California’s Flawed Surface Water Rights

Michael Hanemann
Caitlin Dyckman
Damian Park
Santa Clara University, dpark@scu.edu

Follow this and additional works at: http://scholarcommons.scu.edu/econ
Part of the Economics Commons, and the Water Law Commons

Recommended Citation

Copyright © 2015 University of California Press. Reprinted with permission. All rights reserved.
This Book Chapter is brought to you for free and open access by the Leavey School of Business at Scholar Commons. It has been accepted for inclusion in Economics by an authorized administrator of Scholar Commons. For more information, please contact rscroggin@scu.edu.
In the Beginning: A Chaotic Situation

California sprang into existence following the discovery of gold in 1848. Aside from domestic use, the first major use of water in California was in mining. The first mining consisted of placer mining of alluvial deposits in stream beds throughout the Sierra foothills. As those deposits were depleted, hydraulic mining arose, in which high-pressure jets of water were used to remove overlying earth from upland gold-bearing deposits. That type of mining, first employed in 1853, required substantial water diversions.

When California entered the Union in 1850, the English common law was adopted as the "rule of decision" in courts, including the doctrine of riparian rights for surface water (it was also the governing doctrine in the rest of the Union). Riparian rights entitle the owner of land bordering a surface water body ("riparian" land) to use the water on his or her riparian land. This is a right to use water, not a right of ownership, and it inheres only in riparian lands. Riparian rights remain with the riparian land regardless of changes in ownership. Water under a riparian right cannot be used on nonriparian land. The right is shared equally among all riparians: they own access to the stream as "tenants in common." They can divert water as long as this does not impair the

Dedicated to the memory of Joe Sax. A fuller version of this material is in preparation.
rights of other riparians. No specific quantity attaches to a riparian right. If a riparian originally applied X, this does not preclude him from applying 3X later. Nonuse does not terminate the right. There is no recording of the volume diverted. No institution administers the riparian right. Disputes are resolved through litigation among riparians.

The riparian doctrine was logical where it originated, in a humid region with plentiful streamflow. Streamflow is treated as a common pool to be shared among all riparian landowners. But in an arid region like California, where rivers can run dry by the late summer and annual streamflow can vary by an order of magnitude, there needs to be a specific mechanism for allocating limited streamflow. The riparian right lacks this.

Using water for hydraulic mining violated riparian requirements. In most cases, the deposits being mined were not located on riparian land. And the miners did not own the land where water was being diverted or used—these were public lands. Consequently, a new type of water right was developed, adapted from the rules developed by miners for the right to a mining claim. The miners “met and organized mining districts, adopting rules for the definition of their property rights. . . . These rules limited the size of claims . . . They required miners to post notices of their claims and to record them with district recorders . . . To retain their claims, miners had to work them with diligence . . . When questions of right arose, they were settled by reference to priority . . . first in time, first in right.” With the emergence of hydraulic mining, “the miners applied the same rules to water as they had to land—first in time, first in right. To perfect the right, ditches had to be dug with diligence and the water applied to beneficial use” (Dunbar 1983, 61).

In 1851, the California legislature endorsed the mining-camp rules as state law. Subsequently, district courts applied the principle of first possession to water cases. In 1855, the California Supreme Court endorsed what became known as the appropriative water right. The right to divert water is based on the time and quantity of the initial diversion creating that right. The link between ownership of land and ownership of water is severed. The locations of water diversion and application can be different. If there is too little streamflow, the senior appropriators divert their full quantity until the stream is exhausted, while the remaining (junior) appropriators receive nothing.3

The Supreme Court’s rulings did not extinguish the concept of a riparian right, and California courts continued to uphold it. In 1866 and 1870, Congress gave recognition to appropriative rights. In 1872, California’s legislature formally recognized appropriative rights and
codified the procedures for acquiring them. The codification maintained a dual system of appropriative and riparian rights.

While the appropriative water right was modeled after the right to a mining claim, crucial differences existed between the two resources that rendered the right less well suited to water than to mining. The nature of the economic activity was not the same, and the institutions for recording and enforcing the property right functioned very differently.

According to Clay and Wright (2005, 163), gold mining was “a race to find a small number of high payoff claims.” As they note (157): “Typically a miner worked a claim only long enough to determine its potential. If he decided it was a relatively low-value claim—as most were—he continued the search [elsewhere]. . . . Because miners were continually looking for new and better sites even as they worked their present holdings, mining district rules were as much concerned with procedures for the abandonment and repossession of claims as they were with protection of the rights of existing claimholders.” Mining was thus different from a production-oriented activity such as irrigated agriculture. Mining rules sought to ensure the “orderly turnover” of mining sites to maximize the chance of a bonanza discovery, not to promote land settlement.

The interactions among miners were fundamentally different from those among water users, and played out over a much larger spatial scale. For a miner, the question was “Is someone else working a claim at this location? If not, I will.” For an irrigator, it was not enough to know whether someone else was diverting water at this location: it was also necessary to know whether other diversions were occurring on the same stream.4

Mining districts provided a nongovernmental apparatus that was quite effective in recording mining claims. Posting a claim at the site and recording it with the mining district was a reasonable procedure. Furthermore, the mining districts played some role in mining claim enforcement and dispute resolution. Mining district codes typically specified procedures for settling disputes over contested claims (Clay and Wright 2005, 163–67), although those procedures were not necessarily final. While imperfect, the system based on mining districts, the posting of claims, and the right of first possession was relatively coherent and promoted its objective: orderly and rapid exploration of mining sites.

The situation with appropriative water rights was entirely different. In an arid region, land is worthless without water, and the objective was to ensure continued access to water. Because of the spatial scale of potential interactions among competing water users, posting a claim
along a river bank on a two-foot stake was a much less transparent means of recording a property right for water than for mining. Property right quantification was inherently less precise. The spatial area claimed for exploration was essential to mining. With water, the volume of water diverted during some time at a particular location comprised the claim. But volume is a problematic measure of this right, because the diversion occurs intermittently; the exercise of the property right is not uniform over time, as with a land claim.

In addition to being poorly quantified and not transparently recorded, another crucial difference between an appropriative water right and a mining claim was that the former lacked any administrative apparatus for verifying or enforcing the priority date or the amount of the right. The mining districts played no role in the recording or enforcement of appropriative water rights, even for hydraulic mining, and there was no other entity, governmental or nongovernmental, that performed this role. In the event of a dispute among water users, whether about the seniority or the quantity of a right, the only recourse was litigation.

Litigation has many weaknesses as a method of dispute resolution. Litigation is time-consuming. And water use for irrigation is especially time-sensitive—crops need water during the growing season. Litigation could not resolve a dispute in time to save that year’s crop. Litigation was costly. The decree bound only the parties to the litigation, not other water users omitted from the litigation. Finally, there was no mechanism to enforce a judicial decree resulting from litigation, except further litigation for contempt of court (Chandler 1913, 149).

Given the differences in the nature of the resource and the way it was used, mining claims provided a poor analogy for water use. The system of appropriative water rights based on the right of first possession was considerably less coherent than the system of mining claims based on the same principle.

The 1872 code changed things marginally. Under that code, in addition to posting the claim at the river bank, a water user was required to file a copy with the county recorder and to commence construction of the diversion facility within 60 days of posting. But the county recorder played no role in verifying the claim to an appropriative water right, checking whether there was sufficient streamflow for that amount to have been diverted as claimed, checking whether construction was initiated (or completed), monitoring diversions to ensure subsequent conformity with the water right, or sharing information about appropriative rights claimed with other counties bordering the same stream.
Moreover, *nonstatutory* appropriations were still legal—made, as before 1872, by posting a notice at the site of the diversion and without recording the claim with the county recorder. A property rights scheme lacking effective recording and enforcement is a contradiction in terms. Yet that characterizes the appropriative right to water in California until 1914.

**WHAT OTHER STATES DID**

After the California Gold Rush, other major discoveries of gold occurred in Colorado (1858–1859), Nevada (1859), Idaho (1860), Montana (1862–1864), and Arizona (1863), leading to immigration into those states. Like California, they adopted the English common law and, with it, riparian water rights. In those gold rushes, as in California, the miners organized mining districts and adopted rules to protect claims to mining rights and to water. As in California, the mining was being conducted on public lands and required something other than a riparian right. The new mining districts copied California in adopting an appropriative right to water based on the right of first possession, which was subsequently recognized by the state courts and legislatures.

Colorado was the first western state to enact laws for the administration of surface water rights. This came about gradually. In 1861, in its first session, the territorial legislature endorsed "the records, laws and proceedings of each mining district," and also enacted a statute authorizing the appropriation of water for irrigation of both riparian and non-riparian lands. Under this law, there was no requirement to record the appropriation. The first court decision dealing with appropriative rights, in 1872, upheld this as a necessity in Colorado's climate. In 1876, the state constitution stated that "priority of appropriation shall give the better right as between those using water for the same purpose." The question of whether riparian rights still existed in Colorado was answered in 1882 when the state Supreme Court declared that the riparian doctrine was "inapplicable to Colorado." Eventually, all the mountain states followed Colorado in establishing prior appropriation as the exclusive right to surface water.

At first, following the 1861 legislation, appropriative water rights in Colorado functioned in the same incoherent manner as in California, with no recording requirement and no state administrative apparatus for verification, enforcement or monitoring. As in California, there was chaos, and "it was impossible to determine the number and priorities of
the appropriations of a stream except through an expensive adjudication lawsuit" (Dunbar 1983, 87). The drought of 1874 triggered interest in a new legislative solution when diverters along the Cache la Poudre River failed to agree on how to divide the depleted streamflow, and upstream diverters with junior rights “took what they wanted, depriving the down­stream appropriators of their legitimate supply of irrigation water” (87).

Legislation in 1879 established ten water districts around the state, each with a water commissioner who was to enforce the distribution of water based on prior rights. The water commissioners had no powers to determine the priority of rights or resolve conflicts regarding rights. Instead, judges could initiate an inquiry into a water right and make a finding. This legislation was subsequently challenged because it gave judges the power to initiate an inquiry on their own authority without waiting for someone to file a suit in the conventional manner. The 1881 Adjudication Act resolved this: it required irrigators with existing appropriative rights to file their claims for priority with district courts by June 1881 to determine the priority and quantity of their right.

The Colorado system was only partly successful. The administrative system for enforcing court water rights decrees worked well and was widely admired and emulated. But the reliance on judges was problematic: they did not consult with the state engineer, lacked engineering training, and typically did not verify the accuracy of data presented in court. Consequently, irrigators made extravagant claims, which judges then accepted. The water rights decreed by the courts varied erratically, with no rationale or relation to actual use (Meade 1903, 149-55).

The situation improved slowly. In 1887, statewide recording of appropriative rights claims was initiated (Meade 1903, 144). In 1899, the water commissioners received additional powers, including the power to arrest and prosecute anyone violating orders for the opening or closing of head-gates. In 1903 and 1919, the Colorado legislature completed the adjudication procedure. The 1903 Adjudication Act provided the courts with authority to adjudicate all other appropriative water rights in the same manner as irrigation rights. The 1919 Adjudication Limitation Act was designed to settle the priorities of all water rights. It required any claimant to an appropriation to submit the claim for adjudication by January 1921; failure to do so caused a presumption of abandonment (Hobbs 1999, 9).

In 1886 and 1888, the neighboring state of Wyoming largely copied Colorado’s legislation of 1879 and 1881. It soon found the same defects as in Colorado: “there was no central register of appropriation claims...
Many of the streams were overappropriated, and few had been adjudicated. Of those that had been [adjudicated] the decreed rights were excessive and inconsistent” (Dunbar 1983, 106). Reacting to this situation, on attaining statehood in 1890, the Wyoming legislature created an administrative system for the control of water rights. The administrative apparatus both conferred water rights (handled by courts in Colorado) and administered them.

The Wyoming system created water divisions and a Board of Control consisting of the State Engineer and the superintendents of the water divisions. A person wishing to appropriate water applied for a permit from the State Engineer. If the State Engineer determined that unappropriated water was available and the diversion was not “detrimental to the public welfare,” the permit was granted. No appropriation after 1890 was valid without a permit. The division superintendents monitored diversions and enforced priority. The Board of Control adjudicated streams, subject to appeal to the district courts.

The permit procedure did not apply retroactively to water rights acquired before 1890, but the 1890 legislation specified a procedure to address those rights. Under the stream adjudication process, the owners of all water rights, including those acquired before 1890, were required to file their claim with the State Board of Control. Failure to do this extinguished the right (Squillace 1991, 97). Under this scheme, all of Wyoming’s streams were adjudicated by 1922; any users who failed to claim a pre-1890 right lost it (Squillace 1989, 324).

Over the period of 1895–1909, other western states adopted versions of the Wyoming system. Only Oregon copied Colorado’s court-based determination of water rights. The Wyoming system aroused controversy for vesting the determination of water rights in an administrative board rather than the courts. Engineers supported this, but lawyers and some water users opposed it. After 1902, the federal government advocated it as a precondition for receiving water projects from the new Bureau of Reclamation, which proved decisive.

In summary, all the other western states moved to systems for the conferral, recording, and administration of appropriative rights that, while not perfect, were comprehensive and orderly. Those systems generated usable records of rights holders and their seniority. Moreover, there was a local administrative apparatus for monitoring diversions, ensuring conformity with the decreed appropriative right, and enforcing seniority in the event of shortage. Of all the states, Colorado was the most successful at verifying water rights. In some other states, gaps still
remain between the amounts of water claimed and actually put to beneficial use (Tarlock 2000, 882). Nevertheless, there is a relatively coherent system for recording, monitoring, and enforcing appropriative water rights.

**WHAT CALIFORNIA DID**

While other western states regularized the administration of appropriative rights, California did nothing, even as the use of water for irrigation grew dramatically. The acreage irrigated in California increased from roughly 60,000 acres in 1870 to 300,000 acres in 1880, and then to 1.4 million acres in 1900, 2.7 million acres in 1910, and 4.2 million acres in 1920 (Rhode 1995, table 1). The expansion was partly associated with the assemblage of large land holdings, often obtained through dubious acquisitions of Spanish land grants and fraudulent acquisitions of public lands disposed under the 1850 Swamp Act and the 1877 Desert Land Act. Public land purchases were legally restricted to 320 acres per capita under the former and 640 acres under the latter, but those restrictions were blatantly evaded. For example, Henry Miller, the largest landowner in California, acquired a 100-mile swathe of riparian land along the San Joaquin River and 50 miles of riparian land along the Kern River, much of it obtained fraudulently under the Swamp Act.

The abusive acquisition of land was accompanied by a stretching, if not abuse, of water rights. “Owners of riparian land have... rented and sold water claimed under the riparian doctrine to those who irrigate non-riparian lands, and the right to do this has been sustained in repeated judicial decisions” (Meade 1903, 194). Other landowners claimed appropriative rights and used those to monopolize land that they did not own. They could do this because of the permissive system for claiming appropriative rights and the legal ambiguity then existing: Was the amount of the right the amount actually being used, the amount that could be used given the canal capacity, or the amount the appropriator aspired to use in future? (Pisani 2002, 38). For example, while the average flow of the Kings River varied from 5,000 to 10,000 cfs in flood season and from 500 to 1,000 cfs during the low-flow period, the claims to Kings River water amounted to 750,000 cfs, exclusive of multiple claims to the entire river flow. On the San Joaquin River, six entities each claimed the entire average flow, and the remaining claims totaled 8 times its maximum flow—152 times its average flow (Meade 1903, 190).
James Haggin and two partners owned 400,000 acres of land in Kern County by 1878, but claimed appropriative rights for water to irrigate two million acres, many times more than the Kern River ever carried. As their holdings grew, they collided with the downstream riparian rights of Henry Miller. During a severe drought in 1877, their upstream diversions dewatered Miller's lands. In May 1879, Miller sued Haggin and others. The case was tried in 1881, leading to a decision for Haggin. The California Supreme Court heard the case in 1883 and 1884 and ruled for Miller. The majority opinion held that riparian rights were still valid in California. This generated immense public controversy, and the court agreed to rehear the case. The final decision, in April 1886, again favored Miller. The court ruled that riparian rights counted as property rights under common law, and property rights, once vested, could not be taken without compensation.

California's dual system of inconsistent water rights was thus permanently enshrined. Riparian rights were inherently unquantified. Appropriative rights were quantified incoherently, if at all, and unregulated. The only mechanism for resolving disputes, which abounded, was litigation. But, as Pisani (1984, 338) notes: "The legal system resolved few water rights conflicts.... In the absence of a state engineering office, the courts relied almost entirely on biased witnesses for hydrographic information.... In any case, court tests rarely included all interested parties, so the decisions were invariably incomplete. Then, too, enforcing a court decree was no easy matter; contempt proceedings were expensive and subject to the same delays as water rights suits." Some litigation was epic in its scale. The Kings River was notorious. Litigation began in the drought year of 1876 and escalated, totaling 137 suits by 1917. The piecemeal judgments in those suits produced some striking anomalies, such as places where "A had rights superior to B, who had rights superior to C, who had rights superior to A" (Governor's Commission 1978, 24).

Support for water law reform grew during the drought of 1898-99, but it was blocked by water users. Change finally came after the election of a reform governor (Hiram Johnson) and a reform legislature in 1910. In 1911, the legislature declared that "All water or the use of water within the State of California is the property of the people of the State of California" (Cal. Stats. 1911, 821). It created a State Conservation Commission to examine the need for new laws to control use of the state's natural resources. The commission's recommendations were enacted in the Water Commission Act of 1913.
users, the legislation was put on the ballot. It was approved by the voters and took effect in December 1914.

The legislation established a State Water Commission, with the power to regulate unappropriated surface waters of the state. A person wishing to appropriate water after December 1914 applied to the commission for a permit. If the commission determined that surplus water was available, the permit was granted. The permit holder then had the right to take and use the water according to the permit terms. Upon compliance with the permit terms and demonstration of beneficial use, the commission issued a license which confirmed the appropriative right. The commission’s authority was initially nondiscretionary: if the applicant followed the prescribed procedures and unappropriated water was available, the permit had to be issued. In 1917, the commission was given discretion to refuse applications deemed detrimental to the public welfare. In 1921, it was given the power to grant a right “under such terms and conditions” as it judges “in the public interest” and to reject applications not in the public interest.

Once it had issued a permit or a license, the commission had only “a limited role in resolving disputes and enforcing rights of water holders, a task left mainly to the courts.” Thus, while the 1913 act allowed for the administrative conferral of an appropriative (post-1914) right, as in Wyoming, the resolution of any subsequent disputes among water right holders was still left to the courts, as in Colorado. There were two routes by which the commission might enter such disputes. First, under the court “reference” procedure, a court was permitted to transfer a case to the commission to act as referee. Second, upon its own initiative or upon request of a water right holder, the commission could conduct a statutory adjudication of the stream, determining all appropriative rights to water, whether issued before or after 1914. If they wished, water users could obtain a judicial review prior to a final decree.

The California system had two key differences from those of Colorado and Wyoming. First, Colorado and Wyoming arranged for appropriative rights predating the reform legislation to be brought under that legislation and adjudicated, whereas California’s commission lacked authority over pre-1914 rights, except in the case of a court reference or statutory adjudication. Second, while Colorado’s water districts and Wyoming’s water divisions provided an administrative apparatus to supervise the distribution of water, monitoring diversions to ensure conformity with water rights, no such arrangement existed in California. Supervision of water distribution was opposed by water users at the
Conservation Commission's hearings; it was dropped by the commission chair "in a spirit of conciliation." At the time, commentators saw the omission of public supervision of water distribution as a serious flaw.

The Water Commission had no authority over riparian rights. The Conservation Commission had wanted to abolish riparian rights but felt unable to do this (Miller 1985, 12). Instead, the 1913 act stipulated that unused riparian water would be forfeited after 10 years of nonuse. However, the Water Commission had little power to enforce this—riparians could seek relief with the courts—and it was declared unconstitutional in 1935.

Once in operation, the Water Commission issued biennial reports. The first report, in 1917, identified two weaknesses in the 1913 act: lack of detail regarding procedures for a statutory adjudication, and the lack of power to supervise water distribution. The legislature responded by enacting details for an adjudication but did nothing regarding supervision of water distribution. The commission's second biennial report, in 1918, noted the consequences: "The irrigation season of 1918 has been one of unusually low run-off. For most streams in northern California, at least, the run-off this season is the lowest recorded. A number of requests have been received asking the Commission to send a representative to take charge of the distribution of the water of streams" (17)—but it lacked authority to do so. The legislature still did nothing.

The drought worsened during the winter of 1919–20. It coincided with a dramatic increase in rice acreage in the Sacramento Valley, which required more water than other crops. The rice acreage grew from 100 acres in 1910 and 15,000 acres in 1914 to 154,700 acres in 1920 (California State Water Commission 1921, 71). In February, the commission issued a warning of an impending water shortage. The situation was exacerbated by the lack of reliable data on water rights in the Sacramento Valley (153). The problem was eventually solved by voluntary action, without the commission's intervention and without enforcement of seniority. Various agencies organized an Emergency Water Conservation Conference, which included representatives of water users in the Sacramento Valley. The conference persuaded growers to reduce rice plantings by 50,000 acres and to ensure that water was used "with all due economy. . . . Irrigation water was never handled so carefully in the Sacramento Valley as it was during the summer of 1920" (154–55). Though the crisis passed, it highlighted "the necessity for an early determination of the underlying rights to divert water from the Sacramento River." "Without such a determination," the commission warned,
“there is absolutely no basis for a diversion of water among the various claimants in periods of shortage” (155).

The commission’s 1921 report noted a deluge of applications for new permits, “far in excess of the natural summer flow” of all the streams in California, which “has now been fully appropriated and put to use.” Consequently, “the greater portion of the required additional supply must be developed by the construction of storage reservoirs and regulation of stream flow, holding the flood runoff for use during periods of low natural flow” (12). Despite the interest in new reservoir projects, such projects faced the challenge of “how storage water can be released into a natural stream with assurance of its escaping illegal diversion before reaching its destination, or how such a reservoir can be operated to the satisfaction of prior and vested rights of downstream water users” (13). To answer those questions, the commission believed that California needed “a complete water code”; still lacking were “detailed provisions for the public supervision of the distribution of water . . . in accordance with defined rights, and the appointment of water masters when needed” (15). Accordingly, it proposed amendments to the 1913 act. There was partial success. The appointment of water masters to control the use of water was authorized, but only upon written request of the owners of at least 15 percent of the diversion facilities in the region. The recommendation for supervision of water distribution was ignored.

Thus, when California did finally act, it conceded to politically powerful interests. Compared to other western states, the California commission was weakened by the exclusion of riparian rights and pre-1914 appropriative rights, and had little power to enforce post-1914 appropriative rights.

CONSOLIDATION

In July 1921, the commission ceased existence. A new Department of Public Works came into existence, and the commission’s functions and duties were assumed by its Division of Water Rights. In its 1924 report, looking back to the 1913 act, the division observed that, when the commission started, it had “faced a most difficult situation” because of “the maze of legal entanglement” associated with riparian and pre-1914 appropriative rights. It conceded that the legal situation had not changed, “nor has litigation over water matters been done away with. It has, however, been greatly reduced” (9).
Given the lack of authority over riparian and pre-1914 appropriative rights, and the small quantity of post-1914 appropriative rights, how was litigation reduced? Two tools existed for determining pre-1914 rights (the court reference procedure and statutory adjudication), and one tool for supervising the distribution of water under existing rights (a water master). But either a court or the water users had to request these actions. All the commission or division could do on its own authority was to conduct special hydrological investigations; field investigations were also part of reviewing permit applications and determining whether unappropriated water was available. Those investigations turned out to be crucial.

The investigations had a “moral effect,” because “technical and legal information on points formally so obscure can now be secured from an authoritative and impartial source. The assistance of the Division is sought in controversies over water matters not necessarily within the scope of the 1913 act” (Division of Water Rights 1924, 9). As the division noted:

In any legal controversy over water it is most often the questions of fact which are at issue. . . . Whether or not the Division has any quasi-judicial function, it can, if it is in possession of the facts regarding conditions on a stream, make known these facts to the interested parties in the issue and the matter is then susceptible of compromise. . . . The Division acts in the nature of a bureau in answering questions regarding water right principles. In this, it has been of much service in settling difficulties, in clearing up a number of intricate water tangles, and in bringing together those who desired an equitable settlement of their difficulties, but were in doubt as how best to proceed. It is believed that much useless and expensive litigation has been avoided through this service. (Division of Water Rights 1922, 9)

Thus, the division saw “its largest function” as “a fact finding and recording body” (9).

Three factors helped the division bring some order to the tangle of water rights. First, in assessing permit applications it bypassed “paper” water rights and focused on whether unappropriated flow was available. Frequently, “those claiming vested rights admit that there is unappropriated water available to a new appropriator in the source from which they are already diverting and do not object to a new diversion, provided their prior rights are respected” (Division of Water Rights 1924, 38). Second, in 1923 the division was allowed to modify its procedure for protested permit applications: it could now hold a hearing before the decision, instead of afterwards. This had substantial procedural and psychological
impacts. "Particularly in the larger and more important cases, the action of the Division is expedited, as each of the contesting parties assumes a greater share of the burden in preparing his own case and presents it in better shape, thus overcoming the tendency for such matters to drag on. . . . It may also be noted that the hearing procedure through its formality discourages trivial protests and has tended toward the adoption of a new mental attitude on the part of those whose interests are jeopardized by proposed appropriations."14 Third, the division extended its influence through its readiness to conduct informal investigations. "While some [requests for a hydrographic investigation] come to the Division as requests for adjudication, others come as a request for an informal physical investigation. In some instances the existing rights are so complicated . . . that it is felt that the formal adjudication procedure might not be successful; however, if the physical facts can be determined by investigation this will suffice" (Division of Water Rights 1922, 14).

Thus, a degree of order came to California's water rights administration. But this occurred only if the water users invited it. Thus, water users on the Kings River decided in 1917 to end their litigation wars and request a water master, because they wanted a dam (the Pine Flat Dam), for which a determination of existing water rights was needed (California State Water Commission 1921, 14). There were other cases where the water users wanted no intervention; there, the courthouse remained the only venue for dispute resolution.

WATER MANAGEMENT THROUGH THE COURTS

One dispute involved upstream diversions and downstream water quality in the Delta. While the Delta waters are tidal, they are not saline, except in late summer and fall when low outflow from the Sacramento and San Joaquin Rivers permits saltwater to advance inland. During the 1920 drought, the Sacramento River flow dropped by about 90 percent, to a record low of 420 cfs, coupled with record salinity intrusion into the Delta. In July 1920, the Delta town of Antioch sued upstream irrigators in the Sacramento Valley to stop their diversions from causing salinity to reach the intake for the town's water supply (itself a diversion of less than 1 cfs). At least 3,500 cfs of Delta flow was needed for an acceptable salinity level. In 1922 the California Supreme Court rejected the suit because "it would be hard to conceive of a greater waste for so small a benefit" than to require that an additional 3,080 cfs flow unused to the ocean to provide less than 1 cfs for municipal use.
This case raised two fundamental issues. First, could a water right be used to regulate streamflow for water quality, in this case salinity? The Antioch court recognized that "an appropriator of water from a stream for domestic and similar uses has the right to enjoin the pollution of the stream above him," but considered that diverting water, as opposed to discharging something noxious into a stream, could not be considered an action "that in the least affects the purity of the water." Thus, streamflow was not a water quality parameter. Second, should the interests of downstream water users prevent the construction of upstream storage? The court noted that, if it acceded to Antioch's request, this would set a precedent that could impede the construction of storage, an outcome "highly detrimental to the public interests."

Storage was of keen interest. The 1920 drought demonstrated that additional storage was needed to accommodate new applications for water rights. Also, since the early 1900s electric utilities had become interested in hydropower; these included Southern California Edison, which was looking to the headwaters of the San Joaquin River.

The 1913 act limited annual water use on uncultivated riparian land to 2.5 acre-feet per acre. This was at issue in Herminghaus v. Southern California Edison (1926). The Herminghaus family owned undeveloped riparian land along the San Joaquin River, used for pasture and, since 1896, leased to Henry Miller. For forage, they had the practice of temporarily damming the river during the spring runoff so that it overflowed the land and produced a crop of natural grasses. Their 1913 act limit was approximately 54,000 acre-feet, but they diverted the entire river flood flow, around 1.8 million acre-feet. Edison had riparian rights to the upper San Joaquin, and constructed its first hydropower facility in 1911. In the 1920s it was planning to expand that system. Its reservoirs would store water used to flood the Herminghaus lands, and Herminghaus sued. Edison claimed the right, as a riparian, to store water when the volume of flow far exceeded the needs of downstream irrigators, releasing it in the late summer when irrigation water was in short supply while generating electricity for public use. Herminghaus argued that it had a riparian right to divert the flood water.

The court ruled that the riparian right did include the use of flood waters, but it did not include storage, so Edison impounded water as a mere appropriator. The public benefit of Edison's reservoirs was irrelevant. At that time, California courts applied a standard of reasonable use in disputes among riparians, among appropriators, and between a riparian and an appropriator where the riparian claimed unreasonable
use by the appropriator. But they refused to apply reasonable use to a claim by an appropriator against a riparian. Following that principle, the lower court ruled for Herminghaus. On appeal, the California Supreme Court upheld the ruling. There was a wave of public outrage. There was also "a rash of new cases" against hydropower projects (Miller 1989, 103). In response, the legislature placed a constitutional amendment on the ballot declaring that "the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable," and required that all surface water use—riparian and appropriative alike—be reasonable and beneficial. The amendment passed in November 1928.

**CONSTRUCTING A HYDRAULIC SOCIETY**

By then, California was immersed in water projects. The notion of transferring surplus Sacramento River water to the drier San Joaquin Valley was first suggested in 1858 and was the subject of extensive investigations by the State Engineer, William Hammond Hall, in 1877-88. It resurfaced in 1919 in a proposal by Robert Marshall. Prompted by the 1920 drought, the legislature allocated funds for water resources investigations and, following the 1924 drought, it allocated additional funds. The report, in 1927, offered a coordinated plan for developing the state's water resources (Division of Engineering and Irrigation 1927). That was a banner year. Besides placing the constitutional amendment on the ballot, the legislature authorized the Department of Finance to file to reserve appropriative water rights that might be needed for a statewide water plan, with the notion that it would assign those rights only to users whose projects conformed to that plan. In 1929, water planning moved into high gear. The Division of Water Rights was combined with the Division of Engineering and Irrigation within the Department of Public Works to form a single Division of Water Resources. Funding was allocated for an expanded water planning effort. The product was a detailed proposal for a State Water Plan (Division of Water Resources 1931). The plan's main focus was to provide storage upstream in the Sacramento Valley and to transfer water to the San Joaquin Valley.

In 1933, the legislature endorsed the project and authorized a bond issue, which was narrowly approved by voters. With California then in the depths of the Great Depression, the state made no attempt to sell the bonds. Instead, it turned to the federal government for help, first
seeking grant or loan assistance and then, with those not forthcoming, asking it to take over the project. In 1935, President Roosevelt released emergency relief funds so that work could begin. In 1937, Congress formally approved the Central Valley Project (CVP) as a Bureau of Reclamation project. Construction of Shasta Dam started in 1937 and was completed in 1945; the hydropower and other ancillary facilities were completed in 1950. Construction of Friant Dam also started in 1937; it was completed in 1942. The Madera Canal was completed in 1945, and the Friant-Kern and Delta-Mendota Canals in 1951.

The war led to a boom in California's agriculture and economy, and it continued afterwards. Irrigated acreage grew from 5.1 million acres in 1939 to 6.6 million acres in 1949. The population increased from 6.9 million in 1940 to 10.6 million in 1950. The growth in potential demand for water clearly outstripped the supply expansion from the CVP.

California, by then chafing at federal control of the CVP, created a water planning authority in 1945 and funded a state-wide water resources investigation in 1947. In 1951, a report was released proposing a new large dam in the Sacramento Valley and an aqueduct through the San Joaquin Valley to Southern California (California State Water Resources Board 1951). That year, the legislature authorized what became the State Water Project (SWP) and appropriated funds for detailed engineering studies. This gained further momentum from a massive flood in 1956 which the new dam could have prevented. To implement the project, the Department of Water Resources was created that year as a superagency vested with all the powers and responsibilities relating to water from the Department of Public Works and other state agencies. In 1957, the department issued the culminating product of the decade-long state water investigation, a comprehensive master plan for the SWP. In 1959, the legislature authorized bonds for the first stage of the SWP. This was the largest bond issue ever offered by any state, and it was made subject to voter approval. The bond was narrowly approved in an election in 1960; the northern counties, reluctant to send “their” water south, rejected the proposal; the southern counties, containing the majority of the beneficiaries, provided the margin of victory.

Meanwhile, the CVP was also being expanded. Folsom Dam was completed in 1956, and Trinity Dam in 1963. The CVP division delivering water to the west side of the Sacramento Valley was largely completed by 1965. The new CVP and SWP dams released water into the Sacramento River to flow into the Delta for pumping southward. This required additional pumping capacity in the Delta and additional conveyance capacity.
in the San Joaquin Valley. These were supplied through a federal–state partnership, which included a new aqueduct. The federal portion was known as the San Luis Aqueduct. The SWP portion, known as the California Aqueduct, carried water over into Southern California. Construction of the CVP portion was completed in 1968, and of the SWP portion in 1973. With that, California’s modern hydraulic system was in place.

That system represented a strategy of supply expansion rather than more efficient management of existing resources. What was the role of water rights in the strategy?

The 1928 constitutional amendment was crucial. Without it, most of the new dams could not have been built. However, following a 1935 Supreme Court ruling, the reasonable use doctrine fell into dormancy, losing the effective ability to restrict wasteful water use. Also, when the Division of Water Rights was folded into the Division of Water Resources in 1929, this reduced the resources and attention devoted to water rights administration.

The projects’ financing was based on water users’ paying the cost of the water supplied by the project. For those receiving water from the new CVP canals, that amount could readily be quantified. Not so for users diverting water from the San Joaquin or Sacramento River. With the San Joaquin River, which would be dried up downstream of Friant Dam, the diverters would receive a like amount of water from the Delta-Mendota Canal as a free replacement. The Shasta and Trinity Dams changed the seasonal timing and volume of Sacramento River streamflow, producing less flow in the spring but more in the late summer, and created the risk that existing diverters would grab the augmented late-season flow. These diverters could divert the amount of their pre-existing right to river water (their base supply) for free; if they wished, they could divert an extra quantity, for which they paid (project water). Determining those quantities of water was problematic. For existing users with riparian rights, there was no quantity associated with their right. For users with pre-1914 appropriative rights, those rights remained unquantified because they were outside the Water Commission Act’s purview. For users with post-1914 rights senior to the CVP, the loose administration of post-1914 water rights made those quantities uncertain, too.

The burden of negotiating quantities fell on the CVP and SWP. This was harder in the Sacramento Valley than in the San Joaquin Valley.

In the San Joaquin Valley, a key factor was Henry Miller’s dominance. He had been exceptionally litigious in protecting his water rights.
A 1933 suit against the Madera Irrigation District had generated "nearly a complete adjudication of rights" to the San Joaquin River upstream of Mendota Pool (Graham 1950, 597). Moreover, his company was now in a period of decline and, for several reasons, "needed to sell its water rights before it lost them" (Garone 2011, 165). In 1939, it reached an agreement with Reclamation to sell the water that flooded its pasture lands, and it received an exchange contract to provide substitute water for its irrigated croplands in the San Joaquin Valley. The agreement became the model for contracts with other riparian landowners and ultimately fixed the level of their compensation (Miller 1992, 173).

In the Sacramento Valley, there were many small landowners, with no dominant landowner like Miller and little prior litigation that might have quantified water rights. Impounded water flowed along the river channel to the Delta. The legal point for CVP and SWP diversions was near the Delta, several hundred miles downstream from the points of storage, with many intervening users in between. As the state's chief water lawyer warned in 1942, whether an adequate amount of project water would be available for export depended "upon the degree to which the rights of these intervening users are defined with exactitude, as well as the extent to which those users voluntarily confine themselves thereto. In the existing condition of human nature it may be confidently predicted that [they], finding an abnormal increment in the stream, will each for himself define and exercise their rights in their own favor with substantial elasticity" (Holsinger 1942, 13). Exactitude in the definition of those rights required a statutory adjudication. The Reclamation supervisor in Sacramento had recommended this in 1939, but his superiors in Washington rejected it. California now proposed this in December 1942, but Washington again rejected it. By 1951, with the CVP in full operation, the situation had worsened. Sacramento Valley diversions, which had averaged about 1 million acre-feet annually from 1924 to 1940, soared to 2 million acre-feet in 1951. More diversions meant less project exports. Reclamation leadership was concerned enough to consider requesting an adjudication. At that point, the water users in the Valley brought Congressional pressure on Reclamation to abandon that notion (Bain, Caves, and Margolis 1966, 477). For another decade, Reclamation and the Sacramento River water users continued to disagree about water amounts for settlement contracts. Finally, after 20 years of negotiations, and under pressure from the Secretary of the Interior, Reclamation began signing settlement contracts in 1964.
THE WATER RIGHTS BOARD ERA

To prevent further conflict of interest, the 1956 reorganization that created the Department of Water Resources to operate the SWP also established a separate entity, the State Water Rights Board (SWRB), which assumed the responsibilities of the Department of Public Works regarding surface water rights. The new SWRB was a diminished version of the 1920s Division of Water Rights, and had less ability to manage post-1914 rights. It lost the authority to provide water master service, which stayed with the Department of Water Resources. That department also retained many experienced staff, including engineers employed in field investigations to measure water diversions, which "severely handicapped" the SWRB and limited its effectiveness (California State Water Rights Board 1957, 34). It faced a "heavy backlog" of applications for new permits, accumulated "over a long period of years" (Holsinger 1957, 686).

With new applications, the SWRB tightened the information requirements to validate the amount of water claimed. But it was in a weak position with respect to existing rights, lacking authority over riparian and pre-1914 rights, and with few resources to monitor post-1914 rights. There was no more collection of data on diversions. In 1965, an ineffectual attempt was made to change this, motivated by concerns over uncapped riparian diversions. Riparians and appropriators with both pre- and post-1914 rights were required to file a statement every three years with the SWRB detailing their monthly diversions. But the information was "for information purposes only," and failure to file lacked legal consequences. Smaller diverters in the Delta and others received exemptions. The result was little compliance: in 1978, only 10 percent of holders of riparian and pre-1914 rights filed statements.

The SWRB was also in a weak position to address the water projects. Though the CVP's permits had not yet been issued—this was the immediate task for the SWRB—it was delivering water on a massive scale as a fait accompli. The SWRB could approve permits for the CVP (and SWP) only if (1) unappropriated water was available, (2) this was in the public interest, and (3) it did not impair existing vested rights. That depended on the amount of water controlled by existing vested rights, something not clearly known and beyond the authority of the SWRB to determine. There had been a conscious decision in 1939–42 and in 1951 against holding an adjudication, and the SWRB was not going to touch that.
In its first CVP decision in 1958 (D-893), the SWRB considered applications to divert American River water by the CVP, the city of Sacramento, and various others, significantly exceeding the river flow. There also were state applications for future water developments in upstream counties, and flows for fish conservation requested by the Department of Fish and Game. There were multiple protests, including claims that the diversions would harm vested rights downstream by increasing salinity in the Delta. The SWRB rejected most of the applications but granted the CVP and Sacramento applications, subject to (1) future agreements among the parties to control Delta salinity, (2) future reductions for within-watershed development, and (3) compliance with recent Fish and Game agreements for fish flows. This set the pattern for CVP and SWP applications: the SWRB granted the projects’ applications on an interim basis subject to the resolution of ongoing negotiations about vested water rights, salinity levels, and/or fish conditions. At intervals, the SWRB reopened the decision process, heard evidence, and made a new interim decision on similar terms. This pattern of deference to negotiations among the interested parties continues to the present day, and the negotiations remain largely unresolved.

What did change was the growing power of environmental concerns. In 1949, California adopted the first comprehensive water pollution control law in the United States, creating a statewide water pollution control agency. By 1961, interest in water quality had broadened beyond human health protection: enhancement of fish and wildlife resources was declared an official purpose of the SWP. The issue of salinity in the Delta refused to go away. In the 1940s, the CVP’s strategy was to rely on releases from Shasta to control salinity in the Delta. In the 1950s, the CVP backed away from that commitment. The Delta was the hub for moving project water to agricultural and urban users in the San Joaquin Valley and Southern California. Salinity in the Delta mattered to users both there and in export areas. In 1959, the Delta Protection Act was passed, mandating that the Delta be kept fresh enough for these purposes. Freshwater releases not only reduced salinity but also protected fish and the Delta’s aquatic ecosystem. The two concerns became mutually reinforcing. A 1966 legislative report asserted that downstream water quality was receiving inadequate attention from the SWRB: “The problem of resolving the protection which the Delta water users should receive, based on their vested rights, is beyond the ability of the presently organized SWRB to solve” (California Assembly Interim Committee on Water 1966, 28). The report called for the combination of water
rights and water quality regulation in a single entity. In 1967, the State Water Resources Control Board (SWRCB) was created, combining the functions of the SWRB and the water pollution agency. In 1972, when the federal Clean Water Act mandated state water pollution regulation under EPA oversight, the SWRCB became the state's designated water pollution regulation agency and its water rights agency.

The SWRCB started off energetically, but then bogged down. Its first Delta decision, D-1379 in 1971, strengthened the conditions imposed earlier for salinity control and fish protection, and introduced new water quality standards to protect agricultural and urban uses in the Delta. But before the decision could be implemented, it was stayed by a suit challenging the SWRCB's authority to impose conditions on permits held by Reclamation as a federal agency. The U.S. Supreme Court resolved the legal issue in the SWRCB's favor in July 1978. In August 1978, the SWRCB issued D-1485 together with a Delta water quality control plan. These further strengthened water quality standards and introduced monitoring for compliance. To ensure that Delta water quality would not be impaired by the projects, D-1485 required them to release water and/or curtail diversions if the flow into the Delta would otherwise be insufficient.27 It was greeted with a barrage of lawsuits from water users. In 1986, a California Court of Appeal ruling dismissed the challenges to the SWRCB's authority.

By then, compared to the SWRB in 1956, the SWRCB had powerful tools in its water rights arsenal. As Gray (chapter 4, this volume) shows, California courts used the reasonable use doctrine, revived by the 1967 Joslin decision, to enhance the SWRCB's regulatory jurisdiction with a reasonableness criterion responsive to changing circumstances. The 1986 Appeal Court ruling held that D-1485 was too narrow. While, under water law, the SWRCB had respected vested nonproject rights in conditioning project permits, under its water quality authority it could regulate all water users to ensure a reasonable level of water quality protection. Both sources of authority should be exploited. And the public trust doctrine, upheld in the 1983 National Audubon ruling, gave the SWRCB power to overturn settled water rights if subsequently found to violate the public trust, including protection of environmental resources.

Thus armed, a more ambitious SWRCB reopened its decision process. A draft report in November 1988 called for a "California Water Ethic" with more vigorous urban and agricultural conservation, a cap on Delta exports, and tighter water quality standards. The water users howled, and the governor pressured the SWRCB to withdraw the draft and let the
parties negotiate among themselves. Following agreement between urban and environmental, but not agricultural, interests, the SWRCB issued a draft decision, D-1630, which limited exports in dry years and required additional fish flows. At the behest of agricultural users, the governor vetoed the decision in April 1993, leaving D-1465 still in place.

Now the EPA intervened, threatening to impose its own water quality standards for the Delta. An eleventh-hour agreement averted this in 1994, establishing CALFED, a collaborative planning process overseen by state and federal agencies and key stakeholders, largely sidelining the SWRCB. CALFED produced some positive results, including scientific investigations, but no agreement. Native fish species continued a steep decline, with no simple remedy in sight. With leadership changes in Washington and Sacramento, the political support and funding that had sustained CALFED a decade earlier evaporated, and it was terminated in 2006 (Hanemann and Dyckman 2009).

CALFED was blamed for failing to reverse the Delta ecosystem’s decline or to improve supply reliability for water users. Yet CALFED had no power to limit diversions or set water quality standards—those powers remained with the SWRCB. The SWRCB is tasked with “the orderly and efficient administration of the water resources of the state” (Water Code, Article 174). It has “primary responsibility” for implementing the reasonable use doctrine and for ensuring “meaningful implementation of the public trust” (Robie 2012a, 1175–76). It has not lived up to those obligations, instead displaying chronic passivity and regularly deferring to hoped-for stakeholder agreement. Why? The water rights section was, and is, chronically understaffed for both water use monitoring and scientific analysis. The board is under the governor’s thumb, whether indirectly or through his open intervention. Governors, kowtowing to water users, have controlled the board. This is a political failure: a lack of political will to ensure that the board’s regulatory functions are performed.

The SWRCB’s weakness affects not only permits and water quality standards but also the enforcement of water rights generally. Riparian and pre-1914 rights remain largely unverified and unquantified. Compliance inspections of diverters during 1998–2003 found that 38 percent were in violation of their water rights, and another 11 percent were subject to revocation for nonuse. In three watersheds, an inspection found 50 percent of small reservoirs diverting without a right (California State Water Resources Control Board 2008, 6). Besides personnel, enforcement authority was still inadequate. "Currently, [the SWRCB]
does not possess sufficient authority to effectively monitor and enforce water right laws. In particular, the law does not (1) provide clear authority for SWRCB to require monitoring by diverters, (2) authorize monetary penalties for monitoring and reporting violations, (3) have adequate penalties for unauthorized diversions and violations of cease and desist order, and (4) have provisions for interim relief” (8).

A NEW ERA?

Around 2005, new concerns arose that the Delta was in crisis due to ecosystem decline and levee vulnerability to seismic and erosion risks. Levee failure could permit massive saltwater intrusion, jeopardizing water exports to the south. In March 2007, Governor Schwarzenegger appointed a Delta Vision Blue Ribbon Task Force, mandating a report by November 2007 and a strategic plan by October 2008. Legislation implementing those recommendations was introduced in February 2009, but bogged down amid water user opposition. It emerged, somewhat shorn, in the last hours of the session in November 2009. It established “the two coequal goals of providing a more reliable water supply for California, and protecting, restoring and enhancing the Delta ecosystem.” To that end, a Delta Stewardship Council was created, tasked with developing a comprehensive Delta Plan. It created a Watermaster for the Delta, appointed by the SWRCB and the Delta Stewardship Council, to “exercise the [SWRCB’s] authority to provide timely monitoring and enforcement of [the SWRCB’s] orders and . . . permit terms.” It introduced penalties for failure to file diversion reports, removed the reporting exemption for in-Delta diverters, and authorized additional enforcement staff for the SWRCB. Missing were increased penalties for illegal water diversions, enhanced SWRCB enforcement authority, and independent power to initiate an adjudication.32

The Delta Watermaster has displayed vigor and independence in monitoring diversions and enforcing water rights in the Delta. Compliance with the diversion-reporting requirement is now 99 percent in the Delta, and 70 to 85 percent elsewhere. Overall, however, the SWRCB’s monitoring and enforcement authority for water rights remain “weak” and “inconsistent with its broad enforcement authority over water quality” (Wilson 2012, 3, 10).

Yet, following the declaration of a drought emergency in January 2014, the SWRCB has shown unaccustomed forcefulness, more than in previous droughts.
In the 1977 drought, the SWRCB sent out 4,858 notices of shortage on various streams. Based on projections of summer demand and streamflow, the notices identified time periods when each broad user category (riparian, pre-1914 or post-1914) could take no water or had to reduce diversions by a given percentage. However, lacking the authority to supervise water distribution, the SWRCB relied on enforcement on complaints received and field visits. In May 2014, based on similar projections of demand and streamflow, the SWRCB issued 8,596 notices of curtailment for all post-1914 rights in the Sacramento–San Joaquin watershed, requiring submission of curtailment certification within seven days. There was only a 29-percent response. Invoking its reasonable use authority, the SWRCB adopted emergency regulations in July to streamline and better enforce curtailment, subjecting noncertification of future curtailment to a penalty of $500 per day. It also adopted emergency regulations mandating urban water suppliers to impose conservation measures equivalent to limiting outdoor use to two days per week, with monthly monitoring reports required.

These actions also exposed the SWRCB’s weaknesses. Commenters complained that the proposed 2014 emergency regulations were illegal if applied to riparian or pre-1914 rights. By disregarding individual facts and circumstances and making a blanket determination of unreasonable use for a broad user category, the SWRCB had violated due process. The shortage projections were unreliable because the SWRCB’s diversion data were incomplete (pre-1914 data lacks priority dates), unverified, and inaccurate. The curtailments shielded the projects from their existing responsibility to meet Delta water quality standards, and were an attempt to shift that responsibility to other users without a formal decision process. It is presently unknown whether those objections will be litigated and sustained. Also unknown is whether the SWRCB’s new forcefulness will continue when the drought ends.

CONCLUSION

California started out with a surface water right that was extremely unsuited to its location in a semi-arid region with highly variable stream flow. While still keeping the riparian right, it invented another type of water right, the appropriative right, which became the standard in the other Western states. As originally implemented in California, the appropriative right lacked effective recording, quantification or enforcement. Other states discovered this once they emulated California’s system, but
they soon instituted reforms that made the appropriative right more functional. The reforms provided a usable record of who had rights and with what seniority, and an apparatus on the ground for monitoring diversions and enforcing seniority. Moreover, while appropriative rights obtained earlier were initially grandfathered, they were subsequently brought into compliance with the new administrative system. In California, by contrast, reform of appropriative rights was long blocked by water users and arrived relatively late, in 1914. When California acted, what it did was limited. There was recording of post-1914 rights but not supervision of the distribution of water to ensure conformity with those rights. Pre-1914 rights stayed outside the authority of the SWRCB and its predecessors; they still remain unquantified in many cases, and they require litigation to quantify or enforce them. Riparian rights are also outside the SWRCB’s authority, and they are unenforceable and unquantifiable except through litigation. A systematic quantification of surface water rights in California’s Central Valley would require a statutory adjudication or something equivalent. This was mooted several times, including in 1939, 1942, and 1951, but was rejected as too time-consuming. Seventy-five years later, it is still needed.

The system of water rights affects the allocation of surface water in several ways. It hinders the re-allocation of water through water marketing. Riparian rights can be transferred to nonriparian land only through guile. Without more formal verification, unquantified or poorly quantified appropriative rights can be leased short-term but not leased long-term or permanently transferred. Hence, the vast majority of water marketing in California has been restricted to short-term leases. When there is a drought, the system’s weaknesses show up. In past droughts, water suppliers and users have worked things out informally among themselves, sideling the SWRCB or its predecessors and largely bypassing seniority. When the SWRCB did attempt to enforce seniority, it acted in a simplistic manner: in the 1977 and 2014 droughts, it treated all post-1914 rights as the same without regard to seniority within the category. (It did the same in 1977 for pre-1914 rights, treating them as a homogeneous category.) The lack of data on quantities associated with water rights and on actual diversions left no alternative. The system performs worst with regard to the allocation of water between instream and off-stream uses. Large-scale diversions have been occurring from the Delta since 1949, but there is still no authoritative determination of responsibility for meeting Delta water quality objectives. The SWRCB has relied so far on restricting CVP and SWP diversions to
meet those objectives, despite the 1986 Appeal Court ruling that it could regulate all water users to ensure a reasonable level of water quality protection in the Delta. As the demand for water in California grows, as the Delta ecosystem declines, and as drought becomes more common with climate change, the SWRCB’s failure to exercise its full legal authority will become increasingly burdensome and costly.

NOTES

1. Space precludes discussion of groundwater rights in California. Put simply, that situation has been even worse, although legislation enacted in September 2014 may eventually lead to some effective regulation of groundwater overdraft.

2. That restriction was not initially enforced in California.

3. Some of these details emerged gradually through court rulings in the period 1897–1927.

4. Meade (1903, 199–202) provides several examples where, between 1860 and 1890, ditch companies lost their entire investments because they were unaware of superior appropriative rights elsewhere on the stream.

5. In order to secure a complete and consistent settlement of water rights to a stream, all potential claimants must be brought into the same suit, either through a suit to quiet title or through a procedure known as a stream adjudication.

6. The states adopting appropriative rights as the only form of surface water right were Alaska, Arizona, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. The states maintaining a dual system of riparian and appropriative rights were Kansas, Nebraska, the Dakotas, Oklahoma, Oregon, Texas, and Washington (relatively humid, non-mining states).

7. Nebraska, Nevada, Utah, Idaho, the Dakotas, New Mexico, and Arizona.

8. The court ruled that under certain conditions that did not hold in this case—if the appropriator began using water from a stream before a riparian acquired his property—the appropriation doctrine would prevail.


10. Wiel (1914, 446), states that “there was a promise of opposition to the bill if such provisions went into it.”

11. Wiel (1914, 446); Chandler (1913, 162, 168). Chandler comments, “There is little use in securing an adjudication unless properly authorized officials are charged with the regulation of headgates in accordance therewith.”

12. The commission originally had authority over riparian rights in a statutory adjudication; that authority was removed in 1917. It had authority over riparian rights in a court reference if the court so decided.

13. Under the 1913 act, the commission (or division) was authorized to initiate an adjudication on its own authority. As of 1922, this authority had never been exercised (Division of Water Rights 1922, 8). It was never exercised subsequently, either.
14. Division of Water Rights (1924, 38). Another modification in 1923 changed the filing fee from a flat charge to a fee that varied according to the amount of water applied for. This “played an important role in eliminating many purely speculative filings” (Division of Water Rights 1926, 26).

15. The legislation waived the diligence requirement that these rights be exercised within a fixed period or be lost.

16. These users received what were called *water service contracts*.

17. These contractors are *exchange contractors*, because they exchanged their right to river water for CVP deliveries.

18. These contractors are *settlement contractors*. The SWP also has some settlement contractors on the Feather River.

19. Following litigation, owners of land along the dewatered San Joaquin River segment received compensation for the loss of their land value.

20. Authority to prevent unreasonable use of water remained exclusively with the Department of Water Resources until 1971.

21. Starting with the 1924 drought, there had been an annual inventory of individual diversions in the Central Valley. This ceased in 1956.

22. For post-1914 rights, the “face value” (maximum diversion) is known, but the amount actually diverted is “only a fraction of face value” and is “unde­termined” (California State Water Resources Control Board 2008, 4).

23. Governor’s Commission to Review California Water Rights Law (1978, 18). During the 1977 drought, the SWRCB received about 150 complaints of illegal diversions or violations of permit terms. Upon investigation, 30 cases were found to merit enforcement actions. This was “the first time since enactment of the Water Commission Act in 1914 that the State has enforced its jurisdiction to enjoin illegal diverters” (Division of Water Rights 1978, 18).

24. The Governor’s Commission (1978, 26) suggested that, once signed, the settlement and exchange contracts provided de facto quantification of the riparian and pre-1914 rights of CVP contractors. But those contracts represented a judgment by an agency (Reclamation) that lacked the authority to determine water rights in California. Similarly with the SWP contracts signed by the Department of Water Resources. Olson and Mahaney (2005, 82), staff counsel to SWRB’s successor, reject the commission’s suggestion: “Various agencies conducted studies in order to make assumptions regarding the physical characteristics involved, including estimates of existing water rights. However, these studies did not determine actual water rights, and clearly state that assumptions may differ substantially from the actual rights as determined in a court or by the [SWRB].”

25. In 1959, the SWRB received formal authority to reserve jurisdiction to modify or delete terms when issuing CVP and SWP permits.

26. See Hanemann and Dyckman (2009), who argue that the negotiations are a zero-sum game, thus inherently incapable of yielding a stable bargaining outcome.

27. In 1981, the SWRCB added a condition, Term 91, prohibiting users junior to the projects from making diversions when stored project water was being released to meet Delta quality standards. First seen as an interim measure pending more comprehensive studies of water availability for all diverters, and then
made permanent when that approach was abandoned "due to lack of adequate 
data," this condition was applied to permits with post-1978 rights, and subse­
quently to some post-1965 permits. Invoked almost every year since 1984, it 
covers only 233 out of 5,500 diverters, and enforcement is limited.

28. In 1995 the SWRCB adopted a Delta Water Quality Plan with new 
standards for fish and wildlife, based on recommendations agreed to by the par­
ties. It planned a water rights hearing to allocate responsibility for meeting 
flow-dependent objectives, but canceled this "to facilitate negotiations" that 
might lead to a settlement among the parties, meanwhile leaving the CVP and 
SWP with ultimate responsibility for those objectives (D-1647, WRO-2001- 
05). Despite legal challenges, the decision was largely upheld in 2006, except 
that the court ruled that the SWRCB could not substitute flow objectives agreed 
to by the parties for those in the 1995 plan.

29. See Robie (2012b, 9-11): "the Board has been too timid in its leadership, 
and overall has been a disappointment. . . . It remains critical for the [SWRCB] to 
take a more active role in applying the reasonable use and public trust doctrines 
. . . of its own accord . . . I urge the Board to be more proactive, more bold . . . 
in fulfilling its adjudicatory and regulatory functions." Also see Nawi and Mac-
Millan (2008, 4): "When [the SWRCB] has taken effective action, this has tended 
to be the result of consensus reached by parties outside the Board's process."

30. The formulation currently used by the governor's staff when telling you 
that you are off the board is: "The space is needed for someone else."

31. From 1983 to about 2000, Sawyer (2005, 36) notes, the SWRCB "was 
less interested in water right enforcement" due partly to gubernatorial direc­
tives and partly to staff shortages, as personnel were reallocated from enforce­
ment to other tasks. (Staffing resources, of course, also reflect gubernatorial 
priorities.) Interest in enforcement revived somewhat thereafter.

32. The last was recommended, to no avail, by the Governor's Commission 
in 1978 as well as by the Delta Task Force in 2008.

33. The notice warned that, if current conditions continue, the SWRCB 
might also curtail pre-1914 and riparian diversions.

34. The draft regulations applied to all diverters, including pre-1914 and 
riparians; pre-1914 and riparian rights were omitted from the version adopted.

REFERENCES

California Assembly Interim Committee on Water. 1966. A Proposed Water 
Resources Control Board for California: A Staff Study. Sacramento.
sion of California. Sacramento.
——. 1921. Third Biennial Report of the State Water Commission of Califor­
California's Flawed Surface Water Rights


