

River Report

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Dealing with the Colorado River's Salinity: What is the Future of the Yuma Desalting Plant?

By [Sue McClurg](#)

A decade after the Yuma Desalting Plant's six-month inaugural run was cut short, a combination of hydrological conditions and political pressure may result in the shuttered desalination plant – dubbed by some a “white elephant” – going back on line.

Completed in 1992, the \$250 million federal desalting plant was designed to desalt drainage return flows from Wellton-Mohawk Irrigation and Drainage District (Wellton-Mohawk) prior to the putting the water back into the Colorado River. As planned, once most of the salt had been removed, the water would have been returned to the Colorado River above Mexico's Morelos Dam and counted as part of U.S. delivery obligations to Mexico, consistent with Minute 242 of the International Boundary and Water Commission (IBWC), replacing the lost bypass water for use in the United States. But for a variety of reasons, the desalting plant has not been operated as once planned. Instead, since 1977, the salty drainage water has been bypassed around the plant through a 53-mile bypass canal, emptying into Mexico's Cienega de Santa Clara and giving new life to this wetlands area south of the border.

In spring 2001, the U.S. Bureau of Reclamation (Reclamation) sought stakeholder input from the Colorado River Basin states, IBWC, environmental groups and others on the idea of using alternatives such as forbearance mechanisms to meet 1974 Salinity Control Act Title 1 objectives in lieu of operating the Yuma Desalting Plant. (In 2000 Congress had requested Reclamation to identify less expensive ways to meet the Title I objectives.) In summer 2002, Reclamation officials released a “preliminary draft report” that proposed a two-pronged approach: prepare the plant to operate while pursuing forbearance agreements, water transfers and other measures designed to serve as “make-up water” for a portion of the bypass flows, saying these sources would be less expensive than operating the desalting plant.

“It takes approximately \$25 million to prepare the plant for operation. It was only operated at one-third capacity for a short period of time back in the early '90s, more as a test operation,” said Robert Johnson, director of Reclamation's Lower Colorado River Region. “There are a number of design deficiencies that need to be repaired before we can really operate it at full capacity. Once it's ready to operate, it will cost at full capacity from \$25 to \$32 million a year.

“That's a cost per acre-foot of \$305 to about \$425,” Johnson continued. “So, if you were going to ask me to summarize, there is one major problem with operating the plant: It's expensive – \$25 to \$33 million a year is about 20 to 25 percent of the appropriation request for Reclamation's Lower Colorado Region every year. And I can tell you that the budget for the Bureau of Reclamation or for the Lower Colorado Region isn't getting any bigger.”

The proposal generated a rash of criticism from proponents of the Yuma Desalting Plant, who argue that the plant's operation would provide the United States with approximately 70,000 to 85,000 acre-feet more water each year. Considering the Colorado River's annual average flow is 15 million acre-feet, that may not seem like much, but on a river that is oversubscribed and in a basin suffering its fourth year of severe drought, every drop does indeed count.

“We are bypassing that 100,000 acre-feet. It is not charged against Mexico’s treaty obligation. It’s free water to Mexico. Once it crosses the border, it is Mexico’s water and they do with it as they wish,” said former Arizona Congressman John J. Rhodes III, who now serves as special counsel for the Washington, D.C., law firm of Hunton & Williams. “It has created a rather nice habitat and wetland down in the Cienega de Santa Clara. But it is an accident. It’s like the Salton Sea.

“And there is a serious question as to whether or not we have an obligation to continue to bypass this water that has to be replaced out of storage,” Rhodes added. “That has not been a big issue until the last four or five years because there’s been lots of water up there. But it’s an issue now.”

The Central Arizona Water Conservation District (CAWCD), which operates the Central Arizona Project (CAP), is leading the charge to re-operate the plant primarily because it is last in line under the water priority system established for the Lower Colorado River, thus it would be the first to lose water in a drought-related cutback. With Lake Mead and Lake Powell at 60 percent and 49 percent of storage capacity, respectively, and no drought relief in sight, CAP officials have made operation of the Yuma desalter a top priority.

Environmentalists say the plant’s operation, especially at full capacity, has the potential to destroy the Cienega de Santa Clara, which now serves as the depository for drainage water bypassing the plant. The salty water brought new life to this slough, creating a 10,000 to 14,000 acre wetlands south of the Arizona-Mexican border. Here, cattails and willows have flourished, as have endangered species such as the Yuma clapper rail and desert pupfish. If the desalting plant were to operate at full capacity, the amount of water reaching the Cienega on a regular basis would be cut by about 70 percent, while the water’s salt content would increase from about 3,000 parts per million (ppm) to 10,000 ppm.

“That salinity would exceed the most salt-tolerant vegetation that’s in the Cienega right now,” said Kara Gillon, water counsel for Defenders of Wildlife. “I think you also have to take into account impacts to endangered species such as the Yuma clapper rail and the desert pupfish. Impacts to those species would be severe enough that it may cause thinking twice about what impacts you might impose on the Cienega.

“And, that assumes operation of the plant,” Gillon continued. “We still really need to think about whether or not we want to operate the plant, based not just on environmental, but also economic considerations. It was an extremely expensive plant to build. It would be an extremely expensive plant to get up and running again, and just to operate on a yearly basis, whether at one-third or full capacity. I think Congress was on the right track when they asked Reclamation to look at less expensive ways to meet that obligation.”

The struggle to reduce the Colorado River’s natural and manmade salinity is not new; since 1974 the states that share the river’s water have worked together to develop salinity criteria and implement measures to control that salinity.

What has changed is water supply conditions in the Colorado River Basin. Water flow in the Colorado River has decreased the last four years, and Lake Mead has reached its lowest level since 1969. Even as California parties and others were negotiating the interim surplus guidelines, a key component of the recently signed Quantification Settlement Agreement (QSA), the possibility of continuing surplus conditions on the river was evaporating – increasing

CAWCD's concern. Also, since California did not receive all the water it wanted in 2003 – a historic turn of events – it effectively ended the source of “make-up water” for that bypassed around the plant, water saved by lining 43 miles of the Coachella Canal.

“Arizona officials are watching Lake Mead go down, down, down and they're thinking that their chance of getting shorted is going up,” said Michael Cohen, a senior associate at the Pacific Institute.

Within the Colorado River Basin, the question is whether the plant is the most economical and environmental way to address the salinity issue. It was a question discussed during panel presentations on controlling the Colorado River's salinity at a September 2003 invitation-only Colorado River Symposium sponsored by the Water Education Foundation and at the Colorado River Water Users Association (CRWUA) annual December conference. And it is a question that continues to generate debate among stakeholders within the Basin.

This issue of *River Report* explores the issue of salinity on the Colorado River, Upper Basin control efforts and the Lower Basin's dilemma over the Yuma Desalting Plant. Some of the content for this article came from the Foundation's September 2003 Colorado River Symposium. The Foundation will publish the full written proceedings of the symposium, which was tape-recorded, in 2004.