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In mid-April, Mexico inaugurated its first major desalination plant near the southern tip of the Baja California Peninsula, and officials hope this will be the first of many such projects to help address pending water shortages. The plant, near the communities of Cabo San Lucas and San Jose del Cabo, will help ensure that most residents in the southern half of Baja California Sur state will have access to potable water.

While the plant could resolve a water shortage in one area of western Mexico, other problems could develop elsewhere in the region, such as in the US-Mexico border region near Baja California and Sonora. In April, a US Federal Court approved a plan by California authorities to fortify the All-American Canal, one of the world's largest irrigation canals, near the US-Mexico border. The plan has been a major source of controversy between US and Mexican authorities.

Facility to help ease shortages in Los Cabos region

The desalination plant was constructed at a cost of 336.3 million pesos (US$31.1 million) with participation from the federal Comision Nacional de Agua (CNA), the state of Baja California Sur, and the private company Inima, a subsidiary of Spain's Grupo OHL. Inima has been involved in constructing more than two dozen small and large desalination plants around the world, investing about US$22.8 billion, said the Mexico City daily newspaper Reforma. In addition to the facility in Los Cabos, the company has constructed or is constructing large plants in Spain, Chile, Brazil, Algeria, India, and China.

In the Los Cabos plant, the facility will use reverse osmosis to remove salt from water collected at eight wells along the beach. "This plant will use the latest technology," said CNA director Jose Luis Luege. The water processed at the plant will be distributed to 30,000 residents in Baja California who previously had little access to potable water.

In addition, authorities will be able to improve service to 115,000 residents of Cabo San Lucas and San Juan de Los Cabos. "We will have 96% coverage for the region, compared with 86% previously," said Luege. Mexican officials are hoping the construction of the plant in Baja California Sur will serve as a model for developing similar projects in other coastal areas in Mexico. The plants are needed to help ease pending water shortages in Mexico (see SourceMex, 2001-06-27 and 2003-04-24).

Small-scale desalination facilities have been constructed at some resorts and hotels in Mexico, including the Westin Regina Hotel in Los Cabos and the Mandarin Oriental Riviera Maya Hotel in Quintana Roo. Those facilities are small when compared with the Los Cabos plant. "Our pending water shortages are more worrisome than the drop in reserves of crude oil," President Felipe Calderon told reporters at a ceremony marking the inauguration of the Los Cabos facility. The

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availability of water from the desalination plant will also result in some savings for many residents of the area who have had to pay high prices for water brought into the community in tankers.

Environmental benefits outweigh concerns

The Los Cabos facility was originally proposed during the administration of former President Ernesto Zedillo (1994-2000), but construction was delayed because of high costs and the lack of an environmental-impact study to determine whether discharges from the plant would contain more salt than the local environment could support. After conducting the studies, Mexican authorities determined that the Los Cabos facility would not have an adverse impact on the local environment as long as the waste was handled properly. "Because the brine is more dense than the surrounding sea water due to the higher solute concentration, discharge into water bodies means that the ecosystems on the bed of the water body are most at risk because the brine sinks and remains there long enough to damage the ecosystems," said Wikipedia.com. "Careful reintroduction attempts to minimize this problem."

The construction cost has come down significantly in recent years with the development of new technology. "Historically, the growth of the desalination industry has been seen to have been driven by the falling cost of the process, from more than US$10 per cubic meter 40 years ago to a low price of US$0.47 per cubic meter today," said the company Market Analytics Limited in a report entitled Desalination Markets 2007: A Global Industry Forecast.

Still, environmental impact remains a concern, particularly because desalination plants have the potential to cause major harm in vulnerable regions. "The hypersaline brine has the potential to harm ecosystems, especially marine environments in regions with low turbidity and high evaporation that already have elevated salinity," said Wikipedia.com. "Examples of such locations are the Persian Gulf, the Red Sea and, in particular, coral lagoons of atolls and other tropical islands around the world."

Advocates contend, however, that desalination plants are a more viable alternative than overexploitation of rivers and aquifers. "Desalination is an environmental issue because it involves energy use and brine discharges," said the analytical group Research and Markets in a report entitled Desalination Markets: 2005-2015. "This has to be balanced against the environmental impact of the alternatives, such as diverting rivers."

One proponent of desalination plants is Baja California Sur Gov. Narciso Agundez, who urged the Calderon administration to use the Los Cabos plant as a model for the rest of the country. "We want this to be the prototype for similar medium- and large-scale projects," said Agundez, a member of the opposition Partido de la Revolucion Democratica (PRD). "These types of facilities will solve two problems. They will provide potable water for poorer neighborhoods and reduce overexploitation of aquifers.

Controversial desalination plant starts operations in Arizona

A different problem developed in relation to another desalination facility in the region, the Yuma Desalting Plant in Arizona. In this case, the dispute did not stem from potential discharges from the plant but rather from a disagreement regarding fresh water needed to operate the facility. The plant,

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constructed in the early 1990s, has sat idle for 14 years because of concerns that the facility would have an adverse impact on the Cienega de Santa Clara wetlands, a 6,000-hectare marsh created inadvertently three decades ago by runoff from southern Arizona farms that was sent to Sonora. If the reverse-osmosis facility, constructed at a cost of US$250 million, had opened as scheduled, the runoff would have been diverted to the plant, and the marsh would have sustained irreversible damage. "[The Cienega de Santa Clara] is a very important stop for migratory birds on the Pacific Flyway," said Osvel Hinojosa, a wildlife ecologist for the Mexican environmental organization Pronatura.

Arizona authorities, facing a rapid rise in the demand for water because of increased population and drought, a few years ago started to press for the Yuma facility to reopen. Rather than become involved in a protracted and bitter dispute, officials from local water districts sat down with environmental organizations to seek a solution. "In this little region of California, Arizona, Mexico, we're all confronted with the same issues," said Sid Wilson, general manager of the Central Arizona Project, a water district that serves 1.5 million users.

"How do you deal with growing demands for water by people, declining natural supply, and trying to sustain environmental values?"

The two sides developed a set of alternatives, including a plan to use treated groundwater from Yuma at the plant instead of the runoff. This allowed the plant to open in late March for a three-month test run. "What could have flared into a bitter dispute between environmentalists intent on saving the cienega and water managers searching for a new supply has turned into a cooperative venture," said The San Diego Union-Tribune.

Court order allows All-American Canal project to proceed

While conflict may have been averted regarding the Yuma facility, a much larger dispute about water seems to have intensified a few kilometers to the west near the California border. In early April, the Ninth US Circuit Court of Appeals removed a major hurdle blocking the resurfacing of the All-American Canal, which runs just north of the border with Mexico in southeastern California. The canal, which draws water from the Colorado River, was originally constructed to provide irrigation for local agricultural producers, but its purpose has since been expanded to supply water to cities like San Diego.

Opponents vowed to intensify efforts to prevent the project from moving forward, but there appears to be little legal recourse at this point. While the Mexican government plans to use diplomatic channels to try to convince US and California authorities to abandon the project, the chances of success are very small given the growing demand for water in the southwestern US. The two main proponents of resurfacing the project, the San Diego County Water Authority and the Imperial Valley, say the project could allow them to recover 83.5 million cubic meters of water that leaks through the canal bed.

However, the seepage benefits farmers and wildlife habitats downstream in Sonora and Baja California. The conflict between the needs of US water users and those in Mexico is reflected in the strong tensions between the US and Mexican governments on this issue (see SourceMex, 2006-03-22 and 2006-08-30). The dispute led the Consejo de Desarrollo Economico de Mexicali to join the US-

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based Citizens United for Resources and the Environment (CURE) and Desert Citizens against Pollution in a lawsuit to stop the resurfacing of the canal. In a lawsuit filed in a court in Las Vegas, Nevada, in 2005, the three organizations argued that the project could cause wells in Mexico to dry up, reducing water supplies for the city of Mexicali and for wildlife habitats in the area.

Of special concern is the 6,000-ha Humedal de la Mesa de Andrade, home to 100 species of birds. The legal action succeeded in slowing the project for two years. In March of this year, however, the Ninth US Circuit Court of Appeals threw out the lawsuit, allowing the project to proceed. "We conclude that the environmental and other statutory claims are moot and that the district court lacked subject matter jurisdiction over the remaining claims," Judge Sidney Thomas wrote for a three-member panel. "We vacate the injunction of the project pending appeal."

The US court's decision created an uproar in Mexico, with organizations like the Central Campesina Independiente (CCI) demanding a vigorous protest from Foreign Relations Secretary Patricia Espinosa Castellano and other officials from the Calderon administration. "A lack of water could cause 5,000 producers in the Mexicali Valley to abandon agriculture and either choose another economic activity or emigrate to the US," CCI secretary-general Rafael Galindo Jaime said in mid-April. He suggested that the CCI could join with other agricultural organizations in Mexico in bringing the issue before the UN.

The Mexican Senate also rejected the US court's decision and demanded that the Calderon administration produce a written statement of its position on the dispute. In a resolution approved in mid-April, the Senate warned that the reduction in water could increase water fees for residents and businesses in northeastern Baja California, resulting in major economic uncertainty in the region. The resolution was drafted by Sens. Jaime Rafael Diaz Ochoa and Alejandro Gonzalez Alcocer of Calderon's governing Partido Accion Nacional (PAN), but was approved by all members of all parties in the upper house.

Even though some perceive that the Calderon administration is not doing enough to fight the US court decision, the president pledged during a trip to Baja California in early May to "exhaust all avenues" to prevent the project from proceeding. Calderon did not, however, elaborate on any actions his administration might take. The president is under strong pressure from members of his party to take some decisive action on this issue, since the PAN is facing a tight race in the upcoming Baja California gubernatorial election on Aug. 5 (see SourceMex, 2007-02-07). The PAN has governed the state for three consecutive terms but faces a strong challenge from Tijuana mayor Jorge Hank Rhon of the opposition Partido Revolucionario Institucional (PRI).

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