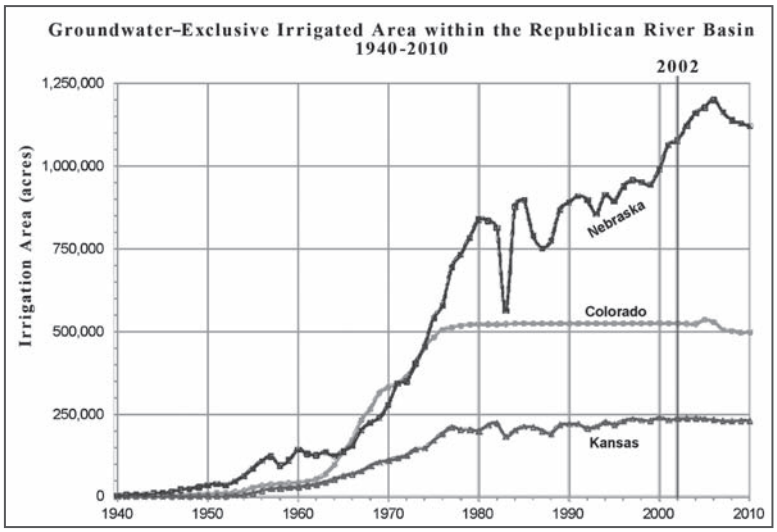

## Republican River Basin Compact

### Nebraska's Irrigation Expansion

### Kansas & Colorado Limitations

late 1970's. *See, e.g.,* RRCA, *30th Annual Report* 18 (1990) (showing 296,060 acre-feet by Nebraska in 1989); RRCA, *31st Annual* Report 13 (1991); RRCA, *32nd Annual Report* 16 (1992). In 1976 and 1978, Nebraska's statewide overuse was reported to be 97,000 acre-feet and 61,000 acre-feet, respectively. From 1976 to 2000, the number of active wells in Nebraska's part of the Basin increased from around 12,000 to more than 18,000. *Kansas v. Nebraska & Colorado,* No. 126 Orig., *Final Report of the Special Master with Certificate of Adoption of the RRCA Groundwater Model*, p. 18 (September 17, 2003) (increase of wells within the Model Domain). Acreage of irrigated land there increased by an even greater amount. Figure 3 shows the expansion of acreage within the Basin that is irrigated by groundwater. Since the late 1970's, Kansas has maintained a limit of under 250,000 acres, and Colorado has maintained a limit of just more than 500,000 acres. During the same period, Nebraska's acreage grew nearly sixty percent, from 750,000 acres to roughly 1.2 million acres, even after the FSS placed a moratorium on new wells.

**Figure 4: Groundwater-Exclusive Irrigated Area within the Republican River Basin, 1940-2010**



## Republican River Basin Compact

### Increasing Noncompliance

Nebraska's over-development of groundwater produced a pattern of increasing noncompliance during dry periods. In wet years, water supply and Compact allocations increase, and irrigation requires less water. In dry years, water supply and allocations decrease, and non-compliance by Nebraska has regularly ensued. 1989-92 witnessed a second period where Nebraska failed to live within its allocation; were it not for the floods of 1993, that period would have continued further. Nebraska's use above Compact allocations was 37,400 acre-feet for 1989, 32,700 acre-feet for 1990, and 52,260 acre-feet for 1991. Kansas regularly complained to the RRCA as Nebraska's violations grew more serious. (RRCA, *26th Annual Report*, for Compact Year 1985, p. 11 (1986); RRCA, *28th Annual Report*, for Compact Year 1987, p. 12 (1988); RRCA, *30th Annual Report*, for Compact Year 1989, p. 12 (1990); RRCA, *32nd Annual Report*, for Compact Year 1991, pp. 8-9 (1992); RRCA, *33rd Annual Report*, for Compact Year 1992, p. 20 (1993)). Since 2007, Nebraska's portion of the Basin has enjoyed plenty of rain, enabling compliance; yet even then, its depletions of baseflow have continued to grow, worsening the problem posed by future dry periods.

**The 1998-2003 Litigation, and the Final Settlement Stipulation and Decree**

### Compact Control of Groundwater

To defend itself against violations of the Compact due primarily to upstream over-pumping of groundwater, Kansas filed suit against Nebraska and Colorado in 1998. The Supreme Court granted Kansas' Motion for Leave to File a Bill of Complaint in January 1999. The Court invited Nebraska to file a motion to dismiss in order to test Nebraska's position that groundwater pumping was not subject to the Compact. Vincent McKusick, the Special Master appointed by the Court, found that the Compact required an accounting of groundwater depletions of the flows of the Republican, and recommended that Nebraska's Motion to Dismiss be denied. The Court denied the motion accordingly, and overruled Nebraska's exception to the Special Master's report. *See Kansas v. Nebraska & Colorado,* No. 126 Orig., First Report of the Special Master (Subject: Nebraska's Motion to Dismiss); 530 U.S. 1272 (2000). After the Court denied Nebraska's Motion to Dismiss, the States began intense negotiations to settle the remainder of the issues.

### FSS' Flexibility

These negotiations were led by veteran chief engineers — Hal Simpson of Colorado, David Pope of Kansas, and Roger Patterson of Nebraska. They, along with their staff, experts, and lawyers, worked to develop the Final Settlement Stipulation (FSS), the Accounting Procedures, and the RRCA Groundwater Model. The federal government, including its own technical staff and lawyers, also participated.

The FSS includes the Accounting Procedures and the Groundwater Model, and is a careful, thorough, and flexible document. Rather than requiring strict annual compliance, it balances five-year compliance periods during all periods with two-year compliance periods during water short years, to ensure that downstream States receive their allocation during dry periods. The Accounting Procedures work with the Groundwater Model to quantify groundwater depletions and credits to Nebraska for the imported water supply from the Platte Basin. The FSS allows each State to develop its own data, while also allowing the States to exchange underlying data.

### Compliance Determination

Legally, the FSS is also comprehensive in nature, serving as the non-severable agreement by which the States determine Compact compliance. Each State, through its Governor and Attorney General, signed the FSS on December 15, 2002. *See Kansas v. Nebraska & Colorado,* No. 126 Orig., *Second Report of the Special Master* (Subject: Final Settlement Stipulation) (hereinafter "*Second Report*") 24 (2003). The FSS was fully supported by the United States. *Second Report*, 77. Special Master McKusick recommended that the Court approve the FSS, explaining that it "is a series of bargained-for exchanges resulting from genuine negotiation and give-and-take among the States on many controversial issues that have divided them for years, and in some cases, decades." *Id.* at 73. In the agreement, each State "gained much of what it most needed, rendering the settlement as fair and equitable as is practicably possible." *Id.* at 76. The FSS avoided a long trial, and restored "the Compact's system for administration of the water of the Republican River Basin." *Id.* at 76, 77. Special Master McKusick also considered the FSS to be "superior to any possible litigated result," because the FSS is "much more complete in breadth of subject matter and depth of specificity than could be any judgment of the Court deciding merely the issues raised by the pleadings." *Id.* at 75-76 (internal citations omitted).

**The Current Controversy over Nebraska's Noncompliance**

### Groundwater Remedies

The FSS and its compliance tests made clear that Nebraska would have to significantly reduce groundwater pumping, particularly during dry periods. In the years following the signing of the FSS, Nebraska's principal compliance activities consisted of seeking reductions in irrigated acres through incentive-based land and water rights retirement programs, metering, and pumping allocations. However, accounting results for 2003-2005 showed that Nebraska had relapsed into noncompliance, just as drought was returning to the Basin.

Kansas and Nebraska are in rough agreement regarding the scale of Nebraska's noncompliance for 2005-2006. The amount of the violation averaged over 35,000 acre-feet per year in 2005-2006. This is more than three times the violation of the Pecos River Compact by New Mexico and nearly four times

**Republican River Basin Compact**

**2009 Arbitration**

**Remedies for Compliance**

**Relief Sought**

**Damages**

**Pumping Reduction**

**Accounting Flaws Alleged**

**Compliance Authority**

**Obstacles**

Colorado's violation of the Arkansas River Compact. *See Texas v. New Mexico*, 482 U.S. 124, 127 (1987) (10,000 acre-feet per year) and *Kansas v. Colorado*, 543 U.S. 86, 91 (2004) (9,000 acre-feet per year). In 2008, Kansas presented the issue to the RRCA (FSS, § VII.A), which failed to resolve it. As required by the FSS (§ VII.B.1), Kansas then initiated non-binding arbitration. The States selected Karl Dreher, former chief engineer for the State of Idaho, as the Arbitrator. Following very truncated discovery, an arbitration trial took place, resulting in a decision in 2009. For a summary of the 2009 Arbitration from the Nebraska perspective, *see* Justin D. Lavene and Marcus A. Powers, *The Republican River Compact: Conflict & Arbitration,* 1-10, *The Water Report* #68 (October 15, 2009).

The two most important arbitrated issues concerned Nebraska's noncompliance and the proper remedies to ensure its future compliance. In his decision, Mr. Dreher stated, "Nebraska has not been in compliance with the FSS since [2003]…until the 5-year normal administration period ending in 2008, following the wet year of 2007 with wet-year conditions continuing through 2008…. ." *Final Arbitration Decision of June 30, 2009* (Corrected July 13, 2009), Finding 151, pp. 57-58 (internal citations omitted). He also found that "Kansas had adequately demonstrated that its proposed remedy would result in Nebraska's compliance with the FSS, even during dry-year conditions…. ." *Id.*, Finding 135, pp. 49-50. However, he found that Kansas had not shown that its remedy was the minimum necessary for compliance, and that Kansas had possibly overestimated the reductions in groundwater irrigated acreage necessary for Nebraska's compliance. *Id.,* p. 50. Conversely, Nebraska "has underestimated the amounts by which it is likely to exceed its allocations during dry-year conditions," by as much as 30,000 acre-feet per year. *Id.,* Finding 150, p. 57. Mr. Dreher was also skeptical of Nebraska's ability to ensure future compliance with the Compact and the FSS. *See Id.,* Findings 136-151, pp. 50-58.

In May 2010, Kansas filed a Motion for Leave to File a Petition with the Supreme Court, pursuant to *Kansas v. Nebraska & Colorado*, No. 126 Original. In April 2011, the Court granted Kansas' Motion and appointed Mr. William J. Kayatta, Jr. as Special Master. The case is set for trial in August 2012.

Kansas seeks three forms of relief (pleadings and other filings in *Kansas v. Nebraska & Colorado* are available at www.pierceatwood.com). The first concerns contempt: it has asked the Court to find Nebraska in contempt for violating the Decree, and to enjoin Nebraska from further violations. The second concerns damages. Kansas has asked the Court to order Nebraska to pay the amount of its profits derived from noncompliance, or the amount of Kansas' losses resulting therefrom, whichever is greater, with interest. Kansas experts have calculated that Nebraska gained more than $50 million from its violation of the Decree during this two-year period, and damaged Kansas to the extent of between $5 and $10 million. Because of the wide divergence between Nebraska gains and Kansas damages, Kansas has also requested that the Court order Nebraska to pay preset sanctions in the event of future violations, in an amount sufficient to remove the incentive to violate the Decree. The final form of relief concerns future compliance. Kansas has asked the Court to order Nebraska to reduce groundwater pumping significantly. To monitor and ensure the effective administration of those reductions, Kansas has requested that the Court make Nebraska subject to a River Master. Kansas Petition, pp. 11-13.

In response, Nebraska filed a counterclaim against Kansas and a cross-claim against Colorado, alleging that the accounting procedures of the FSS are so flawed that they cannot determine the consumptive use of water in each state. According to this reasoning, Kansas' and Colorado's support of these alleged flaws constitute a breach of the Compact that has harmed Nebraska. *Answer and Amended Counterclaims and Cross-Claim of the State of Nebraska, July 25, 2011*, Amended Counterclaims ¶¶ 43-45, Cross-Claim ¶¶ 32-35.

**Nebraska's Noncompliance and the Crisis in Nebraska Groundwater Law**

Nebraska's noncompliance returns us to the problems of State law diversity within a federal compact regime. As summarized above in the first section of this article, the Compact provoked a crisis in Kansas' water law regarding the power of the State's Chief Engineer to regulate all of the waters of Kansas. Nebraska's repeated noncompliance with the Compact in the wake of the groundwater boom has produced a similar crisis in Nebraska water law.

The State of Nebraska is directly responsible for compliance, but it has delegated the authority to reduce groundwater pumping to entities that it does not directly control. State political leaders — governors, attorneys general, and directors of natural resources — are often tempted to disobey their compact obligations to other States, rather than face the political consequence of reducing their constituents' water use. A State Supreme Court can also prove to be a formidable obstacle to State regulation of groundwater pumping. For example, Colorado attempted in the 1960's to regulate groundwater pumping due to impacts on the Arkansas River, and these attempts were overcome and/or reversed by the Colorado Supreme Court. It took Kansas' lawsuit against Colorado to force Colorado to curtail post-compact groundwater development or replace depletions caused by over-pumping. *Kansas v. Colorado,* No. 105 Orig., *First Report of the Special Master, July, 1994*, pp. 118-119. Where a State does not administer surface water rights and groundwater rights consistently in one legally integrated system, the political power of groundwater interests can frustrate that state's ability to comply.

**Republican River Basin Compact**

**Conjunctive Problem**

The textbook example of this structural problem is Nebraska. In Nebraska, surface water is governed by one set of laws and is administered by Nebraska's Department of Natural Resources (DNR). *See* Neb. Rev. Stat. § 61-206(1) (2009): "[DNR] is given jurisdiction over all matters pertaining to water rights for irrigation, power, or other useful purposes except as such jurisdiction is specifically limited by statute." Groundwater is governed by a different set of laws and administered by Natural Resource Districts (NRDs), which are political subdivisions of the State of Nebraska. Neb. Rev. Stat. § 2- 3213(1) (2007). Neb. Rev. Stat. § 46-702 (2011) provides: "The Legislature also finds that natural resources districts have the legal authority to regulate certain activities and, except as otherwise specifically provided by statute, as local entities are the preferred regulators of activities which may contribute to ground water depletion." In 2004, the Nebraska legislature modified the management of groundwater and surface water by enacting LB 962. This bill introduced the mandatory adoption and implementation of Integrated Management Plans (IMPs) in the Basin. Neb. Rev. Stat. § 46-715(1) (2011). Because the NRDs "jointly develop" the IMPs with DNR, the NRDs have veto control over what goes into the IMPs. *Id.*

**Segregated Control**

The State of Nebraska, acting through DNR, has no direct supervisory authority over the NRDs concerning groundwater administration. If DNR and an NRD cannot agree on the content of an IMP, then the Governor convenes the members of a third entity, known as the Interrelated Water Review Board (Board), to resolve the dispute. Neb. Rev. Stat. § 46-719(2) (2011). This same dispute resolution process applies whenever DNR and an NRD cannot agree on modifications to an IMP or on enforcement and implementation of the regulatory controls for groundwater in an IMP. *Id.* § 46-719(3)-(4). To date, DNR has never requested that the Board be convened, despite Nebraska's continuing overdevelopment of groundwater. From Kansas' standpoint, the IMPs are an attempt to square the circle: to effectively coordinate the administration of hydrologically related water rights, despite Nebraska's distinct and intentionally segregated legal regimes for surface and groundwater. For as the Nebraska Supreme Court has lamented, "Nebraska water law ignores the hydrological fact that ground water and surface water are inextricably linked." *Spear T Ranch v. Knaub,* 691 N.W.2d 116, 125 (Neb., 2005).

**Enforcement Provisions**

**Litigation Seeking Federal Control as a Remedy for Noncompliance**

In all likelihood, Kansas could not have bargained for safeguards against noncompliance. If the Compact's vagueness regarding groundwater was a result of the negotiations of 1942, then the accounting procedures, the Groundwater Model, and dispute resolution sections of the FSS were the result of similar negotiations six decades later. While it is probably safe to claim that the States did not execute the FSS with the intention of disobeying its decree, Nebraska almost immediately did so. To the extent the FSS is culpable, it has failed to bring Nebraska into compliance largely because it has no enforcement provisions. This time around, Kansas is seeking a series of remedies — contempt, damages and preset sanctions for noncompliance, and a federally-appointed river master — that together amount to federal supervision of Nebraska to ensure enforcement of the 2003 decree. If Kansas succeeds, litigation will have accomplished what the FSS did not.

**Contempt Aspects**

**Contempt as a Remedy**

Although few would dare disregard a decree of the Supreme Court, the possibility of contempt is not a hypothetical one. The Court addressed this possibility in *Wyoming v. Colorado*, 309 U.S. 572 (1940), where it asserted its power to enforce decrees concerning interstate waters through contempt proceedings. In that case, Wyoming sought leave to file a petition for a ruling requiring Colorado to show cause why it should not be judged in contempt for violating the Court's earlier decree equitably apportioning the waters of the Laramie River. *Id.* The Court granted Wyoming's motion for leave and directed Colorado to show such cause. *Id.* at 605. Colorado responded by claiming that Wyoming had acquiesced to Colorado's overuse, and presented affidavits showing communications between water officials in both States. *Id.* at 572, 581-82. The Court found that Colorado had violated the decree by diverting water beyond its allocation under the decree, and rejected as a matter of law Colorado's defense that Wyoming was not injured by this excessive diversion. *Id.* at 582. However, Colorado did persuade the Court that "there was a period of uncertainty and room for misunderstanding which may be considered in extenuation." *Id.* Noting that Colorado was bound to exceed its decreed allocation, the Court observed that it would be required to find Colorado in contempt, had Colorado not demonstrated that Colorado had legitimately misunderstood the Wyoming officials. *Id.* at 581-82.

By contrast, Kansas seeks the enforcement of the Compact, and the decree meant to resolve the previous Compact dispute. In *Wyoming v. Colorado*, the Court indicated that it would have held Colorado in contempt for an amount of overuse far less than that of Nebraska in this case, absent the extenuations. *Id. at* 581. Nebraska cannot claim that defense, as Kansas immediately protested Nebraska's overuse. Nor does Nebraska have an excuse for violating the Decree only two years after it was entered. Drought is

**Republican River Basin Compact**

**Damages Discrepancy**

**Preset Sanctions**

**Long-Term Baseflows**

**Downstream Burden**

**Eliminating Noncompliance Incentive**

**River Master's Purpose**

**Hydrology Issue**

no extenuating circumstance, because the primary purpose of a compact is to allocate shortages of water equitably.

**Damages and Sanctions: Compact v. Contract**

If the Compact were merely a contract, Nebraska might never honor it, because Cornhusker economics would demand a breach. Excessive groundwater pumping has proven to be profitable: according to Kansas economists, it has generated more than $50 million in gains for 2005-06, while causing damages to Kansas of between $5-10 million over the same period. While Nebraska's figures are considerably lower, they also confirm the discrepancy between ill-gotten gains and lost profits. This is the stuff of which efficient breaches are made. Fortunately for Kansas, the Compact is much more than a contract: it is a federal statute, and so efficient breach should not be an available argument for Nebraska, no matter how appealing it may appear as a justification for noncompliance. Because the economic incentive to over-pump groundwater remains, Kansas has asked the Court for conjoined financial remedies: damages commensurate with Nebraska's ill-gotten gains, and preset sanctions for noncompliance that would bridge the difference between Nebraska gains and Kansas damages.

Even if the Compact were a contract alone, the argument for efficient breach lessens upon review of what has made Nebraska's noncompliance possible: the systemic dewatering of the Basin's water supply to enable an unsustainable level of groundwater pumping. Left uncorrected, over-pumping will eventually threaten the hydrological connection between baseflows and surface streams, thereby reducing the total amount of water available to the States, along with its economic benefits — and well into the future, when the market value of water will continue to increase. Efficient breach of the Compact may make short-term economic sense for Nebraska, but it makes little long-term economic sense for the Basin as a whole.

As the saying goes, it is better to be upstream with a shovel than downstream with a decree. This adage applies with even greater force to interstate waters. Where an upstream State has chosen not to comply with a compact, litigation is the last but necessary resort to correct the natural, political, and structural disadvantages from which a downstream state suffers. Because water allocated to a downstream State flows through an upstream State, that upstream State can choose to comply or to breach. If an upstream State chooses to breach, it becomes the burden of the downstream State to file suit and prove noncompliance and damages. A downstream State has no choice between compliance and breach; its only effective recourse is to enforce the Compact. A downstream State must muster and sustain substantial political will to pursue litigation that has such uncertain costs, duration, and prospects of a positive outcome.

A Court decree awarding Kansas damages equivalent to Nebraska gains, with preset sanctions for future noncompliance, would address Kansas' inequality — an inequality that the Compact can never address — and eliminate the incentive for noncompliance that the FSS left available to Nebraska.

**The Federal Remedy of a River Master**

To ensure Nebraska's future compliance, Kansas has requested a federal River Master. Kansas believes this course of action to be necessary, given that Nebraska's legal regime does not allow for the effective administration of excessive groundwater pumping to ensure adequate surface flows. While unusual, the appointment of a River Master is not without precedent. The Supreme Court appointed River Masters in both the Pecos River Compact litigation (*Texas v. New Mexico*) and the Delaware River litigation (an equitable apportionment case between New Jersey and New York). In addition, the Carson-Truckee River Basin shared by Nevada and California is also subject to a River Master. A principal aim of appointing a River Master is to better ensure on-the-ground compliance. While the written law requires a State to reduce its total water rights to comply with compact commitments, one should never confuse what's on paper with actual compliance or (in the absence of compliance) enforcement. *See Hinderlider v. La Plata River & Cherry Creek Ditch Co*., 304 U.S. 92 (1938). Nebraska has the sovereign right to develop a compliance plan that will honor its Compact commitments, but Kansas is justified in seeking federal supervision to ensure that it does so.

**TIME, FEDERALISM, AND THE FUTURE OF COMPACT COMPLIANCE**

The most important issue in this litigation is hydrological, because future compliance with the Compact and the FSS will be grounded in the Basin's hydrology. Kansas and Nebraska have put forth competing compliance plans that present starkly different views of the Basin's future. Fundamentally, they represent divergent approaches to time and to the federal foundations of the Compact. Because the Compact is perpetual and requires federal engagement, the remedy that the Court ultimately orders may well determine the destiny of much of the Basin's water supply.

## Republican River Basin Compact

**"Lagged Depletions"**

**Reductions Needed**

**Kansas' Proposed Remedy**

**Nebraska Approach**

**Irrigated Management Plans**

**Rapid Response Curtailment**

**Basin Debt?**

**Time and Reductions in Groundwater Pumping**

First, there is the approach to time. During dry periods, Nebraska has over-pumped its groundwater allocations. Even during wet periods, Nebraska's groundwater pumping has caused increasing depletions to groundwater baseflow. Because the effects of excessive groundwater pumping take some time to become apparent as depleted streamflow, they are known as "lagged depletions." Even if Nebraska were to stop pumping groundwater tomorrow, the effects of these lagged depletions would continue for decades.

As a downstream State largely at the mercy of lagged depletions upstream, Kansas has taken a long-term view of Compact compliance, and recommended substantial reductions in Nebraska groundwater pumping. Kansas has proposed a remedy that reduces Nebraska's groundwater depletions to a level consistent with Compact allocations over the next forty to fifty years: 181,000 acre-feet per year. Instead of continuing an upward trend, Nebraska's groundwater consumptive use would stay at a level consistent with its allocation. To achieve such a reduction, Nebraska groundwater users in the Basin would — collectively — have to cut their pumping in half, but that reduction would accomplish a durable solution. Alternatively, Nebraska could instead choose to permanently curtail groundwater pumping near the Basin's streams, to provide large short-term benefits in reducing stream depletions. Such an approach would affect fewer water users, but it would be a less enduring solution if upland lagged depletions remain excessive. In any event, because of lagged depletions overall, it may take many years until the overall reduction in groundwater consumptive use results in the restoration of surface water flows.

Under Kansas' remedy, baseflows recover to meet compliance requirements — at least over the coming decades. To achieve that reduction of 181,000 acre-feet of groundwater consumptive use per year, Kansas has proposed that Nebraska reduce its groundwater-irrigated acreage in the Basin by at least 302,000 acres, out of its current 1.2 million irrigated acres, or find some hydrologic equivalent. This proposed reduction must be appreciated within the context of Nebraska's unsustainable overdevelopment of its groundwater resources. Had Nebraska put adequate groundwater controls in place when Colorado and Kansas did, or in response to Kansas' concerns in the 1980's, the action required by Nebraska at this time would be much less significant or perhaps even unnecessary. Nebraska's groundwater depletions, including lagged depletions, have been continually increasing, and are currently on the order of 200,000 acre-feet per year. They will continue to increase in the future, until more substantial reductions are accomplished.

As shown by its IMPs, Nebraska has not taken the long-term view. Instead, it has concentrated on a year-by-year approach, deploying elaborate methods to project annual water supplies while calling for much smaller reductions in groundwater pumping, and only then as a last resort. Nebraska has repeatedly rejected the conclusion that, based on forty-year projections, it would need to halve its groundwater pumping to stop the increase in its groundwater consumptive use. Rather, it has adopted increasingly shorter futures. For example, the latest IMP for the Upper Republican River NRD defines its "long-term" planning horizon as five to twenty years. *Integrated Management Plan Jointly Developed by the Department of Natural Resources and the Upper Republican Natural Resources District,* November 1, 2010, Section IX.B.e. (The relevant IMPs for the Basin consist of those for the Upper, Middle, and Lower Republican River NRDs, as well as the Tri-Basin NRD. These IMPs are available at the Nebraska DNR website: http://dnr.ne.gov/IWM/docs/IWM_ApprovedPlans.html (last accessed May 20, 2012)).

Nebraska's experts and its lawyers have devoted their substantial expertise to developing the IMPs. But rather than significantly reduce the groundwater pumping that is the unmistakably dominant cause of Nebraska's present non-compliance and greatest threat to future compliance, IMPs require only modest cuts in long-term groundwater pumping. They seek to reduce pumping by five percent over the next five years, principally through voluntary programs, and countenance "allowable ground water depletions." *Id.*, Section VI.A.3.b. During "Compact Call" years, surface water users may receive closing notices on all natural flow and storage rights, but groundwater users do not receive such shutdowns; in such an event, the relevant NRD must develop a plan and submit it to DNR for evaluation. *Id.,* Section VII, VII.F. If DNR and the NRD cannot agree on such a plan, the NRD is to require the curtailment of groundwater pumping in rapid response regions near the streams. *Id.,* Section IX.B.2.c, Section VI.B.1. Whether the State of Nebraska can require such curtailment is an open question, given the bifurcated nature of Nebraska water law; the issue seems certain to be litigated. Indeed, the NRDs have recently litigated the constitutionality of Nebraska statutes intended to enable compliance with the Compact. *See Garey v. Nebraska Dept. of Nat. Resources,* 759 N.W.2d 919 (2009); *Kiplinger v. Nebraska Dept. of Nat. Resources,* 803 N.W.2d 28 (2011). IMPs prescribe only limited explicit reductions to groundwater pumping, and provide an array of alternatives to avoid significant pumping reductions. They have no apparent long-term perspective.

Perhaps the differences in these plans can be understood through analogy to a debt. Kansas is in the unhappy position of an unpaid creditor, worrying that Nebraska's elaborate refinancing scheme will only increase its growing debt to the Basin. Nebraska is in the unhappy position of the put-upon debtor, recoiling against Kansas' long-term repayment schedule and its pesky questions about Nebraska's declining assets in groundwater. Nebraska has argued repeatedly that it can make these payments of annual compliance, despite its declining groundwater account, by borrowing from short-term surface water assets.

## Republican River Basin Compact

### Hydrological Questions

### Reservoir Inflows Threatened

### Impacts on Surface Waters

### Reclamation Project Management

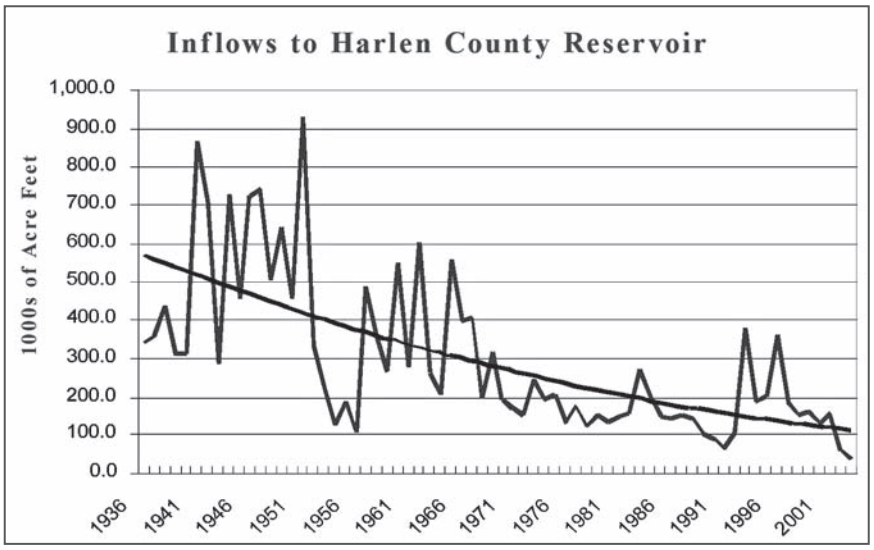
**Federal Involvement and Federal Infrastructure**

Nebraska clearly believes it can obtain surface water supplies held in Basin reservoirs and divert them in such a way as to comply with the Compact in the future. From Kansas' perspective, that belief raises two troublesome questions.

The first question is hydrological. Because of Nebraska's lagged depletions and its increasing future depletions, will surface water supplies be sufficiently available to allow Nebraska to comply with the Compact? Kansas and Reclamation are convinced that the answer is no. From the mid-1980's onward, Reclamation has expressed its concerns about Nebraska's excessive groundwater development. *24th Annual Report of the RRCA*, p. 5 (1984); *29th Annual Report of the RRCA*, p. 14 (1989). In 1990, the Reclamation reported its findings on the decreased inflows into Harlan County Lake to the RRCA. *31st Annual Report of the RRCA*, p.6 (1991). While Nebraska representatives emphasized low precipitation as the driving factor in streamflow declines, Reclamation disagreed, taking the position that decreased precipitation is not a significant factor in determining loss of streamflow, especially where declines reached sixty-six percent. *34th Annual Report of the RRCA*, pp. 17, 18 (1994). Colorado drained Bonny Reservoir between 2011 and 2012.

Figure 5 illustrates the problem of declining flows that threaten Reclamation reservoirs. It represents inflows to Harlan County Lake between 1940 and 2007, declines that follow a steady trend —unlike regular variations in precipitation — resulting primarily from reductions in baseflow due to groundwater pumping.

**Figure 5: Inflows into Harlan County Lake, 1940-2007**




More recently, Reclamation has expressed its concerns regarding how Nebraska's IMPs will affect Reclamation projects, and whether the IMPs will enable compliance over the long term. *See "Statement of the Bureau of Reclamation…Regarding Proposed Integrated Management Plan for the Middle Republican Natural Resources District,"* June 8, 2010 (hereinafter "*Reclamation Statement*"). Primarily due to well pumping, surface water supplies — both supplies stored in Reclamation and Corps projects as well as natural surface flow supplies — have decreased and will continue to do so as long as groundwater depletions increase. Because Nebraska's over-pumping of groundwater has reduced these surface water supplies in the Basin, Kansas and Reclamation believe that Nebraska's reliance on these supplies for compliance purposes is not dependable as a long-term solution. As baseflows continue to decline in Nebraska, surface water supplies will be in even shorter supply.

The second question is legal, and therefore open to far more argument: can Nebraska effectively dictate to Reclamation the terms by which this federal agency operates its own projects? One of Nebraska's means of compliance is the purchase or lease of existing surface water rights — by involuntary means, if necessary. *Integrated Management Plan Jointly Developed by the Department of Natural Resources and the Middle Republican Natural Resources District*, November 1, 2010, V.A.4, VIII.F. Having obtained such water, Nebraska also believes that it can move this water down the Basin, using federal infrastructure, in the quantity it deems necessary for compliance. Kansas and Reclamation have their doubts, given the legal limitations on the availability and maneuverability of waters stored in federal projects. Nebraska's approach places it firmly on the side of state sovereignty, nearly to the exclusion of federal power, while Kansas' and Reclamation's positions recognize that power to a much greater degree.

**Republican River Basin Compact**

**State Law v. Federal Law**

**Reclamation Requirements**

**Allocation Among States**

**Designated Purposes**

**History Matters**

**State Law Diversity**

Nebraska's confidence may result from a states-rights view of the Reclamation Act, whose famously litigated Section 8 explicitly defers to state law in a number of important and evolved ways. 43 U.S.C.A. § 372. (For two thorough treatments of Section 8, *see* Amy K. Kelley, *Staging a Comeback – Section 8 of the Reclamation Act,* 18 U.C. Davis L. Rev. 97 (1984); Reed D. Benson, *Deflating the Deference Myth: National Interests vs. State Authority Under Federal Laws Affecting Water Use,* 2006 Utah L. Rev. 241). From Kansas' perspective, that confidence seems misplaced, given the extent to which Nebraska envisions transforming the operation of Reclamation reservoirs. For Section 8 does not defer completely to state law: state law must defer to direct congressional directives for the management of federal projects. *California v. United States,* 438 U.S. 645, 670, 671, 679 (1978).

Nebraska's IMPs raise at least three threshold inconsistencies with federal law. First, by moving water away from irrigation use in Nebraska, the IMPs may violate the Reclamation Act's beneficial use requirement, which tracks similar requirements under state law. 43 U.S.C.A. § 372; *see, e.g., Jicarilla Apache Tribe v. United States,* 657 F.2d 1126, 1137 (10th Cir., 1981); *Hostetler v. State,* 280 N.W.2d 75, 78 (Neb., 1979). Second, if the IMPs remove project water from Nebraska project lands so that it flows into Kansas, such a maneuver may conflict with the appurtenancy requirement of the Reclamation Act. 43 U.S.C.A. §372. *See, e.g., United States v. Alpine Land & Reservoir Co.,* 340F.3d 903, 913 (9th Cir., 2003). Finally, if the IMPs impair the irrigation efficiency of a Reclamation project — which seems likely, if Nebraska issues closing notices in a Nebraska project so that water may pass to Kansas — then such a closing may violate the irrigation preference of the Reclamation Act (43 U.S.C.A. § 485h(c); *see California v. United States,* 438 U.S. 645, 671-72 (1978)), even if there is need for irrigation water downstream. *EDF, Inc., v. Morton,* 420 F.Supp. 1037, 1044 (D.Mont., 1976). Perhaps because of these concerns, Reclamation has claimed that the IMPs "do not allow Reclamation to operate as authorized by the U.S. Congress." *Reclamation Statement*, p. 6.

Outside of reclamation law, there is a final legal concern with Nebraska's plans. In *Arizona v. California*, the Court held the Boulder Canyon Project Act to be a discrete congressional apportionment of interstate waters within the larger structure of the Colorado River Compact. 373 U.S. 546 (1963). That holding has provoked prominent water law experts to ask whether Congress intends an implicit allocation of water among States when it provides for the construction of federal projects on interstate rivers. Gould and Grant, at 513. Surely, Congress would not intend to waste money on a project that lacks an adequate water supply. Applying this logic to the Republican River Basin, Congress must have intended some implicit apportionment within the Basin, by both the legislation authorizing the project and the appropriation of construction funds. This logic appears to accord with the federal view, which holds that the allocations of the Compact determined the "planning and design of a system of Federal reservoir and irrigation projects that would assist each of the states in developing their allocated share of the Republican River." *Reclamation Statement*, p. 2.

Nebraska's approach to surface water purchases may depend on the position that any implicit apportionment means little, given the explicit allocations of the Compact itself. But the argument for an adequate water supply seems difficult to refute. Congress would not have approved the allocations of the Compact, together with Reclamation and Corps projects within the compacted Basin, without a clear understanding that those projects would be used for their designated purposes. Reclamation did not build Harlan County Lake as a Compact compliance mechanism for Nebraska; it did so to irrigate the Bostwick Project, which straddles the state line.

## CONCLUSION

These conflicts between Kansas and Nebraska may strike readers as little more than legal flyover country. Who cares about one group of row-crop irrigators fighting another, hundreds of miles away from wealthy desert megalopolises, expensive trans-mountain plumbing, and costly endangered or invasive species? Yet this litigation raises three points well worth pondering.

First, the pre-compact history of a river basin matters. The long historical reach of federal power during the period of disposition and development, along with the New Deal context in which the Compact became imperative, are inextricable from the Compact itself. Federal power established certain permanent and structural inequities in the Basin long before the Compact was signed — inequities that no compact could completely redress, given the State boundaries that consigned Kansas to its situation at the bottom of the Basin. Second, the Compact is inseparable from both the larger body of federal reclamation law of which it is a part, and state water law in which it plays such an important role. Because of that inseparability, the diversity of state water law within the Basin has raised a series of legal crises since the 1940's. The Compact created immediate inequities for Kansas after 1943, because Kansas law inhibited federal development of surface water projects in Kansas compared to Nebraska. That inequity largely

## Republican River Basin Compact

### Nebraska Legal Issues

### Federal Role

forced Kansas to rewrite its water code, so that it could obtain its equitable share. Seven decades later, Nebraska faces a legal crisis of its own, because its water law has maintained structural incentives to consume more than its equitable share of water.

Nebraska's plan to comply with the Compact reveals all too well the problem of state law diversity within an interstate river basin. The Nebraska plan is Nebraska law — it is the product of the conditions created by older Nebraska water law, the profile of Nebraska's waters, and Nebraska's water users themselves. Nebraska water law regulates surface waters in a prior appropriation regime, but it has never extended that regime to groundwater. It has not done so because Nebraska is blessed with enormous groundwater supplies, and Nebraska's groundwater irrigators are powerful and organized against such an extension. Consequently, Nebraska cannot meet the problem of its noncompliance directly. Rather than treat the cause of the depletion disease with the strong medicine of groundwater regulation, Nebraska has chosen to soften the symptoms of that disease instead, using an elaborate mechanism — the IMPs.

Finally, there is the issue of how a State complies with a Compact matter. The conflicts between Kansas and Nebraska are ultimately about the future of the Basin itself — especially the surface water projects made possible by the Compact. This conflict over the future places the role of the federal government into high relief. Kansas and Reclamation have taken the position that Reclamation and Corps projects are an integral component of the Compact. By contrast, Nebraska has posited a distinction between Compact compliance and the existence of these projects, a position that has enabled Nebraska to treat them as an expedient means by which it can engineer compliance during the short term.

The ultimate federal question is how the Supreme Court will resolve these conflicts. Equity, such as it exists in the Basin, has been done. Kansas cannot return to 1859 and redraw its boundaries. It cannot return to 1942 and rewrite the Compact, which accomplished an equitable allocation of the Basin's waters. It cannot reverse the groundwater revolution of the 1950's and the 1960's, which permanently transformed the hydrology of the Basin. And it cannot return to 2002 and redraft the FSS, which is a non-severable decree. Therefore, if the Compact is to remain perpetual, the waters of the Basin must remain sustainable; and to keep it so, Kansas must enforce the Compact by litigation. The strongest argument for strict enforcement of the Compact is an understanding of the structural realities and federal-state relationships that made the Compact necessary and desirable in the first place. Those realities remain, and they will long survive the next final decree of the Court.

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*This article is the result of cooperation in litigating the Kansas case and draws on the efforts of John B. Draper, Counsel of Record, and Lara Katz, both of Montgomery & Andrews, P.A., Santa Fe and Albuquerque, New Mexico; Christopher M. Grunewald, Assistant Attorney General for Kansas; and David W. Barfield, Kansas Chief Engineer. Any errors are Burke Griggs alone.*

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LID & Stormwater

# STORMWATER PERMITS & LID

WASHINGTON STATE'S LOW IMPACT DEVELOPMENT REQUIREMENTS

by Linsey Payne

## INTRODUCTION

SOME LID IMPLEMENTATION REQUIREMENTS POSTPONED

Municipal General Permits

The Washington State Department of Ecology (Ecology) issued drafts of three National Pollutant Discharge Elimination System (NPDES) municipal stormwater general permits for a public comment period from October 19, 2011 to February 3, 2012. These permits include Low Impact Development (LID) requirements and are updates of current permits which include: the Phase I Municipal Stormwater General Permit (Phase I permit); the Phase II Western Washington Municipal Stormwater General Permit (Phase II WWA permit); and the Phase II Eastern Washington Municipal Stormwater General Permit (Phase II EWA permit). *See* www.ecy.wa.gov/programs/wq/stormwater/municipal/2012Reissuance.html

Legislation Extends Implementation Time

The finalized permit updates were intended for issuance by June 2012. However, new legislation, the Second Engrossed Substitute Senate Bill 6406, establishes "the extension of time a Permitted Municipality has to implement mandatory LID requirements in their jurisdiction" (Final Bill Report 2ESSB 6406). *See* http://apps.leg.wa.gov/documents/billdocs/2011-12/Pdf/Bill%20Reports/Senate%20Final/6406-S.E2%20SBR%20FBR%2012%20E1.pdf

According to Robin Kirschbaum, PE and LEED AP of HDR Engineering (Bellevue, WA), by being granted this extension "cities will have an opportunity to work with Ecology and really define the terms of the permit better and also have the opportunity to see more low impact development pilot projects get built and make sure that the technology is really well understood by all before it's required on a large-scale." Governor Gregoire signed the bill on May 2, 2012, which will go into effect on July 10, 2012.

LID Mandate

The new legislation extends the use of the existing Phase II EWA permit for an additional year (for a total of two), with Ecology issuing the updated permit August 1, 2014. There are no changes to the timeline for the Phase II WWA permit issuance, which will go into effect on August 1, 2013. The key feature in the updated Phase I and II permits, and a motivating factor for the delay in permit issuance, is the mandate for municipalities to incorporate and require LID in their development code, rules, and standards. "The intent of the revisions shall be to make LID the preferred and commonly-used approach to site development" (Phase I permit). Ecology has reinforced this requirement by concurrently updating the Western Washington Stormwater Management Manual to make LID the primary strategy for water quality protection. As one of the key editors of the Phase II WWA permit, Ed O'Brian (Ecology) stated, "We want low impact development to be what we call the 'preferred and commonly used approach' to site development. If it's feasible to do LID on your site, we want it done. We don't want it to be an option for people to do if they just want to be environmentally friendly."

This article first provides a brief history of the process taken to revise the municipal stormwater general permits. The article then describes a few experiences that local municipalities and stormwater professionals have had using LID.

## BRIEF REGULATORY HISTORY

**Overview**

MS4 Criteria

Ecology is required by law to administer and reissue municipal stormwater general permits. "The federal Clean Water Act (CWA) establishes the National Pollutant Discharge Elimination System (NPDES) permit system to regulate wastewater discharges from point sources to surface waters" including stormwater runoff (Final Bill Report 2ESSB 6406). The municipal stormwater general permits authorized under NPDES apply to those municipalities' operating municipal separate storm sewer systems (MS4) that fit certain population size and density criteria (Final Bill Report 2ESSB 6406). Phase I communities have populations of 100,000 or greater, while Phase II communities have population of 50,000 or greater, or have been designated as Urbanized Areas by the US Census Bureau.

MS4 Phases I & II

The first Phase I general permit in Washington was issued by Ecology in July 1995 to regulate discharges from the MS4s owned or operated by Clark, King, Pierce and Snohomish Counties, and the cities of Seattle and Tacoma. Ecology re-issued this permit twelve years later with an effective date of February 16, 2007. The first Phase II permits in Washington went into effect in 2003. These permits were consolidated into two general Phase II permits and re-issued on February 16, 2007 — one for western Washington and one for eastern Washington — covering at least 80 cities and portions of five counties. Based on the outcomes of appeals rulings, all three permits were modified and re-issued on July 17, 2009. *See* Ecology website: www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIpermit/phipermit.html

**LID & Stormwater**

In 2007 Ecology began preparing for the next permit term by engaging stakeholders and municipalities in discussions about potential requirements and other revisions and continued this engagement into 2011. These discussions were expanded to include LID as a result of rulings by Washington State's Pollution Control Hearings Board (PCHB) in August 2008.

**Revision Process**

**PCHB Ruling**

The August 2008 PCHB ruling required Ecology to add LID to the next updated Phase I permit. PCHB expanded this requirement in February 2009 to include the Phase II WWA permit. The western Washington revision effort included the formation of three advisory groups: (1) the Stormwater Monitoring Workgroup; (2) the Low Impact Development Technical Advisory Committee; and (3) the Low Impact Development Implementation Advisory Committee. These groups consisted of individuals from state and federal agencies, local governments, environmental and non-profit organizations, tribal governments, and the business community. *See* Ecology website: www.ecy.wa.gov/programs/wq/stormwater/municipal/LIDstandards.html.

**Advisory Groups**

The Technical Advisory Committee and the Implementation Advisory Committee worked together to define the scope of LID techniques, criteria for determining the feasibility of LID techniques, a LID performance standard, and a deadline for implementation. *See* Ecology website: www.ecy.wa.gov/programs/wq/stormwater/municipal/lidTECHadvisory.html.

**Eastern Washington Changes**

In 2011, Ecology engaged eastern Washington permittees and stakeholders in a similar effort to cater the Phase II EWA regulatory changes to "reflect the climate conditions, geology, soils, and stormwater management approaches appropriate to different parts of the Eastern Washington landscape." *See* Ecology website: www.ecy.wa.gov/programs/wq/stormwater/municipal/2012Reissuance.html.

Once all stakeholder comments were received from both eastern and western Washington and Ecology finalized their revisions to the Phase I and Phase II permits, the Drafts were posted on November 4, 2011 to begin a 90-day public comment period. All comments have been collected and made available on the Ecology website.

**LID Mandates**

**Municipal Codes Integration**

The integration of LID into municipal codes is no small undertaking. Curtis Hinman, Director of Washington State University's Low Impact Development Research Program, concedes that Ecology is moving into uncharted territory, stating, "This is a big transition, and we are one of the first regions in the nation that are now requiring LID as the first choice for stormwater management."

**Permitee Concerns**

Despite the extensive stakeholder involvement, there are still strong concerns by permittees and developers that the LID mandates will be too heavy of a burden. This concern is heightened by the relatively quick turn around time by the permit for municipalities to implement codes requiring LID. For example, the Phase I permit states that no later than December 31, 2014, permittees shall review and revise their local development-related codes, rules, standards, or other enforceable documents to incorporate and require LID Principles and LID Best Management Practices (BMPs). These changes shall apply to development and redevelopment project applications submitted after January 1, 2015. However, projects approved prior to January 1, 2015 will have a three-year window to start construction until they too have to comply with the new LID standards. The Phase II permittees have until December 31, 2015 to revise their new site and subdivision codes and until December 31, 2016 to revise their development-related codes, rules, and standards.

**Deadlines**

**Citizens' Concerns**

In direct contrast to municipalities' and developers' concerns, environmental groups and citizens expressed in their comments during the public review period that the timelines and deadlines were too long. They also felt there needed to be: more site planning rigor; increased native plant vegetation retention and impervious surface limits; and more complete LID facility mandatory lists.

**Flexibility & Rigor**

Ecology intended for the permit to allow permittees enough flexibility to choose how water quality standards were met, but still provide enough rigor to ensure that all runoff is slowed, treated, and infiltrated before entering into local waterways. The updated 2012 Stormwater Management Manual for Western Washington (SMMWW) provides guidance on the site planning process, the BMP selection, and the design criteria for addressing water quality with LID and other methods. Developers and municipalities are not stuck with the options listed in the SMMWW. According to Ed O'Brian, "If you're meeting the performance standard [for water quality and quantity] you decide how you're going to get there, for the most part. You have to be able to represent the different techniques you're using to bring those flows down using our approved continuous runoff model. As long as you can do that you can get there any way you want as long as you meet the performance standard. You don't have to follow any mandatory list." *See* Ecology website: www.ecy.wa.gov/programs/wq/stormwater/wwstormwatermanual/2012draft/2012draftSWMMWW.html.

**Performance Standard**

 

**LID & Stormwater**

**Shoreline Projects**

Still, Ross Dunning, Engineer at Kennedy/Jenks Consultants, is skeptical of the ability of industries such as ports to adhere to the new strict LID mandates. He feels the performance standard requiring post-development flows to match predevelopment flows in projects that potentially require more than 80% impervious surfaces are essentially requiring on-site retention or re-use — which are both very expensive to construct and may require substantial amounts of real estate — that is particularly scarce at ports. He feels the mandatory BMP list is inadequate for ports as it principally relies on: dispersion through vegetation (typically not an option); permeable pavement (typically not practical); and vegetated roofs on all commercial roofs (typically cost prohibitive).

Dunning's recommendations for the draft permits for shoreline industrial projects, include:

- Don't mandate LID for treatment
- Allow for cost considerations
- Allow for assessment of engineering feasibility
- Give clear guidance allowing municipalities to exempt LID where it just doesn't make sense

## LID EXPERIENCES

### SOME MIXED REVIEWS - TRANSPORTATION TIE-INS

**LID Failure**

LID has recently received mixed reviews in the Seattle region, largely due to widely publicized facility failures in Seattle's Ballard neighborhood. "The Ballard raingardens, I think are a very good example of how important it is to do really careful analysis — particularly in challenging settings," observed Curtis Hinman. "That [failure] was a combination of poor soil, groundwater being too close to the surface, and mistakes that were made during construction."

**LID Successes**

However, the vast majority of LID projects implemented by the City of Seattle have been successful. Seattle's pilot "SEA Street" project is now over ten years old and continues to slow runoff and remove pollutants while also providing traffic calming and parking. Tracy Tackett, City of Seattle's Infrastructure Program Manager, said, "The way we've been able to really get a lot of support for our [LID] projects is by integrating mostly transportation goals into our stormwater goals. We have about a third of our city that has unimproved right-of-ways, needs sidewalk improvements,…needs drainage improvements [and] doesn't have curb and gutter areas. So [the LID process] integrates citizen requests for sidewalks and the transportation needs for moving vehicles in traffic in with our stormwater goals. [This] has been really successful for us."

**Integrating Transportation Focus**

**Flexible Management**

In addition, Ms. Tackett recommends partnering with private developers and homeowners to meet multiple city goals. When working with private developers the City has found it necessary to be flexible with the budget timeline. Sometimes the project must move forward at times when the City no longer has funding allocated. "One of the biggest parts of Seattle Public Utility's being able to do a lot of innovation is the support of our management to take some risks. We'll never know all the information about a new technology and so you have to learn as you move through it. So, we're willing to take some risks and we're willing to adaptively manage our program. And the combination of that support from my management and the motivation from the team to do the best that we can and put in great projects is really what seems to make our projects successful."

## CONCLUSION

**LID On The Way**

There seems to be no question that LID is the future of stormwater management in Washington State. The details about its implementation, however, are still being hotly debated and may result in appeals once the Phase I and Phase II WWA permits are issued in July. There are multiple examples of successful implementation of LID, most in transportation settings. The challenge will be helping smaller cities embark on pilot projects to learn the process and understand how LID fits into their specific codes, political climate, and topography.

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Colorado Basin Study

Study's Technical Foundation

Four Phases

Options & Strategies

Demand Scenarios

Plausible Futures

Critical Uncertainties

Table 1 Water Demand Storyline Themes

# COLORADO RIVER BASIN STUDY

BASIN WATER SUPPLY & DEMAND STUDY UPDATE

by Carly Jerla, James Prairie, and Pam Adams (US Bureau of Reclamation)

## INTRODUCTION

The Colorado River Basin Water Supply and Demand Study (Study) is being conducted by the US Bureau of Reclamation (Reclamation) and agencies representing the seven Colorado River Basin States (California, Arizona, Nevada, New Mexico, Utah, Wyoming and Colorado), with the collaboration of stakeholders throughout the Basin. The Study will: define future supply and demand imbalances on the Basin over the next 50 years; assess the reliability of the system to meet the needs of the Basin resources; and assess option and strategies to resolve those imbalances. The Study will not result in a decision being made as to how future imbalances will be addressed. Rather, the Study is building a common technical foundation that will frame the range of imbalances that may be faced in the future and the range of solutions that may be considered to resolve those imbalances.

The Study is comprised of four major phases: Water Supply Assessment; Water Demand Assessment; System Reliability Analysis; and Development and Evaluation of Opportunities for balancing supply and demand. In *The Water Report* #90 (August 2011) we published an article describing the findings from the Water Supply Assessment phase and work completed at that time in the Water Demand Assessment phase. This article is an update describing the ongoing work accomplished since that time.

This article describes the quantification process undertaken by the Study to quantify several water demand scenarios and presents the resulting water demand projections. This is followed by a summary of the ideas received from the public related to options and strategies to resolve potential future supply and demand imbalances in the Basin and an overview of the approach used to assess the effectiveness of those options and strategies.

## WATER DEMAND SCENARIOS

Given the historical variability of Colorado River inflows and the potential for increased variability in the future, there is great uncertainty associated with future water supply throughout the Basin over the next 50 years. That uncertainty, coupled with the uncertainty in future demand for water Basin-wide, is being addressed using a scenario planning approach. Last month (May 2012), *Technical Memorandum C – Quantification of Water Demand Scenarios* was published. In this memorandum the demand scenarios, previously published in a narrative or "storyline" format, are quantified. This report is available at: www.usbr.gov/lc/region/programs/crbstudy/report1.html.

Scenarios are not predictions or forecasts of the future. Rather, a set of well-constructed scenarios represents a range of plausible futures. The scenario planning approach implemented in the Study has resulted in four plausible future scenarios with respect to future supply for the Basin and four plausible future scenarios with respect to future demand on the Basin. These plausible futures are intended to help assess future risks and the development of options and strategies that mitigate and adapt to those risks.

The scenarios identified in the Study were developed with the involvement of many Basin stakeholders including: state and federal agencies; Native American tribes and communities; and conservation organizations. This process began with the identification of key driving forces for three categories: Demographics and Land Use; Technological and Economics; and Social and Governance. The driving forces were used to explore "critical uncertainties" — i.e., those driving forces that are considered to be both highly important and highly uncertain. How the critical uncertainties are assumed to play out over time formed the basis for the storyline for each scenario. The storyline themes of these six scenarios are presented in Table 1.

**Table 1: Water Demand Scenarios**

| Title | Theme |
|---|---|
| Current Projected (A) | growth, development patterns, and institutions continue along recent trends |
| Slow Growth (B) | low growth with emphasis on economic efficiency |
| Rapid Growth (C1 and C2) | economic resurgence (population and energy) and current preferences toward human and environmental values |
| Enhanced Environment (D1 and D2) | expanded environmental awareness and stewardship with growing economy |

## Colorado Basin Study

### Trjectory Factors

It was determined that under the Rapid Growth scenario a different trajectory could unfold if a different future was realized in terms of both municipal/industrial and agricultural water use efficiency. Thus, the Rapid Growth scenario has two branches. The C1 branch represents a future where a lack of economic growth stifles the adoption of new technologies that result in significant changes in efficiency. In contrast, the C2 branch represents a future where economic conditions result in the investment and rapid adoption of new technologies coupled with an increase in social values and subsequent pressure focused on conservation efforts. Similarly, the Enhanced Environment scenario has two branches, one that considers a moderate growth in population (D1) and one that considers a more rapid growth in population (D2).

### Parameters Quantified

**Approach to Quantify Water Demand Scenarios**

Each critical uncertainty contains parameters that, when quantified, leads to the quantification of consumptive demand for each scenario. Quantifying parameters is the first step in the approach to quantify a demand scenario, described graphically in Figure 1. Examples of parameters quantified for each demand scenario include: population; irrigated acreage; water use efficiencies; etc. The quantification of the parameters resulted in demand for six demand categories: agricultural; municipal and industrial; energy; mining; fish/wildlife/recreation; and tribal.

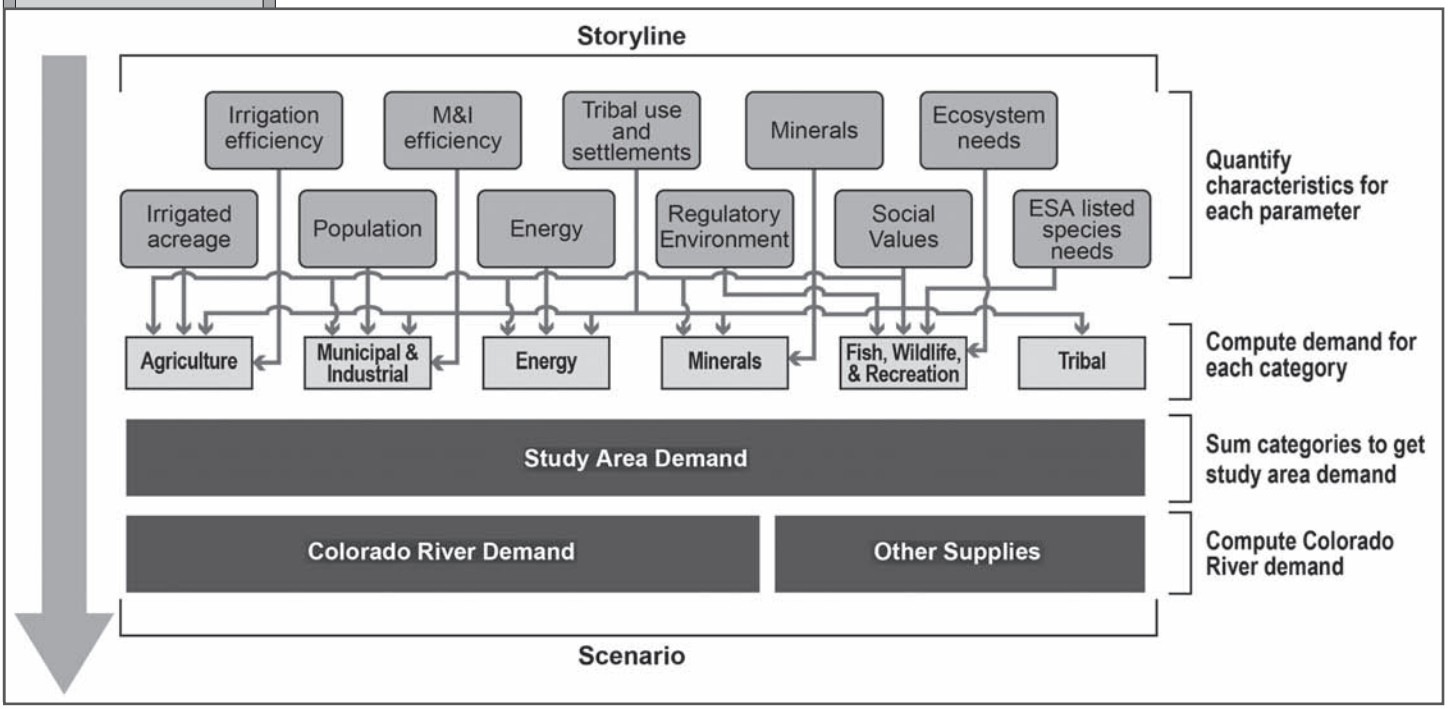
### Non-Consumptive Demands

Non-consumptive demands — such as those associated with uses for hydropower, recreation, and ecological resources — are included through the development of system reliability metrics. Non-consumptive uses were not quantified in the same manner as demand for consumptive uses. For example, non-consumptive flow targets supporting the environment and recreational activities were developed for several locations throughout the Basin. The impact on these flows is being assessed across all combinations of supply and demand scenarios in the System Reliability Analysis phase of the Study. Although parameters vary across storylines, it was assumed that these changing parameters do not affect Mexico's water allotment or losses due to reservoir evaporation, phreatophytes (groundwater-depleting plants), and operational inefficiencies. These catagories are included in the quantified scenarios but are not determined using the quantification approach previously described.

### Study Area

The Study Area, which encompasses the Colorado River hydrologic basin and areas adjacent to the hydrologic basin that receive Colorado River water, was divided into several planning areas for each state. Parameters were quantified for each planning area. Some planning areas include regions outside of the hydrologic basin (e.g., the Front Range of Colorado; Wasatch Front of Utah; and the Metropolitan Water District of Southern California's service areas) that receive supply from sources in addition to the Colorado River. For these planning areas, estimates were made regarding how much demand may be met from sources other than the Colorado River to arrive at Colorado River demand.

**Figure 1 – Approach to Quantifying Demand Scenarios**



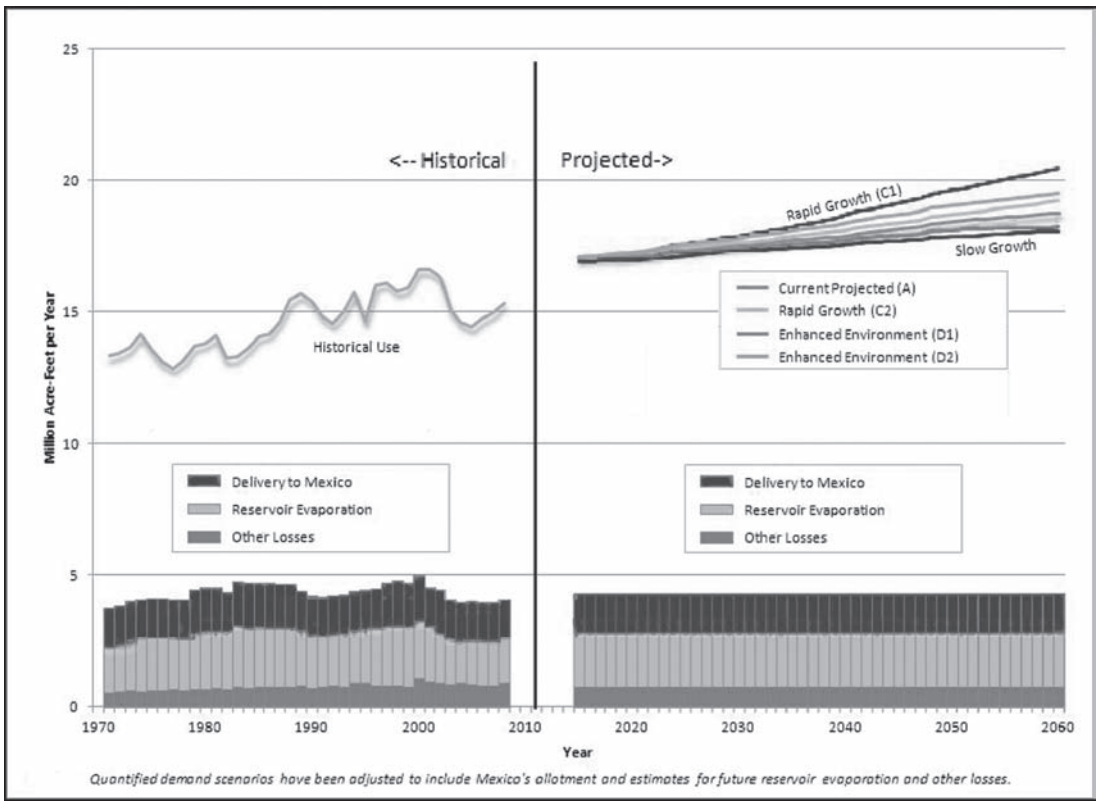
## Colorado Basin Study

### Demand Projection

**Quantified Water Demand Scenarios**

The six quantified demand scenarios are presented in Figure 2. This figure includes both the historical Colorado River use and deliveries to Mexico in addition to losses (such as reservoir evaporation) to arrive at a complete picture of the consumptive needs of the Basin. In total, factoring in Mexico's allotment and losses, the Colorado River demand is projected to range between about 18.1 **m**illion **a**cre-**f**eet (maf) and about 20.4 maf by 2060.

**Figure 2 – Colorado River Basin Historical Use and Future Projected Demand**




### 2060 Range

The range across scenarios is approximately 2.4 maf or an 18 percent spread by 2060 between the highest and lowest demand scenarios — i.e., the Rapid Growth (C1) scenario and the Slow Growth scenario. The largest difference between parameters in these scenarios is population. Study Area population grows from about 40 million in 2015 to reach 76.5 million under the Rapid Growth (C1) scenario, and 49.3 million under the Slow Growth scenario, by 2060.

### Population

The Enhanced Environment (D1) scenario also results in a future with lower demand, only 200 thousand acre-feet (kaf) more than the Slow Growth scenario by 2060. The storylines for the Enhanced Environment (D1) and the Rapid Growth (C1) scenarios differ greatly, resulting in a different quantification of the supporting parameters.

### Rapid Growth

The Rapid Growth (C1) scenario includes: rapid population projections coupled with a modest increase in **m**unicipal and **i**ndustrial (M&I) water use efficiency; the greatest increase in water needs for energy development amongst the scenarios; and the realization of tribal claims and additional settlements.

### Enhanced Environment

In contrast, the Enhanced Environment (D1) is characterized by: slower population projections (although not as slow as those in the Slow Growth scenario); the largest efficiency increases (due to changing social values, federal investment, and subsequent responses focused on conservation efforts); and the least amount of increase in water needs for energy development. It also assumes tribal demand develops according to quantified rights and current use patterns. Although these two scenarios differ greatly in some areas, both are considered to be equally plausible scenarios for how future demand in the Basin may unfold.

### System Reliability

In the System Reliability phase of the Study, each demand scenario is being coupled with each of the four supply scenarios to assess the reliability of the system over the next 50 years. One result of this combination is that many futures are represented — there are 24 possible combinations given four supply and six demand scenarios. A manageable yet informative set of scenarios is being used to inform the system reliability and development of options and strategies. Some combinations are not being fully analyzed because they are uninformative, duplicative, or illogical.

## Colorado Basin Study

**Potential Solutions**

**Long-Term Imbalance**

**Single-Year Imbalance**

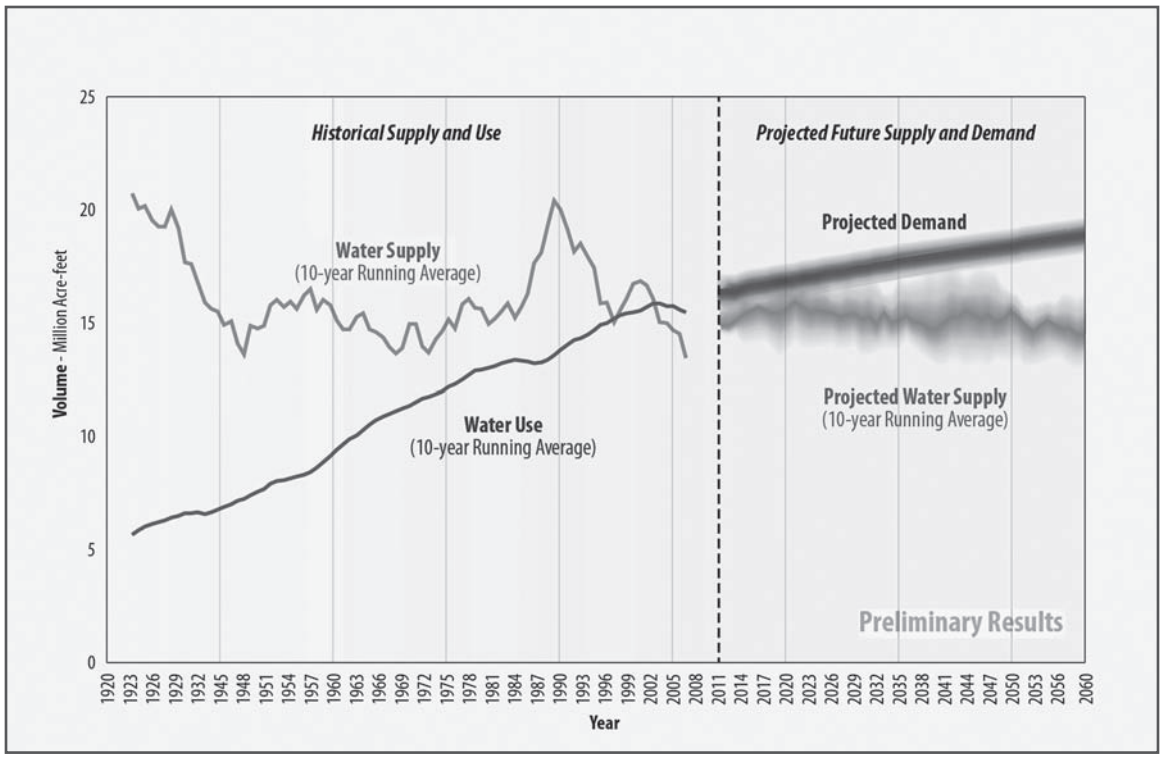
**Reliability Analysis**

**Options Submitted**

### OPTIONS AND STRATEGIES TO RESOLVE SUPPLY AND DEMAND IMBALANCES

In the fall of 2011, the Study's fourth and final phase was launched by asking the public to submit ideas to the Study regarding potential solutions to help resolve future potential supply and demand imbalances. With the demand and supply scenarios quantified at that time, a range of projected total future supply and demand was provided (show in Figure 3) to help frame the magnitude of future potential imbalances.

**Figure 3**
**Historical Supply and Use and Projected Future Colorado River Basin Water Supply and Demand**




The water supply projections largely encompass the range of the four water supply scenarios and are reported by calculating the 10th, 50th and 90th percentiles across the 112 realizations that comprise the water supply scenario incorporating downscaled global climate model projections. Comparing the median of these projections to the water demand projections, the long-term imbalance in future supply and demand is projected to be about 2.0 maf in 2035 and greater than 3.5 maf in 2060.

It is important to recognize two points concerning this result. First, the imbalances reported here are based on the median imbalance for a particular year and can either be more or less year-to-year under any one of 112 projections. Second, single-year imbalances within the range of the projected magnitude have occurred several times in the past. Although there have been shortages in Upper Basin tributaries (Wyoming, Utah, Colorado and New Mexico), deliveries in the Lower Basin (Nevada, Arizona and California) have been made with 100 percent reliability primarily as a result of the ability to capture and store water system-wide during high-flow years and to deliver that water during low-flow years. The system reliability analysis will entail simulating the system, including the effects of reservoir storage, and will result in detailed information regarding the specific timing and magnitude of potential imbalances and how the Basin resources may be impacted.

**Summary of Ideas Received**

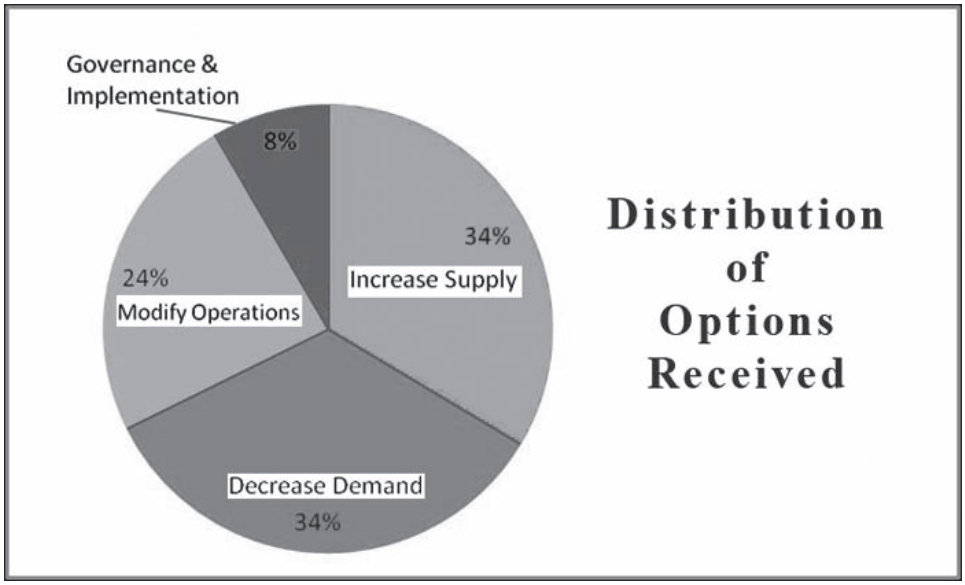
Given the scale of the Basin, the anticipated magnitude and timing of imbalances, regional differences, and the range of resources being considered, a wide array of options will be evaluated. Over 150 ideas were submitted to the Study over the period of November 2011 through February 2012 representing a broad range of outlooks and proposals. Each submitted option has been posted to the Study website at: www.usbr.gov/lc/region/programs/crbstudy/imbalanceoptions.html.

No single option, or type of project, will be adequate to meet all of the future demands on the Basin's water resources. Rather, a combination of options — including: conservation and reuse; development

## Colorado Basin Study

of local supplies; augmentation; and new flexibilities in managing existing infrastructure — will likely be needed. The Study will not result in the selection of a particular proposed option or set of options. The Study is intended to explore a broad range of options to help address future imbalances and assess the performance of those options across a range of future conditions. In doing so, the Study will lay the foundation for continued dialogue about the development, implementation, or further research of options. The ideas received have been grouped into four broad categories: Increase Supply; Reduce Demand; Modify Operations; and Governance and Implementation. The distribution of the ideas received into these four categories is summarized in Figure 4.

**Figure 4 – Summary of Options Received to Resolve Supply and Demand Imbalances**




**Options**

**Reservoir Operations**

The number of options received related to increasing supply (e.g. desalination, importation, water reuse, etc.) was roughly equal to those received related to reducing demand (e.g. conservation, increased efficiency, water pricing, etc.). Almost a quarter of the options are related to modifying reservoir operations and include ideas such as: water banking; water transfers; and the adjustments of reservoir operating rules to meet a specific resource need. The governance and implementation category, comprising almost 10 percent of the options received, contains ideas such as: the development of new stakeholder processes to inform decision-making in the Basin; resolution of tribal water rights claims; and the re-examination of Colorado River Compact allocations.

**Evaluation Criteria**

**Approach to Evaluate Options and Strategies**

Each option received is being characterized based on Study evaluation criteria, which include: potential yield; timing of implementation; technical feasibility; cost; environmental effects; permitting requirements; legal and public policy considerations; and risk/uncertainty. To facilitate analysis, representative options have been developed that encompass the range of options within each category. The representative options are being analyzed to assess their performance in terms of improving the reliability of the system to meet the needs of Basin resources across a wide range of future water supply and demand scenarios. Representative option performance is being summarized for both the evaluation criteria indicated above and the impacts to Basin resources using the system reliability metrics.

**Adaptation Strategies Portfolios**

Based on the results of the characterization and evaluation of representative options analyzed, various representative options are being packaged into portfolios for additional analysis. The portfolios will represent different potential adaptation strategies, each representing a plausible response pathway to an unfolding water supply and demand imbalance. For example, a portfolio may be developed to enhance system reliability with low cost and high certainty in the near future and with increasing costs and less certainty over time. Each portfolio will be analyzed to assess the effects on Basin resources for each scenario. Robust portfolios, or elements of portfolios, will be identified. Finally, the findings of the options and strategies evaluation process will be summarized and future considerations will be identified.

## Colorado Basin Study

### Effectiveness Evaluation

**NEXT STEPS**

We are currently in the process of combining the water demand scenarios with the water supply scenarios. Future Reliability of the Colorado River system is being analyzed and projected both with and without options and strategies to mitigate future water supply and demand imbalances having been implemented. Future system reliability is indicated by the performance of multiple metrics (also developed with a wide range of stakeholder input) representing the Basin resources. Resources considered in the Study include: water allocations and deliveries for municipal, industrial, and agricultural use; hydroelectric power generation; recreation; fish and wildlife, and their habitats; water quality, including salinity; flow- and water-dependent ecological systems; and flood control.

The performance of these metrics, under plausible futures of water supply and demand, indicates the size and the nature of the imbalance and supports the evaluation of options and strategies. The future reliability of the system is being assessed using options and strategies to evaluate their effectiveness in addressing the projected imbalances. The final report for the Study is scheduled to be published in September 2012.

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Reclamation, May 201*2, Technical Memorandum C – Quantification of Water Demand Scenarios*, website: www.usbr.gov/lc/region/programs/crbstudy/techmemoC.html

**Carly Jerla** is an Operations Research Analyst for the Bureau of Reclamation's Lower Colorado Region in the Boulder Canyon Operations Office. She is currently on assignment to the University of Colorado's Center for Advanced Decision Support for Water & Environmental Systems in Boulder Colorado. Carly obtained a BS Degree in Civil and Environmental Engineering and a BS Degree in Engineering and Public Policy from Carnegie Mellon University in 2002. She also earned her MS in Civil Engineering from the University of Colorado in 2005. Carly was an integral part of technical team that developed the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, and leads the Region's research and development of modeling applications and decision support for water operations and planning. She is currently Reclamation's Co-Study Manager for the Colorado River Basin Water Supply and Demand Study.

**James Prairie,** Ph. D., a Hydraulic Engineer with the Bureau of Reclamation's Upper Colorado Region, has been working with the agency for more than 10 years. He is the Reclamation lead for the Basin Study's Demand Scenario development. In addition to his contributions to Reclamation's Basin Study team. Dr. Prairie leads the Colorado River Hydrology Workgroup that facilitates Reclamation's leadership role in water management and planning, including integration of climate variability and change into operational planning on the Colorado River. In addition to leading the workgroup, Dr. Prairie analyzes the river's salinity, oversees the historic and projected natural flow and salinity database, and analyzes the Upper Basin consumptive uses on the Colorado River system. He also works on development of operational and planning models of the Colorado River system. Prairie holds a Ph.D. and M.S. in Civil Engineering from the University of Colorado, and a B.S. in Environmental Resources Engineering from the State University of New York College of Environmental Science and Forestry.

**Pam Adams** is a Hydrologist in the Lower Colorado Region's Planning and Program Management Group. Pam has over 25 years of educational and professional experience in water resources planning and management as well as ensuring Federal compliance with a wide variety of environmental laws and regulations including the National Environmental Policy Act, the Endangered Species Act, and the National Historic Preservation Act. Since joining Reclamation in 2008, she has served as Reclamation's representative on multiple projects, ranging from wastewater reuse to understanding arsenic occurrence and movement in groundwater. Previously, Pam has managed the preparation of, and provided hydrologic expertise for complex federal environmental documents and management plans. Pam has a B.S. degree from Northern Arizona University.

 

## WATER BRIEFS

**MINING LAW & THE ESA CA**
**SECTION 7 CONSULTATION REQUIRED**

The 9th Circuit Court of Appeals en banc, overturning a previous decision, ruled 7-4 that the US Forest Service (USFS) violated the federal Endangered Species Act (ESA) by approving various small mining operations using its "Notice of Intent" (NOI) process, which USFS argued exempted it from compliance with federal environmental and wildlife protection laws. The 9th Circuit rejected that claim and concluded, "We therefore hold that the Forest Service violated the ESA by not consulting with the appropriate wildlife agencies before approving NOIs to conduct mining activities in coho salmon critical habitat within the Klamath National Forest." Slip Op. at 6072. *Karuk Tribe of California v. USFS, et al*., Case No. 05-16801 (June 1, 2012). The decision has implications throughout the western US, since the holding dealt with USFS decisions on small-scale mining projects and the application of Section 7 of ESA.

The plaintiff-appellant, the Karuk Tribe of California, "depends on coho salmon in the Klamath River system for cultural, religious, and subsistence uses. The rivers and streams of the Klamath River system also contain gold. Commercial gold mining in and around the rivers and streams of California was halted long ago due, in part, to extreme environmental harm caused by large-scale placer mining… However, small-scale recreational mining has continued…Finally, some recreational miners conduct mechanical 'suction dredging' within the streams themselves. These miners use gasoline-powered engines to suck streambed material up through flexible intake hoses that are typically four or five inches in diameter…Dredging depths are usually about five feet, but can be as great as twelve feet." *Id*. at 6073-74.

Beginning in 2003 and 2004, USFS allowed suction dredging and other forms of mining on more than 35 miles of the Klamath River and its tributaries in northern California, approving the mining under its Notice of Intent process. As a result, the approvals occurred with any public environmental reviews, no public notice, and no consultation with other federal agencies as required under the ESA.

The Opinion referred explicitly to the General Mining Law of 1872, which allows private citizens to enter public lands for the purpose of prospecting and mining. The 9th Circuit noted that "We have repeatedly upheld the Forest Service's authority to impose reasonable environmental regulations on mining activities in National Forests, so long as they do not prohibit or impermissibly encroach on legitimate mining uses." *Id*. at 6074 (citations omitted). "This decision sets a major precedent across the western states," said Roger Flynn, lead attorney for the Karuk Tribe. "The government and miners had argued that the archaic 1872 Mining Law… overrides environmental laws such as the Endangered Species Act. The Court flatly rejected that untenable position," Flynn said.

The 9th Circuit decided that USFS was required under Section 7 of the ESA to consult with appropriate federal wildlife agencies before allowing mining activities to proceed in critical habitat of a listed species. The two "substantive questions" decided by that court was first, whether the USFS' approval of four NOIs to conduct mining are "agency actions" within the meaning of Section 7 and secondly, "whether the approved mining activities 'may affect' a listed species or its critical habitat." *Id*. at 6072.

The 9th Circuit's Opinion provided an overview of its rulings on the reach of the ESA. "We have repeatedly held that the ESA's use of the term 'agency action' is to be construed broadly. *W. Watersheds Project v. Matejko*, 468 F.3d 1099, 1108 (9th Cir. 2006); *Turtle Island*, 340 F.3d at 974; Pac. Rivers, 30 F.3d at 1055. Examples of agency actions triggering Section 7 consultation include the renewal of existing water contracts, *Natural Res. Def. Council v. Houston*, 146 F.3d 1118, 1125 (9th Cir. 1998), the creation of interim management strategies, *Lane Cnty. Audubon Soc'y v. Jamison*, 958 F.2d 290, 293-94 (9th Cir. 1992), and the ongoing construction and operation of a federal dam, *Tenn. Valley Auth*., 437 U.S. at 173-74. We have also required consultation for federal agencies' authorization of private activities, such as the approval and registration of pesticides, *Wash. Toxics Coal. v. Envtl. Prot. Agency*, 413 F.3d 1024, 1031-33 (9th Cir. 2005)… ." The Opinion then further delineated what *type* of federal action was required: "An agency must consult under Section 7 only when it makes an 'affirmative' act or authorization. *Cal. Sportfishing Prot. Alliance v. Fed. Energy Regulatory Comm'n*, 472 F.3d 593, 595, 598 (9th Cir. 2006); *Matejko*, 468 F.3d at 1108. Where private activity is proceeding pursuant to a vested right or to a previously issued license, an agency has no duty to consult under Section 7 if it takes no further affirmative action regarding the activity. *Cal. Sportfishing*, 472 F.3d at 595, 598-99; *Matejko*, 468 F.3d at 1107-08 ("'inaction' is not 'action' for section 7(a)(2) purposes"). Similarly, where no federal authorization is required for private-party activities, an agency's informal proffer of advice to the private party is not 'agency action' requiring consultation. *Marbled Murrelet v. Babbitt*, 83 F.3d 1068, 1074-75 (9th Cir. 1996); see also *Sierra Club v. Babbitt*, 65 F.3d 1502, 1512 (9th Cir. 1995) (Section 7 applies to private activity 'only to the extent the activity is dependent on federal authorization')." *Id*. at 6091-92.

The 9th Circuit ultimately concluded that the USFS' activities were "agency actions" under Section 7. "The Forest Service contends that approval of a NOI is merely a decision not to regulate the proposed mining activities. *See* 70 Fed. Reg. at 32,720; *id*. at 32,728 ('a notice of intent to operate was not intended to be a regulatory instrument'). But the test under the ESA is whether the agency *authorizes*, funds, or carries out the activity, at least in part. 50 C.F.R. § 402.02 (emphasis added). As shown above, the Forest Service authorizes mining activities when it approves a NOI and affirmatively decides to allow the mining to proceed. Moreover, the record in this case demonstrates that the Forest Service controls mining activities through the NOI process, whether or not such control qualifies a NOI as a 'regulatory instrument.'" *Id*. at 6096.

On the question of "affect" on a listed species or its habitat, the 9th Circuit explained its reasoning behind the decision that the mining activities at issue may affect the listed species or its habitat. "We have previously explained that 'may affect' is a 'relatively low' threshold for triggering consultation. *Cal. ex rel. Lockyer v. U.S. Dep't of Agric.,* 575 F.3d 999, 1018 (9th Cir. 2009). '"Any possible effect, whether beneficial, benign, adverse or of an undetermined character, "' triggers the requirement. *Id*. at 1018-19 (quoting 51 Fed. Reg. 19,926, 19,949 (June 3, 1986)) (emphasis in *Lockyer*). The Secretaries of Commerce and the Interior have explained that '[t]he threshold for formal consultation must be set sufficiently low to allow Federal agencies to satisfy their duty to "insure"' that their actions do not jeopardize listed species or adversely modify critical habitat. 51 Fed. Reg. at 19,949." *Id*. at 6102. Following this discussion,

## WATER BRIEFS

the Court noted evidence in the record concerning the various ways that suction dredging can have negative impacts on coho salmon and its habitat.

In the Conclusion, the 9th Circuit summarized its decision as follows: "There is 'agency action' under Section 7 of the ESA whenever an agency makes an affirmative, discretionary decision about whether, or under what conditions, to allow private activity to proceed. In approving the NOIs challenged in this case, the Forest Service made affirmative, discretionary decisions to authorize mining activities under specified protective criteria. By definition, mining activities requiring a NOI are those that 'might cause' disturbance of surface resources, including underwater fisheries habitat. The Forest Service does not dispute that the mining activities it approved in this case "may affect" critical habitat of coho salmon in the Klamath River system. The Forest Service therefore had a duty under Section 7 of the ESA to consult with the relevant wildlife agencies before approving the NOIs." *Id*. at 6107.

Readers may also be interested in the 9th Circuit's rulings regarding "mootness" (*Id*. at 6084, et seq.). and "discretionary Federal involvement or control" as required by Section 7 of ESA (*Id*. at 6097, et seq.).

**For info:** Case available at: www.ca9.uscourts.gov/datastore/opinions/2012/06/01/05-16801.pdf; Craig Tucker, Karuk Tribe, 916/ 207-8294; Roger Flynn, Western Mining Action Project, 303/ 823-5738

### HISTORIC USE & TAKING CO

**DECISION ON CHANGE APPLICATION**

On May 14, the Colorado Supreme Court (Court) affirmed the water court's dismissal of a change application, holding that the applicant was required, but failed, to prove historic use of the right for which he sought a change in the point of diversion. The Court also held that the applicant was not excepted from the requirement that historic use of the water right be established as a precondition of changing its point of diversion, and finally, that denying a change of water right for failing to prove the historic use of the right does *not* amount to an unconstitutional taking of property. *See* 2012 CO 35. Nos. 11SA136 & 11SA54 (May 14, 2012). *Concerning the Revised Abandonment List of Water Rights in Water Division 2 and Concerning the Protest of Thorsteinson in Pueblo County: Harrison v. Simpson, State Engineer; Concerning the Application for Change of Water Right of Harrison, Personal Representative: Harrison v. St. Charles Mesa Water District*.

The Court set forth Colorado's water law as it relates to historic use and change applications at *Slip Op*. at 6-7: "It is firmly established in this jurisdiction that the measure of a water right for purposes of a change application, including a change in the point of diversion, is its actual historic consumptive use under the decree. *State Eng'r v. Bradley*, 53 P.3d 1165, 1169(Colo.2002)(citing *Williams v. Midway Ranches Prop.Owners Ass'n, Inc.*, 938 P.2d 515, 521 (Colo.1997)). An absolute decree, whether expressed in terms of a flow rate or a volumetric measurement, does not itself represent an adjudication of actual historic use of the right but is implicitly further limited to actual historic use over a representative period. *Id*. at 1170. Therefore, in order to determine that a requested change of a water right is merely that, and will not amount to an enlargement of the right, actual historic use must, in some fashion and to some degree of precision, be quantified. *Id*. Even if it seems clear that no other rights would be affected solely by a particular change in the location of diversion, it is essential that a change also not enlarge the existing right. *Trails End Ranch, L.L.C. v. Colorado Div. of Water Res*., 91 P.3d 1058, 1062… ."

The Court then dealt with the assertion that an unconstitutional taking of the water right had occurred. "Nor does the denial of a change of water right for failing to prove historic use unconstitutionally deprive an applicant of property without just compensation, in violation of either the Fifth Amendment to the United States Constitution or article II, section 15 of the Colorado Constitution. Although we have characterized a water right, including the right to change its point of diversion, as a property right, we have also made clear that the right in question is usufructuary in nature, merely permitting the use of water within the limitations of the prior appropriation doctrine. *Kobobel v. Colorado Dept. of Natural Res*., 249 P.3d 1127, 1134 (Colo. 2011); *Bradley*, 53 P.3d 1168; *Santa Fe Trail Ranches v. Simpson*, 990 P.2d 46, 54 (Colo.1999). The right itself is created by appropriating unappropriated water and putting it to a beneficial use. As we have often held, an absolute decree does not represent an adjudication of the full measure of the right but is implicitly further limited in quantity by historic beneficial consumptive use according to the decree. Limiting a change in water right to the extent of established historic use, therefore, does not deprive an applicant of an existing property right but rather ensures against an enlargement of that right." *Id*. at 8-9.

It should be noted, however, that the Court did not find that "abandonment" of the water right had occurred. "The failure of an applicant for a change of water right to prove historic use by a preponderance of the evidence, however, does not establish an abandonment of that right, and the water court in this case did not so hold. Rather, the water court found abandonment of the 1.04 c.f.s. right to be the stipulated remedy of the parties for Harrison's failure to include in his application a historic use analysis. The water court did not further specify precisely what kind of analysis it understood the stipulation to require or when such an analysis would have to be produced, apparently concluding simply that Harrison's failure to satisfy his burden at the change proceeding was dispositive of the matter." *Id*. at 9. Under principles of contract law, the Court found that "Harrison did not stipulate to an order of abandonment as the consequence of failing to succeed in his change application" and therefore "the water court's order granting the Engineers' motion for abandonment is reversed." *Id.* at 12.

**For info:** Complete decision at: www.courts.state.co.us/userfiles/file/Court_Probation/Supreme_Court/Opinions/2011/11SA136,%2011SA54.pdf

### CAFOs PERMIT MANUAL US

**NUTRIENT MANAGEMENT**

EPA in February released a technical manual for **c**oncentrated **a**nimal **f**eeding **o**perations (CAFOs) to provide states, producers, and the public with general information on permit program requirements for CAFOs, information to explain CAFO permitting requirements, and technical information to help states and producers understand options for nutrient management planning. EPA expects this document will be updated periodically to incorporate new approaches; interested parties can send questions and suggestions at any time. EPA also released in February, State Technical Standards for Nutrient Management. This document provides state technical standards for nutrient management that are to be used by CAFOs when developing nutrient management plans

## WATER BRIEFS

to meet NPDES permit requirements. The standards will also be used by EPA to evaluate whether discharges from a CAFO's land application area qualify for the Clean Water Act agricultural stormwater exemption.
**For info:** EPA website: http://cfpub.epa.gov/npdes/whatsnew.cfm?program_id=7

### CONSERVATION PLAN OK

**FRESHWATER CONSERVATION**

On May 21, Governor Fallin of Oklahoma signed into law the Water for 2060 Act, the most comprehensive, ambitious statewide water conservation measure in the United States, according to the Governor's office. House Bill 3055, establishes a statewide goal of consuming no more freshwater in 2060 than is currently consumed in the State. The bill also creates an advisory council that will develop a strategy for achieving the statewide goal, as well as recommendations on more efficient use of existing water supplies, identification of new water supplies, and more efficient infrastructure.

According to the 2012 update to the Oklahoma Comprehensive Water Plan, localized shortages and groundwater depletions could become more prevalent in the next 50 years in more than half of Oklahoma's 82 watershed planning basins. HB 3055, authored by Speaker Kris Steele, places the focus on preserving freshwater through conservation while also looking toward expanding the use of alternative supplies, such as wastewater, brackish water, and other non-potable supplies, to meet future needs.

Governor Fallin noted that the legislation does not amend the provisions of current law pertaining to water rights or permits to use water and instead, encourages voluntary practices to use water more efficiently and creatively. Under the Act, the Oklahoma Water Resources Board will solicit proposals for and make grants for the establishment of pilot programs, which will implement water conservation projects or plans in communities in the state. "Pilot projects may include, but are not limited to, community conservation demonstration projects, water use accounting programs, retrofit projects, school education projects, Xeriscape demonstration gardens, projects which promote efficiency, recycling and reuse of water, and information campaigns on capturing and using harvested rainwater and graywater." HB 3055, Section F.

The bill itself does not include funding but noted in Section E, "Contingent upon the availability of funding, the Board may award grants each year in an amount not to exceed Twenty-five Thousand Dollars ($25,000.00) for each grant. The total amount of grants awarded each year shall not exceed Fifty Thousand Dollars ($50,000.00)."
**For info:** Governor Fallin's website: www.ok.gov/governor/

### FRACKING REQUIREMENTS US

**DISCLOSURE, UIC DIESEL FUEL USE**

Secretary of the Interior Ken Salazar on May 4 announced the release of a proposed rule to require companies to publicly disclose the chemicals used in hydraulic fracturing operations on public and Indian lands, with appropriate protections for proprietary information. Currently, there is no specific requirement for operators to disclose these chemicals on federal and Indian lands, where approximately 90% of the wells drilled use hydraulic fracturing to increase the volume of oil and gas available for production. The proposed rule would require disclosure of chemicals used during hydraulic fracturing *after* fracturing operations have been completed. The proposed rule was in line with steps that some States have already taken.

The draft rule, which can be viewed at the website below along with economic analysis and an appendix, also contains two additional, measures to ensure development continues safely and responsibly: (1) improving assurances on well-bore integrity to verify that fluids used in wells during fracturing operations are not escaping; and (2) confirming that oil and gas operators have a water management plan in place for handling fracturing fluids that flow back to the surface.

Since 2008, US oil and natural gas production has increased each year. In 2011, US crude oil production reached its highest level in 8 years, and US natural gas production grew in 2011 as well — the largest year-over-year volumetric increase in history — easily eclipsing the previous all-time production record set in 1973. Overall, oil imports have been falling since 2005, and oil import dependence declined from 57 percent in 2008 to 45 percent in 2011 – the lowest level since 1995. Over the last few years, federal oil production has increased by 13 percent and total natural gas production from onshore public lands has increased by six percent, compared with totals from 2006-2008.

Also on May 4, EPA released draft **u**nderground **i**njection **c**ontrol (UIC) program permitting guidance for class II wells that use diesel fuels during hydraulic fracturing activities. The guidance was developed to clarify how companies can comply with a law Congress passed in 2005, which exempted fracking operations from the requirement to obtain a UIC permit, except in cases where diesel fuel is used as a fracturing fluid.

The draft guidance outlines for EPA permit writers, where EPA is the permitting authority, requirements for diesel fuels used for hydraulic fracturing wells, technical recommendations for permitting those wells, and a description of diesel fuels for EPA underground injection control permitting. The draft guidance describes diesel fuels for these purposes by reference to six chemical abstract services registry numbers. The agency is requesting input on this description. EPA will take public comment on the draft guidance for 60 days upon publication in the Federal Register to allow for stakeholder input before it is finalized.
**For info:** Disclosure rule at: www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=293916; Diesel fuel guidance at: http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/hydraulic-fracturing.cfm

### SURPLUS WATER ND/US

**CORPS PRICING POLICY**

On May 9, the US Army Corps of Engineers (Corps) announced that it will move forward with finalizing current outstanding application requests for access to surplus water out of Lake Sakakawea, behind Garrison Dam. In its final report to the Assistant Secretary of the Army (Civil Works), Jo-Ellen Darcy, the Corps determined that it can temporarily make available 100,000 acre-feet of yield for municipal and industrial (M&I) water supply use. This will allow M&I water users access for up to 10 years. Ms. Darcy concurred in making available this provisional use of surplus water and directed the Corps to proceed with processing outstanding applications for access to the surplus water, and to enter into agreements for M&I use of that surplus water.

The issue of the Corps charging for "surplus water" had become an issue recently due to the use of large amounts of water by oil companies in western North Dakota to utilize in the process of fracking wells. US Senator Kent

## WATER BRIEFS

Conrad met with Corps' officials in March to press the Corps to drop plans to charge for users for storing surplus water in Lake Sakakawea. "With the exception of one entity, no other users along the entire Missouri River system are charged for such storage," Senator Conrad said. "Not only is the Corps proposal unjust but it contradicts the long-standing federal commitment to North Dakota to compensate us for the loss of land due to the construction of Garrison Dam."

The Assistant Secretary of the Army (Civil Works) — ASA(CW) — has directed the Corps to pursue rulemaking in accordance with the Administrative Procedure Act to establish a nationwide pricing policy for surplus water. The ASA(CW) directed the Corps not to charge for M&I surplus water withdrawals from Lake Sakakawea during a transitional period, pending the outcome of this rulemaking. The Corps will develop a new pricing model, inform the public about the pricing methodology, allow public comment and agency response to the proposal, and provide time for any revisions, before a formal pricing model is set in place.
**For info:** Monique Farmer, Corps, 402/ 995-2420 or monique.l.farmer@usace.army.mil

### TRIBAL CWA AUTHORITY MT

**WATER QUALITY STANDARDS PROGRAM**

EPA announced on May 2, that the Blackfeet Tribe of the Blackfeet Indian Reservation in north-central Montana has been granted the authority by EPA to administer the Water Quality Standards program under the Clean Water Act (CWA). With this approval, the Tribe likewise is authorized to administer water quality certifications conducted under CWA Section 401. "EPA is excited to have the Blackfeet as a Clean Water Act partner in protecting the rivers, lakes and wetlands that are vital resources for the Tribe," said Jim Martin, Regional Administrator of U.S. EPA's Region 8 (Denver) office. "EPA's approval reflects the Tribe's effort to build the expertise and capacity to manage water quality on the Reservation."

Water quality standards established under the CWA set the Tribe's expectations for Reservation water quality, serve as a foundation for pollution control efforts, and are a fundamental component of watershed management. Specifically, these standards serve as water quality goals for individual surface waters, guide and inform monitoring and assessment activities, and provide a legal basis for permitting and regulatory pollution controls (e.g. discharge permits). EPA's approval of the Tribe's Water Quality Standards program application is not an approval or disapproval of the Tribe's standards; EPA review and approval or disapproval of specific standards is a separate Agency action.

The Tribe's current water quality standards include designated uses, narrative and numeric criteria to protect those uses, and an anti-degradation policy, all consistent with EPA's Water Quality Standards Regulation at 40 C.F.R. Part 131. The uses and criteria are similar to the State of Montana's standards. The Tribe developed water quality standards, and held a public hearing in 2005. The Tribe plans to revise its standards, conduct a public hearing, and submit their revised standards to the EPA for review during the summer/fall of 2012.

The Blackfeet Tribe is the fourth tribe in Montana to obtain authority to administer the Water Quality Standards program. The Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation and the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation currently have standards in effect under the Clean Water Act. The Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation received authority for the Water Quality Standards program in 2006.
**For info:** George Parrish, 303/ 312-7027 or parrish.george@epa.gov; Tribal contact: Barry Adams, 406/ 338-7421, badams@3rivers.net or www.blackfeetnation.com/; Fact sheet, public notice, and copies of the Tribe's application materials: www.epa.gov/region8/water/wqs; For info on EPA's strategy for reviewing Tribal eligibility applications to administer EPA regulatory programs: www.epa.gov/tribalportal/laws/tas.htm

### CORPS LEVEE POLICY CA/US

**VEGETATION REMOVAL**
**CALIFORNIA FILES SUIT**

The California Department of Fish and Game (CDFG) has filed suit against the US Army Corps of Engineers (Corps) over its national policy requiring removal of virtually all trees and shrubs on federal levees.

The lawsuit, filed May 23rd, claims the Corps failed to comply with the federal Endangered Species Act, National Environmental Policy Act, and federal Administrative Procedure Act when it adopted the policy in the wake of Hurricane Katrina.

According to CDFG, the national policy would require the removal of riparian habitat essential for several endangered species, including Chinook salmon, Central Valley steelhead, Valley elderberry longhorn beetle, riparian brush rabbit, Western yellow-billed cuckoo and Swainson's hawk. Only 5% of the California's Central Valley's original riparian forest remains, and the Corps' new policy would eliminate it entirely, CDFG said in a press release.

CDFG contends that the national policy fails to account for regional variations among levees and the fact that several studies conducted by California confirm that native riparian vegetation on levees is compatible with flood control. Approximately 1,600 miles of federal project levees along the Sacramento and San Joaquin rivers and tributaries are likely to be affected by the Corps' policy, according to CDFG. Several miles of federal levees in the Bay Area and Southern California would also be affected.

In total, compliance with the policy is estimated to cost up to $7.5 billion and divert funds from more significant levee deficiencies like seepage and erosions, according to CDFG. CDFG notified the Corps of its intent to bring suit in February. The suit seeks to require the Corps to comply with the federal ESA, the National Environmental Policy Act and the federal Administrative Procedure Act before further implementation of the levee vegetation removal policy.
**For info:** Jordan Traverso, CDFG, 916/ 654-9937

### WETLANDS GRANTS US

**CONSERVATION AND HABITATS**

On June 7th, Secretary of the Interior Ken Salazar and Director of the US Fish and Wildlife Service Dan Ashe announced that the Migratory Bird Conservation Commission has approved more than $1.3 million from the Migratory Bird Conservation Fund to protect an estimated 1,368 acres of waterfowl habitat on three units of the National Wildlife Refuge System. The commission also approved more than $25 million in federal grants through the North American Wetlands Conservation Act (NAWCA) to support public-private partnership activities that will conserve more than 144,000 acres of wetlands and associated habitats in the United States and Canada.
**For info:**
USFWS website: www.fws.gov/birdhabitat/Grants/NAWCA/index.shtm

## CALENDAR

**June 18-19 ID**
**IWUA Summer Water Law Seminar & Workshop, Sun Valley.** Sponsored by Idaho Water Users Ass'n. For info: www.iwua.org

**June 18-20 CA**
**WESTCAS 2012 Annual Conference, San Diego.** Catamaran Resort Hotel. For info: WESTCAS, 770/424-8111 or www.westcas.org

**June 18-22 OR**
**Natural Resources Leadership Academy, Corvallis.** OSU. Sponsored by Program in Water Conflict Management and Transformation (OSU). For info: Lynette de Silva, OSU, 541/ 737-7013, desilval@geo.oregonstate.edu or http://outreach.oregonstate.edu/nrla/

**June 19 DC**
**Water & Watts: Potential to Save Energy & Water in the Municipal, Industrial & Commercial Sectors Conference, Washington.** Atlantic Council, 1101 15th Street, NW, 11th Floor. For info: www.acus.org/

**June 20 OR**
**Governor Kitzhaber's Future Energy Action Plan Presentation, Portland.** Tonkin Torp, 888 SW 5th Ave. Sponsored by Sustainable Future Section, Oregon State Bar. For info: woods@sustainableattorney.com

**June 21-22 NV**
**Tribal Water Law: National Perspective Conference, Las Vegas.** Planet Hollywood. For info: CLE International, 800/ 873-7130 or www.cle.com/

**June 21-22 WA**
**Washington Brownfields & Land Revitalization Conference & Trade Show, Spokane.** The Davenport Hotel. Sponsored by Northwest Environmental Business Council. For info: Sue Moir, NEBC, 503/ 227-6361, sue@nebc.org or www.nebc.org

**June 23-26 CA**
**Preparing for Our Environmental Future: Ass'n for Environmental Studies & Sciences Annual Meeting, Santa Clara.** Santa Clara University. For info: Ken Wilkening, AESS, dew@unbc.ca or www.aess.info/content.aspx?page_id=22&club_id=939971&module_id=111756

**June 24-29 TX**
**14th Annual EPA Region 6 Stormwater Conference, Fort Worth.** Worthington Renaissance Hotel. For info: http://epa.gov/region6/water/npdes/sw/ms4/conference.htm

**June 25-27 CO**
**Contaminants of Emerging Concern in Water Resources II: Research, Engineering & Community Action Conference, Denver.** Sheraton Downtown. For info: American Water Resources Ass'n, www.awra.org/meetings/

**June 25-29 OR**
**Natural Resources Leadership Academy, Corvallis.** OSU. For info: Lynette de Silva, OSU, 541/ 737-7013, desilval@geo.oregonstate.edu or http://outreach.oregonstate.edu/nrla/

**June 25-29 CO**
**2012 AWRA Summer Specialty Conference, Denver.** Sheraton Denver Downtown. Sponsored by American Water Resources Ass'n. For info: www.awra.org

**June 26 WA**
**Reducing Toxics in Fish, Sediment & Water Conference, Seattle.** WA State Convention Ctr. For info: Holly Duncan, Environmental Law Education Center, 503/ 282-5220, hduncan@elecenter.com or www.elecenter.com

**June 26-27 OH**
**Midwestern Groundwater Issues Conference, Columbus.** Crowne Plaza. For info: NGWA: www.ngwa.org/Events-Education/conferences/5085/Pages/5085jun12.aspx

**June 26-29 AZ**
**Navajo Nation Biennial Drinking Water Conference, Scottsdale/ Fountain Hills.** Wassaja Conference Ctr. For info: www.navajopublicwater.org/Conference2.html

**June 27-29 CO**
**Riparian Ecosystems IV: Advancing Science, Economics & Policy Conference, Denver.** Sheraton Downtown. For info: American Water Resources Ass'n, www.awra.org/meetings/

**June 29 WA**
**Toxics in Washington Conference, Seattle.** For info: Holly Duncan, Environmental Law Education Center, 503/ 282-5220, hduncan@elecenter.com or www.elecenter.com

**June 30-July 3 MA**
**18th International Interdisciplinary Conference on the Environment, Portland.** Holiday Inn By the Bay. For info: http://ieaonline.org/?page_id=68

**July 10-13 CO**
**Environmental Awareness Bootcamp, Colorado Springs.** Antlers Hilton. For info: EPA Alliance Training Group, 713/ 703-7016 or www.epaalliance.com

**July 11-13 CO**
**SPCC & Stormwater Compliance Workshop, Colorado Springs.** Antlers Hilton. For info: EPA Alliance Training Group, 713/ 703-7016 or www.epaalliance.com

**July 12-13 NM**
**Natural Resources Damages Seminar, Santa Fe.** Hilton Historic Plaza Hotel. For info: Law Seminars Int'l, 800/ 854-8009, email: registrar@lawseminars.com, or website: www.lawseminars.com

**July 16-18 CO**
**CUAHSI 3rd Biennial Colloquium on Hydrologic Science & Engineering, Boulder.** Bldg. 1, Center Green Campus (UCAR). Sponsored by Consortium of Universities for the Advancement of Hydrologic Science, Inc.. For info: www.cuahsi.org/biennial2012/index.html

**July 17-18 CO**
**Colorado Water Law in a Nutshell Program, Gunnison.** Western State College. For info: www.western.edu/academics/water

**July 17-19 NM**
**Managing Water, Energy & Food in an Uncertain World - 2012 UCOWR/NIWR Conference, Santa Fe.** La Fonda Inn. For info: UCOWR, 618/ 536-7571 or www.ucowr.org

**July 17-20 DC**
**First Stewards Symposium: Impact of Climate Change on Indigenous Coastal Cultures, Washington.** Smithsonian's National Museum. For info: Leonda Levchuk, National Museum of the American Indian, 202/ 633-6613 or www.firststewards.org

**July 18-20 CO**
**Water Taboos: Addressing Our Most Challenging Issues - 37th Annual Colorado Water Workshop, Gunnison.** Western State College. For info: Jeff Sellen, WSC, 970/ 943-3162, jsellen@western.edu or www.western.edu/academics/water

**July 18-20 MD**
**Stormwater Symposium 2012, Baltimore.** Sheraton City Center. For info: www.wef.org/Stormwater2012

**July 19-21 CA**
**Rocky Mt. Mineral Law Foundation 58th Annual Institute, Newport Beach.** Marriott Hotel. For info: Dave Phillips, RMMLF, 303/ 321-8100 x 101, dphillips@rmmlf.org or www.rmmlf.org

**July 31-Aug. 4 OR**
**Ecosystem Services Come of Age: Linking Science, Policy & Participation for Sustainable Human Well-Being Conference, Portland.** Doubletree Hotel. Sponsored by Ecosystem Services Partnership. For info: www.espconference.org/ESP_Conference

**August 1-3 ID**
**NWRA Western Water Seminar, Sun Valley.** Sponsored by National Water Resources Ass'n. For info: www.nwra.org/

**August 4 OR**
**RiverFeast, Smith Rock.** Ranch at the Canyons. Sponsored by Deschutes River Conservancy. For info: www.deschutesriver.org/get-involved/events/2012_riverfeast

**August 6-8 CA**
**Overview of Environmental Statistics Course, Davis.** 1137 Lab, UC Davis. For info: UC Davis Extension, 800/ 752-0881 or www.extension.ucdavis.edu/landuse

**August 9-10 AZ**
**Arizona Water Law Conference, Phoenix.** Biltmore Resort. For info: CLE International, 800/ 873-7130 or www.cle.com/

**August 10 CO**
**Conservation Easements Conference, Denver.** Grand Hyatt Hotel. For info: CLE International, 800/ 873-7130 or www.cle.com/

**August 14 NM**
**City of Santa Fe-Buckman Direct Diversion & WTP (Luncheon), Albuquerque.** O'Neil's Pub on Central, 11:30am-12:30pm. Sponsored by AWRA State Section. For info: http://state.awra.org/new_mexico/index.html

**August 15 CA**
**ACWA's 2012 Regulatory Summit, Rohnert Park.** Doubletree by Hilton Sonoma Wine Country. For info: Ass'n of California Water Agencies, www.acwa.com/events/acwa-regulatory-summit

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## CALENDAR

(continued from previous page)

**August 15-17 CO**
**2012 Summer Conference of the Colorado Water Congress, Steamboat Springs.** Sheraton Steamboat Resort. For info: http://www.cowatercongress.org/SummerConference/index.aspx

**August 24 CA**
**Habitat Conservation Planning Course, Sacramento.** Sutter Square Galleria, 2901 K Street. For info: UC Davis Extension, 800/ 752-0881 or www.extension.ucdavis.edu/landuse

**August 26 CA**
**APWA Public Works Congress & Expo, Anaheim.** Convention Ctr. Sponsored by American Public Works Ass'n. For info: http://apwa.net/congress

**August 26-29 MI**
**National Tribal Environmental Council Annual Conference, Acme.** Grand Traverse Resort & Spa. For info: NETC: http://ntec.org/annualmeeting.html

**August 26-31 Sweden**
**World Water Week: Water & Food Security, Stockholm.** Hosted by the Stockholm Intern'l Water Institute. For info: www.worldwaterweek.org/

**August 27-28 WA**
**Water Law in Washington Seminar, Seattle.** WA State Convention Ctr. For info: Law Seminars Int'l, 800/ 854-8009, email: registrar@lawseminars.com, or website: www.lawseminars.com

**September 5-7 AL**
**2012 Alabama Water Resources Conference, Orange Beach.** Perdido Beach Resort. For info: http://auei.auburn.edu/conference/

**September 6 CA**
**Wetlands Regulation & Mitigation Course, Sacramento.** Sutter Square Galleria, 2901 K Street. For info: UC Davis Extension, 800/ 752-0881 or www.extension.ucdavis.edu/landuse

**September 6 GA**
**Stormwater Law & Regulation in Georgia Seminar, Atlanta.** Cobb Galleria Centre. For info: The Seminar Group, 800/ 574-4852, email: info@theseminargroup.net, or website: www.theseminargroup.net

**September 7 CA**
**Hydraulic Fracking Seminar, Santa Barbara.** TENTATIVE. For info: The Seminar Group, 800/ 574-4852, email: info@theseminargroup.net, or website: www.theseminargroup.net

**September 9-12 FL**
**27th Annual WateReuse Symposium, Hollywood.** Westin Diplomat Resort. For info: www.watereuse.org/symposium27