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Water Use in Southwest Heads for a Day of Reckoning

By **FELICITY BARRINGER**

LAKE MEAD NATIONAL RECREATION AREA, Nev. — A once-unthinkable day is looming on the Colorado River.

Barring a sudden end to the Southwest's 11-year drought, the distribution of the river's dwindling bounty is likely to be reordered as early as next year because the flow of water cannot keep pace with the region's demands.

For the first time, federal estimates issued in August indicate that Lake Mead, the heart of the lower Colorado basin's water system — irrigating lettuce, onions and wheat in reclaimed corners of the Sonoran Desert, and lawns and golf courses from Las Vegas to Los Angeles — could drop below a crucial demarcation line of 1,075 feet.

If it does, that will set in motion a temporary distribution plan approved in 2007 by the seven states with claims to the river and by the federal Bureau of Reclamation, and water deliveries to Arizona and Nevada would be reduced.

This could mean more dry lawns, shorter showers and fallow fields in those states, although conservation efforts might help them adjust to the cutbacks. California, which has first call on the Colorado River flows in the lower basin, would not be affected.

But the operating plan also lays out a proposal to prevent Lake Mead from dropping below the trigger point. It allows water managers to send 40 percent more water than usual downstream to Lake Mead from Lake Powell in Utah, the river's other big reservoir, which now contains about 50 percent more water than Lake Mead.

In that case, the shortage declaration would be avoided and Lake Mead's levels restored to 1,100 feet or so.

Lake Powell, fed by rain and snowmelt that create the Colorado and tributaries, has risen more than 60 feet from a 2004 low because the upper basin states, Colorado, New Mexico,

Wyoming and Utah, do not use their full allocations. The upper basin provides a minimum annual flow of 8.23 million acre feet to Arizona, Nevada and California. (An acre-foot of water is generally considered the amount two families of four use annually.)

In its [August report](#) the Bureau of Reclamation said the extra replenishment from Lake Powell was the likeliest outcome. Nonetheless, said Terry Fulp, the bureau's deputy regional director for the [Lower Colorado Region](#), it is the first time ever that the bureau has judged a critical shortage to be remotely possible in the near future.

"We're approaching the magical line that would trigger shortage," Mr. Fulp said. "We have the lowest 11-year average in the 100-year-plus recorded history of flows on the basin."

The reservoir is now less than 15 inches above the [all-time low](#) of 1,083.2 feet set in 1956.

But back then, while the demand from California farmland was similar, if not greater, the population was far smaller. Perhaps 9.5 million people in the three states in the lower Colorado River basin depended on the supply in the late 1950s; today more than 28 million people do.

The impact of the declining water level is visible in the alkaline bathtub rings on the reservoir's walls and the warning lights for mariners high on its rocky outcroppings. [National Park Service](#) employees have repeatedly moved marinas, chasing the receding waterline.

Adding to water managers' unease, scientists predict that prolonged droughts will be more frequent in decades to come as the Southwest's climate warms. As Lake Mead's level drops, Hoover Dam's capacity to generate electricity, which, like the Colorado River water, is sent around the Southwest, diminishes with it. If Lake Mead levels fall to 1,050 feet, it may be impossible to use the dam's turbines, and the flow of electricity could cease.

The fretting that dominates today's discussions about the river contrasts with the old-style optimism about the Colorado's plenitude that has usually prevailed since Hoover Dam — then called Boulder Dam — was completed 75 years ago, impounding the water from Lake Mead.

The worries have provoked action: cities like Phoenix and Las Vegas have undertaken extensive conservation programs. Between 2000 and 2009, Phoenix's average per-capita daily household use has dropped almost 20 percent; Las Vegas's has dropped 21.3 percent.

Nonetheless, “if the river flow continues downward and we can’t build back up supply, Las Vegas is in big trouble,” Pat Mulroy, general manager of the [Southern Nevada Water Authority](#), said in an interview.

While Las Vegas is one of the Colorado River’s smaller clients — it consumes 2 percent of the river’s allocated deliveries— the city relies on Lake Mead for 90 percent of its water supply. From 2002 to 2009, the metropolitan area’s population mushroomed by nearly 40 percent, to 1.9 million from 1.37 million.

In response to the population boom and the drought, which began in 1999, the authority began an aggressive effort to encourage water conservation in 2002.

Now it is expanding its options: it is tunneling under the bottom of Lake Mead to [install](#) a third intake valve that could continue operating until lake levels dropped below 1,000 feet.

Saddle Island, the construction staging site on the reservoir, looks like an abstract painting, its dusty russet ground covered with interlacing segments of the 2,500 concrete rings that will make up the three-mile-long pipe.

Ms. Mulroy has also pushed aggressively for pipelines to carry distant groundwater to the Las Vegas area; most contentious is a planned [285-mile pipeline](#) that would cross the state diagonally and take groundwater from the Snake Valley, on the Nevada-Utah border, to Las Vegas.

The authority has also spent about \$147 million on a program to encourage homeowners and businesses to eliminate their lawns in favor of the rock, grass and cactus landscaping known as [xeriscaping](#). More than 70 percent of household water usage is attributed to outdoor use, Ms. Mulroy said.

Residents can now water their yards only three days a week, before 11 a.m. and after 7 p.m., and the restrictions are to tighten this winter.

Dolores Cormier, 82, who lives on Monterrey Avenue on the southern side of Las Vegas, reconfigured her front and side lawns, installing a rocky cover and drip irrigation. Under a water authority program known as Water Smart Landscapes (colloquially, Cash for Grass), she has received \$2,689 in utility subsidies that will offset the \$5,600 or so she said the xeriscaping cost her.

She is pleased with the new look but said her average monthly water bill of \$45 or so has yet to decline, perhaps because she still tends grass in her small backyard. “I need some lawn,” she confessed.

If the 1,075 level is broken at Lake Mead next year, more drastic conservation measures will be needed, officials warn.

“We have a very finite resource and demand which increases and enlarges every day,” said John A. Zebre, a Wyoming lawyer and the president of the [Colorado River Water Users Association](#).

“The problem is always going to be there,” he said. “Everything is driven by that problem.”