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Water for the 21st Century

Southern Nevada is dealing at the same time with climate change and population growth.

NOWHERE IS THE ART OF illusion more completely manifest than Las Vegas. There, night becomes day, volcanoes erupt hourly, and statues come to life. On the issue of water, southern Nevada also is illusory; the many resorts and their opulent water features in fact consume only 3 percent of the community's water supply.

region's precious water resources with Las Vegas—a seemingly profligate water user.

Therein lies the ultimate irony. Outside perceptions aside, southern Nevada has in effect some of the country's most stringent water-efficiency rules. Turf grass is strictly limited in both new residential and commercial construction. Resorts hoping to build ornate water features must first submit water-efficiency plans that offset water use. Customers must adhere to seasonal watering schedules, while golf courses follow strict water budgets. In myriad ways, Las Vegas is at the forefront of water efficiency.

This metamorphosis is born of necessity. Las Vegas grew rapidly during an era of seemingly unlimited resources. Despite having the smallest Colorado River allocation of all the states (2 percent)—even though it is the only metropolitan area using water from the river that is actually located in the Colorado River watershed—early Las Vegasans thought little about water resource availability. However, the advent of corporate resort ownership in the 1980s sparked a population expansion and spurred the need for further water resources.

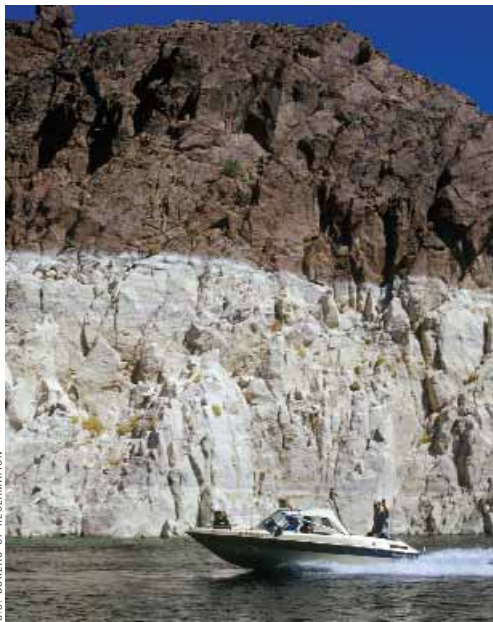
Created in 1991, the Southern Nevada Water Authority is a regional agency representing the communities' various water and

wastewater agencies. Chief among its responsibilities—which also include operating regional drinking water treatment and transmission facilities—is acquiring and managing water supplies. During the 1990s, the agency's primary goal was maximizing its ability to draw upon the Colorado River's inexpensive and apparently unlimited resources without violating tenets of the Colorado River Compact, an amalgam of agreements, treaties, and court decisions governing the river system.

By the second millennium, the agency acquired—through the *Interim Surplus Guidelines*—what was essentially a guaranteed water supply to meet municipal needs until 2016, with one catch. The ability to draw more than Nevada's basic allocation of water was linked to levels in Lake Mead, which at the time was up to 95 percent of its capacity. Then came a drought so severe that in only seven years it lowered to half the water levels from the Colorado River's primary reservoirs.

As the surplus evaporated and the population expanded, the agency—with input from a citizens committee—implemented an efficacious drought plan. Subsequently, between 2002 and 2006, municipal water consumption decreased by nearly 18 billion gallons annually, even though the region gained 330,000 new residents and 40 million annual visitors during that period.

The agency shifted its focus to a future marked by uncertainty about the effects of the severe ongoing drought and the impact of climate



U.S. BUREAU OF RECLAMATION

The level of Lake Mead at the Hoover Dam has dropped 89.63 feet (27 m) since October 1998 when it was at a high of 1,215.76 feet (371 m).



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Yet, the challenge of managing the region's water resources is commensurate with the city's success in marketing its conceptual image. People go to Las Vegas to visit an oasis in the desert, necessitating its watery facade. Other western neighbors are reluctant to share the



change on the Colorado River's flow, as well as the increasing in-migration of residents. Its most pressing priority was to reduce the community's dependence on the Colorado River by activating long-held groundwater application systems in several basins in east-central Nevada. Two basins—Spring and Snake valleys—are particularly promising, as mountain ranges collect hundreds of billions of gallons of precipitation annually. The result is a naturally renewable resource that, properly managed, will help meet southern Nevada's needs for decades to come without depleting the aquifers.

Although the first water rights have already been issued, it will be nearly a decade before the agency receives the necessary permissions and completes construction to allow major deliveries from this new source to Las Vegas. Meanwhile,

Lake Mead's receding shoreline further jeopardizes the reliability of the region's water supply. In addition to constructing a new drinking water intake at a greater depth than the existing intakes, the agency has worked closely with the other six Colorado River Basin states to identify solutions that will protect all of their constituents. These discussions yielded an unprecedented proposal that quantifies shortages should the system continue to falter, and that increases operational and resource management flexibility on the river, which should benefit all the basin states.

Another problem is population growth. Despite calls to bar the door, the approach simply ignores reality. Many people relocate to the Southwest by choice. If cities ceased to absorb new residents when they reached the limits of

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their local water supplies, places like Phoenix, San Diego, and Los Angeles would have locked down years ago.

For newcomers and longtime southern Nevadans alike, there are significant economic issues associated with decisions related to growth. Approximately one-sixth of the population works in a field directly tied to expansion—such as construction or real estate. If that field suddenly is constricted, independent economic analyses project that there would be widespread unemployment and a shockwave affecting all of Nevada, as Clark County's tax revenue represents a massive component of the state budget.

The issue of development should be decided by the community, not dictated by water utilities. To the extent that the agency can meet the region's water needs through

increased water efficiency and responsible resource development, it has an obligation to all of the citizens of Nevada to do so. There may come a day when the agency can no longer secure resources to meet the region's needs. However, the length of time the community's water needs can be met will depend largely on how committed Nevadans themselves are to work on alleviating the problem and on how flexible neighbors along the Colorado River are willing to be.

Growth profoundly affects the state's water resource needs. Indoor water use has virtually no impact on a community's supply because it is captured through the sanitary sewer system, treated to bring it up to standards of quality required by the Clean Water Act, and returned to Lake Mead for a gallon-for-gallon credit. The Colorado River allocation is based on "net" usage, not

"gross" withdrawals, which has tremendous implications for the water supply. The so-called "Manhattanization" of Las Vegas, evidenced by numerous high-rise condominiums under construction, is the best possible type of development in terms of water efficiency. Like resorts, these buildings use most of their water indoors, limiting consumptive uses to central air conditioning systems, community swimming pools, and small patches of landscaping. Concurrently, single-family dwellings have dramatically improved their water efficiency. Municipalities have adopted strict landscaping codes limiting the amount of grass permitted in residential yards, reducing each home's consumptive draw on the community's water supply.

With regard to flexibility among other Colorado River users, the recent *Seven States Colorado River Operating Plan* proposal addresses

certain possibilities. For instance, in exchange for funding construction of a new water storage facility designed to capture and hold cancelled water orders, the agency would receive a block of at least 280,000 acre-feet of water. This arrangement would benefit all seven states, not just Nevada. The total water savings resulting from this new reservoir would be greater than the water provided to the water authority; thus, the project would help maintain upstream reservoir levels. This kind of positive, resourceful thinking should influence the direction the Southwest must go to meet the needs of its constituents in increasingly uncertain times. **UL**