

Climate Change Drives Water Law Innovation

by Kenneth J. Warren / *The Legal Intelligencer*

Impacts from climate change make headline news. Intense precipitation events followed by extended periods of dryness or drought are common. Snowpack supporting stream flows is diminished and melts earlier in the season. Storm surges and rising sea levels inundate coastline communities. The southwestern United States suffers from prolonged drought of unprecedented duration and intensity. Available surface water and groundwater supplies supporting public water supply, agriculture, hydroelectric power, recreation, and other uses are stressed, or at times unavailable.

Dams and reservoirs are the traditional structural solutions for managing river flows. But during the long-term droughts associated with climate change, they have proven inadequate to support stream flows and diversions. Dry conditions in the Colorado River Basin have reduced the nation's two largest reservoirs, Lake Mead and Lake Powell, to about 26% of capacity. As a result, states in the Lower Colorado River Basin are engaged in the painful process of reducing their diversions.

River basins in the southeast have likewise been stressed by drought, resulting in U.S. Supreme Court litigation. Most recently, Florida unsuccessfully sought to invoke the court's jurisdiction to reduce Georgia's water diversion to protect Florida's oyster population, and Mississippi unsuccessfully sought damages from Tennessee for withdrawing groundwater originating in Mississippi.

Water laws developed during a period when climate conditions were stationary and amounts of precipitation reliably fell within an anticipated range now seem archaic. In the eastern United States with relatively abundant water supplies, the common law permitted riparian owners to make reasonable use of water flowing through or located under their lands, as

long as that use did not interfere with downstream users. In response to needs of growing populations and industry to divert water for nonriparian uses, the locations to which water may be permissibly transferred expanded. Thereafter, states introduced greater predictability by establishing water withdrawal permitting regimes sometimes referred to as regulated riparianism.

Different water rights systems arose in the American West in response to its arid conditions. Western states follow the prior appropriation doctrine that recognizes surface water rights based on the principle, first in time, first in right. Water withdrawers possess a property right entitling them to continue their withdrawals as long as they beneficially use the water without waste. When sufficient water is unavailable to satisfy all water users, those with senior rights (i.e., persons who commenced withdrawals earlier) have priority over later users.

Initially imposed through the common law, the prior appropriation doctrine has been codified in some states, with older rights established through stream adjudications and more recent rights documented in administrative permits or certificates. Notably, in contrast to surface water, groundwater is subject to the reasonable use doctrine, although in some states it is regulated by permit.

Water law doctrines initially paid scant attention to the instream flows necessary to sustain aquatic ecosystems. Many states now recognize the importance of maintaining minimum flows. And even in states reluctant to consider ecological flows, federal laws may impose minimum flow requirements necessary to maintain water quality and aquatic habitat. Clean Water Act water quality standards, the Endangered Species Act taking and jeopardy provisions, and the Federal Power Act mandate to give equal consideration to enhancement of fish and wildlife have resulted in allocation of water to maintain instream flows.

Notwithstanding federal requirements, water quantity remains primarily subject to state law. Revision of these laws is needed to respond to changes in the amount and timing of precipitation resulting from a changing climate. To meet water demands, including by cities holding junior appropriated rights or relying on sources of surface water or groundwater stressed

by drought, a resilient water system that furthers our public policy choices is needed. Some of the potential elements of a new water regime are discernable, while others are more difficult to predict.

The need to manage water quantity and water quality together is apparent. Water uses including public water supply, agricultural and industrial operations, recreation, and protection of aquatic life require water in sufficient quality and quantity. Water dilutes the pollutants entering the waterbody. Particularly during drought conditions when stream flows diminish and uses must be curtailed, water law managers should recognize the relationship between the water quantity and quality.

Similarly, conjunctive management of surface water and groundwater would enable regulators to make the best use of available water supplies. In locations where surface water and groundwater are hydrologically connected, withdrawals from an aquifer may reduce stream flows. Hydrologic principles support managing surface water and groundwater under the same rules.

By reducing demand, water conservation and efficiency measures continue to play an important role in providing reliable water supply. Water loss audit methods and other techniques to detect and minimize water loss through distribution systems are being deployed, and water uses of low priority such as lawn watering may be limited or prohibited. As necessary, the largest water user, agriculture, may need to improve irrigation techniques or sacrifice irrigation acreage. When water demand declines, water allocations to existing users may be reduced by the amount of savings realized and the allocations may be made available to support instream flows or other demands.

Curtailed of existing water rights to serve cities or augment stream flows may raise claims for a compensable taking. These claims are most likely to be asserted in western states where appropriated rights to water use are frequently treated as property rights. The success of a takings claim may turn on how courts define the limitations of the property rights held. Under

state law, where a right to use water conflicts with public water supply needs or preservation of ecosystems, the right may be limited by the public trust doctrine, the prohibition against creating a nuisance, or by public necessity. Water rights may also be limited by a right of each citizen to sufficient water to meet basic needs. Water rights may also be curtailed when necessary to address a temporary emergency, including conditions that jeopardize public water supplies. As climate change produces persistent drought conditions and floods, the emergency exception may be expanded to include these new climate conditions. Market mechanisms may be employed to transfer water to uses of high public priority such as public water supply or instream protection. Funding mechanisms may be required to facilitate these transfers. And contrary to the traditional western rule that an appropriator loses its right to water that it does not use, conservation of flows may be recognized as a beneficial use that maintains a water right.

Coordinated administration of water resources may be accomplished through watershed management plans. Negotiated by public and private stakeholders and adopted by government agencies, these plans may specify ecosystem goals and implementation strategies.

Conservation and efficiency measures, reduction of withdrawals and diversions as stream flows or reservoir levels diminish, and scheduled releases from reservoirs and public and private hydroelectric facilities may be specified. The plans may also maintain landscape features such as wetlands and forests when necessary to protect aquatic ecosystems.

Because the impacts of climate change will not affect all watersheds uniformly, an effective response should be tailored to the distinct conditions of each watershed. Updated hydrologic models and accurate data on water availability and use would allow plans to be developed based on sound science. Watershed-based management would encourage the participation of local stakeholders and have the flexibility to adjust requirements by using adaptive management techniques as conditions warrant.

Some models for watershed-based management already exist. For example, the Delaware River Basin Compact authorizes a commission to manage a basin's surface water and groundwater resources pursuant to a comprehensive plan that balances competing water uses. Similarly, Supreme Court equitable apportionment decrees recognize the importance of instream flows in maintaining fisheries and aquatic life. Climate change may provide the stimulus to integrate water rights and environmental protection into comprehensive watershed plans that balance the various demands for water to best serve the public interest.

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