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## **Climate Change and the Law of the River - A Southern Nevada Perspective**

Patricia Mulroy\*

In a recent article submitted to the Journal of Land, Resources and Environmental Law at the University of Utah, I wrote that:

In a world increasingly challenged by population growth, natural resource utilization and climate change, existing water management systems often appear insufficient for solving tomorrow's water problems. Elaborate legal regimens such as the Law of the River . . . are frequently seen as impediments to meeting the evolving values, demands and needs of contemporary communities. This seeming contradiction between current management systems and the need to innovate to meet future challenges can be a source of friction and conflict among parties interested in addressing particular water issues.<sup>1</sup>

My intent with these remarks was to highlight, albeit indirectly, a tendency among some water stakeholders to focus on their institutional or regulatory constraints rather than on developing creative solutions that respect, yet alleviate those constraints.

After dealing with water management issues for more than 20 years, I have learned that the institutional or regulatory systems in which we operate have numerous limitations, but they almost always have opportunities for innovation as well. These opportunities for innovation are typically more evolutionary than revolutionary, yet they can help us to address some of our most difficult water problems while avoiding the kind of conflict or competition that results in winners and losers, or perhaps worse, complete inaction. The advantages of an innovative attitude are particularly

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1. Patricia Mulroy, *Beyond the Divisions: A Compact that Unites*, J. LAND RESOURCES & ENVTL. L. (forthcoming 2008).

manifest in the Colorado River Basin, with its complex Law of the River and prospective water management challenges posed by climatic uncertainty.

The sustained drought over the past eight years has altered our historical understanding of the Colorado River's flows, challenged many underlying assumptions about the river's future, and forced basin states and communities such as Southern Nevada to adjust infrastructure plans, improve water efficiency and develop additional unused water supplies to maintain the reliability of their delivery systems. For example, since 2001, inflows to Lakes Powell and Mead — the two principal storage reservoirs in the Colorado River Basin — have been below average for all but one year, with 2002 being the worst thus far at 25 percent of average.<sup>2</sup> Today, both Lake Powell and Lake Mead sit at roughly 49 percent of capacity — a combined loss of around 25 million acre-feet of system water in only a handful of years.<sup>3</sup>

In Southern Nevada, the steadily declining water levels threaten the operation of our community's two drinking water intakes in Lake Mead. The highest intake, Intake No. 1, sits at elevation 1050 and could be out of service as soon as 2010. The second intake, at elevation 1000, could be at risk sometime after that. To address the situation, Southern Nevada is proceeding as quickly as possible with the construction of a third intake. This new intake is not expected to be completed before 2012 or 2013. To address the loss of capacity that will occur if lake levels fall below the level of Intake No. 1, the Southern Nevada Water Authority (SNWA) has augmented its pumping capacity for the second intake and constructed bypass pipelines at its Lake Mead water treatment facility. This will allow the second intake to compensate for the loss of Intake No. 1 and move up to 600 million gallons of water per day into the Las Vegas Valley while the third intake is being constructed.

In response to the drought, Southern Nevada also implemented more aggressive water conservation, including a comprehensive drought response plan that has resulted in permanent changes to how the community uses water.<sup>4</sup> The plan involves a mix of regional policy, education, pricing and incentive initiatives, including increases to tiered water rates among all local water purveyors, prohibition of turf in front yards of new development, restrictions on time and day of watering, more innovative conservation advertising, and extensive water waste enforcement.<sup>5</sup> The centerpiece of this

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2. U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION, FINAL DRAFT ANNUAL OPERATING PLAN FOR COLORADO RIVER RESERVOIRS 2008, 5-6 (January 25, 2008).

3. *Id.* at 15, 20.

4. SOUTHERN NEVADA WATER AUTHORITY, DROUGHT PLAN (2007), *available at* [http://www.snwa.com/html/drought\\_plan.html](http://www.snwa.com/html/drought_plan.html).

5. *Id.* at 25-28.

new conservation ethic is the Water Smart Landscapes Program.<sup>6</sup> With revenues derived from local connection charges paid by new development, this program provides customers with rebates for removing turf from their landscaping.<sup>7</sup> To date, the program has provided over \$90 million in rebates, saving more than 5.4 billion gallons of water each year. As a result of these conservation efforts, Southern Nevada's consumptive water use declined by approximately 15 billion gallons between 2002 and 2007, despite the arrival of nearly 400,000 new residents and 40 million annual visitors. Most importantly, conservation in Southern Nevada has evolved from a temporary drought response into a permanent way of life.

In addition to its conservation efforts, Southern Nevada is also moving forward with plans to develop an alternate water supply through acquisition of water rights to available, unused groundwater in several hydrographic basins in eastern Nevada. Today, about 90 percent of Southern Nevada's water supply comes from the Colorado River, while about 10 percent comes from groundwater in the Las Vegas Valley. Additional shortfalls in Colorado River flows — whether from continued drought, climate change or other causes — could jeopardize the majority of Southern Nevada's water supply, leaving the community exposed unless it moves forward to develop alternate supplies such as its in-state groundwater project. Nothing short of an alternate supply, including conservation, will protect the region and its two million residents from continued drought or future shortages. As a result, Southern Nevada has no choice but to develop an alternate supply that is hydrologically independent of the Colorado River.

These conditions reflect the new reality for communities that have come to rely on the Colorado River's limited resources. For some observers, this reality may seem to necessitate radical change, including reform of the Law of the River or fundamental revision to the original Colorado River Compact of 1922. For others, including myself, it argues for a more practical response, one that encourages greater collaboration and creativity within the bounds already established by the Law of the River. This practical view holds that we must find ways to deal with the consequences of climate change without discarding or destroying the perfectly serviceable arrangements at hand. The Law of the River is one such arrangement. Calls for its reform, while understandable, tend to overlook or discount the historical background of the Compact and the modern political realities of managing increasingly scarce water supplies in the West. It is far from certain that fundamental reform could be made to the Colorado River Compact or Law of the River without inducing tremendous acrimony among the seven basin states or adversely impacting the tens of millions of people

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6. *Id.* at 23.

7. *Id.*

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that have come to depend on the water supply provided by the Compact's extensive framework these past 85 years.

At the time of its adoption in 1922, the Compact imposed structure on what was then unregulated use of the West's most important water supply, the Colorado River. That unregulated use was primarily benefiting California, so the Compact was conceived, first and foremost, as a means for protecting the current and future water interests of each of the seven basin states — Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming. However, because the seven states were unable to reach agreement on their respective allocations during these initial negotiations, they agreed to a Compact that divided the estimated average annual flow of the Colorado River — considered 15 million acre-feet at the time — evenly between the Upper Basin (Colorado, New Mexico, Utah and Wyoming) and the Lower Basin (Arizona, California and Nevada). Although the Compact divided the river equally between the Upper and Lower Basins, it would take more than 40 years and multiple agreements, court cases and legislation to allocate the river among the states within each basin and for those allocations to carry the kind of certainty they have today. Key events subsequent to the signing of the Compact included the Boulder Canyon Project Act of 1928, which allocated water among the Lower Basin states, the Upper Colorado River Basin Compact of 1948, which established allocations for each of the Upper Basin states, and the landmark *Arizona v. California* (373 U.S. 546) in 1963, which resolved several outstanding questions concerning the original allocations among the Lower Basin states. Collectively, the Compact and these later agreements, court cases and legislation (including several in addition to those just cited) comprise what is known as "the Law of the River."

Of all the states, Nevada was given the smallest amount of water for its allocation (only 300,000 acre-feet per year), mostly in recognition of the state's limited boundary with the Colorado River, Southern Nevada's relative lack of agricultural prospects, and the state's scant population. Similar rationales governed the determination of other state allocations. Given population trends, increasing water demands and changing priorities in the West today, including concerns over climate change, some view the Law of the River as too rigid or unfair to handle current and future water management challenges.

However, based on my own experience, it does not follow that the Law of the River is incapable of bridging the gap between how things have worked historically and how they must work in the future to meet resource needs and minimize conflict.<sup>8</sup> The Law, with its complex suite of agreements, court rulings and requirements, is not resistant to change, as long as that change takes place within the limits of the underlying Compact

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8. See Mulroy, *supra* note 1.

itself, with the full participation and acceptance of its signatories, and with the understanding and expectation that benefits and hardships will be shared. The Law's various component parts have established a web of formal and informal relationships that, taken as a whole, ensure the seven states remain communicative, interactive and productive in addressing ongoing needs and challenges within the Colorado River Basin. This approach has given the seven basin states tremendous flexibility when addressing seemingly intractable problems in the past and continues to prove highly effective in adapting the Law of the River to new conditions such as climate change by yielding innovative results under challenging circumstances.

To cite the most recent example, in 2005 the Bureau of Reclamation issued notice of its intent to prepare an Environmental Impact Statement ("EIS") for the development of Lower Basin shortage guidelines in the event of low reservoir conditions at Lakes Powell and Mead.<sup>9</sup> In response, the seven basin states embarked on negotiations to establish guidelines for dealing with shortage on the Colorado River. After some challenging debate, the states submitted a preliminary proposal ("Basin States Proposal") to the Secretary of the Interior in early 2006 that outlined four components that should be included in any final guidelines.<sup>10</sup> These components included extension and modification of the Interim Surplus Guidelines through 2025 (the "interim period"), guidelines for coordinated operation of Lakes Mead and Powell during all reservoir conditions, implementation of shortages in the Lower Basin during the interim period, and establishment of a Lake Mead Intentionally Created Surplus (ICS) Program.<sup>11</sup> The Basin States Proposal was included and analyzed by the Bureau in a Draft EIS published in early 2007.<sup>12</sup> Following additional comments, the Bureau published a Final EIS in November 2007 that

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9. COLORADO RIVER RESERVOIR OPERATIONS: DEVELOPMENT OF LOWER BASIN SHORTAGE GUIDELINES AND COORDINATED MANAGEMENT STRATEGIES FOR LAKE POWELL AND LAKE MEAD UNDER LOW RESERVOIR CONDITIONS, 70 Fed. Reg. 57322 (Sept. 30, 2005).

10. COLORADO RIVER RESERVOIR OPERATIONS: DEVELOPMENT OF LOWER BASIN SHORTAGE GUIDELINES AND COORDINATED MANAGEMENT STRATEGIES FOR LAKE POWELL AND LAKE MEAD, PARTICULARLY UNDER LOW RESERVOIR CONDITIONS, 71 Fed. Reg. 16341 (March 31, 2006).

11. *Id.* at 16342.

12. COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD, 72 Fed. Reg. 9026 (Feb. 28, 2007).

substantially adopted the Basin States Proposal as the preferred alternative.<sup>13</sup>

On December 13, 2007, the Secretary of Interior signed and issued a Record of Decision on the Final EIS, effectively approving the preferred alternative and creating the first set of guidelines in the history of the Colorado River Compact to manage Lower Basin shortages and coordinate operation of Lakes Powell and Mead.<sup>14</sup> As approved, the guidelines implement interim reservoir operations designed to minimize shortages in the Lower Basin and avoid the risk of curtailments in the Upper Basin through an operating strategy for Lakes Powell and Mead that strives to balance the water supply between these reservoirs, while maximizing their use.<sup>15</sup> The guidelines extend the Interim Surplus Guidelines through 2025, with amendments that (a) remove the partial domestic surplus category; (b) limit domestic surpluses for the Metropolitan Water District, Arizona and the SNWA to 250,000 acre-feet, 100,000 acre-feet, and 100,000 acre-feet per year, respectively, during the years 2016 through 2025; and (c) implement shortage conditions when Lake Mead's elevation is at 1,075 feet or lower.<sup>16</sup> The guidelines also provide an opportunity for Lower Basin States to develop, store and access ICS water through extraordinary conservation efforts, tributary conservation, system efficiency projects or importation of non-Colorado River water into the mainstream of the Colorado River.<sup>17</sup> In any one year, the creation of extraordinary conservation ICS for California, Nevada and Arizona will be limited to 400,000 acre-feet, 125,000 acre-feet, and 100,000 acre-feet, respectively, while the maximum amount that California, Nevada and Arizona can accumulate at any one time is limited to 1.5 million acre-feet, 300,000 acre-feet, and 300,000 acre-feet, respectively.<sup>18</sup> These limits do not apply to other categories of ICS water available to Nevada. The Record of Decision also activates an agreement between the seven basin states to pursue interim water supplies, system augmentation, system efficiency and water enhancement projects within the Colorado River system, including but not limited to importation of new sources of supply

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13. COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD, 72 Fed. Reg. 62272 (Nov. 2, 2007).

14. DEPARTMENT OF INTERIOR, COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND THE COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD (Dec. 13, 2007), *available at* <http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>.

15. *Id.* at 4.

16. *Id.* at 34-37.

17. *Id.* at 38.

18. *Id.* at 41.

from outside the Colorado River Basin and desalination of ocean water or brackish water.<sup>19</sup>

The decision and interim guidelines are a major advancement in the management of Colorado River water resources, with significant benefits to Southern Nevada. Beyond the advantages cited above, the guidelines provide for the development of procedures that will allow Nevada's pre-Compact tributary and imported groundwater water resources to be introduced, conveyed through, and diverted from the Colorado River system. Ninety-five percent of this water would be recoverable and available during any shortage and could contribute to return flow credits. As the SNWA pursues development of additional, available groundwater supplies within Nevada, this procedure will provide an opportunity for the SNWA to extend the use of these new supplies significantly. In addition, the guidelines allow Nevada to participate in the implementation of system efficiency projects such as the Drop 2 Reservoir along the All American Canal in California and the Yuma Desalting Plant in Arizona, as well as future augmentation projects. Participation in the Drop 2 project alone will give Nevada access to a one-time supply of water (at least 400,000 acre-feet) that can be accessed in future years on an as-needed basis.

The guidelines are most remarkable in light of the fact that seven states with very different cultures and competing water interests were able to set aside their differences and work together to find a solution that avoided a "winners versus losers" scenario. The Basin States Proposal, adopted in the Final EIS and Record of Decision, is an excellent example of the flexibility inherent in the Law of the River. For the very first time, recognition of a shared shortage among states and urban communities has been established. This recognition reflects the integrated nature of the people who use the river and the need to share impacts.<sup>20</sup>

This type of cooperative arrangement would have been highly unlikely outside the framework of the Colorado River Compact and Law of the River. It is happening today in direct response to the drought and long-term concerns over how climate change may affect future water availability from the Colorado River, and represents a creative solution to the constraints and requirements imposed on the various participants by the Law of the River. As climate change continues to test the limits of our historical water management practices in the West, this same flexibility and innovation is more likely to result in prudent, workable, and lasting solutions, than will any fight to reform the Compact.

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19. *Id.* at 12.

20. For example, in the event that the Secretary of the Interior declares a shortage on the Colorado River and Arizona cities are forced to cut back on consumption, Southern Nevada has agreed to reduce its consumption from the river by a proportionate amount.



Experience shows that far from dividing the seven basin states, the Law of the River binds them together in a framework that is as rigid or as flexible as the group desires. By ensuring that each state has leverage over the particular objectives of any other state, when it comes to the river's future, the Law of the River prevents the seven states from ignoring one another and forces them to think as a team and work together to find common solutions. It allows the seven states to do whatever they, as a group, can agree to do. As a result, each state's self-interest must yield at some level to the reality of the basin's collective interests, which, in turn encourages compromise and consensus. In this sense, the Law of the River does not divide the river so much as unite the various people who depend on the river each day.

The effect of catalyzing the opportunities inherent in the Law of the River — particularly in the last two decades — has been a degree of innovation and progress unheard of for much of the river's history. Notable successes include implementation of a multi-species habitat conservation program; increased coordination on water quality issues such as salinity and perchlorate; development of off-stream storage regulations to permit interstate banking in the Lower Basin; promulgation of interim surplus guidelines to facilitate a long-term reduction in California's use of the Colorado River return to 4.4 million acre-feet per year; and, as noted above, approval of the first-ever guidelines for allocating water supplies and coordinating operation of the river's major reservoirs during a water shortage.

As the protracted drought in the Colorado River Basin demonstrates, climate change represents an unprecedented challenge for Western communities, particularly as it relates to developing, storing and delivering adequate water supplies. What we are experiencing today on the river system is the harbinger of a new reality for the seven states that have come to rely heavily on the river's resources. The future security of communities in the arid West will depend on conservation, diversification of resource portfolios and the recognition that we are all interdependent. For the seven basin states, the drought and underlying challenge of climate change have led to a rethinking of how we manage and operate the river and how we work together to meet the water needs posed by the rapid population growth that has been endemic to the American West for more than a century. By embracing cooperation and partnership implicit in the Law of the River, balancing our competing needs and demands, and reaching out to share our experiences and solutions with others who are facing similar challenges, we can work within the Compact to set new standards for resource management that will sustain us through the consequences of climate change and the many other challenges that surely await us over the horizon.