

Once built on a lake, Mexico City now runs dry

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MEXICO CITY — In his chronicle of the Spanish Conquest, the soldier Bernal Díaz marveled at the invaders' first glimpse of Tenochtitlán, the Aztec capital set on an island in a vast lake. The city and lakeside towns, he recalled, "rising from the water, all made of stone, seemed like an enchanted vision."

After the Spaniards built Mexico City on the ruins of the Aztec city they had destroyed, they conquered the lake waters. The Aztecs had kept floodwaters at bay through a network of dikes, levees and canals. The Spaniards ignored all that and just began to drain the water.

The result over five centuries is the most drastic reordering of the natural environment that just about any city has carried out. In place of the five interconnected lakes that formed the heartland of the Aztec Empire, a megalopolis of 20 million people sits today.

Where there was once an excess of water, there is now a looming shortage.

This week, as the city plays host to the Fourth World Water Forum, a six-day conference of water experts, it serves as an arresting example of the effects on water supplies of unchecked urban growth, shortsighted management and political inertia.

"It is a system held together by a thread," said Manuel Perló Cohen, director of the University Program for Studies of the City at Mexico's National Autonomous University.

Mexico City and its suburbs, broadly known as the Valley of Mexico, extract water from their aquifers more than twice as fast as they replenish them.

As a result, the spongy clay on which the city is built dries up and compresses, causing it to sink. It has fallen nearly 10 meters, or 33 feet, in the past century and dropped as much as about 40 centimeters, or 15 inches, a year in some areas.

But in the ranking of urban worries here, crime and traffic eclipse water for the attention of the public and politicians. Only now, in preparation for the water conference, have the local media engaged in a bout of collective hand-wringing over the city's water worries.

They are on full display in the city's poorer eastern limits and the neighboring working-class suburbs. There, the aquifers that supply the district of Iztapalapa, home to 1.8 million people, are overstretched and there is no alternate source.

Berenice Hernández and her husband, Santiago García, who live with their nine children in a three-room concrete-block house, say they have not had running water for four weeks.

They woke up at 4 one morning to get to the head of the line for the district water truck. But by the time it rumbled up the hill to their narrow street at mid-afternoon, it could fill only about 30 centimeters of the family's cistern.

"They say we waste water," said García, motioning at his tiny house with a shrug of disbelief.

The city's response to the shortage is to take water elsewhere, namely from the mountains to the west. From there, a system of pumps and treatment plants carries a quarter of the city's water 130 kilometers, or 80 miles, uphill.

But it also takes water away from the poorest inhabitants of those mountains, diverting by almost five kilometers the river that once supplied the Mazahua Indians. After 25 years, they have yet to receive the running water they were promised in return.

The problems around wastewater are just as bad. A decade-old project to build four wastewater treatment plants is paralyzed by feuding among the city, state and federal governments.

The result is that the Valley of Mexico treats less than 10 percent of its wastewater, sending its sewage into rivers that irrigate farmland to the north.

Jesús Campos, the chief official in charge of urban infrastructure at the National Water Commission, warns that politicians are underfinancing the system and misleading the public by not raising water rates.

After all the effort to get water to the city, about 36 percent of it is lost to leaks.

The financing needs are enormous. Campos estimates that the backlog for Mexico City's infrastructure is \$3 billion. This year, only 10 percent of that is budgeted.

Still, Mexico City has managed to achieve the impossible when it has to, like a 25-year-old project that restored a small section of the largest of the Aztec lakes, Lake Texcoco.

By the 1950s, the lake had become a desert. Nothing could grow in the salty soils of its parched lake bed and windstorms whipped its blinding dust across the city, said Raul Solís, one of the engineers in charge of the project.

Now, an artificial lake attracts migratory ducks, sandpipers and herons. The surrounding hillsides have been terraced and planted with millions of trees. Along

with more than a thousand small dams, they now contain the rainwater, so that it will seep back into the aquifer, where it can be used.

"The purpose," Solís said, "is to harvest the water."