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Cover Photograph: The Alabama Gates on the Los Angeles Aqueduct, in California's Owens Valley, symbolize the often contentious struggle over the development of water law in the West, the subject of this special issue. (Photograph by James Bledsoe, c. 1913, Courtesy of the Department of Water and Power, City of Los Angeles)
Hoover Dam on the Colorado River, completed in 1936.
As recent scholars have emphasized, the serious historical analysis of western water law began with Walter Prescott Webb's 1931 classic, *The Great Plains.* In a section on the development of prior appropriation, Webb found antecedents to the doctrine in the Hispanic Southwest before the 1848 U.S. occupation, and postulated that the West's aridity accounted for priority's adoption by Anglo-Americans. According to Webb, "The justification of the arid-region doctrine is found in the physical conditions of the country in which it has been adopted." He attributed conflicts over water rights to
appropriation's locking up a scarce resource, and particularly to federal land-disposal policies that failed to take the water needs of the affected population into account.6

Although Webb's work has been criticized for its methodology7 and conclusions,8 the questions he raised and his approach linking law, the environment, and public policy have shaped several generations of western water studies.9 In this brief overview, I will discuss how legal historians have elaborated on Webb's themes, and place the four essays in this issue of Western Legal History within the context of an evolving field. Webb's suggestion that prior appropriation had Spanish and Mexican origins has now been superseded by monographic research showing that, far from being absolute and exclusive, water rights in the Hispanic Southwest were apportioned among various users.10 In The Spanish Element in Texas Water Law (1959), Betty E. Dobkins showed how the Spanish system was designed to prevent water monopoly by fostering distribution rather than preserving vested property interests.11 Michael C. Meyer, in Water in the Hispanic Southwest (1984), established that priority was only one of many criteria used to resolve water disputes; additional considerations included just title, need, avoiding injury to third parties, reason for use, legal right, and the common good.12 Other scholars, such as Thomas

6Ibid. at 451-52.
F. Glick, Malcolm Ebright, and Daniel Tyler (who is a contributor to this issue), have stressed the importance of local custom in water allocation. Legal historians have also explored how the communal nature of Spanish and Mexican water use was at variance with American courts' creation of exclusive municipal, or "pueblo," rights in California and New Mexico and of riparian irrigation privileges in Texas—doctrines that judges falsely traced to the Hispanic period.

The central theses of The Great Plains, that the environment was the sole reason for the adoption of prior appropriation and that federal policy was primarily responsible for water controversies, have been undercut by disciples of the legal historian James Willard Hurst. Researching court records of Wisconsin lumber disputes, Hurst emphasized socioeconomic influences on legal decisions and the government's allocation of resources to promote the "release of energy" necessary for economic growth. This approach has been applied by Gordon Bakken, in The Development of Law on the Rocky Mountain Frontier (1983), and by Donald J. Pisani, in "Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century" (1987) to explain prior appropriation as a response to miners' and ranchers' need for efficient water use where capital, labor, transportation, and water were limited. Charles W. McCurdy and Harry N. Scheiber have implicitly challenged Webb's negative view of government in law-review articles, arguing that nineteenth-century courts in California stimulated development by preventing water monopolization and pollution, and

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19James Willard Hurst, Law and the Conditions of Freedom in the Nineteenth-Century United States (Madison, 1956), 1-32.
21Pisani, "Enterprise and Equity," supra note 1 at 21.
by invoking the public trust over navigable waters to enjoin harmful hydraulic mining. And, far from considering federal policy the major culprit in water controversies, Norris Hundley, Jr., "The Great Thirst (1992)" and Pisani's To Reclaim a Divided West (1992) maintained that a wide range of public and private interests have at times clashed and at other times combined to frustrate consensus on the issues that have faced western water users.

A more critical trend in legal history, exemplified by the work of Morton J. Horwitz, has led to studies that go beyond the environment-versus-economy debate to view western water law as a legitimating ideology. In The Transformation of American Law, 1780-1860 (1977), Horwitz showed how early-nineteenth-century state courts were initially "instrumentalist," restricting vested rights to foster commercial and industrial entrepreneurship, but later disguised the gains of new elites with the "formalist" notion that legal rules were apolitical and inevitable. For example, the Mill Acts passed in Massachusetts and other eastern states to compensate owners of land flooded by mill dams—and to eliminate more favorable common-law remedies—were originally explained as an expansion of eminent domain necessary to encourage industrialization, but were ultimately rationalized as a mere harmonization of the parties' traditional riparian rights, "a supposedly nonpolitical doctrinal category." Two studies of California's water history have employed the legitimation theory, Eric T. Freyfogle's "Lux v. Haggin and the Common Law Burdens of Modern Water Law" (1986), and M. Catherine Miller's Flooding the Courtrooms (1993). These analyses contend that the maintenance of riparian rights since the 1880s has provided a justification for limiting water access to certain landowners. According to Miller, who researched the Miller and Lux cattle empire in the San Joaquin Valley, the command of water "was achieved not by physical control or expertise but by gaining the public trust over navigable waters to enjoin harmful hydraulic mining." And, far from considering federal policy the major culprit in water controversies, Norris Hundley, Jr., "The Great Thirst (1992)" and Pisani's To Reclaim a Divided West (1992) maintained that a wide range of public and private interests have at times clashed and at other times combined to frustrate consensus on the issues that have faced western water users.

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state's recognition and definition of water as property."

My recent article "Mission Revival Jurisprudence: State Courts and Hispanic Water Law Since 1850" (1994) also pursues this approach, investigating manuscript case files to demonstrate that American judges knowingly misattributed the pueblo doctrine and riparian irrigation to Hispanic law in order to construct precedents for exclusive water domination by municipalities and large landowners.

These studies of pre-American water apportionment, economic and governmental influences on legal change, and legitimating legal ideology have undermined many of Webb's arguments, or, at least, filled in gaps in his work. The four articles in this issue continue this process of reevaluation by focusing on various aspects of western water-law history. All the essays are based on primary research, and all concentrate on questions raised by The Great Plains or its successors.

The first article, in chronological order by subject, is David A. Reichard's "The Politics of Village Water Disputes in Northern New Mexico, 1882-1905." Examining correspondence between lawyers and clients in late-nineteenth-century litigation over acequias (irrigation ditches), Reichard asks why Hispanics and Indians filed such lawsuits with increasing frequency in the New Mexican territorial courts, rather than opting for the customary informal mediation. He finds that the answer is more complex than water scarcity, for the post-Conquest legal system had become a "contested state," or social space, where various ethnic groups fought political battles within and between their respective communities. Litigants attempted to "preserve (or to create) local power" by using lawyers or courts to gain political advantage—for example, to weaken wealthy landowners or the dominant Republican Party. Reichard concludes that territorial jurisdiction over acequia disputes sanctioned the formal legal institutions' role as arbiters of social conflict, and helped to bring rural New Mexico into a national, capitalist orbit. This essay thus supplements the studies of pre-1848 Hispanic law by detailing how Hispanics brought their traditional water access concerns into American courts, and supports the legitimation school's emphasis on legal rationalizations for interest-group aggrandizement.

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30 Ibid. at 174.
Daniel Tyler similarly explicates the documentary record to shed light on water controversy in "Delph E. Carpenter and the Principle of Equitable Apportionment." Carpenter, a lawyer, a Colorado water commissioner, and the negotiator of the 1922 Colorado River Compact, left eighty-five boxes of personal papers, which Tyler sifts to explain the "equitable apportionment" principle in interstate water allocation. According to Tyler, Carpenter's concept of equitable apportionment meant flexibility, fairness to all parties, consideration of local conditions, and compromise rather than litigation; by rejecting priority and exclusive rights, the principle "controverted the essence of prior appropriation." Incorporating Carpenter's proposals, the 1922 compact divided the Colorado River Basin into two parts, with water allocated equally between them, relieving the upper-basin states (Colorado, New Mexico, Utah, Wyoming) of fears that their future requirements would be blocked by the lower states' (Arizona, California, Nevada) acquiring prior rights to unreasonable flows. Analogizing to the mutual recognition underlying international water agreements in Europe and the Middle East, Carpenter considered that the compact promoted state sovereignty, as the various states were able to accommodate their different legal regimes and stages of development without resorting to litigation or federal intervention. In his analysis, Tyler avoids Webb's pessimism, providing a Hurstian example of governmental resource allocation for the public benefit.

Failure rather than success is the theme of G. Emlen Hall's "The Mismeasure of the Pecos River: Royce Tipton and the 1948 Pecos River Compact." Hall utilizes official documents, minutes of hearings, and oral interviews to assess the career of Tipton, a Denver engineer who chaired the Pecos River Joint Investigation, helped negotiate the 1948 Pecos Compact between New Mexico and Texas, and later consulted to the commission charged with implementing the accord. One of the breed of hydrologists and negotiators known as "enginawyers" (part engineers, part lawyers), Tipton attempted to apply an empirical formula for apportioning Pecos water by controlling New Mexico depletions rather than by specifying flows at the state line. But this system, incorporated into the compact, was a "scientific failure," overoptimistically presuming accurate measurement of various drains on the river and never accounting for the full extent of human uses. As a result, New Mexico's delivery obligations were continually disputed, and Tipton erroneously fixated on salt-cedar trees, not humans, as the primary source of flow diminution. Of the essays in this issue, Hall's fits most squarely in the Webb mode of criticizing gov-
ernment misunderstanding and mismanagement of a scarce water supply.

Finally, Alan M. Paterson surveys a complicated past of interest conflicts and policy confusion in "Water Quality, Water Rights, and History in the Sacramento-San Joaquin Delta: A Public Historian's Perspective." The article discusses the major controversies regarding California's Delta since the 1920s, including upstream irrigation diversions interfering with downstream uses, riparian versus appropriative rights, inconsistent northern and southern demands, and threatened fish habitats. Paterson laments the political pressures from various lobbying groups that have made allocation decisions difficult for courts and state agencies such as the Water Resources Control Board, whose internal reports he examined. He points out that public historians can play a constructive role as water-agency consultants by providing evidence of baseline conditions (such as streamflow and fish populations) that can be used comparatively to assess current policies. Paterson goes beyond Webb's generalized condemnation of government ineptitude; echoing Hundley and Pisani, he draws a detailed picture of fragmentation and politicization, but focuses more specifically on one riverine ecosystem.

These articles demonstrate the maturation of western water-law history since the publication of The Great Plains. Although indebted to Webb for his identification of certain central issues and his introduction of an interdisciplinary approach to the field, this newest generation of water scholars has far surpassed his methods and ideas. Their investigation of primary sources, their theoretical sophistication, and their analysis of multi-factor causation place them in the vanguard of contemporary legal-historical research.
Residents of New Mexico's northern pueblos developed irrigation systems, based on *acequias* like this one at San Juan, as early as the 1400s. (Photograph by George C. Bennett, c. 1881, Courtesy Museum of New Mexico)
Between the 1880s and the early 1900s, disputes over access to water for irrigation and household use within many Hispano villages and Indian pueblos intensified across northern New Mexico. These conflicts typically arose among those who shared a particular source of water, and were often precipitated by periodic drought in the region. The issues in contention varied: the improper diversion of a river's course, the failure to clean an acequia (irrigation ditch), the questionable allocation of water "shares" to farmers "under ditch," or the misappropriation of water from an acequia without permission from the mayordomo (ditch overseer) responsible for the water's allocation.1

Irrigation disputes also began to appear with greater frequency in the territory's district courts, circuit courts that visited county seats twice a year. Rather than seeking an informal resolution through self-help or mediation, or before a local justice of the peace, litigants pursuing their claims in the more
Spanish colonists brought their own technology to the Pueblos' irrigation systems by adding such things as wooden flumes. (Courtesy Museum of New Mexico, c. 1900)

formal district courts generally hired lawyers, assisted in the collection of evidence, produced affidavits, and attended courtroom sessions. How and why local Hispano villagers and Indian Pueblo pursued these lawsuits in increasing numbers in the forums in which they did requires a more complex explanation than water scarcity itself.

The active participation by these litigants was part of a much wider trend. Since the territory’s conquest by the United States, the legal system had become a “contested state” institution in which Native Americans, Hispanos, and Euro-American immigrants waged political struggles within their communities and amongst each other. Because these territorial residents encountered the legal system in different ways, depending on such things as geographic location, ethnic identity, class, gender, position of power vis-a-vis the courts, and/or financial resources, they turned to the courts to resolve certain kinds of
disputes, though not all of them, making the decision to seek
the assistance of the state very much a tactical one.²

For New Mexico’s Hispano villagers, bringing water disputes
before legal forums had a long history. As Michael Meyer has
demonstrated, the Spanish colonists in the territory had created
not only irrigation schemes that combined Pueblo and Spanish
practices to obtain water for agriculture, mining, stock raising,
and household use, but also a variety of legal mechanisms to
allocate water and to determine disputed water rights. Malcolm
Ebright has also shown how local custom, not formal law, may
have been the primary means by which Hispanics settled irriga-
tion disputes, though they often applied such custom within
“formal” legal institutions. Seldom using professional lawyers
(who were scarce in the region), Hispano villagers in the terri-
itory’s Spanish colonial and Mexican period confronted their
neighbors in local alcalde courts, in which arbitration and me-
diation were the most common methods employed to resolve
their differences.³

After conquest by the United States and before the 1890s,
however, many Hispanos criticized the new U.S. territorial
courts, lawyers, and judges for facilitating the loss of their land

²David A. Reichard, “‘Justice Is God’s Law’: The Struggle to Control Social
Conflict and U.S. Colonization of New Mexico c. 1846-1912” (Ph.D. diss.,
Temple University, forthcoming) [hereafter cited as Reichard, “‘Justice Is God’s
Law’”]; Malcolm Ebright, Land Grants and Lawsuits in Northern New Mexico
(Albuquerque, 1994) [hereafter cited as Ebright, Land Grants and Lawsuits]; for
a contemporary view, see Frances Levine, “Dividing the Water: The Impact of
Water Rights Adjudications on New Mexican Communities,” Journal of the
Southwest 32 (Autumn 1990), 272-74; I have been influenced by a number of
anthropologists in formulating my interpretation. See Mindie Lazarus-Black
and Susan F. Hirsch, eds. Contested States: Law, Hegemony and Resistance
(New York and London, 1994); John Gaventa, Power and Powerlessness:
Quiescence and Rebellion in an Appalachian Valley (Urbana and Chicago,
1982).

³In the Spanish colonial period, mechanisms for resolving water disputes
included special water judges (variously called comisionado, alcalde de agua,
judes de agua). While some historians have characterized alcalde courts as
somewhat arbitrary and corrupt, recent scholarship has prompted a reexamina-
tion of these courts as serving the distinct needs of “frontier” conditions with
flexibility and fairness, yet fairness for whom remains a debatable question.
Michael C. Meyer, Water in the Hispanic Southwest: A Social and Legal
History (Tucson, 1984) [hereafter cited as Meyer, Water in the Hispanic
Southwest]; Ebright, Land Grants and Lawsuits, supra note 2 at 73-83. Marc
Simmons, Spanish Government in New Mexico (Albuquerque, 1968); Charles
Ross Cutter, The Legal Culture of Northern New Spain, 1700-1810 (Albuquer-
que, 1995) [hereafter cited as Cutter, Legal Culture of Northern New Spain];
David J. Langum, Law and Community on the Mexican California Frontier:
Anglo-American Expatriates and the Clash of Legal Traditions, 1821-1846
at the hands of land speculators, lawyers, railroads, and mining companies. For example, in a political statement distributed in northern New Mexico in 1890, las gorras blancas, the territory's night-riding populists, argued forcefully for the reform of the territory's legal system:

We are not down on lawyers as a class, but the usual knavery and unfair treatment of the people must be stopped.

Our Judiciary hereafter must understand that we will sustain it only when "Justice" is its watchword. . .

There is a wide difference between New Mexico's "law" and "justice." And justice is God's law, and that we must have at all hazards.4

Significantly, these critics did not argue for an abandonment of the territory's legal system, but for a refinement of its abuses. Arguably, they recognized that the legal system, so central to the United States' establishment of its authority in New Mexico, had also become a useful terrain upon which to resist the appropriation of village land and water, a tactic followed in at least one contemporaneous acequia dispute filed in the district court.5

Moreover, residents of New Mexico's northern pueblos had developed productive irrigation systems as early as the 1400s, especially among those to the northeast. These methods, which included terraces, reservoirs (for the collection of rainfall), and networks of ditches, diverted water for such crops as beans, maize, and chiles. Some pueblos, particularly those with the most frequent water shortages, developed spiritual practices aimed at ensuring an adequate supply. Yet how the Pueblo managed water disputes before European colonization in the sixteenth century is still little understood, because of the lack

4Las gorras blancas [white caps] were Hispanos who resisted Euro-American (and wealthy Hispano) appropriation of land by cutting fences, posting intimidating warnings, and digging up railroad tracks. For a time, the more institutional manifestation of this resistance, El Partido Pueblo Unido, the People's Party, was successful in some regional elections in the 1890s. Robert Rosenbaum, Mexican Resistance in the Southwest: The Sacred Right of Self Preservation (Austin, 1981) [hereafter cited as Rosenbaum, Mexican Resistance in the Southwest]; Nuestra plataforma, reprinted in translation in ibid., 166; Robert W. Larson, New Mexico Populism: A Study of Radical Protest in a Western Territory (Boulder, 1974); Juan Gómez-Quinones, Roots of Chicano Politics, 1600-1940 (Albuquerque, 1994), 281-83.

5Reichard, "Justice Is God's Law"; see discussion in text of Juan Marquez et al. v. Agapito Sandoval et al. (1892).
of archeological and ethno-historical research on the subject. After Spanish colonization, however, and especially after the *reconquista* of 1692, the Pueblo actively used Spanish legal institutions to assert their rights to water. As Meyer has stated,

In the struggle for survival, Indians found themselves contending for water, and not very successfully, with Spanish towns, Spanish presidios, and individual Spanish settlers. . . . When the Indians found themselves on the short side of water allocations, they often asked for judicial relief, but their record in courts, with a few major exceptions such as the Taos settlement, left much to be desired. Armed with what they believed to be legal documentation to support their case, they were often turned away by officials who informed them that their papers were not valid.

Until Mexican independence, a *protector de indios* represented the Pueblo in disputes before Spanish colonial tribunals, but this office did not always serve the best interests of the Pueblo. Furthermore, the Pueblo were not averse to representing themselves before Spanish colonial judges, when, in the words of Frances Leon Quintana, "with or without the aid of their legal advocate, [they] ably defended their rights." Pueblo litigants may have brought certain disputes to Spanish colonial forums while preferring to retain control over others within their own communities.

A second explanation for the increase in irrigation lawsuits in the district courts can be found in the legal profession. Primarily (though not exclusively) Euro-Americans who had migrated from other parts of the United States, lawyers in the

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territory had worked steadily since the 1840s to create a legal order that required particular rules and methods, which they frequently created themselves. This was especially the case after the 1880s, as greater numbers of lawyers made their way to New Mexico. Stanley B. Newcomb, the president of the New Mexico Bar Association (founded in 1886), wrote in 1889, "If we ever obtain a body of laws commensurate with our needs, adequate to our necessities and adopted to our rapidly advancing civilization, depend upon it, it must, in the main, be through the efforts of the legal profession."9

When a village litigant brought a case to a lawyer, it was likely that if the dispute intensified it would result in a lawsuit before the district court, held in the county seat, away from the village in which the original dispute had arisen. Furthermore, by the 1890s, a litigant's chance of success in district court was greatly increased if he or she hired a lawyer, a fact that probably did not go unnoticed by those considering bringing suit.

Another reason for irrigation disputes' becoming more common in district court lay in the shifting social and economic conditions of late-nineteenth-century New Mexico. By the 1880s and 1890s, many promoters of New Mexican "development" argued that in order for the territory to participate more fully in the nation's economy, local subsistence farming would have to be transformed into commodity production for national and international markets. One way to achieve this, they maintained, would be to increase the number of farmers in the territory. This assertion reflects the common belief among such promoters that only Euro-Americans could properly transform local agricultural practices.

For example, in a promotional pamphlet in 1897 touting the territory's attractiveness for agricultural pursuits, the New Mexico Bureau of Immigration declared that

The greatest of all the needs in New Mexico is farmers. Of merchants, lawyers, doctors, politicians, middle-men, statesmen, etc., the supply is fully equal to the present demand—but the farmer—the basis of development and the foundation stone and superstructure of all public prosperity, individual, local, state and national—the man who tills the soil in rational, intelligent and successful ways, is the man most needed in New Mexico.

Appealing to the "pioneer spirit" of its Euro-American audiences, the bureau concluded that the American "has migrated westward 'till he has become by his nature a state-builder. It has got into his blood and must have vent."  

These sentiments were mirrored by Edmund Ross, former governor of the territory, in an address to the Deming Irrigation Convention in 1893. Arguing that the "general government" in Washington should play a larger role in the active development of New Mexico's irrigation systems, he linked local prosperity resulting from such development to the maintenance of "public order and good government." Praising the "native people" of the territory as innovative irrigators, Ross claimed that "All we need to do is to adopt and improve upon their method." These calls for Yankee innovation were echoed at other irrigation conventions, several of which were held in New Mexico during

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10The New Mexico Bureau of Immigration, "Farming by Irrigation in New Mexico: The Essential Combination of Sunlight and Moisture to be Assured in No Other Way" [n.p., 1897], Center for Southwest Research [CSWR], University of New Mexico, Albuquerque.
the 1890s and early 1900s, as well as in the meetings of the
Irrigation Commission, created by the territorial legislature in
1897 to investigate water rights and document the irrigation
methods in use across New Mexico. These conventions and
commissions culminated in 1905 in the formation of the office
of territorial irrigation engineer, charged with administering
the "public lands" in New Mexico and overseeing the mapping
of water sources (including acequias) across the territory.1

These schemes place New Mexico firmly within a regional
movement to develop new and more widespread methods for
obtaining regular sources of water. As historians of western
water policies have clearly shown, water development through-
out the American West was inexorably linked to the expansion
not only of private irrigation projects, but also to the increasing
role by the federal government in promoting capitalist invest-
ment in agriculture, mining, and stock raising. Land specula-
tors, politicians, government analysts, and agricultural scien-
tists all seemed to agree that the proper development of the
West's economy depended on reliable and consistent sources of
water. Although they often differed over this development, the
phrase of the day seemed to be "irrigation enterprise." As the
cover of one promotional pamphlet from a national irrigation
congress declared in 1911, "Science Bid the Desert Drink," a
slogan that nicely demonstrates the prevailing attitude.12

It was only to be expected that land investment schemes,
railroad construction, irrigation "enterprise," and town build-
ing would often result in ethnic, class, and generational conflict
among Hispanos, Pueblo communities, and Euro-American

11Edmund Ross, "The Deming Irrigation Convention" (privately printed, 1893),
CSWR; New Mexico Irrigation Convention, Las Vegas, New Mexico, March 16,
1892; T.B. Mills to T.B. Catron, Santa Fe, ser. 102, box 13, folder 4, item 7310,
Thomas B. Catron Collection, CSWR [hereafter cited as Catron Collection];
The Irrigation Commission's original members included George Curry [later
governor], Antonio Joseph [congressional delegate for New Mexico], and J.E.
Saint. Commission of Irrigation, Minutes, 1897-1898, Records of the Territorial
Engineer, Territorial Archives of New Mexico [TANM] roll 89, frame 4 ff,
New Mexico State Archives and Records Center [NMSA], Santa Fe; Vernon L.
Sullivan, Irrigation in New Mexico, U.S. Department of Agriculture, Office of

12Donald Worster, Rivers of Empire: Water, Aridity, and the Growth of the
American West [New York, 1985] [hereafter cited as Worster, Rivers of Empire];
Donald J. Pisani, To Reclaim a Divided West: Water, Law and Public Policy,
1848-1902 [Albuquerque, 1992] [hereafter cited as Pisani, To Reclaim a Divided
West]; M. Catherine Miller, Flooding the Courtroom: Law and Water in the
Far West [Lincoln and London, 1993] [hereafter cited as Miller, Flooding the
Courtroom]; Sarah Bates et al., Searching Out the Headwaters: Change and
Rediscovery in Western Water Policy [Washington, D.C., 1993]; Official
Proceedings of the Nineteenth National Irrigation Congress [Chicago, 1912],
Miscellaneous Collection, Acequia and Water Rights, NMSA.
migrants (whose presence in the territory increased dramatically after the 1880s). As a result, promoters of capitalized land and water development looked to the legal system to provide stability and legal sanction for their schemes, a process that included solidifying the jurisdiction of federally controlled courts over water management across the region. "Command was achieved," according to one historian, "not by physical force or expertise but by gaining the state's recognition and definition of water as property." 13

The increased role of the district courts (whose judges were appointed in Washington, D.C.) in resolving water disputes paved the way for greater federal involvement after the turn of the century. Thus, while local disputes over access to water from acequias may seem remote from debates over national resource development, they were nevertheless intricately tied to the questionable future of agricultural production in New Mexico. In these local disputes, social conflict was to be carefully managed by the state.

However, as these local acequia disputes also demonstrate, Hispanos and Pueblo alike were active in shaping the form each dispute took in the community and in the court. Like other instances of social conflict in the territory, irrigation disputes brought New Mexicans before the district courts with increasing frequency. Even though this shift gave the district courts more legitimacy as arbiters of local conflict, litigants repeatedly proved that legal institutions were critical in the attempt by New Mexicans to control the social and economic landscape, which had changed so dramatically during the late nineteenth and early twentieth centuries.

LOCAL POLITICS: THE ACEQUIA CASES

Most acequia disputes filed in the territorial district courts between 1885 and 1905 shared a few overall similarities. Most were initiated by a large group of plaintiffs against an equally large group of defendants, often as many as seventy or eighty on each side, almost always men. Typically, the litigants were neighbors who derived their water either from a shared river or from a common acequia madre. Some cases involved acequias that had been extended beyond their original length in order to accommodate more irrigators. These disputes, between those

13Rosenbaum, *Mexicano Resistance in the Southwest*, supra note 4; Tobias S. Durán, "We Come as Friends: Violent Social Conflict in New Mexico, 1810-1910" (Ph.D. diss., University of New Mexico, 1985); Pisani, *To Reclaim a Divided West*, supra note 12; Miller, *Flooding the Courtroom*, supra note 12 at 174.
under the “upper” acequia and those under the new, “lower,” acequia, were often especially acrimonious, occasionally pitting one extended family against another. Other cases involved determining who held a right to the water during intensified shortages, with one side often asserting a long-standing customary right to the water, even though others had shared it in the past. As a result, these litigants portrayed prior shared usage as resulting from permission, not right. In some cases, a group of irrigators claimed that an illegal diversion of water from a river had deprived downstream acequias of their rightful water.14

The plaintiffs in these lawsuits generally demanded that the court order the defendants to do, or cease doing, something—either performing some required labor such as cleaning the acequia, repairing an inlet dam, diverting water, or removing an obstruction; and relief was demanded quickly. Because most of these suits were filed either just before or during the planting season, there was a direct correlation between the timing of a lawsuit and the immediacy of the requested relief.

Many cases resulted in some sort of intervention by the district court (typically an injunction), issued while the dispute was proceeding, although the actual implementation of such a court order often proved as divisive as the original complaint. While some cases were “settled” within a few months of the initial filing of a complaint, several remained in court for years, moving in and out the legal system with each new agricultural cycle. The formal outcome varied; many litigants eventually compromised (apparently out of court), while those cases in which the court issued a judgment tended to be resolved by compromise or by a judgment in favor of the plaintiffs.15

Upon deeper probing, however, these disputes also concerned local class, ethnic, and political dynamics specific to each community. These in turn shaped the form of each dispute in the community as well as in the courts. Central to many acequia disputes was politics, with some litigants portraying plaintiffs

14For example (all cases NMSA), Rafael Lucero et al. v. Desedario Apodaca et al., San Miguel County D.C., no. 3678 [1882] [upper and lower acequia]; Juan Marquez et al. v. Agapito Sandoval et al., San Miguel County D.C., no. 4149 [1892] [upper and lower acequia]; Pueblo of Santo Domingo v. Marcos C. de Baca et al., Bernalillo County D.C., no. 5283 [1899] [claimed continued use of water with permission of pueblo for thirty years]; Edward Miller et al. v. Alfonso Dockwiller et al., Santa Fe County D.C., no. 4064 [1899] [illegal diversion of water].

15La Acequia de los Garcias v. La Acequia del Medio, Rio Arriba County D.C., no. 770 [1905], NMSA; Juan Marquez et al. v. Agapito Sandoval et al., San Miguel County D.C., no. 4149 [1892], NMSA [both showing prior attempts at settlement].
and defendants as divided along political party lines. Water shortages most likely exacerbated political fissures already existing within the community.

For example, in an Española case regarding the proper authority of a mayordomo to distribute water from an acequia, one group of litigants claimed allegiance to the Republican party, characterizing the opposing side (neighbors along the same acequia) as "radical democrats." As plaintiff L. Remúzon wrote to his fellow Republican attorney, "Please let me know 'if 4 Democrats' can handle all the Republicans in the territory, 'you included.'" These political differences, moreover, were as important to litigants as obtaining water. When the Española dispute was not settled by the end of April, Remúzon feared that the delay would cause a loss of Republican power in the village. As he wrote again to his attorney, "As we don't hear anything about our case of injunction our friends come every day asking me what is the matter? All Democrats are laughing at us on that account we will certainly lose those precincts [sic] in November if this is not settled at once."16

As the Española case demonstrates, clients sometimes hired attorneys on the basis of their shared political affiliation. This may also help explain why some lawyers took these seemingly unprofitable cases in the first place. For example, in at least two cases, the Republican firm of Catron, Knaebel and Clancy saw political benefits in handling acequia cases for only a modest fee. One client's response demonstrates how a lawyer's interest in local squabbles could become a political asset:

The people are jubilant over your generosity and I am working it as a political point so as to give a favorable showing in the coming campaygne. I ask on the part of my people whom I represent your liberal favors you may write me at once and give me amt. which is your fee and I will remit you your retainer as soon as possible. I will then levy an assessment. If anyone should take any water without consent of the mayordomo I will get out an injunction and have [it] sent down to you for your action and approval and other advise will be gratefully recived and anything to gain a point in the coming campaigne.

16L. Remúzon to Frank Clancy, April 7, 1890, Catron Collection, ser. 102, box 6, folder 5, item 3223; Remúzon, to Clancy, April 21, 1890, Catron Collection, ser. 102, box 7, folder 1, item 3414; Remúzon even contacted the attorney general of the territory to define the law in regard to the election of mayordomos before hiring an attorney. Remúzon to Edward R. Bartlett, January 10, 1890, roll 105, frame 94, 110, TANM.
As many lawyers were also heavily invested in the territory's political institutions, these affiliations with clients, which could eventually be translated into votes for the chosen political party, should not be taken lightly.17

In another well-documented acequia litigation, party politics in Anton Chico masked the class tensions permeating the community. In this case, a group of supporters of las gorras blancas appear to have filed a lawsuit in the district court as a means to bypass the local justice of the peace court, which was probably controlled by the Republican party in the village. In the process, these plaintiffs most likely attempted to use the water dispute to build support within the community and lessen the credibility of the Republicans whom they opposed.

In 1879, the residents along an established acequia in Anton Chico agreed to allow its extension to a portion of uncultivated land below. By the 1890s, after the construction of the extension, the residents along the upper acequia began to refuse to allow water to flow through the entire length of the joined acequias. In response, several residents along the lower acequia complained to their neighbors, and, when this proved unsuccessful, hired a lawyer and eventually filed suit in 1892 seeking equitable relief from the court.18

On one level, this dispute centered on the interpretation of a contract agreed to by the residents of the village in 1879 for the extension of the upper acequia. The defendants alleged that in exchange for agreeing to the extension, the plaintiffs would be required to maintain the upper acequia in good working order by assisting in the traditional yearly cleaning of the acequia "in common" (comunidad) with their upper acequia neighbors. Several key plaintiffs, however, disputed this claim, arguing that the responsibility to labor in common extended only to the original widening of the old acequia. Defendant Juan Marquez, for example, recalled, "We have debated very often and very often spoken about this word comunidad in speaking in reference to the contract." Marquez, who could recite the entire contract from memory, alleged that the only "common" labor that the people of the lower acequia were required to do was to assist the Hormigoso people in widening the original acequia; the completion of this task ended any and all "com-

17John H. Young to Catron, Knaebel and Clancy, [n.d.] received May 20, 1890, Catron Collection, ser. 102, box 7, item 3646; Thomas B. Catron was one of the most powerful lawyers in New Mexico and a central figure in Republican party circles. Victor Westphall, Thomas B. Catron and His Era (Tucson, 1973).
18Juan Marquez et al. v. Agapito Sandoval, no. 4149, San Miguel County D. C. (1892) [hereafter cited as Anton Chico Case File], NMSA.
mon" responsibility to maintain the upper acequia in the future. Another witness, Nestor Martinez, agreed with Marquez's assessment, saying, "I never saw anything in the instrument that would compel the people to work the upper ditch."\(^{19}\)

Several plaintiffs also argued that the residents along the upper acequia had sold water to those "not entitled to it," thus depriving the residents along the lower acequia of their rightful water. Plaintiff John Mink, the only Euro-American in the group of Hispano plaintiffs and defendants, testified it was

Because they did not let enough water into the ditch from the [upper] Hormigoso ditch, and the Hormigoso people did not let all the water to which we were entitled to come down into the [lower] Juan Pais ditch. They sold a great portion of the water to other persons who had no right to it. They also used more water than it was necessary for them to use.\(^{20}\)

As a result, several plaintiffs [including Marquez and Martinez] refused to participate in the yearly cleaning, which prompted the mayordomo of the upper acequia to refuse the lower acequia its water. Some witnesses testified that not every man refused to provide the requested labor. Yet, as Marquez testified, there were possible reasons for this cooperation:

Some of the people went there to work of their own accord, others went there to work because they were threatened that if they didn't go to work that they would be taken before the court. And I was one of those who never did want to work from the year 1885 then I was hauled up before the court and Justice of the Peace Desedario Gallegos and I was always opposed claiming as I have always have claimed and in

\(^{19}\)The term comunidad was subject to diverse and conflicting interpretations. José Sanchez, for example, claimed that all parties had agreed to this common labor, portraying Marquez as nothing more than an instigator. Testimony of José D. Sanchez, May 10, 1893 ["The document[t] was read to the people that got together and [was] approved by them, they said it was alright, and that the people would all be made to do the work on the ditch . . . to the upper point of the Loma Montoza, and that the Hormigoso people would not have to do any work from that point below, and the work was done accordingly up to 1891 in good harmony by the people of the two acequias."]; Testimony of Juan Padilla, June 10, 1893; Master's Report, Anton Chico Case File; Stanley Crawford describes the yearly cleaning process in Mayordomo, supra note 1 at chs. 1-4.

\(^{20}\)Testimony of John H. Mink, April 13, 1893, Anton Chico Case File; Juan Marquez also pointed out that the defendants sold water without the consent of the lower acequia. Testimony of Juan Marquez, July 19, 1893, Anton Chico Case File.
the same manner a great many of our people were brought before the court and so on we were continually threatened.21

Several witnesses supported Marquez's testimony that many people refused to labor on the upper acequia—a refusal that, as Martínez testified, often resulted in recalcitrant residents' along the lower acequia being dragged before an unfriendly justice of the peace. Martínez claimed that he worked the upper acequia

because I did not want to be censured by the people and compelled to do the work which we ought not to do and put us to great trouble otherwise, and also threatening us and as we are very poor we do not like to be dragged into court especially in such place as that where there is courts to drag us into the court of the Justice of the Peace, there we are put to expenses and fines and as we are poor people, we therefore do the work.22

By 1890 the trouble between the two acequias had become acute, exacerbated by two particularly dry years in Anton Chico. By 1892, some sixty or seventy people along the lower acequia refused to clean the upper one. Even the major defendant in the case, José Sanchez, confirmed in a letter to the attorney that although some of the residents along the lower acequia participated in the annual cleaning of the upper one, an equal number refused.23

The dispute became violent during the 1890s. Sanchez alleged that in 1891 Juan Marquez and Miguel Gonzalez had assaul ted him after Marquez had accused Sanchez of attempting to break the acequia and prevent any water from flowing toward the lower extension. Sanchez denied such a charge, stating instead that he was fixing his fence. His vivid testimony

21Juan Padilla, a witness for the defendants and resident along the lower acequia, noted that in 1885 there were thirty-seven or thirty-eight lower acequia residents who labored on the upper acequia without apparent objection. Testimony of Juan Padilla, [n.d., probably June 10, 1893], Anton Chico Case File; Testimony of Juan Marquez, July 19, 1893, Anton Chico Case File.
22Testimony of Nestor Martínez, July 19, 1893, Anton Chico Case File.
23Testimony of Nestor Martínez, July 19, 1893, Anton Chico Case File; Testimony of Severiano Griego, [n.d., probably June, 1893], Anton Chico Case File; Testimony of Juan Marquez, July 19, 1893, Anton Chico Case File; José Sanchez to A.A. Jones, A.A. Jones Collection, Legal Correspondence, 1893, NMSA [hereafter cited as Jones Collection].
demonstrates the animosity that appears to have developed along these *acequias*:

When he [Marquez] pulled out his pistol and said to me [Sanchez] "If you run I will kill you," and when I was so leaning against the fence I stooped down and crouled under the poles and went inside the enclosure and that left the fence between us. He kept threatening me with the drawn revolver, and during that time I was dodging behind the poles of the fence until I got into the field and away from him. When I got into the field Marquez turned his horse and rode over the bridge, apparently for the purpose of heading me off and stopping me before reaching town. I then sat down in the field and Marquez went into town.24

Despite his testimony, several other witnesses claimed that Sanchez had been caught many times breaking the *acequia*. For example, José Durán testified that when he was *mayordomo* of the lower *acequia* in 1891, he had discovered Sanchez breaking the *acequia* and diverting water back into the river. Remaldo Gonzales, appointed as *mayordomo* by the court to oversee both *acequias* a year after the lawsuit was filed, also testified that he had caught Sanchez attempting to divert water in defiance of the court. In fact, Sanchez told Gonzales that he would take the water when he wanted, and that "the orders of the District Judge wasn't worth shit."25

As testimony in the case proceeded before a court-appointed master, several witnesses alleged that the plaintiffs, especially Marquez and Martinez, were supporters of *las gorras blancas* and *El Partido Pueblo Unido*. One witness, Remaldo Gonzales, attributed this dispute directly to politics. He testified that the litigants to the suit were "not on friendly terms" and reported that the majority of the defendants were Republicans and that the plaintiffs were "democrats and people's party united," including himself. When asked whether the root cause of the lawsuit were political, Gonzales noted that the political disputes arose at the same time; the people of the upper *acequia*, he testified, referred to those who refused to labor as "being

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24Testimony of José D. Sanchez, May 10, 1893, Anton Chico Case File.

25As Durán recounted, "After the men who were watching the *acequia* had retired about a mile away from the ditch, in a short time they would return and find the *acequia* broken. And they found Don José Sanchez in the act of breaking the *acequia* it[c] did not break again that year." Testimony of José Durán, April 15, 1893, Anton Chico Case File; Testimony of Remaldo Gonzales, July 28, 1893, Anton Chico Case File.
white caps and fence cutters.” Asked by plaintiff’s counsel, “Do you mean to say that politics has anything to do with that contract?” Gonzales replied, “It is my belief.”

Among the defendants, Sanchez was an important member of the Republican party in Anton Chico, and a wealthy merchant and landowner in the community. Marquez and Mink took particular pains to paint Sanchez and the other residents along the upper acequia as having more cultivated land and greater wealth than their counterparts below. Mink estimated that 60 percent more land had been brought under cultivation under the upper acequia after its widening, doubling the actual number of landowners; in contrast, while the extension of the acequia had produced forty or fifty new allotments of land under the new acequia by 1884, amounting to nearly fifteen hundred acres, only nine hundred acres were favorable to cultivation, and a mere 450 acres actually supported a crop. The reason was the lack of adequate water.

Whatever the substantive source of conflict, acequia disputes filed in district court also reveal how Hispano litigants actively sought to influence the direction of their cases once they entered the official legal system. This interest occasionally produced conflict between the attorneys, their clients, and the judges. For example, correspondence between José Sanchez, a key defendant in the Anton Chico dispute, and his group’s attorney, A.A. Jones, demonstrates the often subtle form this relationship took as the dispute progressed through the legal system. Sanchez not only routinely informed Jones about factual developments in the case, but suggested legal strategies for settlement.

When the residents of the upper acequia learned that the mayordomo of the lower acequia had attempted to distribute water, Sanchez tried to ascertain whether the mayordomo had such authority. As he wrote Jones, “Please tell wether [sic] we can sue those men for using the water or for the work performed this year in cleaning the acequia del Hormigoso? We want to sue them before the Justice of the Peace if you think we can do it.” In response, Jones tried to dissuade his clients from taking any further action in the justice of the peace court in favor of the district court, writing, “The recent remarks of the Judge’s that he would not make another order in the ace-

26Testimony of Remaldo Gonzales, July 28, 1893, Anton Chico Case File; Testimony of José Sanchez, May 10, 1893, Anton Chico Case File.

27The 1870 census lists Sanchez as having $1,200 dollars of real property and $2,413 of personal property—far more than any of the residents of Anton Chico. U.S. Manuscript Census, Guadalupe County, 1870; Testimony of John H. Mink, April 13, 1893, Anton Chico Case File; Testimony of Juan Marquez, July 19, 1893, Anton Chico Case File.
*quia* case until the master had reported on the same leads me to think that our case will be prejudiced if we insist upon taking some action now in the face of what he has said."^{28}

By April, when the defendants were worried that their lawyer was not giving their case proper attention, Sanchez wrote to Jones, "We know that Juan Marquez is already introducing his evidence and we are confident that you are attending our side of the case, but should you think it necessary for any of us to be present there, please let us know." He also informed Jones that the community had retained Marcos C. de Baca [a prominent New Mexican lawyer, politician, and landowner] as co-counsel, whom Jones was to call upon for any assistance.^{29}

When Sanchez thought that the plaintiff’s attorney was using delay in seeking a settlement of the case as a tactic, he wrote to Jones, stressing that Jones should respond quickly:

> Now in view of all this facts we believe there is no prospect of coming to a compromise and we believe Mr. Veeder is causing all this trouble in order to delay a final decision, thereby causing animosity and difficulty between the two peoples. Now Mr. Jones, we are ready to go with our testimony and we request of you to write to us by next Wednesday's mail whether you are ready by next Thursday to take our testimony we will be there on that day.^{30}

When the court finally issued an order but the parties were still not reconciled, Sanchez wrote once again. Pleading for a final decision, he insisted that Jones inform Sanchez and his co-defendants promptly of any impending final decision, "in case the Judge is about to decide let us know, as we wish to be present at that time." While the dispute had obtained a tentative peace by 1892, periodic conflict erupted within Anton Chico into the early twentieth century, when the case fell from the official records.\^{31}

These cases strikingly illustrate how ordinary litigants used the district courts as a means to further local political strug-

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^{28}Sanchez reluctantly agreed to follow the lawyer's advice, although he complained that "it seems to us that the time is too long, but we are very well pleased with what you have done ... and we trust your honesty." Sanchez to Jones, March 24, 1893, Jones Collection; Jones to Sanchez, March 31, 1893, A.A. Jones Papers, Letterpress Book 8, NMSA; Sanchez to Jones, April 6, 1893, Jones Collection.

^{29}Sanchez to Jones, April 17, 1893, Jones Collection.

^{30}Sanchez and others to Jones, May 22, 1893, Jones Collection.

^{31}Sanchez and Florencio Aragon to Jones, Jones Collection.
gles. In Anton Chico, Juan Marquez, Nestor Martinez, John Mink, and other plaintiffs attempted to assert control over a major means of production within the community (water) as leverage against José Sanchez and other wealthy defendants by filing a lawsuit outside Sanchez's political control. Sanchez's hesitation and downright defiance of the district court provide further evidence that while his power base may have been strong within Anton Chico and among its local political officers, his control did not extend to the territorial district court.

At the same time, Sanchez's correspondence with his attorney is an example of how Hispano villagers kept a keen eye on the progress of their case, and did not hesitate to tell their attorneys to take steps more consistent with community goals. Such activist clients existed not only in Hispano villages, but also within various Indian pueblos.

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**Pueblo-Hispano Water Disputes**

In *acequia* disputes involving Indian pueblos, the question of Pueblo tribal sovereignty often rose, especially in disputes with Hispano neighbors who shared access to the same source of water. During the period under study, several *acequia* disputes concerning Santo Domingo, Laguna, Zía, Nambé, Isleta, Picuris, and Taos pueblos and their Hispano neighbors made their way to district court. In these cases, the Pueblo drew on different sources from their Hispano counterparts for their prosecution—notably teachers, Indian agents, and military officials, as well as lawyers. These intermediaries helped gain access to the territorial district court in a number of ways. For example, teachers wrote letters to the Indian agents in Santa Fe to report local water conflicts. In addition—and here they resembled their Hispano counterparts—leaders of the Pueblo called on the intermediaries themselves to assert the Pueblo's own agenda. The Pueblo drew on the tradition of the *protector de indios* of former colonial times to make sense of (and make the best of) their late-nineteenth-century interaction with the American legal system.\(^\text{32}\)

Pueblo demand for legal assistance even led Congress to authorize the appointment of a special attorney to care for the

legal affairs for all the northern pueblos in 1899. Antonio Jojola, the first lieutenant governor of Isleta Pueblo, characterized this office as a “protector of the Indians of New Mexico” when he wrote to George Hill Howard in congratulation, thus linking the new special attorney with an older Spanish colonial past. (The appointment, however, does not seem to have been a lucrative one. In 1901, Congress appropriated only fifteen hundred dollars a year to the secretary of the interior to pay the special attorney for his services, a small sum to handle the diverse legal business of all the pueblos.)

During the existence of this office, the special attorney handled a relatively large number of acequia cases. In these, the Pueblo routinely asserted that the local custom of a particular pueblo should control the allocation of water in disputes with their Hispano neighbors. This often resulted in debate over how to allocate water obtained from an “Indian ditch” by non-Indians, and what law would apply.

For example, in 1899 the Pueblo of Santo Domingo, through Special Attorney George Howard, initiated a lawsuit against Marcos C. de Baca and other residents of nearby Peña Blanca. In dispute was access to an acequia allegedly maintained by the pueblo, but from which C. de Baca and others in Peña Blanca had purportedly drawn water for over twenty-five years. As in other acequia cases, a particularly dry year precipitated a dispute over who would receive what little water that existed. In a letter to the Indian agent in Santa Fe reporting the initial problem, Julian Lobato, the governor of Santo Domingo, reported that

there is people here that are taking water from the acequia without working the acequia [...] they claim that they have a legal paper in which is granted them the right to take water from said acequia given to them some time ago in which we claim that they havent any right to take any water [...] we have sent them each one of them notice not to take any water and they have told us that they are going to take it to the Courts [...] now we wanted an advice from you what is best to do and we have told them that we are going

33 Antonio Jojola to George H. Howard, November 27, 1899, box 1, folder 7, Indian Affairs Collection, CSWR [hereafter cited as Indian Affairs Collection]. Although the collection is designated the Indian Affairs Collection, its contents appear to be a small but rich selection of office files from at least two special attorneys. These files reveal the diverse legal work that the special attorney performed, including criminal defense and land-title and other property disputes; Appropriations Act, 31 Stat. 1077 (1901) [authorizing money for special attorney].
to take this matter to the District Court, now we ask a favor as our Agent to send each of them a notice not to take any water from the Acequia.  

The special attorney filed a lawsuit in April 1899, seeking an injunction against the Peña Blanca farmers. The complaint, drafted by the attorney, alleged that the pueblo had enjoyed the power of controlling its internal affairs for centuries, a power that included that of "its irrigating ditches, or acequias, under and in accordance with its own methods, usages and customs."  

The testimony at trial revealed that several Hispano defendants had regularly obtained water from the disputed acequia for nearly twenty-five years; the defendants even produced a contract that supposedly gave the Peña Blanca farmers a right to water obtained from the Santo Domingo acequia. Juan Anastacio Garcia testified that he had never had any difficulty irrigating from the disputed acequia, indicating that at "one time I was irrigating and the Governor [of the Pueblo] came over and I employed him—gave him fifty cents to irrigate my patch of land himself and the Governor took the task."  

Santo Domingo and other Hispano witnesses, however, variously characterized the taking of water by neighboring Hispanics as "stealing" or as using more water than was "needed." A Hispano witness and justice of the peace, Feliciano Montoya, testified that "The Indians always have disputed their [Peña Blanca Hispanics'] right to this water but they have used it." When asked if there had been previous difficulty, Montoya replied, "Yes, sir, there has always been." The former Santo Domingo governor, Santos Tortolita, admitted that some Hispanics had used water from the Santo Domingo acequia, but added that its use had come with a price, which included some candles and "a can of powder." Conceding that a former governor had negotiated with the residents of Peña Blanca for the sale of some water, Tortolita claimed, "Yes he sold, but not for always."  

34Julian Lobato and Francisco Tenorio to U.S. Indian Agent (n.d., probably before April 1899), Indian Affairs Collection, box 2, folder 9.  
35Complaint, April 10, 1899, Pueblo of Santo Domingo v. Marcos C. de Baca et al., Bernalillo County D. C., no. 5283 (1899), NMSA.  
36Testimony of Andres C. de Baca, David Baca, and Juan Anastacio Garcia, May 1899, Transcript of Record, N.M.S.C., December 1, 1899, Pueblo of Santo Domingo v. Marcos C. de Baca et al., N.M.S.C., no. 837 (1900), NMSA.  
37Testimony of Julian Lobato, Feliciano Montoya, Ramon Baca, Marcelino Baca, Santos Tortolita, Marcos C. de Baca. May 1899, Transcript of Record, N.M.S.C., December 1, 1899, Pueblo of Santo Domingo v. Marcos C. de Baca
The district court judge held in favor of the pueblo, a decision that C. de Baca and the other defendants appealed to the New Mexico Supreme Court. That court upheld the decision, noting that as the ditch had been built by the Indians "very many years ago," and had been maintained by them all the time, their failure to follow the laws of the territory regarding ditches was not so great as to divest them of their water.  

In this case, Santo Domingo Pueblo, through the special attorney, employed the territorial legal system to assert a sovereign right to determine its own "law" with regard to water use, a tactic not limited to water cases. Perhaps the uncertain status of New Mexico's Pueblo Indians as citizens (which would not be reconciled by the courts until the twentieth century) benefited Santo Domingo and other Pueblo Indian communities in such cases. As a result, Pueblo calls for a sovereign right to determine water use from their own acequias may have been heard by more sympathetic judges, who gained jurisdiction to determine the outcome of a water case, despite upholding internal Pueblo water-use custom. Additionally, by 1900 the New Mexico Supreme Court was committed to sustain the doctrine of prior appropriation, which required that the first users of a water source obtained the first right as long as the use was productive. Asserting the power to define what constituted "first," in the context of New Mexico's local water wars, maintained the court's authority to decide the ultimate legal rights in question as well as who could actually use the water.  

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38 The court refused to hold the pueblo to a territorial law that required particular procedures for electing a mayordomo and partitioning water from the acequia. Opinion of Court, February 7, 1900, Pueblo of Santo Domingo v. Marcos C. de Baca et al., N.M.S.C., no. 837 (1900), NMSA. It should be noted that the Supreme Court of New Mexico was composed of all the sitting district court judges, although the judge hearing the case below could not sit in judgment on its appeal. Arie W. Poldervaart, Black Robed Justice: A History of the Administration of Justice in New Mexico from the American Occupation in 1846 until Statehood in 1912 (Santa Fe, 1948).

39 Pueblo governors, for example, also asserted control over local "criminal" infractions, which occasionally resulted in efforts by Indian agents or the special attorney to insist that Isleta bring these causes of action to New Mexico's territorial courts. W.A. Jones to Juan Domingo Abetia et al., July 8, 1903, box 1, folder 2, Indian Affairs Collection, Worster, Rivers of Empire, supra note 12 at 88-96.
Like their Hispano contemporaries, Pueblo litigants sought outside assistance at times of acute crisis. In June of 1901, Annie Sayer, a teacher at Zia Pueblo, wrote a letter to the Indian agent in Santa Fe complaining of Cornelius Sandoval, a local Hispano who had taken up a piece of land between the Hispano village of San Isidro and Zia Pueblo. It is unclear whether Sayer wrote at the behest of Zia residents, but it is likely that she did. She informed the Indian agent that Sandoval had assaulted the mayordomo of the Zia "Indian" acequia the previous day.

Yesterday, Jose L. Cruz [Medina] went out to irrigate his fields and Mr. Sandoval drove him away, cut the ditch and took the water for his own use. When Jose objected, Sandoval seized him and tore his hair out of his head leaving a bare spot nearly as large as the palm of my hand. This man is a very mean trecherous Mexican... He [Sandoval] is determined to fight these Indians out of their ditch and will do it too if the matter is not taken up and properly arranged. I think the attorney for the Pueblo Indians would find an excellent opening right here to do a good bit of legal work. Sandoval should never have been allowed on this side of the river and if he could bee ousted it would be a good thing for Zia.\(^{40}\)

William Pope, who was later appointed as a special referee to take testimony in the case, visited Zia to investigate. Recording his impressions in a series of private scribbled notes, he claimed that Jose de la Cruz Medina, the mayordomo of the pueblo's only acequia, had discovered Sandoval cutting the acequia and diverting the water to his own crops below, depriving Zia pueblo of all its irrigation water. Pope recorded that Medina had

tried to clear the acequia with his hoe so as to have it run down as before but Sandoval caught his hoe: he continued however and Sandoval pulled out a bunch of his hair leaving a bald spot in his head big as my hand. Indian had not used any bad language or made any attempts to do violence to Sandoval. After injury

\(^{40}\)Annie Sayer to C.J. Crandall, June 12, 1901, box 1, folder 3, Indian Affairs Collection. In another, a local teacher mediated a case involving a land-title claim. George B. Haggett to William Pope, June 6, 1901, box 2, folder 11, Indian Affairs Collection.
he went back to the Pueblo. Only other witnesses were Sandoval’s son and a man who was working for him. Indian doesn’t know name of either if these. Sandoval is only Mexican on said ditch and there are no Mexicans within Indian league and no others that have given any trouble to the Indians. Sandoval, however, has been exceedingly quarrelsome. He has held this land about three years. . . . Sandoval tried to turn the ditch last year but the Indians made him desist. This is a renewal of old trouble.41

In other cases, governors of various pueblos sought quick assistance from the special attorney, and raised substantive questions of law and strategy for consideration. In one acequia dispute between the Pueblo of Nambé and a contiguous settlement of Hispanos, Francisco Tafoya, the governor of the pueblo, sent a messenger on foot to the Indian agent in Santa Fe. A Hispano justice of the peace had fined Juan Antonio Miraval, from Nambé, for diverting water from a disputed acequia. Tafoya requested that the Indian agent inform the special attorney that he might be required to appear as counsel before the local justice of the peace. As Tafoya indicated, “Our only object in doing this being to free ourselves from the interference of the Mayor-domo with our water rights and to try to make our Mexican neighbors respect our rights in our own property.” Tafoya requested that any advice from the special attorney be given right away and sent with the messenger upon his return to the pueblo. When Miraval was arrested by the same justice of the peace, Governor Tafoya added, “Mr. Miraval was arrested yesterday evening and summoned to appear before the justice to-morrow. Sat the 22nd at one P.M. at the same place Mr. Howard conducted a former suit for us. We will esteem it a favor if Mr. Howard will be there promptly at the time set.”42

41There is no indication of how this case was settled, as the special attorney did not bring a formal suit in the matter. Sandoval later denied that he had harassed Zia Pueblo for water, indicating he had been in Albuquerque at the time of the incident. Attorney Memoranda/Notes of William Pope, July 1, 1900, box 1, folder 3, Indian Affairs Collection; Cornelio Sandoval to William Pope, April 29, 1902 (English translation from Spanish), box 1, folder 3, Indian Affairs Collection.

42Francisco Tafoya to U.S. Indian Agent, June 30, 1897, box 1, folder 12, Indian Affairs Collection; Tafoya to U.S. Indian Agent, April 20, 1899, box 1, folder 12, Indian Affairs Collection; Jose Felipe Abeita to Walpole, U.S. Indian Agent, November 11, 1900, box 1, folder 7, Indian Affairs Collection (“We come to you as our agent that you may see that our rights be given”).
Acequia disputes reveal that Hispano villagers and residents of Indian pueblos did not bring their claims to district court without first assessing the potential benefits such a decision would have on their cases. In Hispano villages, litigation became yet another weapon in the arsenal for waging local political struggle, especially in villages where party politics was intensely bitter. Similarly, in Pueblo-Hispano conflicts, the Pueblo employed federal legal assistance in the tradition of the protector de indios of former colonial times, drawing on teachers, lawyers, and Indian agents to help them assert legal claims against Hispano neighbors encroaching on Pueblo land and/or water. Litigation thus became a useful tactic for those attempting to preserve (or to create) local power by bringing their disputes to district court (instead of to a local justice of the peace) or by acquiring the services of a lawyer to gain needed leverage over their adversaries.

When litigants sought the assistance of the state in determining local issues, they brought about greater state intrusion in their lives, although this may not have been the intent. As with federal jurisdiction over settling land title claims, territorial jurisdiction over local acequia disputes created circumstances boosting the authority of lawyers and judges as the arbiters of local conflict. Although Hispano villages may have been "refuges" from Euro-American intrusion until the 1930s, as Sarah Deutsch suggests, these linkages via the territorial district courts contributed to the greater incorporation of New Mexico into the U.S. capitalist orbit much sooner than her analysis implies. The groundwork for that incorporation, which intensified during the twentieth century, was laid in the nineteenth. The legal system, or at least its legitimacy as an arbiter of conflict, became crucial to the way in which the United States asserted political control over the region and promoted the capitalist transformation.43

When Congress established the Court of Private Land Claims in 1891 to settle western land titles, there was a complementary need to settle and assure any water disputes associated with the actual use of the land. Establishing that authority at the local level paved the way for larger-scale, bureaucratic, federal and territorial involvement in water "management" during the twentieth century and ensured that United States courts (or, later, New Mexico state courts) would be the forum for

43Sarah Deutsch, No Separate Refuge (London and New York, 1987); William G. Robbins, Colony and Empire: The Capitalist Transformation of the American West (Lawrence, 1994). Robbins effectively ignores how the law was used in this transformation either as a means of incorporation or a means of resistance.
deciding any disputes. Like the process by which the Court of
Private Land Claims established its legitimacy, but with much
less notoriety, acequia cases may have given local sanction to
the official legal system and contributed toward bringing all
water disputes under singular legal definition.44

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44In 1907 the Territory of New Mexico created the office of territorial engineer
[later state engineer], the holder of which who was given the jurisdiction over
all water courses and their management. Under the law, all water disputes
filed with the courts were required to obtain from the engineer a hydrographic
survey that delineated all water rights in the vicinity. I maintain that it was
the early interest in local irrigation disputes that made such state intrusion
possible. Vernon L. Sullivan, First Biennial Report of the Territorial Engineer
to the Governor of New Mexico Including Water Supply, 1907-1908 [Albuquer-
que, 1908]; Stanley Crawford, “Dancing for the Water,” Journal of the South-
west 32 [Autumn 1990], 265-67.
Delph E. Carpenter, at about the time Wyoming sued Colorado over water from the Laramie River (Daily News, February 13, 1911)
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1 In the 1922 Colorado River Compact negotiations, Carpenter estimated that 400,000 to 500,000 acre-feet of water would be Colorado’s natural limit for transmountain diversion from the Colorado River to the east side of the Continental Divide, but, for the sake of simplicity and protection against error, he increased this amount to 600,000, or 5 percent of the approximately 12 million acre-feet Colorado supplies to the main stem of the Colorado River. See Minutes, Sixth Meeting, Colorado River Compact Commission, Washington, D.C., box 7, Delph E. Carpenter Papers, Northern Colorado Water Conservancy District [hereafter cited as Carpenter Papers]. As of 1995, average annual withdrawals of Colorado River water to the Front Range approximated 510,000 acre-feet, 380,000 acre-feet being diverted to the South Platte River and 130,000 acre-feet to the Arkansas River. See Agricultural Water Conservation Task Force, “Colorado River Tributary System,” Colorado Water Resources Research Institute, Fort Collins, 1995.
By quieting the fears of the Lower Basin states (California, Arizona, and Nevada) regarding Colorado’s potential to dry up the river, Carpenter made possible the construction of the Colorado–Big Thompson Project fifteen years later. He deserved more credit than I gave him when I wrote the project’s history, an error I hope to rectify with his biography.

I mention the second thing that happened only because it coincided with my interest in telling Carpenter’s story. A novel called Lucy Boomer by Russell Hill appeared, telling the story of Jack, a history professor, in search of a collection of documents from which he hoped to make a name for himself and land a decent job at a major university. Having heard of a woman in a California nursing home who had been secretary to presidents Wilson, Harding, and Coolidge, Jack went to see her, hoping to look her diaries. She was alone, with no one to visit her, and desperately wanted to return to Iowa to die. She was also articulate and resourceful. Whenever Jack asked about the diaries, Lucy responded vaguely or changed the subject, but kept his interest by implying that she had been involved in more than just a professional relationship with the three presidents. Jack became a frequent caller, his historical appetite thoroughly whetted, until at last Lucy announced her wish to be kidnapped from the nursing home and returned to Iowa, where, she confessed, the diaries were to be found.

Jack’s response and the subsequent events make excellent light reading. I won’t spoil your pleasure. My point is only that historians dream of being the first to plow through significant primary sources. Seldom do we have the chance. The third of these events of 1992 resulted from a freak accident that nearly destroyed eighty-five boxes of records containing Delph Carpenter’s professional and family history.

In that year Carpenter’s only son, eighty-five-year-old Donald Carpenter, was living with his wife, Doris, in a refurbished school house east of Greeley. Convinced that his late father’s life story merited telling, Donald Carpenter spent countless hours organizing the many maps, books, diaries, and other papers to which he had become heir and which he kept in his basement. (He had donated some materials to the Hoover Presidential Library in 1976, but most of the material remained untouched and uncatalogued.) During the night of September 5, 1992, Doris Carpenter discovered that water from a blocked culvert was flooding the basement. Everything on the floor was soaked, including some of the boxes containing the Delph Carpenter papers. By the next morning, the water was three inches deep, and rising. Doris Carpenter called for help. Vacuum

pumps, dehumidifiers, and air movers were brought in. Not until September 9 did the level of water begin to subside. For another week, volunteers dried the wet documents and put them in new containers. Some damage had been done, but most of the collection was saved.³

Donald Carpenter had had a close relationship with the late Dugan Wilkinson, father of the present manager of the Northern Colorado Water Conservancy District, and because of this the family decided to transfer the papers to the NCWCD’s Loveland office, where I had spent the better part of five years working on The Last Water Hole. Simultaneously, the Carpenters agreed to allow me limited use of the documents as a basis for Delph’s biography. Knowing how carefully the papers had been guarded by the family and how frequently Donald had been asked to donate them to various agencies, I felt extremely fortunate. I was on the verge of a Lucy Boomer experience.

After examining nearly all of the eighty-five boxes of papers, I am convinced that the Carpenter collection contains much that is crucial to the West’s water history. Additionally, it brings to light the constitutional and legal evolution of Carpenter’s principles regarding state sovereignty, interstate water treaties, the role of the federal government, and the relationship between prior appropriation and equitable apportionment in water-rights adjudication. It also shows how isolated Carpenter felt while he formulated his ideas.⁴ Similar to Spanish and Mexican concepts of water distribution, equitable apportionment meant different things to different people.⁵ To Carpenter it contained the idea of flexibility, fairness to all interested parties, respect for local needs and conditions, compromise if necessary, and avoidance of litigation. It controverted the essence of prior

³Doris M. Carpenter to Daniel Tyler and James E. Hansen III, January 13, 1993.
⁴In a letter to Herbert Hoover on August 25, 1922, Carpenter mentioned his “deepest personal regard” for the secretary of commerce. Hoover had been chosen by President Warren G. Harding to represent the United States on the Colorado River Commission. Carpenter recognized in Hoover many of his own highly valued principles, and felt free to tell the secretary that he appreciated his “underlying spirit of broad-minded fair play. . . . The sphere of my personal endeavors during the past fifteen years has in a large measure isolated me from others in my own profession and has frequently provoked a feeling of extreme loneliness which at times has been almost overwhelming, and as our hearings have proceeded your presence has prompted within me a sense of comradeship.” Box 20, folder 8, Carpenter Papers.
⁵The Hispanic doctrine of equity and the common good was a working legal principle that “mitigated against any attempted water monopoly and provided one of the few avenues for a more contemplative kind of justice. Incapable of categorical definition, it also gave judicial officials tremendous flexibility in rendering decisions.” See Michael C. Meyer, Water in the Hispanic Southwest (Tucson, 1984), 163.
appropriation, focusing instead on preserving the interconnected relationships of water users in entire river basins.

Equitable apportionment was not Carpenter's invention, but his insistence on applying the principle to difficult and contentious interstate water problems occurred at a time when most water officials wanted to fight it out in court. What is most illuminating historically is the fact that a small-town Colorado water lawyer, raised as a devotee of the doctrine of prior appropriation, committed to the principle of first in time, first in right, became a leading critic of that doctrine when he realized that if it were applied to interstate streams, it would lead to the loss of state sovereignty, to United States' claims of ownership of the unappropriated waters in the West, to endless and costly litigation, and eventually to economic collapse. The origins of Carpenter's views regarding equitable apportionment and the manner in which he applied this doctrine to the Colorado River Compact are the themes addressed in this essay.

EARLY LESSONS IN WATER APPORTIONMENT

Delph Carpenter was born in Greeley in 1877, the second son of Leroy S. Carpenter and the former Martha Allen Bennett. His parents had moved to Colorado from Iowa in 1872 after more than a year of courtship by correspondence—Leroy in Colorado, Martha in Iowa. Pioneers of the Union Colony, they were strong advocates of temperance, charter members of the Methodist Church, and committed advocates of irrigated agriculture. Before their marriage, Leroy frequently wrote to Martha about the back-breaking labor involved in extending ditches for water delivery from the Cache la Poudre River to the two farms he and his father had purchased. Martha wondered what the ditches looked like, how she would avoid falling into them, whether any "carpenters" would be available to rescue her, and how the ditches might serve the utilitarian purpose of sobering up drunks. Once she had arrived, she soon realized that the farms on which the family depended could not raise a crop without irrigation water from the ditches.

When Fort Collins came into being, upstream, in 1873, the lesson was brought home even more forcefully. Irrigation by members of the Fort Collins Agricultural Community lowered water levels in the Cache la Poudre River to such an extent that the Union Colony's ditches dried up. Angry farmers from

6Leroy Carpenter to Martha Bennett, June 10, 23, 1871, August 5, 1871, September 25, 1871, October 27, 1871; Bennett to Leroy Carpenter, June 17, 1871, October 2, 1871, box 30, Carpenter Papers.
both communities convened midway between the towns. From this contentious meeting emerged a new system of water management. The old concept of riparian rights (guaranteeing equal water rights to all landowners on a stream) was replaced by the doctrine of prior appropriation (first in time, first in right). Two years later the Colorado State Constitution endorsed the concept in Article XVI. During the next twenty years, most western states embraced this western water doctrine in one form or another.

As a law student at the University of Denver, Delph Carpenter studied the ramifications of prior appropriation. His father told him that if he wanted to specialize in water law, he would have to write his own text books. He attended classes at night, graduated from the University of Denver with a law degree, and returned to Greeley to set up his practice. Early on he had to take whatever cases came his way, but gradually he became known for specializing in water. He defended his neighbors' irrigation rights, using the rules of priority; when he was elected state senator in 1908, he successfully pursued legislation that allowed reservoir companies to be included under the same prior-appropriation doctrine that governed the operation of ditch companies. He also insisted that Colorado owned all of the water originating within its boundaries. Evidently he considered first in time, first in right an immutable principle. Nevertheless, once he had been appointed as Colorado's representative to the Colorado River Compact Commission in 1921, equitable apportionment was all he could talk about. What had happened?

In 1896, the year Carpenter graduated from Greeley High School, the Department of Interior placed an embargo on the construction of reservoirs and canals on the Rio Grande, pending consummation of an agreement with Mexico. For the next ten years, four projects in Colorado's San Luis Valley were rejected by the United States Reclamation Service because of the government's concerns about maintaining adequate flows in the river during treaty negotiations. When the Root-Casasus Treaty was signed in 1906, Mexico was guaranteed sixty thousand acre-feet of water annually from the yet-to-be-built Elephant Butte Reservoir. The embargoes should have ended in

7The story of this tussle is told by Robert G. Dunbar in “Water Conflicts and Controls in Colorado,” Agricultural History 22 (July 1948), 180-86. Dunbar's narrative draws heavily on David Boyd’s A History: Greeley and the Union Colony (Greeley, 1890).

8In a letter to the author on July 14, 1995, Douglas R. Littlefield pointed out that this congressional apportionment of an interstate stream is the first of its kind, although the Supreme Court in 1963 [Arizona v. California] stated that the 1928 Boulder Canyon Act was the first such apportionment.
1906, but the Reclamation Service modified its policy only slightly. To all intents and purposes, the upper Rio Grande area was denied opportunities for development for almost thirty years.

It is not altogether clear when Carpenter began studying this issue, but by the time formal discussions of the Rio Grande Compact were initiated in 1924, it was said that he "had been connected with this work for a great many years and [was considered] a most astute individual besides being fully informed with the entire history of the difficulty and all its ramifications."9 Without a doubt, he had learned some important lessons from the Rio Grande situation: that while the United States as a headwaters nation had a perfect right to utilize all of the flow of the Rio Grande under international law, a better policy was to respect the needs of Mexico and settle the issue by treaty;10 that the Reclamation Service had the ability to retard state development by imposing its will without consulting local authorities; that under the prior-appropriation doctrine, headwaters states would be at a disadvantage in interstate stream litigation if lower states could prove prior use of water on the same stream; and that protection of future economic development for headwaters states could be achieved only by signing a compact before agreeing to construction of storage reservoirs and canals. Under prior appropriation, Carpenter believed, states benefiting from government-financed reclamation projects benefited additionally from a superior legal claim to stored water. For a headwaters state like Colorado, rapid development in the lower basin enhanced by a federally financed storage reservoir could be disastrous.

In 1907, the United States Supreme Court handed down a landmark decision in *Kansas v. Colorado*. To Carpenter, the Court's opinion was "the most illuminating discussion to be found upon the subject of interstate water law."11 Kansas, a

9Memorandum, Mark B. Thompson, New Mexico College of Agriculture and Mechanical Arts, May 5, 1925, Corlett Papers, no. 1038, box 1, folder 401, Colorado State Historical Society.

10See opinion of Attorney General Judson Harmon in 21 Ops. Atty. Gen., 274, 280-83, in memorandum, Brief on Law of Interstate Compacts [with certain recent interlineations], by Delph E. Carpenter, hearings on H.R. 6821, Judiciary Committee, 67th Cong., 1st sess., June 4, 1921, 7 [hereafter cited as Carpenter, Brief on Law of Interstate Compacts]. During negotiations of the Colorado River Compact, Carpenter told the other commissioners that "technically" a headwaters state could take all the water from an interstate stream, but that this might constitute an "unreasonable exercise of its sovereignty and thereby become a trespass on the lower state." See Minutes, Sixth Meeting, Colorado River Compact Commission, Washington, D.C., box 7, Carpenter Papers.

11Carpenter to William Howard Nichols, January 11, 1923, box 7, Carpenter Papers.
riparian state, claimed that Colorado (prior-appropriation) was not allowing continuous and uninterrupted flow of the Arkansas River. Colorado wanted absolute dominion and exclusive use of the water originating within its borders. The Court decided that Kansas had failed to prove sufficient injury, but it also stated that when "diversions from the river in Colorado had so diminished the supply of the stream into Kansas as to do violence to an equitable apportionment to the waters of the streams between the two states" the Court would rehear the suit.12

For those who were listening, the 1907 ruling was a watershed. For Carpenter it was more of an epiphany. In the future, said the Court, no state could claim absolute ownership of water on any of its interstate streams; every state was recognized by the Court as being on equal footing with every other state; and federal agencies were advised that they could neither claim control over western state streams, nor dispose of these waters under the rule of prior appropriation.13 Unless states preferred the expense of litigation, conformance with the Court's ruling would have to be accomplished through interstate compacts or agreements effected by state-appointed commissioners "fully acquainted with the facts and surrounding conditions, as well as with future possibilities of use of water from the streams."14 It was clear that the Court was unwilling to interfere in the Arkansas River conflict on the basis of introduced evidence, and it also refused to settle a squabble between states that followed two distinct water doctrines.

When Wyoming brought suit against Colorado in 1911, that distinction did not apply. Both states adjudicated water rights according to principles of prior appropriation. Since 1908 the Greeley-Poudre Irrigation District had been proceeding with a plan to take up to one hundred thousand acre-feet of water

12 Kansas v. Colorado, 206 U.S. 46. The quoted comment is from an undated memorandum by Carpenter for the Colorado River Commission, box 1, folder 3, Carpenter Papers.

13 The United States successfully petitioned to intervene in Kansas v. Colorado in 1904. Its assertion was that parts of the Arkansas River were navigable and that the Constitution gave the federal government authority over all navigable rivers. It also argued that a million acres of public lands were waiting to be settled under terms of the 1902 Reclamation Act. Therefore, neither Colorado nor Kansas should have control over the water in the Arkansas River. The Court found that "each state has full jurisdiction over the lands within its borders including the beds of streams and other waters." See Kansas v. Colorado, 206 U.S. 46 [1907], 93. Information provided the author courtesy of Dennis M. Montgomery, Hill and Robbins, P.C., Denver, in a report by Douglas R. Littlefield entitled "The History of the Arkansas River Compact," vol. 1, August 1990.

14 Carpenter, Brief on Law of Interstate Compacts, supra note 10 at 6.
out of the Laramie River Basin for delivery into the Cache la Poudre River by way of the Laramie Tunnel. The objective was to develop one hundred twenty-five thousand acres of new farmland thirty miles northeast of Greeley. Carpenter was legal counsel for the irrigation district. He was also appointed directing counsel for Colorado in the Wyoming suit, in which capacity he presented two briefs and the 1918 argument before the Supreme Court. Overworked and pressured by what might have been a conflict of interests, he became extremely ill in Washington and suffered for the rest of his life with what was finally diagnosed as Parkinson’s disease. Over the next ten years, his shaky signature and references to his health testify to his mental and physical courage during the most productive years of his life.

In retrospect, the 1922 decision in *Wyoming v. Colorado*, recognizing prior appropriation as the determining factor in allocating Laramie River water between the two states, seems to have clinched Carpenter’s views in favor of the need to pursue interstate river compacts based on equitable apportionment. The Court’s opinion restricted the amount of water that Colorado could take out of the Laramie River basin to less than twenty thousand acre-feet. Consequently, the Greeley-Poudre irrigation project crashed, together with the spirits of those who believed that Colorado held absolute dominion over its own water. Bond holders from all over the world took a beating, and the future of irrigated agriculture in the West appeared threatened.\(^\text{15}\)

While claiming that he had foreseen the Court’s decision, Carpenter was shocked when it became public. “The doctrine so announced,” he said, “leaves the western states to a rivalry and a contest of speed for further development.” Unless the

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\(^{15}\)The history of the Greeley-Poudre Irrigation District reveals how speculators and international investors promoted irrigation projects as money-making schemes. Proposed only a year after the *Kansas v. Colorado* decision had supposedly warned states against attempting to appropriate large quantities of water flowing in interstate streams without consulting downstream users, the project initially sold $5 million worth of construction bonds but encountered market resistance as soon as the *Wyoming v. Colorado* suit was filed in 1911. Brokerage houses had to admit failure by 1913 because “they were afraid to sell bonds against which the Wyoming-Colorado suit might be used as a means of criticism.” Carpenter recognized this problem and admitted that the market had turned sour, not only because of *Wyoming v. Colorado*, but because “certain large irrigation projects in the West [had failed] during the past few years.” Nevertheless, he still argued that the project, if completed, would be “one of the finest irrigation projects in the West.” See Carpenter to Osborne Mitchell, February 13, 1913; to A. L. Davis and Son, Princeton, Illinois, December 12, 1912; and to M. T. McClelland, Ottumwa, Iowa, April 13, 1913, box 24, Carpenter Papers.
compact method could be made acceptable, upper-basin states would have only one alternative: to use every means available to retard development in the lower states until water uses at the headwaters reached their maximum. Such action would be the equivalent of war between states, just what Carpenter hoped to avoid. He was angry with Wyoming. They had "suicided [sic] and incidentally half murdered all the other states of origin." The decision was a "disaster and the pity of it all," wrote Carpenter, "is that he [Chief Justice Willis Van Devanter] did not need to have done so in order to have afforded Wyoming ample protection." Carpenter also worried about what Kansas would do on the Arkansas River, surmising that the Wyoming decision gave strength to those who favored litigation over negotiated settlements.

As time passed, however, Carpenter began to make a virtue out of what he had first termed a disaster. The Court had validated the principle of transmountain diversion once and for all. Colorado could take at least some water from the Laramie River and apply it to a beneficial use in the Cache la Poudre River Basin. Additionally, the Court had confirmed the correctness of his efforts to secure interstate stream compacts with Kansas, Nebraska, and New Mexico. Since 1912 Carpenter had been trying to implement the idea of interstate treaties to settle interstate water rights, "only to meet skepticism, indifference, failure of comprehension or open ridicule." But he had persisted. Agreements on the South Platte and La Plata rivers were, in fact, less than a year away. What he hoped was that other Colorado officials would be forced to abandon their insistence on absolute dominion over the state's waters and would finance the treaty work that he had been doing as the state's designated interstate streams commissioner. The Wyoming decision clearly established a precedent that would have to

16Carpenter, Brief on Law of Interstate Compacts, supra note 10 at 18.
17Carpenter to R. E. Caldwell, Salt Lake City, July 5, 1922, box 7, Carpenter Papers. Caldwell was Utah's commissioner on the Colorado River Compact Commission.
18Carpenter to Vena Pointer, July 17, 1922. "Kansas will press its suit," Carpenter wrote, "unless a settlement is concluded soon . . . the trend of decisions, including that in the Republican River case are all toward recognition of a preferred status for all prior appropriations upon interstate streams regardless of state lines." Box 23, Carpenter Papers.
19Delph E. Carpenter, draft memorandum, The Colorado River Compact: Sketch of Events and Causes Leading to Creation of the Colorado River Commission, 28, Carpenter Papers [hereafter cited as Carpenter, draft memorandum].
20Carpenter to Senator Lawrence Phipps, July 11, 1922, box 26, and undated speech, box 28, folder 9, Carpenter Papers.
apply to the Colorado River. California was agitating for a flood-control dam at Boulder Canyon. The upper states, Carpenter wrote, could rest assured that no large work would be constructed on the lower river "whereby a priority of appropriation might later be asserted, until the future development of the upper states shall have been definitely assured." Allocation and apportionment of Colorado River waters, therefore, would have to be accomplished before construction. This decision "makes my work much easier," he concluded. "In fact, I feel greatly relieved and my work much lightened."  

Carpenter Applies His Equitable Principles

In truth, the major work of Carpenter's life was about to begin. The Colorado River situation presented him with the challenge of persuading Colorado, the federal government, and six other states that the concept of equitable apportionment, implemented through interstate compact, could be adopted successfully to protect everyone's interests. By 1921, the need for some kind of agreement among the seven Colorado River Basin states was indisputable.

Immediately after the end of World War I, Utah's governor, Simon Bamberger, called a meeting of the seven states to discuss a proposal by the secretary of the interior to settle veterans on three million acres along the Colorado River. This group, known as the League of the Southwest, agreed that the veterans should be offered lands ready for planting. Consequently, they concluded, reclamation projects would have to be completed as soon as possible. California was anxious for the Reclamation Service to begin work immediately. The state wanted a reservoir built at Boulder Canyon for flood control and an all-American canal that would bring water to Southern California without passing through Mexican territory. Existing Colorado River levees were considered extremely unstable. Another surge of water could easily destroy them, repeating the 1905 flood of the Imperial Valley.

As Colorado's interstate stream commissioner, Carpenter met with the league for the first time in Denver in August 1920. He knew that the flood menace on the Colorado River was increasing annually, and that if the levees broke the upper

21 Carpenter to W. F. McClure, July 11, 1922, box 7, Carpenter Papers.
22 Resolution, League of the Southwest, Salt Lake City, January 18-21, 1920, box 1, folder 12, and Speech by Secretary of the Interior Albert Fall to the League of the Southwest, December 10, 1921, box 1, folder 4, Carpenter Papers.
1922 map used in negotiating the Colorado River Compact (Carpenter Papers, NCWCD)
states would lose any control they might have had for a negotiated settlement. He agreed with the reclamation commissioner, Arthur Powell Davis, that there was sufficient water in the Colorado River for all seven states, but past experience on the Rio Grande, North Platte, Arkansas, Laramie, and South Platte rivers convinced him that protection for the upper basin could be achieved only through interstate compact. The slower-developing headwaters states needed assurance that sufficient water would be available for up to two hundred years, if necessary, so that agriculture and industry could expand without having to accede to claims of water rights priorities in the lower basin. Davis assured Carpenter of his unqualified support for a compact approach to the Colorado River. A resolution ensuing from the Denver meeting endorsed this principle and instructed the legislatures of the seven states to select commissioners to begin negotiations.

In May 1921 Carpenter accompanied the governors and their personal representatives to Washington, where they sought President Warren G. Harding's approval for the compact plan. Harding assured them that if Congress passed the appropriate legislation he would appoint a federal representative who understood both the international situation and the complexity of interstate issues on the Colorado River. Within a few months, Congress approved the Mondell Bill (named after the House leader, Frank Mondell, who was from Wyoming), authorizing the states to enter into a Colorado River compact among themselves and with the concurrence of the United States. Carpenter drafted the language on which the bill was based. Predictably, it authorized the interested states “to equitably apportion among them the waters of the Colorado River and its tributaries.” The legislation specified a time limit of January 1, 1923, for the commission to complete its work. By statute, therefore, Congress “established the principle of equitable apportionment . . . by compact as the federal policy” on interstate

23Delph E. Carpenter, testimony at Hearings Before the Committee on Irrigation and Reclamation, U.S. Senate, 69th Congress, 1st sess., October 26–December 22, 1925, 705-6, 710-11.

24Carpenter was impressed by Harding, describing him as a man of “dignity and charm.” And he liked the mood of Washington, which, he thought had an “air of freedom and action” that had replaced the “timidity and restraint” of the previous administration. About the secretary of the interior, Albert Fall, Carpenter wrote, “He has no sympathy with bureaucracy. If given a free hand he can accomplish wonders in his department during four years.” Greeley Tribune, June 13, 1921. Carpenter’s feelings can be understood in the light of the Republicans’ partiality for local control of water resources and the Democrats’ commitment to federal control.

2542 Stat. 171, August 19, 1921.
streams. Harding appointed Secretary of Commerce Herbert Hoover as the federal representative. It was then up to the Colorado River Commission to put the new policy into effect.

In simplified terms, the Colorado River Compact, signed by representatives of all seven states and approved by Hoover in Santa Fe on November 24, 1922, divided the Colorado River equally between four upper-basin states (Utah, Wyoming, Colorado, and New Mexico) and three lower-basin ones (Arizona, California, and Nevada). When ratified by Congress and the state legislatures, each basin could claim a perpetual right to 7.5 million acre-feet of water per year. Measurement was to be calculated in such a way that the upper basin would be in default only if it failed to pass seventy-five million acre-feet by Lee’s Ferry to the lower basin over a ten-year period. An extra one million acre-feet were awarded to the lower basin because of Arizona’s nearly exclusive claims to the Gila River. Other compact articles stipulated that domestic and agricultural uses would have priority over power and navigation; that further equitable apportionment could be made after October 1, 1963, if either basin had exceeded its 7.5 million acre-feet; that Mexico’s possible rights would be considered later in a separate treaty, the burden of which would be borne equally by both basins; and that nothing in the compact should be construed as affecting the obligations of the United States to Native-American tribes.

Carpenter’s broad application of equitable apportionment is most discernible in his ability to persuade Hoover and the other commissioners that, instead of apportioning the water on a state-by-state basis, using maximum irrigable acreage as the unit of measurement, the river had to be considered in its entirety so that the headwaters states’ need of time to develop could be integrated in a plan that also recognized the need of the lower basin for flood control and power. Division of the river at Lee’s Ferry and apportionment of water on a fifty-fifty basis between upper and lower basins represents the apogee of Carpenter’s intellectual creativity. It is a legacy of equitable apportionment.

26Carpenter, draft memorandum, supra note 19.
27On June 25, 1929, after nearly seven years of heated debate, the Colorado River Compact was proclaimed in effect by President Herbert Hoover. Six states had ratified the compact. Arizona remained a pariah until February 24, 1944. See Norris Hundley, Jr., Water and the West: The Colorado River Compact and the Politics of Water in the American West (Berkeley, 1975), 281, 295.
State Sovereignty and International Comity

A constitutionalist and a student of international law, Carpenter constructed his plan on a solid legal foundation. He spoke frequently about Article I, section 10, paragraph 3 of the Constitution, which allows states to enter into treaties with Congress's consent. All states, he pronounced, were on an equal footing. They had surrendered their right to bear arms against each other and replaced war with the right to litigate in the Supreme Court. Compacts and treaties already negotiated between states over boundary disputes, fisheries, harbor rights, and other conflicts had proved more productive than litigation. The situation on the Colorado River among seven states and the United States, he reasoned, was similar to the role of nations with international rivers. Compacts were "nothing more than the application of the rule of international law . . . [and] diplomacy must be exhausted before there is a recourse to arms,"28 or, in the case of the states, before there was a recourse.

28*Albuquerque Morning Journal*, February 1, 1921. Carpenter repeated this idea in many official documents and private correspondence.
to lawsuits. Just as headwater nations in international law had a certain "inherent privilege to benefits that might be denied the lower nation," basin-of-origin states on the Colorado River, which agreed to a system of sharing the river through equitable apportionment, should be guaranteed enough time to develop without being compelled to deliver unreasonable amounts of water from the headwaters to projects in the lower basin. As Carpenter put it, if basin-of-origin states were forced to yield unrealistic flows without any quid pro quo, the lower basin would attain a prior right that "becomes an involuntary extraterritorial servitude upon their [upper basin] domain and amounts to a taking away of their property. . . . Such servitudes," he remarked, "are frowned upon by international or interstate law."29

The key to equitable apportionment was trust. Carpenter’s study of the Nile River in Egypt convinced him that the contracting parties needed to view the river as a single, interconnected entity throughout which, as one writer put it, "the use, conservation and development of water must be viewed as a public trust . . . administered in the interests of the beneficiaries of the trust and with due regards to the rights of generations unborn."30 His notations on other documents describing problems on rivers in Germany, France, and Switzerland indicate his awareness of a similarity between the Colorado and international waters.31 What Carpenter did say, repeatedly, was that equitable apportionment could come about only through international or interstate trust, or what he frequently referred to as "comity"—the courteous recognition accorded by one nation or state of the laws and institutions of another nation or state. If negotiating parties entered too quickly into refinements, details, or demands, such as trying to determine how


30 Excerpt from H. T. Cory, "The Struggle for the Nile," 27-28, written in Denver, September 1922. Carpenter’s notes in the margins indicate his familiarity with this work. The full report was published on December 30, 1920, under the title "Nile Control." Cory was the United States’ nominee to an international commission on the Nile River, and wrote the report with G. C. Simpson, the University of Cambridge’s nominee to the commission.

31 Carpenter to U.S. Consulate, in Paris, France, December 8, 1913, inquiring about the rights of headwaters states and the resolution of a dispute between France and Switzerland. Carpenter was just beginning work on the Wyoming v. Colorado case. Penciled notations on a printed lecture by W. J. M. Van Eysinga, University of Leyden, "Vienna—The Treaty of Versailles, 1815-1819," at a symposium on "Rivers and International Canals" at the Academy of International Law of The Hague, July 1923, indicate that Carpenter considered it necessary to depoliticize issues on international rivers in order to achieve successful settlement. Box 26, Carpenter Papers.
many irrigable acres were available in a specific state, trouble would ensue, litigation would break out, and the courts would assume unwelcome control. But if comity were established first, negotiation could proceed with a genuine interest in understanding the other's point of view.32

This notion of equity or fairness was predicated on respect for state sovereignty. Nothing irked Carpenter more than the suggestion that federal officials should resolve Colorado River issues. Turning over river problems to the government was just plain "unAmerican," he wrote.33 Repeatedly citing such landmark cases as *Gibbons v. Ogden*, *Chisholm v. Georgia*, and *McCulloch v. Maryland* to show that the United States was limited to the powers specifically surrendered to it in the Constitution, he maintained that Colorado had been drawn into litigation by its neighboring states for nearly twenty-five years with the unparalleled aid and abetment of the United States Reclamation Service, whose disregard for state sovereignty had become notorious.34 The "insidious and well organized assault" on the states by the Reclamation Service, he said, was a poorly disguised attempt by the government to apply the principle of prior appropriation to interstate streams.35

To Carpenter, such a policy would be calamitous. It would encourage the United States to repeat its embargo tactics on the Rio Grande; it would promote federal claims that western rivers were the exclusive property of the federal government; and it would create an administrative superpower insensitive to changing needs and vested interests of the states.36 A com-

32See Minutes, 18th Meeting, Colorado River Compact Commission, Santa Fe, box 39, Hoover Presidential Library; *Greeley Tribune*, April 11, 1921; Carpenter, memorandum, n.d., referring to the Rio Grande, noting that the United States was under no obligation to guarantee water to Mexico but that "from considerations of comity, the question should be decided as one of policy and settled by treaty." Box 26, Carpenter Papers.

33Delph E. Carpenter, "Interstate River Compacts and Their Place in Water Utilization," *Journal of the American Water Works Association*, vol. 20, no. 6 (December 1928), 760 [hereafter cited as Carpenter, "Interstate River Compacts"].

34Delph E. Carpenter, "The Colorado River Compact: Sketch of Events and Causes Leading to Creation of the Colorado River Compact," 7-8, Carpenter Papers. Writing reflectively some time after the compact was signed, Carpenter noted, "The unfortunate attitude of Reclamation officials and employees in seeking to belittle the rights of the States and to supersede state control with national control and administration of waters of interstate rivers, made difficult the creation of a sentiment of cooperation for further Colorado River development under supervision of federal agencies."

35*Denver Post*, October 11, 1925.

36Minutes, 11th Meeting, Colorado River Compact Commission, Santa Fe, box 37, Hoover Presidential Library.
Pact agreement on the Colorado River based on equitable apportionment between sovereign states, on the other hand, would strengthen the Union. What finer reason existed for resisting the government's heavy hand?

Nothing better demonstrates the application of this logic than Carpenter's proposal to divide the Colorado River into two basins with water apportioned equally between them. It was, in a sense, his crowning achievement. Properly crediting creative individuals such as Colorado's deputy state engineer, R. I. Meeker, while condemning the avarice of federal bureaucracies, Carpenter regarded the division of the basin into two parts and the fifty-fifty split of water between them as the ultimate rejection of interstate prior appropriation. International precedent for such a split already existed between the United States and Canada on the Milk and St. Mary's rivers. Carpenter's task was to persuade the commission that his plan was the most logical, because it was based on natural conditions in the Colorado River Basin. Lee's Ferry, one mile below the Paria River, was the perfect dividing point. "We have a great catchment basin," he said, "like the receptacle basin of a funnel; we have the funnel neck, [i.e.] the canyon and below, the territory that receives the water through this funnel neck with certain additional supplies arising and flowing in that territory." Believing that the upper-basin states could never fully utilize what he termed their "equitable share" of the Colorado River, and knowing that from 1902 to 1921 an average of fifteen million acre-feet of water had passed Lee's Ferry, Carpenter felt confident in recommending that the upper basin guarantee an aggregate of seventy-five million acre-feet to the lower basin over a ten-year period—half the annual average flow of the river.

Hoover was sufficiently impressed with the plan to recom-

37 Carpenter to F. H. Newell, Washington, D. C., August 2, 1923, box 1, folder 21, Carpenter Papers.
38 Minutes, 11th Meeting, Colorado River Commission, box 37, Hoover Presidential Library. Carpenter states that he has "no copyright on the idea. It is a composite of expression of various members of this Commission and learned men. It was advanced before this Commission by Director [Arthur Powell] Davis; not in the exact form that I have suggested, but division below the mouth of the San Juan was suggested by him." Davis wrote Carpenter saying that he was "very glad [the suggestion was made by you and I wish to congratulate you upon it....] this proposition seems to contain more promises of agreement than any I have yet seen." Davis to Carpenter, October 24, 1922, box 7, Carpenter Papers.
39 Carpenter to McClure, July 11, 1922, box 7, Carpenter Papers.
40 Minutes, 11th Meeting, Colorado River Compact Commission, Santa Fe, box 37, Hoover Presidential Library.
mend that a compact draft be drawn up based on this concept, and Carpenter readily agreed to his request in August 1922. His draft became the foundation for discussions by the Colorado River Commission during the next three months. What gave his plan credibility was its simplicity, combined with his conviction that the plan was equitable for all of the states. It would dissipate future rivalry and enhance state sovereignty and state control of local waters. It would allow flood-control projects and time for economic development, make possible transmountain diversion, share the Mexican burden equally, and place the federal government in an equitable and constitutionally correct relationship to the states. It was a compact the commissioners had to accept. By signing the document in the Ben Hur Room of the old Palace of the Governors in Santa Fe on November 24, 1922, they endorsed Carpenter’s tightly reasoned arguments and the spirit of comity in which they were offered.

The true significance of Carpenter’s work has yet to be evaluated. At this point, however, it is safe to say that Carpenter established a precedent. The method of solving interstate water problems through equitable apportionment was emulated on other rivers and by other states almost immediately after the Colorado River Compact had been signed. As of 1929, five bills were before Congress involving the states of Colorado, Oklahoma, Kansas, New Mexico, Arizona, and Texas, which, between them, sought permission to negotiate an equitable division and apportionment of water on the Arkansas, Gila, San Francisco, Rio Grande, Pecos, Canadian, Red, Cimarron, San Juan, and Animas rivers. Moreover, Carpenter noted, twenty-one of twenty-two western states were about to be involved in compact negotiations, and ten of twenty-six eastern states were already covered by compacts. Columbia River states hoped to model an agreement on the Colorado River Compact, and Maine sought Carpenter’s opinion on a power-export agreement involving six New England states. There is no question about the impact of Carpenter’s interstate water policy on other states.

Little has been said respecting the price Carpenter paid for his achievements. His illness was relentless. His shaky signa-

41 Carpenter to Hoover, August 25, 1922, box 20, folder 8, Carpenter Papers.
43 Typed manuscript, “Bills before Congress,” box 63, Carpenter Papers.
44 Carpenter, “Interstate River Compacts,” supra note 33 at 756-73. See also telegram, Clarence C. Stetson to Carpenter, February 21, 1927, box 7, Carpenter Papers.
ture had become commonplace; fatigue was his constant companion. At times during commission sessions he became irritable, even stubborn and inflexible. In letters to colleagues he asked that his mood swings not be taken personally. But he never failed to be courteous and respectful of others' views. The strength of his leadership seems to have been as much a result of his style—a generous spirit, unfailing patience, and absolute integrity—as his sometimes brilliant reasoning and his vision, initiative, and ingenuity. Although he had his share of critics, accolades from distinguished people expressed profound appreciation for his work and recognition of how much pain he had endured to achieve equity for the Colorado River Basin. Most of the Colorado River commissioners praised him highly, but the letter that probably meant the most to him came from the White House in 1929. It congratulated him for consummating the Colorado River Compact. "It was due to your tenacity and intelligence that it succeeded," said the letter. "[I] want to be able to say this and say it emphatically to the people of the West." Signed, Herbert Hoover, President of the United States.45

45 Herbert Hoover to Carpenter, May 29, 1929, Carpenter Papers.
Map showing the Pecos River in New Mexico and Texas [Drawn by Carol Cooper Rider]
The recent Supreme Court decision in the interstate dispute between Texas and New Mexico over the Pecos River put to rest a century of interstate water bickering between the two states. The intervention of the Court marked the political failure of Texas and New Mexico to settle their own differences over the river. Just as importantly, the imposed legal solution marked the scientific failure of the brightest and best of the West’s engineers and hydrologists to describe, apportion, and control the Pecos River.

The scientific and technical failures of the Pecos River Compact may be ascribed to Royce J. Tipton, a preeminent water engineer in Denver and a ubiquitous presence in intra- and interstate Rocky Mountain water concerns for the critical years between 1920 and 1970, when western states were growing rapidly and struggling to control access to the increasingly

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1 Texas v. New Mexico, no. 65, Original Docket of the U.S. Supreme Court [hereafter cited as Texas v. New Mexico]. The sequence of decisions in the case are variously reported at 421 U.S. 927 (1975) and 482 U.S. 124 (1986).


stretched water resources. Tipton was foremost among the technical consultants who offered some scientific basis for the political compromise that the unreliable, short water supply demanded. Part engineers, part lawyers ("enginawyers," in the parlance of western water law), these scientists played indispensable and unheralded roles in water affairs. Without them, none of the many interstate compacts that apportioned common surface waters between and among the competing western states would have been consummated. With them, the compacts engendered the belief that science could accurately describe western rivers, that law could fairly apportion what science described, and that technology could improve what science saw and law regulated. In the end, the Pecos River defied Tipton on all scores. The grand effort and the poor results demonstrated the basis and the limits of the control that westerners could impose on regional water systems.

Between 1941 and 1966, Tipton was critically involved in the battle between Texas and New Mexico over the Pecos River. Between 1941 and 1942, he brought the science of surface-water hydrology, as it was then understood, to the wildly unreliable river, gathering and analyzing data about the river processes and using them to describe the river's operation under past, present, and hypothetical future conditions.

Between 1945 and 1948, Tipton became the driving force in hammering out the Pecos River Compact of 1948. In that position, he joined a group of pioneering western water engineers who combined a solid grounding in hydrology with political astuteness in negotiating the interstate battles caused by the scarcity of water. The 1948 Pecos River Compact was largely Tipton's work; it would never have come about without him.

For Tipton's career, see "Notes for testimony . . . in Wyoming v. Colorado, [n.d.], Delph E. Carpenter Papers, box 43, folder 3, Northern Colorado Water Conservation District, Loveland.

Herbert Hoover, who negotiated the 1922 Colorado River Compact, and Raymond Hill, who negotiated the 1938 Rio Grande Compact, preceded Tipton as the driving forces in creating the interstate compacts that made possible the rapid expansion of the West in the first half of the twentieth century. For Hoover, see John Upton Terrel, War for the Colorado River: The California-Arizona Controversy [Glendale, 1965], 1:19. For Hill, see Raymond A. Hill, "Development of the Rio Grande Compact of 1938," Natural Resources Journal 14 [April 1974], 163-98.

The term "enginawyer" was coined by the then governor of New Mexico, now a United States district court judge, Edwin L. Mechem. Carl Slingerland, interview with author, Santa Fe, March 22, 1994 [hereafter cited as Slingerland interview].

Tipton provided what everybody thought was an empirical formula for dividing the water of the Pecos by controlling depletions in New Mexico rather than by specifying flows at the state line. He embedded that formula in the bistate Pecos River Compact, and subsequently devoted part of his complex professional life to making the compact a success. In this effort he failed.

Between 1949 and his death in 1967, Tipton worked as a consultant for the Pecos River Commission, which the compact created. He tried desperately to get the river to behave according to the scientific standards he set up for it and the technological improvements he designed for it. Both the commission and Congress cooperated for a while, but the river did not.

**TIPTON HEADS THE PECOS RIVER INVESTIGATION**

In 1941, Tipton became chairman of the National Planning Board’s Pecos River Joint Investigation. Begun in 1939, the investigation represented a massive federal effort to collect all the available information on the Pecos River so that Texas and New Mexico would have a factual basis on which to negotiate a permanent division of the river’s resources. By the time Tipton arrived, the agencies participating in the investigation had already spent two years gathering data. Texas and New Mexico had spent twenty-five years feuding over the river.

Three central concerns had plagued any efforts to reach a mutually acceptable interstate compact. First, such a compact would have to protect downstream Texas and the Carlsbad Irrigation District in New Mexico from uncontrolled upstream development, taking more and more water not only from the river itself but also from interconnected groundwater sources in Roswell, New Mexico, that contributed substantially to the river’s flow. Second, the compact would have to lay the foundation for technological improvements to the river (in addition to the existing dams) that everyone hoped would enhance the reliability of supply for both states. Third, the compact would have to apportion the unreliable flood flows that made up so much of the water produced by the erratic Pecos. The Tipton-driven investigation was intended to address the scientific underpinnings of these three concerns.

For its time—and in some senses this still holds true today—the 1939-1942 Pecos River Joint Investigation represented the
finest effort that had been made to marshal all the information "on the water problems and related problems of the Pecos basin," a basin that, as Tipton claimed repeatedly, "probably presents a greater aggregation of problems associated with land and water than any other irrigated basin in the western United States." To understand those problems, Tipton coordinated the research of every conceivable state and federal agency that dealt with the Pecos. The information that he and his team gathered was not restricted to the length of the nine-hundred-mile river alone. Rather, the investigation recognized that how and when water ran in the river was a consequence of upland land-use choices in the forty-four-thousand-square-mile arid basin that contributed to it. In an eerie prediction of concerns to come, Tipton's investigation even considered the (deleterious) effects of the extensive and diffused cattle grazing in the uplands on the water that eventually reached the river. In 1942 the investigation was thus thoroughly contemporary, with its multidisciplinary, resource-interrelated analysis of the river as a whole. The resulting publication in 1942 bore a formidable title, *Regional Planning, Part X—The Pecos River Joint Investigation in the Pecos River Basin in New Mexico and Texas*. Its 207 odd-sized pages, including two plates, thirty-two illustrations, and 141 tables, provided a bewildering array of figures. Many of its passages, particularly those describing technical processes, were densely written. Nevertheless, Tipton's investigation represented genuine regional planning for watershed-wide management some fifty years before the cry for it became popular. Again and again, the investigation emphasized how little was really known about the infinitely complex processes of the Pecos River. Still, the big picture that emerged was clear, even if all the details were not. Here was a river, the investigation confirmed, whose flow depended heavily on erratic, dispersed, unpredictable flood inflows. Those flows could be evened out and the water supply for development in both New Mexico and Texas improved if existing dams were appropriately regulated. One purpose, then, of any compact based on the data assembled

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11 See, e.g., Tipton to Woods, April 2, 1942, in *PRJI*, supra note 8 at vi-vii.
12 Tipton to Subcommittee on Irrigation and Reclamation, U.S. Senate, May 10, 1956, ibid. at 8.
13 See Lindford and Lingle, *Decade of Progress*, supra note 2 at 3.
14 *PRJI*, supra note 8 at 138-40.
15 For example, consider the following passage: "A check on the amount of 1940 return flow as above derived is afforded by a computation of the difference between the amount of diversions and the total depletion under those diversions independently estimated." Ibid. at 66.
by the investigation would have to be apportionment between the two states of flood inflows originating in New Mexico but heading downstream to Texas.  

In addition, suggested the investigation, river managers would have to face the "groundwater problem." The Pecos River Joint Investigation estimated that groundwater sources in the middle basin had contributed two hundred thirty-five thousand acre-feet a year to the flow of the Pecos in the middle basin before the development of irrigated agriculture. By 1939, according to the estimation, artesian and shallow wells in the Roswell Basin had already reduced that contribution to seventy thousand acre-feet a year at the most.

Clearly, the river had lost one hundred sixty-five thousand acre-feet a year to New Mexico’s wells—water that would oth-

\[\text{\textsuperscript{16}}\text{Ibid. at 27-82.}\]
erwise have first run down to Carlsbad and then to Red Bluff. If the Roswell basin’s groundwater should be considered part of the river, as Texans had argued as early as 1935, then New Mexico had already appropriated 70 percent of it. In addition to flood inflows, the investigation made it clear that groundwater contributions were going to be a problem, too.¹⁷

The investigation offered no specific compact solution. Instead, Tipton presented a series of routing studies, which showed how far the science of surface-water hydrology had come. By 1942, Tipton could not only gauge the widely varying flows of the river over time, but could subject those flows to any set of natural or man-made conditions—past, present, or future—that he chose.¹⁸

His final short section of the Pecos River Joint Investigation, entitled “Availability and Use of Water under Given Conditions,” showed how much water would have reached, or would reach, the stateline under six hypothetical conditions.¹⁹ Condition 1 represented actual 1940 conditions on the river with the Alamogordo, McMillan, Avalon, and Red Bluff dams in place as they were, with irrigation demands in New Mexico and Texas as they existed, with base inflow in the Roswell area reduced as it had been, and with flood inflow reaching the river as it was supposed to have. Conditions 2-6 added and subtracted dams, varied salt loads in the river, altered natural processes that consumed Pecos River water, and considered other factors that might affect the amount of water reaching the Carlsbad Irrigation District and Texas.

The point of all six conditions was to show New Mexico and Texas how various real and possible combinations of storage (for which read “dams”), draft ("irrigation"), salvage ("salt cedar eradication"), and remedial measures ("channel" and "water quality improvements") might affect Texas’s share of any flood inflows originating in New Mexico and bound for Texas. For all their technical sophistication, the routing studies really showed the two states how various plans for the river would affect Texas’s fundamental demand that New Mexico not deprive Texas of its historic share of flood inflows.

As the primary means of exploring alternatives for managing the Pecos River, the routing studies shifted the focus of river analysis. The investigation’s basin-wide considerations had given the study its special, contemporary watershed-manage-

¹⁷Ibid. at 82-86.
¹⁸The measurement of western streams had begun at the Embudo Station on the Rio Grande in New Mexico in a project sponsored by the United States Geological Survey in the 1880s.
¹⁹PRJI, supra note 8 at 171-83.
ment tilt in the first place. The routing studies fixed on the river alone.

The studies balanced the flow measure at an upstream gauge with the measured flow at the next downstream gauge. They then purported to account for every drop of the difference—whether natural or man-made, direct or indirect—between the flows at the two points. For the most part, the studies disregarded the even larger basin-wide mass balances that had produced the river flow in the first place and that had always shown far more water being taken out of the Pecos River Basin than was coming in every year, without exception.20

The publication in June 1942 of Regional Planning Part X ended the first stage of Royce Tipton’s involvement with the Pecos River. As Tipton wrote, the investigation had provided a “factual basis for the consummation of an interstate compact between New Mexico and Texas for the allocation and administration of the water of the Pecos River.”21 He went home to Denver and left the negotiations to others.

River Negotiating in Full Spate

Begun in the spring of 1943, authorized negotiations between Texas and New Mexico started slowly. By 1947, four years of talk showed that the compact that Tipton’s Pecos River Joint Investigation had anticipated was going nowhere. Then, in the late spring of 1947, after five years’ absence, Tipton reappeared on the increasingly bitter Pecos River Compact scene, this time as the federal engineering representative to the negotiating commission. Things started to move. Within a little more than a year, Tipton’s presence brought about the compact that had eluded the two states for so long.22

At the first compact negotiating commission meeting that he attended in Austin in May 1947, Tipton was asked whether he had anything to say. “I would prefer to listen,” he said, but within moments launched into a long, articulate analysis of Pecos River problems. For the next year and a half, until the signing of the Pecos River Compact in December 1948, he barely stopped talking. “I just needed,” he later told Congress,

20See John Shomaker, Studies Related to the Administration of the Pecos River Compact, prepared for the Pecos Valley Artesian Conservancy District, Roswell, January 1994 [hereafter cited as Shomaker, Studies].

21Tipton to Woods, April 2, 1942, PRJI, supra note 8 at vii.

22See Minutes of Meetings of the Pecos River Compact Commission Prior to and Including Signing of the Compact, February 9, 1943–December 4, 1948, New Mexico Interstate Stream Commission, Santa Fe [hereafter cited as Minutes].
"to teach the two states a few hydrologic facts and they'd agree."23

Tipton first convinced both states that each would have to change the basis on which it had divided the river. Neither New Mexico's insistence on protection for irrigated acreage nor Texas's demand for a fixed amount of Pecos River water would work, he told them, because the river's water supply under any natural and man-made conditions varied so greatly. How, then, should the two states proceed?

It was easy, concluded Tipton in the summer of 1947. Texas and New Mexico should make a compact based on the actual operation of the Pecos River at a particular time. By that, he did not mean the supply of water in a particular year, but the way in which the natural and man-made condition of the river in a particular year would have affected the highly variable supply for any year. The investigation had already analyzed river operations through 1939. Now Tipton proposed to bring the routing studies up to date through 1947.

Two factors affecting the river flow quickly reemerged as powerful influences on water availability in any given year: the effects of groundwater pumping in the Roswell Basin and the spread of salt cedars. Both of these had been analyzed through 1939, and now became the focus of the compact negotiations.

Known as the "water vampires of the West," salt cedars were scruffy, thick-growing, non-native trees that had invaded the Pecos River riparian areas since about 1914. Introduced as ornamental trees to communities on the lower Pecos, the salt cedars, it turned out, took hold along the banks of the Pecos River in general and the silt-rich river areas, and spread like mad. They sent their roots straight into the water table and drank directly from it.24

Tipton's Pecos River Joint Investigation had estimated that the salt cedars had encrusted six hundred acres in the McMillan delta alone and consumed five thousand acre-feet a year of Pecos River water in 1915. By 1939 the salt cedars had spread to fifteen thousand acres and consumption had jumped to fifty-six thousand acre-feet a year. (It had been even higher in years of larger-than-usual run-off.) If nothing were done about the salt cedars, warned Tipton repeatedly, they would devour more and more of the Pecos River water.25


25See, e.g., U.S. Congress, Hearing on S.J. Res. 155 Before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular
In the growing infestation of salt cedars, Texas and New Mexico at last had a common enemy. During the compact negotiations Tipton delighted in treating them as alien invaders that had to be repulsed by appropriate warlike tactics.26

Besides uniting the two states against them, the salt cedars offered a critical element to the final negotiations of what became the 1948 Pecos River Compact: a source of additional supply. Elsewhere in the West, dams promised to capture what nature refuse to produce reliably. But on the Pecos the dams were already in place, and everyone agreed that there would be no new ones. While other planners looked to such unlikely sources as polar icebergs for additional water, Tipton looked no farther than the McMillan Delta and saw the salt cedars. If they were removed, he predicted, the fifty-six thousand acre-feet a year they consumed would be available for human use in New Mexico and Texas.27

The salt-cedar boon, however, had to be balanced against the bane of the draft caused by the wells in the Roswell-Artesia reach of the river. Sooner or later, Tipton knew, existing Roswell wells, pumped at the rate they were in 1947, would take the entire fifty-six thousand acre-feet a year that was still seeping into the river from the Roswell Basin.28

The nice fit between water being wasted by the useless salt cedars in 1947 and the river water that would eventually be commandeered by the Roswell wells provided the fulcrum on which Tipton could balance the competing interests of the two states. Texas's demand that New Mexico take no more of the Pecos River than it was already could be met by offering it a share of the water that would be saved by eliminating the salt cedars. New Mexico's demand that its existing uses be protected could be met by offsetting the future effects of the exist-

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26"Mr. Tipton: 'My facetious proposal is to get a squad of Marine flame throwers to see whether the salt cedars perform properly and, if they do, interest the Army in having a bombing program out there, get rid of some incendiary bombs and at the same time get rid of the salt cedars. Maybe that should be off the record.' Mr. Miller: 'I would like for it to be on the record.' Mr. Tipton: 'Well, you newspapermen, just don't put it in the newspapers. This is completely off the record so far as the newspapers are concerned.' Minutes, Austin, May 28, 1947.


28See Frederick, "Salvaged Water," supra note 4 at 217-18. Texans and New Mexicans had recognized since at least 1935 that Roswell wells directly affected surface-water flows in the interconnected river. See Minutes, October 2, 1945, 20-26, letter of August 14, 1935, Sullivan to Board of Directors.
ing Roswell wells with the water rescued from the salt cedars.\textsuperscript{29}

The diminishing base-flow contribution and the increasing salt-cedar depletions in Tipton’s report in January 1948 were only two of the forty-one elements in an inflow/outflow analysis that followed the virgin flow of the river downstream under the conditions imposed in any year. In the water-balance scheme the water coming into the river, of which the base inflow in the Roswell area was only a small part, and the water leaving the river, of which the salt-cedar consumption was only a small part, had to be equal.\textsuperscript{30} All forty-one elements were necessary to that balance, but, as negotiations speeded up, the inflow element of baseflow and the outflow element of salt-cedar depletion emerged as special issues.

At a negotiating meeting in Santa Fe on March 10 and 11, 1948, Tipton presented the results of the updated January 1948 report to the Pecos River Commission. Most of the conclusions dealt with the effects of dams, salt cedars, and Roswell wells on the historic water supply of the Pecos. The dams, Tipton concluded, had not had much effect on the amount of water reaching the state line, but the salt cedars and wells had.\textsuperscript{31}

With Tipton’s analysis on the table, Texas and New Mexico exchanged their first full compact offers, which hardly varied from each state’s original demands. The commissioners instructed Tipton to analyze each state’s offer and to estimate the ultimate effect of groundwater development in the Roswell basin on the base flow of the river.

The whole group did not reassemble until November 1948, when the New Mexico and Texas delegations and the federal representatives (of whom Tipton was the most important) gathered for six days in Austin’s elegant Driskill Hotel.\textsuperscript{32} There were eleven representatives from Texas, three from New Mexico, and nine from the Carlsbad Irrigation District. The skewed distribution and the tilt toward the special interests of the Carlsbad Irrigation District showed how fraught the politics of the final negotiations would be.

As usual, the formal proceedings were transcribed, but much of the time was devoted to separate, unrecorded caucuses by each interest group, trying to respond to issues raised in the formal, recorded proceedings. Feelings were running so high

\textsuperscript{29}Frederick, “Salvaged Water,” supra note 4 at 217-18.

\textsuperscript{30}See Shomaker, Studies, supra note 20 at 21. The inflow/outflow method used in the routing studies depends on stream-gauging records and on calculations of flows by difference, rather than direct measurement. Both the records and the calculations are subject to error.

\textsuperscript{31}Minutes, supra note 21 at March 10-11, 1948.

\textsuperscript{32}Minutes, supra note 22 at November 8-13, 1948.
and the pressure to reach some agreement was becoming so intense that the separate groups found it more and more difficult even to meet in the same hotel rooms with one another.\textsuperscript{33}

In the intermittent formal sessions, Tipton increasingly predominated in defining the terms of debate. He began melodramatically enough. "Nature is taking a terrific toll of water out of the Pecos," he told the assembled group. "That toll is increasing and unless there is a joining of hands in order that remedial measures shall be put into effect, there will be two patients dead—one the Carlsbad Irrigation District, and the other a part of the area below Red Bluff."\textsuperscript{34}

\begin{center}
\textbf{Tipton Sees Nature as the Villain}
\end{center}

Today, public officials worry that humans will kill the rivers. Only fifty years ago, Tipton and the Pecos River compactors thought that the river would kill the humans. From their perspective, the obvious solution called for adjusting the river; from ours, the obvious solution would have called for reducing human demands on it.

Tipton opened the sessions in Austin by predicting that, if the states did nothing, the Roswell wells would continue to deplete the base flow of the river and the salt cedars would consume more and more of the little that was left. In that event, the average safe yield from Red Bluff reservoir would plummet to less than one hundred thirty-five thousand acre-feet a year.\textsuperscript{35}

From these miserable prospects, Tipton moved on to the supplemental studies that the negotiators in Santa Fe had requested. If Texas's March proposal became the basis for the interstate compact—if, in other words, the salt cedars were eliminated and the base inflow remained exactly as it was under the 1947 condition—then the average safe yield at Red Bluff would skyrocket to the 198,700 average acre-feet that Texas had requested. If, on the other hand, New Mexico's March proposal were accepted—if the base inflow were fully depleted and the salt cedars were not necessarily eliminated but the amount of water they consumed remained the same—then the New Mexico guaranteed safe yield at Red Bluff dropped to 139,500 acre-feet a year.\textsuperscript{36}

For the next two days of private meetings, Tipton went from

\textsuperscript{33}Slingerland, interview, supra note 7.

\textsuperscript{34}Minutes, supra note 22 at November 8, 1948, 10.

\textsuperscript{35}Ibid. at 16.

\textsuperscript{36}Ibid. at 17-21.
caucus to caucus, explaining, trading, coaxing, and cajoling in his inimitable combination of numbers and predictions and logic. Recollections of what he said and promised naturally differed years later, but what emerged after two days was relatively clear.37

On the morning of November 13, the Pecos River commissioner, John Bliss, who was also New Mexico's state engineer, reopened the formal proceedings by presenting to the commission the nine principles that would form the basis of the Pecos River Compact. The first of these went to the heart of how New Mexico proposed to apportion the water between Texas and New Mexico. "New Mexico," read Bliss, "shall agree not to deplete by man's activities the flow of the Pecos River at the New Mexico-Texas state line below an amount which would give to Texas the quantity of water equivalent of the 1947 condition as reported by the engineering advisory committee in its report of January 1948 and supplements thereto adopted November 11, 1948."38

The language of this fundamental provision was so different from any previously proposed by either state that its radical implications were not immediately clear. The New Mexico proposal did not affirmatively obligate New Mexico to deliver a specified quantity of water to Texas as Texas had demanded, but neither did it explicitly protect existing New Mexico uses as New Mexico had insisted. Instead, Bliss's proposal for apportioning the river prohibited New Mexico from further affecting the river after 1947. In its assignment of basic obligations, New Mexico's new proposal changed the focus of both original ones.39

However, in its description of the obligation, New Mexico appeared to have accepted the Texas proposal. In its March counter-offer, New Mexico had switched from demanding that a compact protect its uses to agreeing not to deplete the river any more than in 1947. The switch from protected beneficial uses to prohibited further depletions moved the Roswell wells into a new category. Under New Mexico's original proposal, those wells would have been fully protected as "existing uses." Under its counter-offer, the wells would have been protected only to the extent that their effects had already reached the

37Slingerland, interview, supra note 7.
38Minutes, supra note 22 at November 13, 1948, 51.
39Most interstate water compacts to which New Mexico was a party were flow-based, not depletion-based. That is, compacts like the 1938 Rio Grande Compact guaranteed to Texas a certain percentage of the flow of the river measured at an upstream gauge in New Mexico. A depletion-based compact like the one Bliss proposed was both more sophisticated and more difficult. See Shomaker, Studies, supra note 20.
river in 1947 and would not further reduce the flow of the river under the 1947 condition, as everyone knew that they would.\textsuperscript{40}

It's tempting to say that New Mexico, through Bliss, with the blessing of Tipton, thereby gave up the future of the Roswell wells, but the compact proposals were more complex and more ambiguous than that. For one, there were the savings that everyone expected from the eradication of the salt cedars. Tipton had estimated that those savings would cancel the increased draft on the river beyond the 1947 condition caused by the Roswell wells. For another, there was the possibility that New Mexico might bring Roswell pumping under sufficient control to prevent the further depletion of the river by existing wells. Finally, and equally as important, the definition of the 1947 condition on which the whole New Mexico obligation would have been based might itself be improved and the improvement might cancel the anticipated future effects of the Roswell wells. Thus, while New Mexico's willingness to change the terms of its compact obligation to Texas from an agreement not to increase use to an agreement not to increase depletions was fundamental, it was softened by other possibilities in the state's counter-offer.\textsuperscript{41}

Tipton assuredly had a hand in moving New Mexico from its March 1948 "protected uses" stance to its November 1948 "prohibited depletion" one, and he assuredly played a role in moving Texas away from a stance that would have required New Mexico to deliver a set amount of water based on 1935, not 1947, conditions. Formally, however, he only blessed the compromise.

At its most basic, the compromise embodied Tipton's deepest confidence in the ability of science to divide the river. It assumed that his formulas could accurately show differences between how much of a varying flow in any year after 1947 reached the Texas state line and how much should have reached it under the 1947 condition. The compromise also assumed, even more ambitiously, that the routing studies could

\textsuperscript{40}The Minutes of the meeting of November 11, 1948, show that Bliss had to contend not only with Texas but also with his own Carlsbad Irrigation District. Representatives of the latter, even as early as 1948, were extremely sensitive to the increasing impact that existing Roswell wells would have. This sensitivity may have driven Bliss to the switch from "uses" to "depletions."

\textsuperscript{41}The proposed compact directed New Mexico to enforce its own laws—including the laws of priority—within its own boundaries. \textit{New Mexico Statutes Annotated}, sec. 72-15-19 [Michie 1978]. This guarantee may have been redundant, but it also served the interests of the Carlsbad Irrigation District, which had the oldest New Mexico rights on the river. As for changes in the definition of the critical 1947 condition, Tipton always insisted that his formulas were designed "to reflect in realistic terms the manner in which nature operates." See \textit{Texas v. New Mexico}, 462 U.S. 554 (1983).
analyze any differences between those caused by human activities in New Mexico and those caused by something else.

The document that Tipton and his helpers produced had the open-endedness of a fundamental constitution. The critical Article 3 provision regarding apportionment of the Pecos River between the two states incorporated, almost word for word, New Mexico's guarantee that it would not deplete by human activities the flow of the Pecos River beyond the 1947 condition. The other fifteen articles showed how, and under what circumstances, the two states would effectuate that guarantee.42

The proposed compact established a Texas-New Mexico commission with broad powers. It could refine and improve definitions of the river so long as it stuck to the inflow/outflow method. It would determine New Mexico's compliance with the compact so long as both states agreed. And New Mexico could make up for departures from the baseline 1947 condition so long as it used the principles of prior appropriation to make up for shortfalls. Essentially, the proposed Pecos River Compact looked forward to the resolution of as many questions as it answered, and it did so in the context of an ongoing relationship between Texas and New Mexico.

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**HOW DO YOU MANIPULATE A RIVER?**

Enter Royce Tipton in the third stage of his Pecos River role, as engineering adviser to the Pecos River Commission established by the 1948 Pecos River Compact. The commission was charged, as were many interstate bodies of the time, with the administration of the deal that Tipton had led Texas and New Mexico to strike.43 Part of that deal involved an accurate accounting of the amount of Pecos River water that should have reached the Texas state line under the 1947 condition in any subsequent year, and the amount of water that it in fact had. Once that comparison had been made, then someone had to determine whether human or natural causes could account for the difference.

The essential compact determination turned out to be harder than it sounded. Everyone knew something was wrong when, in an admittedly extremely dry year in 1951, there wasn't even enough index inflow in the Pecos River to allow the compact's inflow/outflow formulas to indicate what the corresponding


outflow should have been under the 1947 condition. Texas initially insisted that the compact obligated New Mexico to follow the original schedules, no matter what. New Mexico and Tipton (as chairman of the Engineering Advisory Committee) wanted the commission to re-study the baseline 1947 condition. It took a glacial seven years to resolve the dispute, during which the flow of the Pecos River, both in New Mexico and at the state line, continued to drop, but eventually New Mexico and Tipton prevailed. On July 30, 1957, the Pecos River Commission authorized Tipton and an engineering subcommittee he supervised to reexamine the 1947 condition and recommend changes. By November of that year, Tipton was at work.\textsuperscript{44}

Once again, he was playing on a field of his own invention: the most accurate description of the Pecos River under the 1947 condition. Obviously, the data on which the compact had been based needed revision, but any revision was likely to be highly controversial because it might affect the amount of water New Mexico owed Texas. On this front, Tipton proceeded cautiously, masking his recommendations for revision in the esoteric language of surface-water hydrology and stating elliptically only the effect of his proposed changes on the obligation of upstream New Mexico to deliver water to downstream Texas.

For example, between 1957 and 1961, Tipton reconsidered the relationship between precipitation under the 1947 condition, base inflow to the Pecos River and flood inflows. This was hardly a subject that would set the world beyond surface-water hydrologists on fire, although it was a critical (but poorly understood) area. The problem was one of water accounting—what to make of the extraordinary rains that had fallen on the Pecos River Basin in 1941-42. The accounting problem had a human dimension: Tipton and the architects of the Pecos River Joint Investigation had done their longitudinal studies so soon after those 1941-42 years that they could not see how unusual they were. From the longer perspective of the 1950s, they could. In 1961, on the advice of Tipton, the Pecos River Commission adjusted its definition of the baseline 1947 condition to eliminate the freak 1941-42 years.\textsuperscript{45}

The correction involved only shifting values in the Tipton 1947 condition routing studies, not more or less water. Some of what Tipton had originally assigned to base inflow in the pre-compact studies he now assigned to flood inflows in the revised

\textsuperscript{44}See G. Emlen Hall, "Pecos River Commission Administrative History, August 1, 1978," in \textit{Texas v. New Mexico}, no. 65, Original, supra note 1 [hereafter cited as Hall, "Administrative History"].

\textsuperscript{45}Ibid.; Slingerland interview, supra note 7.
studies in order to dampen, as he put it, the effect of the 1941-42 years on all other pre-1947 years.\textsuperscript{46}

Tipton’s switch was statistically and hydrologically justified, but it had a direct effect on the calculation on New Mexico’s delivery obligations to Texas under the 1947 compact because flood inflows provided the index for mandatory outflows at the state line. Under the original 1947 condition routing studies, less flow/inflow had produced more mandatory outflows and the old relationship had inured to the benefit of Texas. Under Tipton’s revised 1947 condition, more flood inflows produced fewer mandatory outflows, to the benefit of New Mexico.\textsuperscript{47}

Adjustments like this one resulted in the Pecos River Commission-approved Review of Basic Data in 1961. Using the Review of Basic Data, the commission found that in the 1948-61 period, New Mexico had under-delivered water at the Texas state line by about fifty thousand acre-feet over all, and that less than five thousand acre-feet of that under-delivery was due to human activities in New Mexico.\textsuperscript{48}

Tipton must have breathed a sigh of relief, but Texans on the lower Pecos certainly did not. Drought continued there, and local agricultural economies suffered terribly. It was easy to blame upstream water bandits in New Mexico, and the Texans did.\textsuperscript{49} Eventually, however, in 1974 they caught on to Tipton’s accounting sleight-of-hand, and when they did so they discovered that, using the unadjusted, pre-1947 Tipton studies, New Mexico had under-delivered Pecos River water to Texas by a fantastic one and one-half million acre-feet between 1948 and 1974. From Texas’s point of view, Tipton’s Review of Basic Data and new 1947 condition study had only delayed the inevitable day when upstream New Mexico uses would have to be cut back in recognition of downstream Texas rights.\textsuperscript{50}

As Tipton struggled to delay that day’s arrival by using techniques of surface-water hydrology, he tried to augment the supply of the Pecos River so that the inevitable day of shortages would be longer in coming. The solution was clear: more physical improvements by humans to correct for nature’s mistakes.

The alternative was to reduce claims on the river in general

\textsuperscript{46}Minutes, Pecos River Commission, September 1961, 19.
\textsuperscript{47}Slingerland, interview, supra note 7; Hall, “Administrative History,” supra note 44 at 18-22.
\textsuperscript{49}Raymond Allgood, interview with author, Barstow, Texas, March 16, 1992.
\textsuperscript{50}Hall, “Administrative History,” supra note 44 at 29-30. See State of Texas Motion for Leave to File a Complaint against the State of New Mexico, June 26, 1974, in Texas v. New Mexico, no. 65, Original, supra note 1.
and groundwater pumping in Roswell in particular. Tipton never seriously considered this alternative, but other groundwater hydrologists had. Scientists had worked out the first general theory of groundwater movement in the United States by studying the Roswell Basin. In the process, they had come to recognize that the basin was being pumped at a rate that could not sustain itself.

The groundwater studies of the Roswell Basin, begun as early as 1906 and repeated in 1926, 1933, 1941, and 1949, had increased the understanding of the amazingly efficient water-collecting geology that underlay the water-rich Roswell basin. They had also deepened the understanding of the movement of water through the underlying rocks. But it took an Iraqi hydrologist, working for New Mexico Tech, to put the mathematical conclusion to the previous work.

In 1954 Mahdi Hantush moved from Socorro to Roswell to measure wells. To everyone except Tipton, the future of irrigated agriculture in the Lower Pecos Basin never looked the same. Published in August 1955, a few years before Tipton started work on the Review of Basic Data, Hantush’s report bore the title “Preliminary Quantitative Study of the Roswell Groundwater Reservoir, New Mexico.” It was replete with mathematical calculations based on formulas taken from those worked out to describe the flow of other materials—heat, electricity—through other mediums—tubes, wires—and transferred to water moving through rock. Hantush pulled no punches about what they showed.

In a short, eloquent report section entitled “Estimate of Safe Yield,” Hantush wrote that

The term ‘safe yield’ at once connotes the continuance of a good potable water supply or for the preservation

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52 See, in particular Arthur G. Fiedler and S. Spencer Nye, Geology and Ground Water Resources of the Roswell Artesian Basin, U.S. Geological Survey Water Supply Paper no. 639 [Washington, 1933]. The study was particularly important because it was the first time that the Geological Survey had assigned an engineer and a geologist to work together. Zane Spiegel, interview with author, Norwalk, Conn., March 16, 1993.

of the hydrologic system from the water comes. A rate of yield and use at any given time is 'safe' if it does not threaten, under current or foreseeable future conditions, to exceed the supply available through immediately applicable methods of pumping and delivery. . . . A tenable water policy would provide that one generation should not overexploit or otherwise impair the conditions of yield of a renewable natural resource as to prevent a future generation from its benefits nor impose conditions that favor unreasonably the development of one community over another. . . . The safe yield implies that the amount of pumpage from a well field during a period of time should not cause the water levels in the field to drop below a certain desirable level and that thereafter the amount of discharge (pumpage plus natural losses) should not exceed the amount of re-charge during any other period; that is, a balanced flow condition should be maintained.54

By these clearly stated, common-sense standards, Hantush’s mathematical analysis showed that in 1955 the Roswell wells were removing a lot more water each year than came into the basin. For a while this excess could tap groundwater in storage for its sustenance, but eventually [and Hantush noted that it was only a matter of time] the level of water in wells would drop to the point at which no well could economically remove water from the ground. The implied solution was clear: reduce the human draft on the Roswell Basin or suffer the inevitable consequences.

One of those consequences—the reduction and then the elimination of groundwater contributions to the Pecos River—had been recognized as early as 1935 in compact negotiations. Twenty years later and six years after the compact itself had been consummated, the most sophisticated study yet had confirmed that the day would come when the important 1947 condition base-flow contributions to the river would disappear and New Mexico would have violated the compact.

Instead of calling for a reduction of human uses, Tipton called for technological improvements. Between 1955 and 1965, with the help of Texas and New Mexico, he set out to secure those improvements from the only source available: the federal government. First, he provided the technical support necessary to justify the federal financing of a channel that would bypass water consuming salt cedars in a critically in-

54Hantush, Preliminary Quantitative Study, supra note 51 at 71.
festwed area of the river. As chairman of the Engineering Advisory Committee of the Pecos River Commission, he pushed federal funding for the Kaiser Channel at the head of Lake McMillan. In every venue he repeated the same dark prophesy, that "unless something is done about the salt cedars, the irrigation which depends upon the water below the Lake McMillan will gradually go out of the picture. There is a segment of civilization there which depends on irrigation which will cease to exist. In my opinion that is inevitable." With things pitched in such terms, Congress funded the bypass channel.55

In the 1960s, Tipton went after the salt cedars themselves. By then, New Mexico and Texas had secured federal financing to clear large areas of the trees. By the time a group of angry beekeepers succeeded in stopping the Bureau of Reclamation’s cutting program, fifteen thousand acres of salt cedars had been cut and their former domain plowed.56 Bloodied but unbowed, the Bureau of Reclamation, pushed by New Mexico’s state en-

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55 U.S. Congress, Hearing before the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, 84th Cong., 2d sess., May 10, 1956.

gineer, undertook the environmental impact analysis that they had forgotten the first time around.\textsuperscript{57}

The practical problem was that the Pecos River flows apparently responded neither to the channel nor to the clearing. A series of United States Geological Survey studies begun in the late 1960s but not published until 1988 could never definitively say that Tipton’s plan for offsetting the overappropriation of groundwater in Roswell by cutting salt cedars produced an additional drop of water in the river.\textsuperscript{58} The long-delayed finding produced a minor tempest in the bureaucratic decision as to how and when to publish the result of the Geological Survey’s research.

The greatest problem was that humans had not been able to improve much on the natural system of the Pecos River. In the end, it was this that plagued Tipton and the group of Pecos River managers who struggled to make the river behave for the benefit of humans. The Tiptons of the western world of the United States of their time were smart men of good faith who believed that water existed for the benefit of humans and that humans would most benefit if the limited supplies were stretched as far as they could be. The Tiptons of the world tried to use the best science and the best of technology to match supplies and uses, but they were working in the margins of that match. The Pecos River tragedy shows that neither science nor technology was up to bringing so closely together what nature provided and what humans could reliably use. In Tipton’s view, nature should yield, and it would not.

\textsuperscript{57}New Mexico State Engineer, Santa Fe, 33rd Biennial Report (1976-78), 58.

\textsuperscript{58}Welder, “Hydrologic Effects,” supra note 56.
The state of California is witnessing an ever more intense and complicated war over the distribution of its water resources. North versus south, fish versus people, rural versus urban; dividing lines are being drawn and redrawn. And the main battleground is a reclaimed swamp known as the Delta.

The Delta is at the intersection of California’s major river systems and is a vital link in the projects that supply water to millions of Californians from the Sacramento Valley to the Mexican border. Engineers and lawyers, scientists and lawmakers have wrestled with its problems for most of this century, only to find that some of their solutions created new problems. The issues have become so complex and the stakes are so high that the administrative process for managing the state’s water resources has bogged down.

This article briefly describes the history of some of those issues from the perspective of a historian serving as a water-agency consultant. Historians in such a role are a rarity. Analyzing records of water-quality samples or mathematical models of hydrologic systems may not be the stuff of history as it is commonly perceived, but it all has a historical dimension and is as much a part of the interpretative context as more traditional political or legal elements. And, like all the players, regardless of their professional backgrounds, once involved in the...
process the historian becomes, to a degree at least, an advocate for his or her client's causes.

The Delta lies at the upstream end of the San Francisco Bay estuary, where the rivers that drain the interior of northern California enter the tidal basin. The Sacramento River—by far the larger of the two major streams—enters the Delta near the city of Sacramento, while the San Joaquin River comes in to the south of Stockton. They flow through a maze of natural and man-made sloughs and channels before they meet near Antioch, at the upper end of Suisun Bay. Reclamation and flood control have dramatically and fundamentally altered not only the Delta but the watershed that feeds it. In its natural state, tules (or bulrush) covered most of the Delta's half-million acres, broken at intervals by low levees along the rivers. Upstream in the Sacramento Basin were other swamps occupying extensive overflow basins that served as outlets for excess water in the wet season and slowly drained back into the Sacramento River as river flows subsided. Reclamation began during the gold rush along the higher margins of the Delta and in upstream areas. During the first two decades of the twentieth century, the task of reclaiming the broad marshes of interior California was largely completed by development of a comprehensive flood-control project for the Sacramento Valley that employed a system of bypasses and enlarged channels, all buttressed by enlarged levees, to move seasonal floods quickly out to sea. At the same time, improvements in dredger technology and an influx of capital led to the reclamation of the central Delta, where unstable peat soils had frustrated earlier efforts. By World War I the leveed islands of the Delta were one of the state's richest agricultural areas, producing asparagus, pears, potatoes, sugar beets, onions, and corn. Irrigating these islands seemed simple enough, surrounded as they were by an inexhaustible water supply. It soon became apparent, however, that the supply of fresh water was anything but inexhaustible.

The location of the interface between ocean salinity and fresh water in an estuary depends on the amount of fresh water

1. See map.

flowing through the estuary and the physical shape of the tidal basin. Salt water is pushed upstream at each high tide unless it is balanced by fresh-water inflow. Reclamation and the diversion of water for irrigation and other uses substantially altered the hydrology of the Sacramento River and the Delta. In the natural, pre-gold rush Delta, inflow and the movement of the upstream limit of tidal salinity reflected the seasonal nature of precipitation in the watershed and the filling and draining of the overflow basins in the Sacramento Basin. Flow in the Sacramento and San Joaquin rivers rose during the winter rainy season and peaked in April through June, when the Sierra Nevada snowpack melted. High flows pushed salinity back into Suisun Bay and, during floods, into San Pablo and San Francisco bays. Flood water that had spilled into the overflow basins began to drain back into the river after the snowmelt had been exhausted. As the outflow from the rivers dropped in the summer and fall, salinity began working its way inland. Flood control meant moving runoff through the valley and out to sea quickly instead of letting it pond in the valley, and as a result the modified channels of the reclaimed Delta probably carried more water in the high flow season and less during the drier months than they would have under natural conditions. After the turn of the century, irrigation upstream from the Delta began making further inroads on dry-season inflow.

In 1920 a combination of a below-normal rainfall and upstream irrigation diversions so reduced the summer inflow that higher salinities invaded the western Delta, threatening crops and interfering with municipal and industrial water uses along Suisun Bay. The town of Antioch filed suit against upstream irrigators, asking that they be enjoined from indirectly depriving it of water by diverting the flow needed to control the movement of tidal salinity. The California Supreme Court ruled against Antioch's claim that large amounts of water had to be released to the sea to protect its small appropriation, but the decision left unresolved the question of the protection of more substantial riparian rights in the agricultural Delta. The situation continued to worsen, and in the critically dry year of 1931 salinity above the limit then considered safe for irrigation

3. Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay, California Division of Water Resources, Bulletin no. 27, 1931, remains one of the basic sources on the factors that control the movement of tidal salinity.

4. Natural hydrologic conditions, including the potential loss of water in the vast pre-reclamation marshes, can only be estimated. The exhibits by Phyllis Fox (see supra, note 2) were part of an effort to define that hydrology.

5 Antioch v. Williams Irrigation District, 188 Cal. 451 (1922).
made its deepest penetration, reaching Stockton on the San Joaquin River and Clarksburg on the Sacramento.6

Further litigation was threatened, not since the controversy over mining debris in the nineteenth century had a water-resources question pitted such powerful economic interests against one another. For all its political overtones, the debris issue was a relatively straightforward one of pollution—millions of cubic yards of rock and “slickens” that had been washed out of the mountains and onto the farmlands and rivers below.7 Although the salinity crisis also involved water quality, it was a battle between rival users of water, pitting upstream irrigators against Delta farmers and industrial users along Suisun Bay.

Water is allocated among users by a system of water rights based on priority. California’s priority system is complicated by the coexistence of riparian rights, which attach to streamside property, and appropriative rights, a more flexible system based on the concept of “first in time, first in right.” Delta water users claimed riparian rights and charged that upstream appropriators, whose rights as appropriators were junior, were depriving them of the water they were entitled to by interfering with the flow needed to repel salinity. An adjudication involving the thousands of water rights on streams tributary to the Delta became an ominous possibility. It would have been another round in the struggle between riparian and appropriative right holders that had convulsed California for half a century. The Supreme Court’s 1926 decision in the Herminghaus case, which suggested that riparian owners were indeed entitled to require that excess water flow past their property if necessary to protect their use, refocused attention on riparian rights and led to a constitutional amendment in 1928 that specifically limited riparian rights to reasonable use.8 A Delta water-rights case would have provided a difficult test of the reasonableness doctrine in the context of water rights at the edge of an estuary

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7 Hydraulic mining and its ramifications are described in two books by Robert Kelley, Gold vs. Grain: The Hydraulic Mining Controversy in California’s Sacramento Valley (Spokane, 1959), and Battling the Inland Sea, supra note 2.

8 Herminghaus v. Southern California Edison, 200 Cal. 81 (1926). The significance of the riparian issue to statewide water policy is discussed in Donald J. Pisani, From Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931 (Berkeley and London, 1984).
Sacramento–San Joaquin Delta farmlands west of Stockton, California, c. 1970 (Photograph by J. C. Dahilig, U.S. Bureau of Reclamation)

and the extent of the obligation of upstream diverters to maintain a hydraulic barrier against tidal salinity.

To forestall such an epic water-rights showdown, the state sought a physical solution. One possibility was the construction of a salt-water barrier, a dam below the Delta to separate salt water from fresh. Another alternative was to release water from proposed upstream storage reservoirs during the dry season to increase Delta outflow and create a hydraulic barrier to the upstream movement of salinity. This proposal dovetailed nicely with the water system state engineers had begun to plan during the 1920s.

**PREMISES, PROJECTS, AND PROTECTIONS**

The premise of California's water planning was that the state had plenty of water if it could only be captured in sea-

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9 For more information on salinity barriers, see Alan M. Paterson, "The Great Fresh Water Panacea: Salt Water Barrier Proposals for San Francisco Bay," *Arizona and the West* [Winter 1980].
sons of abundance and moved to where it was needed. That concept gave rise to two similar interbasin transfer projects, the Central Valley Project and the State Water Project. Both store water north of the Delta for delivery to customers south of it, and both were conceived to provide a measure of salinity protection through the use of reservoir releases to maintain dry-season Delta outflow. The Central Valley Project took shape in the State Water Plan of the 1920s, but California's inability to finance the project during the Depression forced the state to surrender it to the federal Bureau of Reclamation. It is the larger of the two projects, supplying irrigation water to farms in the Sacramento and San Joaquin valleys and to municipal and industrial water agencies in Contra Costa County and parts of the southern San Francisco Bay area. The State Water Project, constructed in the 1960s, is operated by the California Department of Water Resources and serves urban southern California and farms in Kern and Tulare counties by way of the four-hundred-mile California Aqueduct. Smaller aqueducts furnish water to urban users north and south of San Francisco Bay.\(^\text{10}\) The two projects' canals are not connected directly to their Sacramento Basin storage reservoirs, but instead water is released into the Sacramento River system for recapture at pumping plants at the southwestern corner of the Delta. Use of the Delta to transfer water from north to south has profoundly altered the Delta's hydrology, and has reduced the value of the Delta as an aquatic habitat. The so-called export pumps that feed the California Aqueduct and the Bureau of Reclamation's Delta-Mendota Canal are powerful enough to reverse the direction of flow in some Delta channels, and have altered the timing and volume of flows throughout the Delta. The projects have generally lived up to their promise to prevent salinity from entering the agricultural Delta, but at an environmental cost that has only recently become apparent.

The linkage between water quality in the Delta and water rights was clearly established in the 1920s, and remains embedded in Delta policy. Flow determines the location of the salinity interface, and water rights determine who has a right to the use of the flow. For that reason, water-quality regulations involving the control of tidal salinity are administered through water-rights mechanisms. In 1961 the State Water Rights Board considered the question of what salinity objectives should be attached to the water rights held by the Bureau of Reclamation.

\(^{10}\) The Department of Water Resources' Bulletin 160 series, *The California Water Plan*, periodically updates supply and demand projections and describes of project facilities and service areas.
The Central Valley Project stores water north of the Delta for delivery to customers south of it. Its Tracy Pumping Plant pulls 4,600 cubic feet of water per second from the Delta. (Photograph by H. L. Personius, U.S. Bureau of Reclamation)

for operation of the Central Valley Project. Because there was no consensus on what those water-quality levels should be, the board adopted interim standards and reserved continuing jurisdiction over the project’s water-quality obligations. The same concepts were extended to State Water Project water rights in 1967.

The interim objectives adopted in 1961 were established to protect Delta farmers, who were the originally intended beneficiaries of salinity control. However, at the same time broader water-quality regulations were being considered by another set of agencies. The Federal Water Pollution Control Act of 1965 required that states draft water-quality criteria for the protec-

11 "Objectives" are also interchangeably referred to as "standards" or "criteria." Objectives define specific minimum levels of flow at a particular point or minimum levels of a particular water-quality parameter, such as salinity or temperature. Objectives can also specify operational requirements, such as the operation of pumping plants or diversion channels.

tion of interstate and coastal waters and submit them to the secretary of the interior for approval. Because the Delta was deemed (though not without argument) to be a coastal water, it became subject to the requirements of the act. The Central Valley Regional Water Quality Control Board drafted salinity standards for consideration by the State Water Quality Control Board that extended protection to two new categories of beneficial uses. First, it proposed to maintain water quality near Antioch at average historical levels for the benefit of industrial water users along Suisun Bay. Second, and more significantly, it included objectives to protect the western Delta spawning habitat of striped bass, an important game fish. By doing so, it recognized the importance of the estuarine environment. The Department of Water Resources protested, claiming that the proposed objectives were excessive and would impair operation of the State Water Project. Acting on that advice, the State Water Quality Board refused to adopt the Antioch and striped-bass criteria, thereby setting up a confrontation with the Department of the Interior. A federal task force endorsed the two controversial standards, only to have them again rejected by the board. Basically, California adopted a states'-rights position, which asserted that the implementation of water-quality standards could be achieved only by water-rights administration at the state level.

In 1969 the State Water Resources Control Board opened hearings on the amendment of the interim salinity terms attached to Central Valley Project and State Water Project permits, and two years later adopted a new decision on water rights. This time the state followed the path originally broken by the regional water-quality board, and significantly broadened the range of beneficial uses entitled to water-quality protection. When the Central Valley Project was designed in the 1920s, and even when the State Water Project was conceived in the 1950s, the term “beneficial use” essentially meant human use, and water that could not be put to economic use was generally thought of as wasted. In the new decision, known as D-1379, however, the board not only increased the level of protection guaranteed to irrigation and to municipal and industrial uses in the Delta, but added new salinity standards to protect the spawning and nursery habitat of striped bass, the migration of salmon, and the brackish water-marsh habitat of Suisun Bay.

14 The State Water Resources Control Board is the successor to the State Water Rights Board and the State Water Quality Control Board.
The new standards required a higher level of salinity control, which could be achieved only by higher Delta outflows, which in turn would reduce the amount of water that could be delivered to Central Valley Project and State Water Project customers. Not surprisingly, the customers filed suit to block D-1379.

The legal challenge to D-1379 eventually turned into a question of state jurisdiction over water rights for a federal project. By the time it was finally played out, the board was ready to begin writing Delta standards all over again with a series of hearings in 1976-77. At those hearings, advocates for the various beneficial uses, from Delta farmers to fishery agencies, proclaimed the necessity for more protective salinity standards, while the projects and their customers tried to protect their operational flexibility and their ability to meet contractual commitments. In fact, two closely related debates were being carried on simultaneously before the board. The first was over the actual needs of the various Delta beneficial uses, as defined by the range of salinities needed by particular species of zooplankton or the specific water-quality requirements for the irrigation of field corn in the Delta, while the second concerned balancing those needs with consumer demands in regions tributary to the Delta and in the areas served by the Delta export projects.

The 1978 Water Quality Control Plan (commonly referred to as the 1978 Delta Plan) and accompanying Water Rights Decision 1485 adjusted and generally strengthened salinity standards for protection of the Delta. A basic, and innovative, feature of the decision was the reliance on a "without-project" level of protection; that is, the permits of the Central Valley Project and the State Water Project were conditioned to make the projects responsible for attaining a level of protection equal to the protection that would have been achieved had the two projects not been constructed. For example, industries in the western Delta "would be provided water of a quality suitable for the most salt-sensitive industrial processes for the length of time that they would have received it in the absence of the projects." The board's rationale was that the without-project standards protected senior right holders against the projects, and only the projects' water rights were before the board in the hearing process.

To no one's surprise, almost everyone party to the decision sued the board. The result was a 1986 decision by the state

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court of appeals, which has become known as the Racanelli Decision for its principal author, Judge P.J. Racanelli. The decision rebuked the board for applying the without-project methodology to water-quality planning. The board erred, said the decision, by trying to limit its water-quality objectives to what it could enforce against the Central Valley Projects and the State Water Project. The board was obligated to determine what protection was required for beneficial uses, including environmental uses, taking into consideration the needs of all users. Once the board had balanced the various uses, it could then proceed to allocate the responsibility for meeting water-quality objectives. The court suggested that not only the export projects but all water users tributary to the Delta should share in the responsibility, although the decision was vague about how that could be accomplished.16

Racanelli brought the Delta problem full circle. The Central Valley Project, and later the State Water Project, had intentionally insulated upstream diverters from the salinity issue, but irrigation districts, cities, power companies, and even individual farmers and ranchers using water from hundreds of streams in the Delta watershed were once again enmeshed in the problem of Delta water quality. What's more, it was a problem that could only get worse as the needs of declining estuarine natural resources competed with the demands of a growing population. California had once been able to build its way out of water-supply shortages, but the prohibitive cost of new projects, both in monetary and environmental terms, meant that the board would be faced with the job of managing and even redistributing a clearly finite resource. The water community awaited the beginning of the next round of Delta hearings, and the water-rights decision that would come out of them, with nervous anticipation.

A PLAN THAT PLEASED NO ONE

The State Water Resources Control Board planned a three-year, three-phase hearing process. The first phase would be an evidentiary hearing to establish a formal record of information on the needs of the Delta (human and environmental), the needs of export users supplied by the Central Valley Project and the State Water Project, and the needs and uses upstream of the Delta. Following Phase One, the board would draft a water-quality plan containing salinity and operational stan-

ards to protect beneficial uses of water in the estuary. Phase Two would provide an opportunity to comment on and recommend changes to the draft plan. After adoption of the plan, a water-rights hearing to allocate responsibility for providing the water needed to meet the new standards would be conducted [Phase Three]. The effect would be the separation of water-quality decisions from the water-rights process, as required by the Racanelli Decision.

Phase One began on July 7, 1987, before an overflow crowd of lawyers, consultants, and water-project staff. The extended and occasionally overzealous cross-examination of expert witnesses confirmed that there was an administrative price to be paid for the expansion of the number of parties potentially involved in solving the Delta's problems. By the time the series of hearings ended after Christmas, the crowd was smaller, arguably wiser, and certainly fatigued by the mind-numbing complexity of issues that had ranged from the needs of the growing population of coastal southern California to the alleged impact that Delta outflow could have on ocean phytoplankton productivity and bird populations along the northern California coast from Point Reyes to the Farallones Islands.

After the evidentiary hearings, the board's staff took almost a year to sift through the mountain of testimony and write a new Delta plan. The "Draft Water Quality Control Plan for Salinity" released in November 1988 recognized that "full protection of all beneficial uses in all water years is impossible. There is simply not enough water." The board proposed to stretch, and redistribute, existing supplies according to a loosely framed "California Water Ethic," which it explained in the following terms:

All users of Estuary waters, persons north, south and within the Estuary must share in the responsibility of meeting objectives to protect Bay-Delta beneficial uses. Also, all users should pursue the reclamation and reuse of water to its maximum potential. Water conservation and reclamation will need to be practiced in all areas, not just those south of the Estuary [dependent on Delta exports]. Water users in the areas of water origin will also need to participate in this new water ethic.

This new water ethic forms the basis for determin-

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ing reasonable consumptive water needs upstream, within, and south of the Estuary as well as water project operations which affect water flows into and through the Estuary. These changes in use of water come with associated costs. Within the limits of available data, these costs have been considered here; additional information on this subject should be received in Phase II.\textsuperscript{19}

The ethic, which seemed to mean whatever the board said it would mean, was a share-the-pain approach to the division of Delta water between human and environmental needs. And there was plenty of pain in the draft plan for all sides. Faced with sharp declines in several key fisheries, and an implied decline in the overall health of the estuarine environment, the board proposed more protective salinity and outflow standards, as well as significant restrictions on the operation of the projects' export pumps. However, what the board viewed as a reasonable compromise, or balance, between conflicting uses of water satisfied no one. Environmental groups insisted that the board had not gone far enough to redress the damage done to the estuary by decades of water development. The export projects and their customers, who made up the bulk of California's population, disputed the board's assumptions about how much water they could reclaim and reuse and expressed dismay at the prospect of a never-ending "administrative drought." The response of upstream users was more muted, and tended to focus on the fear that the board's water ethic, vague as it was, signalled an abandonment of the existing water-rights system and an enlargement of the board's authority based on an administrative determination of which uses were "reasonable." The barrage of criticism—technical, legal, and political—was so intense that the board was forced to withdraw the plan in early 1989 and completely recast the hearing process.

One of the legal arguments raised against the 1988 draft plan was that the board had confused the elements of a water-quality-control plan with those of a water-rights decision, and had improperly bundled water-quality standards together with Delta outflow and operational requirements (such as export limitations) in the same document. Such expressions of outrage were a little disingenuous, since the 1978 Delta Plan and its predecessors had done the same thing, and it was fairly obvious that protection of beneficial uses could require specific outflows and export pumping restrictions that were linked not so much to favorable salinity conditions as to the necessity to

\textsuperscript{19} Ibid.
keep fish and other aquatic resources out of harm's way. For example, export pumping restrictions and higher outflow might be needed at times to move larval fish safely through the Delta to nursery areas in Suisun Bay and to prevent their loss at the pumps. Even though salinity and flow requirements had always been part of a single package, attorneys for some of the interested parties pointed out that there were significant legal and procedural differences between water-quality planning and the regulation of flow and project operations through the water-rights process.

Bowing to this logic, the board scrapped its original work plan and wrote a new one that strictly separated the consideration of water-quality standards from flow-only requirements. The new plan called for the board to adopt a narrowly focused salinity-control document, and then to gather information for the preparation of an environmental impact report. This would include the consideration of flow and other alternatives to complete the protection of beneficial uses. Finally, a water-rights hearing would combine review of a draft environmental impact report with preparation of a water-rights decision to implement the water-quality control plan and whatever additional measures were required. The plan also provided for the establishment of technical work groups, operating outside the board's formal hearing process, to examine specific issues in greater detail and report to the board at its various hearings and workshops. If nothing else, the new plan guaranteed that full revision of the 1978 Delta Plan would be considerably delayed.

OF SALMON, STRIPED-BASS SPAWNING, AND SALINITY

During preparation of the water-quality-control plan, vigorous debate centered on three environmental issues: location of the entrapment zone in Suisun Bay, protection for chinook salmon migrating through the Delta, and protection of striped-bass spawning habitat in the Delta. The entrapment zone is an area within the interface between fresh water and salt water where sediments and nutrients accumulate, creating an environment favorable for phytoplankton production and thus for

20 Fish are lost at the Delta pumping plants by being pulled into the pumps ("entrainment") or through high levels of predation, particularly in the forebay of the State Water Project plant.
other elements of the aquatic food chain. It was postulated that by locating the entrapment zone adjacent to the broad shallows of Suisun Bay a productive nursery area could be maintained that would benefit juvenile striped bass and other species. Although environmental groups proposed the use of salinity criteria to determine, and control, the location of the entrapment zone, other parties successfully argued that the zone's location was a function of Delta outflow that should most appropriately be considered later in the process.

Likewise, salmon migration through the Delta is influenced by Delta flow patterns, which in turn are largely influenced by export pumping. The export pumps can divert juveniles (known as "smolts") migrating down the Sacramento River into the central Delta via the Central Valley Project's Delta Cross-Channel or Georgiana Slough.\textsuperscript{21} The survival of fish diverted from their normal migration path is reduced. San Joaquin Basin salmon face entrainment at the export pumps if the pumps pull them into the Old River branch of the San Joaquin where the export facilities are. The only true water-quality issue was that of water temperature. The salmon is a cold-water species, and temperatures in the Delta during the spring outmigration were sometimes higher than the U.S. Fish and Wildlife Service considered safe. The debate over potential temperature objectives included questions about how Fish and Wildlife manipulated its experimental data to arrive at the temperatures it recommended to the board, and project operators raised doubts about the feasibility of controlling water temperatures in the Delta through the use of reservoir releases. In the end the board adopted a requirement that "The daily average water temperature shall not be elevated by controllable factors above 68 deg. F," and a footnote made it clear that reservoir releases were not among such controllable factors.\textsuperscript{22}

The striped bass is an anadromous game fish native to the East Coast that was introduced to Delta waters in 1879. It adapted successfully, and by the turn of the century supported a sizable commercial fishery. Although striped bass spend much of their lives in salt water, they spawn in fresh water, either in the western Delta or far up the Sacramento River. Protection of an area of Delta spawning habitat with suitable salinity has

\textsuperscript{21} It is more efficient to move water from north to south through the interior Delta rather than from the western Delta at the confluence of the Sacramento and San Joaquin rivers. The Delta Cross-Channel is a short, gated cut that diverts water from the Sacramento River into channels leading to the central Delta and a more direct path to the pumps. Georgiana Slough is a natural channel that does essentially the same thing.

Water-quality control plans require cross-channel gates like the one at Walnut Grove to be closed at times to prevent salmon and striped-bass diversion into the central Delta, where survival is difficult. (Photograph by J. C. Dahilig, U.S. Bureau of Reclamation)

been a water-quality issue since the 1960s, but by the time the Bay-Delta hearings began in 1987 it was obvious that the population was in sharp decline. Testimony by the California Department of Fish and Game identified the Delta export pumps as the primary problem, because they sucked in and destroyed larval bass in the spring and could subject juvenile fish to displacement from favorable nursery areas, increased predation, or entrainment at the pumps. Other reasons for the decline were postulated, among them a reduction of the historic Delta spawning habitat, which was said to have once encompassed the entire length of the San Joaquin River as it flows through the Delta. Loss of upstream low-salinity habitat was the result of increasing salinity in the San Joaquin River, which in many years could block the spawning run west of Stockton. To address this potential (but previously unexplored) fishery problem, in 1989 the board staff suggested extending the protected spawning habitat from its existing location in the central and

23 In the San Joaquin River—always more saline than the Sacramento River—salinity has risen because of agricultural drainage.
western Delta upstream to Vernalis, where the San Joaquin enters the Delta. In wet years, the San Joaquin carries enough water to dilute its salt load to harmless concentrations, but to get good water every year would require the release of large amounts of water from San Joaquin Basin dams.

The staff's proposed water-quality standard was suspect on at least three major grounds. Striped bass are mass, open-water spawners that do not need a large spawning area, and there was consequently no evidence that the extent of the spawning area, or even its location, had limited their population. In other words, more miles of spawning habitat would not necessarily produce more fish. Nor was there any apparent evidence that the San Joaquin River above Prisoner's Point, at the upstream end of the historic protected habitat, had ever been a major spawning area. In addition, water-quality problems in the San Joaquin River and the "salinity block" to migrating striped bass had substantially predated the population decline.

At hearings on the proposed water-quality-control plan in 1990, fishery biologists for export-project customers seriously questioned the value of trying to expand the potential spawning area, and testimony on historic spawning locations and the historic water quality of the San Joaquin River from Vernalis to Prisoner's Point concluded that the 1978 Delta Plan and its predecessors adequately defined the location where most spawning had taken place since the turn of the century, and that elevated salinity had occurred in that reach of the river as far back as the 1930s.24 Faced with evidence that the upstream extent of the spawning area had little do with declining abundance and that extension of the spawning habitat would provide few biological benefits, the board opted to retain the protected habitat as previously defined, although the Water Quality Control Plan adopted in 1991 provided for better protection, through lower salinity, at the upper end of the existing range.

The 1991 plan for salinity was a relatively innocuous document that made few substantive changes in the 1978 Delta Plan's salinity standards.25 The real fight had been deferred to the final stage in the process: the preparation of an environmental impact report and an accompanying water-rights decision. The board, and many of the participants, had taken the position that regulation of outflow and of export-project opera-

tions, rather than water-quality conditions by themselves, were needed to protect the estuarine environment. How much flow was needed, when it was needed, and how operation of existing export facilities should be modified or new facilities added were discussed in a series of workshops in mid-1991. The Central Delta Water Agency's attorney advised the board to focus on standards that would arrest the decline of fisheries and other measures of estuarine health until permanent solutions could be found, a position that drew wide support and acknowledged that the Bay-Delta process would have to become a more or less continuous one.

After receiving a good deal of conflicting advice from participants, the board staff withdrew to ponder, as they had in 1988, the balance between humans and nature and how they would implement significant changes in California's water economy. Before they could reach a decision, however, the political landscape changed dramatically. On April 6, 1992, Governor Pete Wilson declared "The Delta is broken," and expressed his frustration that five years of Bay-Delta hearings had so far failed to find a solution. He directed the State Water Resources Control Board to adopt interim standards by the end of 1992 to protect the estuary while a new Bay-Delta Oversight Committee, appointed by the governor and representing urban, agricultural and environmental interests, worked out a long-term plan. The board was left with little choice but to abandon its effort to write an environmental impact report, and begin at once to write interim standards for incorporation in a water-rights decision.

Interim water-rights hearings were held during the summer of 1992. While the needs of the estuary and of water users throughout the state were discussed, there was little opportunity for discussion of the question that had hung over the Bay-Delta process from the beginning: how would the board allocate the responsibility for the outflows it was expected to demand, and whose water would be taken away to support the estuary's aquatic resources? The answers came in December 1992 with the release of draft Decision 1630. In terms of Delta protection, D-1630 required the release of more water to the estuary through short-term, high-volume "pulse flows" to transport young salmon and striped bass through the Delta, restrictions on export-induced reverse flows in the western Delta, and direct limitations on export pumping. As significant as the proposed allocation of water between human and environmental uses, however, was the board's view of its authority

26 Pete Wilson, "Ending California's Water Wars," April 6, 1992, 4-5.
to change the way water was divided among various classes of users.27

STATE AUTHORITY IS TESTED

In D-1630, the board asserted that it had the authority, based on a broad interpretation of the constitutional prohibition against unreasonable use and on its responsibility to protect public-trust resources, to distribute the responsibility for meeting its proposed standards regardless of water-right priorities. It went so far as to argue that adherence to the priority system was infeasible.28 The result was tantamount to an administrative reallocation of water among users. Water users with junior rights, particularly those with urban constituencies likely to be protected in a redistribution of water supplies, might have been comfortable with the board's view of its powers, even if they disliked the rest of D-1630, but senior right holders, including many non-project, upstream diverters, urged the board to work within the existing system of priorities.

Not only did D-1630 attempt, in essence, to redefine California's water-rights system, it also had to deal with the relationship between state water rights and federal authority over hydroelectric projects licensed by the Federal Energy Regulatory Commission. In the Rock Creek case, the Supreme Court had ruled that the state board could not impose separate, and higher, instream flow requirements than those imposed on a project by its license from the commission.29 Owners of facilities licensed by the commission therefore argued that the board could not require pulse-flow contributions in excess of commission releases, while the board naturally took a narrower view of the scope of the Rock Creek decision.30

While D-1630 would have expanded state authority over the allocation of water resources, its implementation mechanisms raised serious questions about the board's ability to manage such an allocation. Under D-1630, primary responsibility for

27 "Draft Water Right Decision 1630," State Water Resources Control Board, December 1992. A final draft was released in April 1993. The board also proposed a mitigation fee to be assessed against various classes of users, based on their perceived impact on Delta resources and their ability to pay.
operating the Delta and meeting the proposed standards would continue to rest with the Central Valley Project and the State Water Project, but the obligation to provide supplemental pulse flows to the estuary was to be divided among major upstream reservoir operators (except hydropower-only reservoirs) according to a complicated methodology based on each user’s total reservoir capacity, the natural flow of major tributary streams, and the amount of water that would be in the river absent the pulse-flow requirement. Comments by board staff made it clear that they themselves were unsure how the provisions would be implemented. Critics of California’s water management have often pictured the existing water-rights-based system as cumbersome, unresponsive to changing needs, and inequitable, but D-1630 suggested that the alternative—a state-managed allocation system—had its own administrative perils.31

Shortly before the board was to consider D-1630’s adoption in early 1993, the governor asked the board to abandon the interim process. Wilson argued that federal actions under the Endangered Species Act to protect the Sacramento River winter-run chinook salmon, and the imminent Endangered Species Act listing of the Delta smelt, made it impossible for the state to establish a workable Delta policy. Whether or not his stated reasons were persuasive, his decision to end the short but controversial career of D-1630 appeared to bring to a close the Bay-Delta process begun in 1987. Environmentalists, angered by the failure to pursue protection for the estuary, boycotted the governor’s Bay-Delta Oversight Committee. The state was left with little to show for almost six years of work.

The abrupt departure of the State Water Resources Control Board from the field created a vacuum that the federal Environmental Protection Agency attempted to fill. Under the Clean Water Act, that agency is charged with the responsibility for approving state standards for the protection of identified beneficial uses, or, in the absence of acceptable state standards, for writing its own water-quality criteria. The EPA had disapproved parts of the 1991 Water Quality Control Plan and repeatedly informed the board of the steps it felt must be taken to ensure adequate protection, but it clearly preferred working with the board rather than developing its own criteria. In December 1993, the EPA and a group of federal fishery and water agencies informally dubbed “Club FED” [Federal Ecosystem Directorate] announced proposed Delta water-quality criteria

31 Norris Hundley, *The Great Thirst: Californians and Water, 1770s-1990s* (Berkeley and London, 1992), is among those who have argued that the water-management system must be fundamentally reformed, largely through more vigorous administrative action.
and proposed rules and notices under the Endangered Species Act for Delta smelt, Sacramento splittail, and longfin smelt. The agency proposed three sets of criteria covering salinity-delimited estuarine habitat (a surrogate for an entrapment-zone standard), salmon smolt survival, and striped-bass spawning in the San Joaquin River upstream from Prisoner's Point. Reaction to the proposal was typically mixed. Environmentalists praised the agency's efforts, particularly the estuarine-habitat criteria. Some water users, most notably the California Urban Water Agencies, applauded the proposals in theory but predicted economic disaster unless they were modified. The state board itself quickly challenged the proposals on both scientific and legal grounds.

On the technical side, criticism centered on the implied connection between water quality and declining fish populations and on the EPA's definition of a historic reference period for application of the Clean Water Act's antidegradation rule. The state board noted that the EPA's focus on the salinity line (and thus on the entrapment zone) was "due to a belief that EPA has the authority to promulgate standards for salinity intrusion into the Bay-Delta estuary but not flow," and went on to point out that exports and flow through the estuary had a crucial effect on aquatic resources. The other proposed criteria fared no better, and it was pointed out that, in the case of the striped-bass criteria, the agency had substantially ignored its own target of protection equivalent to that of approximately the late 1960s and early 1970s.

Regardless of the scientific validity of the EPA's proposals, the state board and many water users argued that the agency lacked the authority to regulate flow and water-project operations, which were state prerogatives. The agency had, in fact, recognized that, while it had the authority to promulgate salinity criteria, implementation authority rested entirely with the state; the Federal Register notice stated hopefully that "EPA expects that the State Board would implement these criteria by making appropriate revisions to operational requirements in water rights permits issued by the State Board." Despite all the criticism, the agency announced plans to adopt final criteria by the end of 1994.

In April 1994 the state board held the first of a series of workshops that would begin the triennial review of the 1991 water-

34 Ibid. at 33.
35 Federal Register, vol. 59, 827.
quality-control plan, as mandated by the Clean Water Act. The board sought comments from water agencies, environmentalists, and others involved in the Bay-Delta process on the EPA's proposed criteria, and noted that if the EPA adopted "these standards or some modified version of these standards under Federal law," the State Water Resources Control Board would "have to decide whether to adopt these or other protective standards under State law." A federal-state standoff over water-quality regulation was averted in June when a framework agreement was signed that provided for a cooperative ecosystem approach to formulating standards acceptable to both sides. At the same time, a coalition of Delta export-dependent water users, led by the California Urban Water Agencies and San Joaquin Valley farmers, worked on a plan that would provide additional water to the estuary in exchange for increased operational flexibility and a commitment to restrict additional water demands for endangered-species protection for three years. On December 15, 1994 (the deadline for EPA and state board action), agreement was achieved on a three-year plan. Based on proposals advanced by the California Urban Water Agencies and its agricultural allies, it blended requirements under the Endangered Species Act with new provisions for Delta outflow and for export restrictions. Operations under the proposed plan were to be the responsibility of the Central Valley Project and the State Water Project, but the state board planned to convene a water-rights hearing in the summer of 1995 to address the broader allocation of Bay-Delta obligations. The Water Quality Control Plan was hailed by its participants as a landmark in state water policy, but it is uncertain that its complex provisions can sufficiently serve the often conflicting goals of its signatories.

The Question of History

History has been an active, if somewhat unappreciated, element throughout the current Bay-Delta process. Although basic


allocation questions with important implications for policy historians will ultimately have to be decided through the water-rights process, most of the effort has gone into writing scientifically justified objectives to protect beneficial uses in the estuary. While defining protective measures is primarily a technical exercise, it also has a historical context, expressed implicitly or explicitly as baseline conditions that furnish a standard of comparison, such as the EPA's historical reference periods. Baselines are sometimes misunderstood, especially since they reflect a hydrologic system progressively modified by reclamation and water development. The interest in past conditions includes such things as streamflow, which can be directly measured, and things that can only be estimated, such as populations of fish. In the absence of historic data, synthetic data produced by mathematical models are often substituted. The resulting blend of actual and artificial history can be a useful analytical tool, and it has been heavily relied upon by the state board, but it needs to be handled with considerable care to avoid misinterpretation. It would be comforting to think that when questions of historical context are raised historians would be part of the process, but historians are generally not active participants in biological, scientific, and engineering issues. If they wish to become participants they will have to understand scientific issues and methodologies and convince the lawyers, engineers, and scientists who control the process that historians can make a unique, and useful, contribution.

The question of the Delta is not limited to a fish-versus-people argument over the appropriate equilibrium between water development and the environment; it has long been a "people-versus-people" matter involving the allocation of responsibility for meeting Delta requirements. The Delta first surfaced as a policy issue in the 1920s as a contest between upstream diverters and Delta water users. Construction of the Central Valley Project sidetracked the problem by making enough water available to satisfy all users, but growing demands and the Racanelli Decision have reopened the water-rights issue. Solving the problem of whose water is at stake in protection of the Delta's beneficial uses could lead to a significant restructuring of the institutional basis of California's water rights and allocation. Water-resources management is often characterized as the fight at the water hole; after seventy-five years of skirmishes at the Delta water hole, the real fight may be just beginning.

38 The striped-bass spawning area research cited above is one of the few examples of the direct application of history by a professional historian to the technical policy process.
“Retained by the People”: A History of American Indians and the Bill of Rights, by John R. Wunder. New York: Oxford University Press, 1994; 278 pp., notes, bibliographic essay, index of cases, index; $45.00, cloth.

Our Anglo-American legal system, grounded in stare decisis, makes some trial advocacy and all appellate work exercises in applied history. To move the law in a particular direction, an advocate must show the path the law has taken through time. Nowhere in our history-bound legal system is history more important than in the area of American-Indian law.

The entire corpus of that law is a continuing attempt to address the question “What is sovereignty?” for the conquered Native-American nations within the United States. The courts have repeatedly held that Congress has the authority to answer the question, to define American-Indian sovereignty, but Congress has left the American-Indian nations twisting in the winds of public opinion as governmental policy lurched to and fro among neglect, nation-to-nation equality, and purposeful extinction.

The historian John R. Wunder has written a book of concise historical essays that document the lurches in governmental American-Indian policies and how those policies translated into law. The federal Bill of Rights, Wunder demonstrates, has been as useless to Native Americans after the Civil War amendments as it was to African Americans before those amendments. Neither the rights characterized in the Declaration of Independence as “inalienable” nor the enumerated rights in the first ten amendments to the Constitution have served to protect American-Indian property, or even lives, from the demands of Euro-American expansion.

While many histories of particular tribes and of Native Americans generally have documented this ugly gap between democratic rhetoric and genocidal fact, it is the function of a legal history to show exactly how the gap was covered with a fig leaf of legality. And, with the exception of the Cherokee Removal cases, in which President Andrew Jackson refused to play the role that President Dwight Eisenhower later played in enforcing Brown v. Board of Education, there was always some fig leaf of legality.

Wunder’s essays manage, in a mere 213 pages of accessible
text, to describe congressional and executive policy shifts that may tell an advocate more than he or she wants to know about how American-Indian law came to its present irrational state. Wunder is breaking little new ground here, but his virtues of conciseness and readability will be of value to those without the time to tackle Felix S. Cohen's *Handbook of Federal Indian Law*.

Wunder also appends a generally excellent bibliographic essay that serves as a guide to the great works of American-Indian law as well as lesser-known books and articles. The final sentence of the essay—"Repatriation issues are just beginning to be published in scholarly periodicals"—is true enough, but he could have pointed out the two special journal issues that contain most published scholarship on the question of why Native Americans are not allowed to bury their dead: vol. 24, no. 1, of the *Arizona State Law Journal* and vol. 16, no. 2, of the *American Indian Culture and Research Journal*, both published in 1992. The new book by Roger and Walter Echo-Hawk, *Battlefields and Burial Grounds*, was in press at the same time as Wunder's book.

It is difficult to address the history of Native-American relations without expressing rage or resorting to irony, and Wunder's credentials do not render him immune from normal emotions. His reference to supporters of termination as "demagogues in Lincoln's clothing" is buttressed by a quotation from Arthur Watkins that illustrates the rhetoric of equality employed for purposes most people in our time would find shameful. Though Wunder clearly stands with Native peoples, his scholarship will hold the weight of his opinions.

This volume contains seventeen photographs, mostly from the National Archives, of subjects from an aged John Ross to a young Kirke Kickingbird. (The caption for the photograph of the former Navajo chairman, Peter McDonald, omits mentioning his sojourn in a federal penal facility, but the wounds Native peoples have inflicted upon themselves belong in another book, to be written when and if the dominant society ends its depredations.)

The question here is not what American Indians could have done better to protect themselves, but how the Bill of Rights, the shield that Euro-Americans routinely interpose between themselves and the government, served to protect Native Americans. The reasons the Bill of Rights did not save Native Americans are buried in a historical tale as painful as it is colorful, a tale that John Wunder has told with the insight of a lawyer but with the pain and the color intact.

Steve Russell
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In November 1975 four American Indians, including the wife of Dennis Banks, a leader of the American Indian Movement, were arrested in eastern Oregon in two vehicles found to contain several boxes of dynamite and an arsenal of weapons. Two others, who were the major focus of the Federal Bureau of Investigation's attention—Banks himself and Leonard Peltier, both fugitives from South Dakota—escaped capture. In *Loud Hawk*, Kenneth S. Stern, a lawyer associated with the defense team during the thirteen years of pretrial maneuvering, gives his version of the case and the historical context in which it took place.

Stern's underlying premise is that American-Indian treaties conveyed a sovereignty to tribes equal to that possessed by foreign nations (John Marshall's *Cherokee Nation v. Georgia* notwithstanding). Thus the difficulties between the American Indian Movement and federal authorities, which had resulted in deaths on both sides, including those of two FBI agents, should be viewed as "a war between Indian activists and the government" (p. viii). Stern's account of the protracted legal proceedings in *United States v. Loud Hawk, et al.* is liberally interlaced with vignettes about Wounded Knee, American-Indian occupation of Bureau of Indian Affairs headquarters in Washington, D.C., and other episodes in the Red Power movement of the 1970s.

Stern's rendering of events and issues is that of an advocate and polemicist. He and the other defense lawyers agreed with the activists who came to Portland after the arrests that the issues were more political than legal. Stern depicts members of the large defense team as selfless idealists fighting for truth and justice. The three U.S. attorneys who successively headed the prosecution effort are described as "loony on this one" (p. 85) or as obsessed with obtaining a conviction by any means, fair or foul. As a consequence, the book has little value for historians or lawyers. For Stern, an offhand comment by an activist that American Indians were being killed by the dozen is equal in weight to a Supreme Court decision, while any action taken by the FBI or U.S. attorneys was either illegal or suspect in motivation. Although some—or perhaps much—of what was done by the government over the course of thirteen years could be characterized as incompetent, inept, or worse, there is no way to evaluate these actions based on Stern's account. *Loud Hawk* is history written as political theater informed by acute paranoia.

One example of this paranoia will suffice. Soon after the ar-
rests, Stern happened to answer the telephone in a house that had been acquired for use by the defendants and their supporters and families. A "nervous" male identified himself as the Portland chief of police, calling to report that a group of vigilantes had left South Dakota with the intention of killing Dennis Banks. After a frantic effort to find Banks, Stern drove him to a home south of Portland owned by a sympathizer. There they barricaded themselves for several days while participating in sweat-lodge ceremonies and spooking when twenty uniformed men were reported to be marching on the house. (The uniformed men turned out to be World War I veterans gathering for a meeting.) They soon returned to Portland, with no indication from Stern whether anyone had verified the source of the warning or the validity of the rumored vigilante threat.

The book is most interesting in showing how time can overtake events. Despite Stern's view that the case represented good versus evil, there are few heroes in this story. The participants emerge as flawed humans who succumbed to motivations other than idealism. After a decade, Stern characterized his fellow defense lawyers as alcoholic, psychotic, and unethical. Quarrels frequently erupted, with one attorney threatening to use as his client's defense the allegation that Banks was responsible: "I'm pinning everything on him" (p. 237). The defendants were also at cross-purposes, with some wishing to plea-bargain and others insisting on a trial as the only honorable course for "warriors." One of the arrested American Indians complained that Banks was always the center of attention: "Where were Kenny [Loud Hawk] and me? Nowhere! Just Demis Banks this and Dennis Banks that" (p. 239).

Banks, whom Stern came to represent, is presented as a highly intelligent and devout family man. But on many occasions he revealed that he could be irrational, as when he purposely lied in response to every question asked by the governor of Oregon in a private interview. And, as Stern reluctantly admits in the epilogue, Banks left his wife soon after the case ended, apparently because she wanted to put up a Christmas tree for the children.

Stern expresses increasing doubts about the violent tactics employed by the American Indian Movement in the 1970s, musing that a decade later he might not have been able to defend Banks if in the 1980s the latter had taken a similar course of action. As he rationalized his defense to himself, "If I am ever going to try this case, I am going to have to push the sympathy for everyone who died or could have died well down, bury it, and paint a picture for the jury that is unequivocal—all good on our side, all evil on the other. That is my duty to my
clients. I have a month to shape my mind, feel the zeal without the doubt" [p. 309].

The case ended with a plea bargain that saw dismissal of the charges except for Banks's plea of guilty to one count, for which he was sentenced to probation. In sum it was, as Vine DeLoria, Jr., has said, a side event of the Wounded Knee occupation.

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Temples of Justice: County Courthouses of Nevada, by Ronald M. James. Reno: University of Nevada Press, 1994; 200 pp., notes, glossary, bibliography, index; $29.95, cloth.

In Temples of Justice: County Courthouses of Nevada, Ronald M. James has analyzed the thirty-four courthouses constructed by Nevada's counties since statehood, primarily from three aspects: architectural monumentalism, the community-building role of the courthouse, and the shift from vernacular design to the use of professional architects.

James notes that, though architecturally quite distinct, each of the courthouses exhibits a "monumentalism" that reflects "the popular sentiment that public buildings should be grandiose, exhibit permanence and stability, and project an image of prosperity and respect for the institutions housed within" [p. 9]. He defines monumentality as implying large spaces, ceilings and doors of great height, and oversized architectural features. Although most of Nevada's county courthouses are modest in size, in the context of their own communities they do exhibit monumentality. The continuity of this aspect of courthouse design through varying economic fortunes and architectural fashions demonstrates the consistency of the belief that public architecture can and should be a powerful symbol of the community and its government.

Temples of Justice also addresses the historic importance of the county seat, and the dramatic steps taken by the new communities of the West to secure that status. Because of the limited number of counties in Nevada, James is able to provide significant detail on the political battles for county seat designation, as well as the debates concerning courthouse design.

In describing the courthouses, James faces a difficulty inherent to the architectural history of the early American West. As he correctly notes, the early western mining camps drew many professionals, but few architects. Thus early courthouses were usually designed and constructed by builders and engineers
who lacked professional architectural training. These “designers” freely mingled styles and features, creating structures that cannot be placed in any recognized architectural style and are best described as “vernacular.” Although vernacular design is most common in the initial period of settlement, the unusual developmental patterns of the mining West resulted in the use of vernacular design in Nevada’s courthouse architecture far later than would be expected in agricultural regions.

*Temples of Justice* also explores the shift from this use of builder-as-architect to the advent of professional architects, primarily through an analysis of the courthouse designs of Nevada’s premier architect, Frederick J. DeLongchamps. James gives considerable attention to DeLongchamps’s designs, including the political context of each commission as well as the symbolic meaning of the style, plan, and ornamentation. Unfortunately, in regard to Nevada’s unique Pershing County Courthouse, James has failed to note the most significant architectural symbolism.

Although he discusses the unusual round floor plan of DeLongchamps’s design and the symbolic importance of the placement of the courtroom in the center of the building, he does not address the subtle yet powerful statement made by the placement of the jury box in the center of the courtroom, a placement that emphasizes the importance of the jury’s role. Especially for a county recently born of a populist movement for separation from a county government viewed as distant and indifferent, this architectural underscoring of the power of the local citizenry is highly symbolic. Not only is DeLongchamps’s placement of the jury in the center of the court unique in this country, it is also perhaps one of the clearest uses of architectural design as political symbol.

The author notes in his acknowledgments that he received early criticism of the county-by-county organization of the work. Although I agree that Nevada’s limited number of courthouses makes a strictly chronological organization unworkable, it is unfortunate that James chose to arrange the counties alphabetically. One of his primary theses is the importance of community building by the presence of the courthouses, and how they shaped the various county seats of Nevada. Only one community in the state—Carson City—took its role as county seat rather lightly, depending on the monumental architecture of the state government buildings to define the city. This exception, which proves the rule James so aptly presents in his other chapters, would be more powerful if it were toward the end of the work, rather than in the first chapter.

Nonetheless, *Temples of Justice* is a notable contribution to the history of the development of western communities, and to
the architectural progress and importance of public buildings in the West.

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This book is the result of the author's painstaking research into the Environmental Protection Agency's relationship to the federal court system over a generation. Divided into discussions by chapter of the various EPA categories of environmental oversight (air, water, hazardous wastes, and so on), the book moves quickly through important case studies that relate the ramifications of court action upon EPA programs. Rosemary O'Leary, a professor in Syracuse University's Maxwell School of Citizenship and Public Affairs as well as an adjunct scholar in the State University of New York's College of Environmental Science and Forestry, is especially interested in the ways in which twenty years of court battles have curtailed the EPA's effectiveness.

There are some surprises along the way. One is the level of bureaucratic inertia and ineptitude in an agency so young. The EPA is only about twenty-five years old, established—perhaps cynically, O'Leary notes—by the Nixon administration in the wake of Earth Day's startling success. But agency youth is no defense against cloddishness. Some of the most revealing passages in the book concern the EPA's stubborn refusal to abide by court directives regarding the creation of various environmental standards. William Ruckelshaus, who had been the agency's first administrator, was called back to service in the early 1980s to restore its reputation following the scandals associated with Anne Gorsuch. Ruckelshaus had his own difficulties, however, and he appears here as a stonewalling bureaucrat unwilling to bend. In one celebrated case, the EPA had asked the court for a nine-year extension in complying with the delivery of clean-air standards, arguing disingenuously that it could never accomplish the task in any less time. The exasperated district court judge not only lashed out at the agency's "dog-eat-my-homework" temerity, but forced the agency to comply within six months. The EPA responded in a bureaucratic huff,
and eventually created sham guidelines and standards that, in effect, worked to the advantage of the worst environmental polluters. Such action (not to mention gall) makes one wonder why O'Leary, who admits to approaching this project with a skeptical edge, came out of it with an “immense amount of awe and respect” (xv) for the agency’s employees.

Part of the EPA’s difficulty, O’Leary correctly surmises, is simply that the organization is so often caught between contradictory motives, goals, and even constituencies. An experimental bureaucratic hybrid from the beginning, the agency continues to be hampered by its lack of cabinet-level administrative legitimacy. The necessity of adhering to scientific method, and the concomitant need for scientific advisers, creates problems that other bureaucracies do not have to address. Furthermore, the EPA has to navigate narrow legal channels between ever-litigious groups on its right (usually corporate behemoths) and its left (usually environmental watchdogs). The net result is an agency that spends too much time and money defending itself indoors, in court, when it should be outdoors defending plants, birds, and trees. The very real obstacles in no way excuse the EPA’s incompetence, but perhaps help explain O’Leary’s respect for the ability of the organization to do any good at all.

Organized and written as a kind of extended white paper of policy analysis, Environmental Change is a solid piece of research that examines an intriguing set of questions. How does the EPA fight, accept, and adapt to court-ordered policy changes? By examining the vast number of cases since 1970, O'Leary has earned the right to narrow her focus in this book to specific case studies of critical importance. Her findings indicate that the EPA is an odd organization, often handcuffed from within and without while maintaining the potential to protect the environment. Yet that potential is, and will continue to be, mediated by the impact of judicial decision-making and the vagaries of politics—by the agency’s ever-present need, in effect, to protect itself. What O'Leary demonstrates is the necessity for all parties—the agency, federal judges, and litigants—to think far more seriously about the tricky and often inefficient nature of court-mandated policy change. For instance, she asks for more contemplative thought from watchdog groups before they file a suit that will send the EPA into what she refers to as a “keystone cops” routine of yet again wasting time, money, and talent (p. 172). She also demonstrates, if only implicitly, the need for EPA administrators to be more fully conscious of just how political bureaucracies can—indeed, must—be. Otherwise, as she notes in her final chapter, the environmental heritage of future generations will be all the more imperiled by agency weakness in the face of litigants and
jurists alike. In the meantime, perhaps President Clinton will make good on his campaign promise to elevate the EPA to cabinet status.

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_Incredible Élfego Baca: Good Man, Bad Man of the Old West_, by Howard Bryan. Foreword by Rudolfo Anaya. Santa Fe: Clear Light Publishers, l993; 104 pp.; illustrations, bibliography; $22.95, cloth.

Fact or fiction, hero or villain, Élfego Baca was a man of contradictions. He defied logic and reason, yet embraced both unabashedly when it behooved him. A picturesque and colorful figure, Baca had a personality that ran the gamut from the enigmatic and outrageous to the simplest and most down-to-earth. From this complex persona there emerges an Élfego Baca whose brilliance, astuteness, and connivance were unmatched, but who was never devoid of at least a modicum of humor or compassion.

Élfego Baca was born in Socorro, Territory of New Mexico, in 1865, and died in Albuquerque eighty years later, after a long and tumultuous career in the public eye. He dedicated himself primarily to law enforcement and politics, but he was also a lawyer, an entrepreneur, and an educator. Reading Howard Bryan’s lively account of Baca’s involvement in public service, it becomes clear that politics inevitably played a pivotal role in his life. In fact, it is difficult to discern where politics began and ended, since nothing escaped his political acumen—in typical fashion, many would say, of political life in New Mexico today.

This is the atmosphere that permeates Bryan’s stories on Baca, who, at a very young age, displayed a proclivity for the bizarre and the unpredictable—though never without flair—while unhesitatingly defying “the enemy.” One of his first reckless acts involved his father, Francisco, whom he rescued from jail in Los Lunas after the elder Baca was convicted of murdering two “boisterous cowboys” in Belen.

Élfego Baca’s topsy-turvy life mirrors that of his father, albeit in a much grander and more dramatic fashion. The younger Baca was indicted for murder countless times, but invariably eluded conviction. Even when found guilty of lesser crimes, like shooting a dog for attacking him, he accepted whatever punishment was meted out, albeit somewhat tongue-in-cheek. Occasionally it meant serving a jail sentence when, unbeknownst to the judge, Baca himself was the jailer, while being
allowed complete freedom of movement and receiving a per
diem, to boot. Clearly, Baca believed in exploiting a system
that had many flaws.

Incredible El Tefego Baca contains stories that are classics in the
annals of New Mexico's history. A prime example (on a par
with the gunfight at the O.K. Corral in Tombstone, Arizona)
is the account of Baca's stand against an onslaught of bullets in
a shootout with a group of Texas cowboys along the San Fran-
cisco River. The only fault in Bryan's book is that the episodes
are too few in number. Perhaps a sequel is in order so that El Tefego
Baca aficionados can delve more fully into his turbulent life.

Nasario Garcia
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To Protect and Serve: A History of the San Diego Police
Department and Its Chiefs, 1889-1989, by Pliny Castanien. San
Diego: San Diego Historical Society, 1993; 132 pp., bibliogra-
phy, index; $14.95, paper.

Pliny Castanien has written a well-documented and ency-
clopedic account of the hundred-year history of the San Diego
Police Department, as reflected in the personalities and perse-
verance of its thirty police chiefs.

A police reporter for the San Diego Union for twenty-five
years, after retiring in 1974 Castanien was designated as the
police department's historian by the then police chief. Thus
Castanien's reverence and respect for the department and its
pro-police point of view come as no surprise: "My aim was to
inform and to draw attention to the role of the police as our
first line of defense against disorder and crime" (p. 1).

The author takes us back to 1889, when the newly created
police board appointed the city marshal, Joe Coyne, as San
Diego's first chief of police. The city was a wide-open town
where gambling, liquor, and prostitution thrived. Most resi-
dents accepted this because San Diego was a flourishing seaport
and the navy's presence was an economic boon to the fast-
growing city. Coyne put together the first metropolitan police
force, which consisted of a jailer and no more than a dozen
policemen.

An incident in 1891 diffused the enthusiasm for the new
constabulary. When the USS Charleston sailed into the harbor,
the sailors, who had been at sea for several months chasing a
ship running contraband guns to South America, were overdue
for shore leave. San Diego had long been an amiable liberty
port. The sailors headed for the Stingaree, a section of San
Diego as infamous as San Francisco’s Barbary Coast. When several of them went AWOL, the police were instructed by the mayor to do nothing.

The second chief of police, W.H. Crawford, had his hands tied. The responsibility for rounding up AWOL sailors shifted to the office of the U.S. marshal, who paid unemployed lawmen ten dollars for each sailor returned to ship. The new deputy marshals, armed with billy clubs and six-shooters, sought out sailors in a Stingaree saloon. During the ensuing melee, one of the sailors died from frontal skull fractures. Under the banner headline “Clubbed to Death,” the San Diego Union wrote, “The order to return sailors to their ship did not read ‘dead or alive,’ and the affair illustrated the danger of delegating authority and power to enforce it to irresponsible persons, to whom a paltry reward was to be gained at the expense of human blood” (p. 11).

Crawford, who had successfully campaigned for an annual one-week vacation plus a day off for his fourteen men and had authorized no one to act as a bounty hunter, was forced to resign. The collision between police, politicians, and press commenced. The concern by citizens about the use and misuse of deadly force by those acting under the protection of the law continues to this day.

To Protect and Serve is replete with briefly described incidents and a plethora of names, dates, and places. The book is at its best and most interesting when the author fleshes out pivotal incidents that illustrate the character of the city and highlight the operations of its police department and its chief.

In 1912 the Industrial Workers of the World, who were attempting to organize city employees and transit workers, clashed with business and civic leaders. For twenty years, San Diego allocated an area known as Soapbox Row to speakers voicing opinions on popular and unpopular subjects. Several politicians and businessmen suggested that the city council pass an ordinance to control street speaking. After initially ignoring the proposal, the council passed an ordinance prohibiting any public meeting in the downtown area. Meetings could be held elsewhere, but not in Soapbox Row.

The IWW staged protest marches in Soapbox Row and the police, following the letter of the law, confronted, hosed down, and arrested the protesters. The city and county’s jails overflowed. Anyone arriving in San Diego by train and suspected of being sympathetic to the IWW’s cause was turned back. Vigilantes kidnapped, tarred, and assaulted, among others, the editor of the San Diego Herald, who supported the free-speech movement and printed articles on police brutality. The police and the city district attorney protected the vigilantes. “The rule
of law suffered," writes Castanien, "when officers and law enforcement officials abdicated their sworn duty to the law and the Constitution" (p. 32).

Subsequent police chiefs sought to restore the department's credibility by insisting on, and fighting for, better pay and benefits in order to recruit qualified men. Only much later would women and members of minority groups be allowed to join the force.

*To Protect and Serve* is fully illustrated with descriptive photographs depicting a city facing the changes and challenges spurred by rapid growth and competition from groups with conflicting interests and goals. Castanien's book reveals clearly how the evolution of a police force is also the evolution of the law.

Elaine Santangelo
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The words "Indian" and "water" in the same sentence conjure both the romance and the despair that are part of the culture of the American West. It is widely recognized that Native Americans suffered at the hands of the settlers while the West that they inhabited was built—among other things—upon limited waters, which are now overused. *Indian Water in the West* deals with the confluence of Native-American and contemporary mainstream society and the attempts of the two to coexist, and it is the portrayal of this confluence that makes the book particularly valuable.

The collection opens with David Getches's concise description of Native-American rights in the West, and closes with Charles Wilkinson's sense of hope in resolving the contention surrounding Indian lands. Between these solid bookends is an assortment that will enlighten anyone interested in the area. To the credit of the editors, the essays are relatively well balanced and come close to painting a realistic and comprehensive picture of the American West. The collection contains two themes that have not hitherto been adequately developed.

The first of these is the complex role that the federal government plays in resolving Native-American disputes. The essays written by federal agency officials prove to be the most useful in the book and are somewhat surprising, considering that
agency employees generally remain silent on controversial topics. The initial essay, "Conflicting Federal Roles in Indian Water Claims Negotiations," describes the difficulties that many agencies, especially the Department of Interior, face as they attempt to represent a diverse constituency with conflicting mandates. The essay's candor will impress the reader with the delicate balancing act required by the agencies in these matters. The theme continues in "A Federal Perspective," which suggests that, notwithstanding internal differences, the federal agencies are nonetheless best equipped to resolve and determine Native-American water-rights settlements. "The Salt River-Maricopa Settlement: An Overview" offers a perspective from within the Department of Interior.

The discussion on water-rights settlement is the second theme of note. At the heart of this process is Arizona v. California, which began in 1952 and continues to leave its mark on Indian policy to this day. The battle over the waters of the Colorado River resulted in a special master opinion and a subsequent Supreme Court opinion and decree that left none of the affected parties satisfied. Those involved now seem to recognize that litigating these complex issues is merely an expensive crapshoot, a recognition that has made settlement an attractive way to achieve a mutually beneficial solution.

Fortunately for the reader, an entire segment of the book is dedicated to the settlement process, including essays on the Fort Peck-Montana compact and the Salt River Pima-Maricopa settlement, as well as on ten common themes in negotiated water settlements and alternative dispute resolution. For any participants in Native-American negotiations, this aspect of the book will be essential reading, while for those otherwise interested in the West the discussions point directly to the challenges posed by western water policy. It becomes clear that, though long and tedious, the process is benign compared with litigation, and the results are generally better suited to the needs of the affected parties.

The major flaw in Indian Water in the New West is that the legitimate needs of water users who are not Native Americans are not fully discussed. For example, only one commentator, John Weldon, questions the basis for the extent of Indian water rights. Most of the writers seem to assume that the method of quantifying these rights, known as Practicably Irrigable Acreage, is sound and will work. Weldon discusses the difficulties the method presents for water users in the West as well as the fact that it does not make much sense. The collection is otherwise devoid of any discussion on how Native-American water rights should be quantified.

The book closes with several reflections. The former Wyo-
ming congressman Teno Roncalio expresses the hope that all parties will continue to work together rather than against one another. Michael Clinton echoes this sentiment and then marvels at the coexistence of previous opponents after a mutual solution has been found. The final word is reserved for Charles Wilkinson, who has a gift for putting hope onto paper. He is fascinated by the way in which abstractions, such as Native-American water issues, can be so intensely practical. It is for this reason of practicality that Indian Water in the New West is recommended.

David J. Guy
California Farm Bureau Federation

**BRIEFLY NOTED**

*Divided Waters: Bridging the U.S.-Mexico Border,* by Helen Ingram, Nancy K. Laney, and David M. Gillilan. Tucson: University of Arizona Press, 1995; 262 pp., appendices, notes, bibliography, index; $17.95, paper.

The urban area of Nogales, Arizona, and Nogales, Sonora, is the setting for this case study of the physical, social, economic, and political dimensions of water management along the border between the United States and Mexico. Water problems common to the American West—inadequate supply, contamination, inequitable distribution, periodic flooding—are also problems of the Mexican North. The authors of *Divided Waters* suggest that other regions in the world may draw valuable lessons from the joint planning that Mexico and the United States have undertaken.


In 1944, the United States Army Corps of Engineers and the Bureau of Reclamation began implementing a flood-control and reclamation plan for the Missouri River. In order to build the reservoirs, large parcels of Native-American land were taken through the federal government's power of eminent domain. Michael Lawson argues that this was the government's single most destructive act against a Native-American tribe in the twentieth century. In this paperback edition he updates the
developments in American-Indian rights and government policy since the book was first published in 1982.


Command of the Waters explores the conflict between the doctrine of prior appropriation, which allocates water on the basis of priority of beneficial use, and the reserved-rights doctrine, enunciated by the Supreme Court in Winters v. United States, which states that Native-American water rights were established when reservations were created. The author uses the concept of "iron triangles" to explain how tripartite coalitions among bureaucrats, legislators, and interest groups have influenced federal water-resource development in the West. An introduction to this paperback edition covers court decisions that have been made and legislation that has been passed since 1987.
ARTICLES OF RELATED INTEREST

Below we list articles recently published in journals of history, law, political science, and other fields that we believe may be of interest to readers. Although comprehensive, the list is not definitive, and the editor would appreciate being informed of articles not included here.


Cole, Terrence M., "Wally Hickel's Big Garden Hose: The Alaska Water Pipeline to California," *Pacific Historical Quarterly* 64 (Spring 1995).


Peterson, E. Wesley F., J. David Aiken, and Bruce B. Johnson, "Property Rights and Groundwater in Nebraska," *Agriculture and Human Values* 10 [Fall 1993].


Compiled with the assistance of Helen Petersen.
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