



Standing on Fishes

A HISTORY OF SUPPLYING WATER TO HOUSTON

What is perhaps most striking about the Wallisville Lake Project is that there is no lake. The dam is modest in size and generally unimpressive. The pumps on the Trinity River that supply Houston lie upstream and Lake Livingston, further upstream, serves as a massive reservoir. The gates of the dam are kept up, allowing bay water to enter the marshes when the force of the incoming tide outmatches the river flow, unless the salinity at the water pumps gets too high.

by Martin V. Melosi

The tranquility of the site belies the legal war fought over the area from 1963 to 1987—a war involving Congress, the U.S. Army Corps of Engineers, and the Sierra Club. A few quotes from papers of the time give a sense of the debate. In *Houston Post* articles from 1986 and 1987, opponents of the Wallisville Dam called the project “a fraud,” “a monumental rip-off,” “an economic blunder,” and “a slowly grow-

ing cancer,” citing the environmental risks.

Even in the seemingly water-rich Houston region, which sits atop massive aquifers and is straddled by the Neches, Colorado, Brazos, San Marcos, Trinity, and Sabine rivers, a water war raged as if Houston were in drought-prone West Texas. Understanding why this happened—and how we have reached a point where the decision to build a sewer pipe or a freeway ramp outside Katy affects the lives of herons and shrimpers 75 miles away in Anahuac—calls for a deeper history of Houston’s water supply.

WATER SUPPLY BEFORE 1945: THE ERA OF ARTESIAN WELLS

During its frontier days, Houston depended upon underground brick cisterns, overhead cypress tanks, and private wells for both drinking water and fire protection. Initially water from the bayous was considered good for drinking. Bud A. Randolph, in his 1927 work “The History of Houston’s Water Supply,” tells of bucket brigades tapping cisterns and shallow wells when fires broke out.

Houston developed its first public water supply system in 1876. It was unique in that the city relied exclusively on groundwater from countless wells until the 1940s. Water was drawn from the Chicot and Evangeline aquifers, running southeast to northwest from the Gulf Coast through Harris County’s western half and into Montgomery and Grimes Counties.

In 1884 local business interests, headed by former mayor and wealthy property holder Thomas H. Scanlan, purchased the Houston Water Works Company, and in 1888 the company drilled its first artesian well. No one had known that Houston sat atop one of the largest artesian reservoirs in the United States. This new source of clean water was heralded as the solution to Houston’s long-term water needs.

But the company soon discovered that a supposedly bottomless pool of pure water did not solve all of the problems of operating a water system. Bayou water frequently had to be pumped into the city reservoir to meet increased demand when fires broke out, making the water unfit to drink for days afterward. Legal action against this practice led in 1904 to the U.S. Supreme Court’s ruling that the company cease pumping bayou water into the mains, and artesian wells became the sole source for the Houston distribution system.

As the population grew, so did complaints about water quality, poor fire protection, and inadequate extension of distribution mains. In a 1905 annual report, Mayor Hugh Baldwin Rice concluded that while he had been doubtful of public ownership of utilities, “when it comes to the question of water, the very life and essence of a community, it would be far better for the City of Houston to own and operate its own water system.” Municipal ownership improved service and efficiency, but the long-term viability of

LEFT: The onset of World War II pushed Houston towards a regional system supplied by surface water.

RIGHT: A cormorant suns itself near the Wallisville Dam.

RIGHT BELOW: Gap around the pad of an old Baytown well demonstrates original height of the ground before subsidence.

a water system based solely on artesian wells was ignored. Even the new industry along the Ship Channel drew from the aquifer.

AFTER WORLD WAR II: DAMMING THE RIVERS

After World War II, the city could no longer fool itself into thinking artesian wells alone would suffice as a water supply, but city leaders—because of either political expediency or their inability to see the incredible population explosion just ahead—moved too slowly.

Through the 1930s, Houston had been the largest city in North America to rely exclusively on wells for its water. With increased industrial pumping along the Ship Channel for cooling and other purposes, the static level (the depth at which pumps could retrieve water) of the wells worsened, leading many industries and owners of commercial buildings to compound the problem by bypassing the city and drilling more of their own wells. Taking water from the ground also led to a series of unintended consequences, chiefly subsidence. The ground sinks as surrounding clay deep underground collapses and compacts, breaking pipes, clogging sewers, encouraging saltwater encroachment, and increasing potential flooding. By 1978, subsidence of up to ten feet had been measured along the Ship Channel.

The onset of World War II finally pushed Houston to initiate projects creating a surface supply. In July 1942, the War Production Board authorized the San Jacinto River Conservation and Reclamation District to build a reservoir. Construction of Sheldon Reservoir (located on a tributary of Buffalo Bayou) began in December 1942 to assure the delivery of water to industries at Baytown and in the Pasadena area.

It was in the postwar era, however, that aggressive annexations and unrelenting sprawl tested the integrity and functionality of Houston's water supply system. Pipes connecting an annexed area to the Houston system often led to a leapfrog pattern of suburban development. As a result, water services ended up connected to a variety of watersheds as well as to Galveston Bay. A Spring Branch dishwasher became interlinked with a Trinity Bay estuary. One woman's shower was interconnected with a distant bird's nesting ground. The water for one man's watered lawn was the stuff of some shrimper's living.

The development of the San Jacinto River in 1942 to supply water for defense industries along the Ship Channel joined with the existing groundwater supply to produce a dual water system for urban, industrial, and agricultural users in the Houston metropolitan area. Completed in 1954, Lake Houston—which replaced Sheldon Lake as the city's prime source of surface water—provided water for both the City of Houston and the industrial complex stretching from Houston to Baytown, and it also supported local



Opponents argued it would reduce shrimp harvests by 65 percent, and damage or destroy saltwater ecosystems. After a revision of the plan and a court decision in favor of the government, the project was completed in 1999 in its current form—a set of levees, a small dam across the Trinity, a navigation lock and engineered navigation channel, a gated control structure, administrative buildings, and recreation areas.

The design compromise at Wallisville appears well conceived. To an untrained eye, the surrounding wetlands seem pristine. But the roseate spoonbills and herons (and the bird watchers who follow

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irrigation for various agricultural products, including rice. By 1970, treated surface water met about 40 percent of the demand of the municipal system. Other sources on the Trinity, Brazos, Colorado, and Neches Rivers continued to be explored.

The San Jacinto projects and other shifts to surface water produced a different set of contentious environmental issues—bringing our story back to the Wallisville Dam. Authorized by Congress in 1962, construction began in 1966 at the mouth of the Trinity River located approximately 40 miles east of Houston. Visualized as a multipurpose project, proponents claimed that it would increase the industrial water supply for Houston, control saltwater intrusion into the river, improve navigation, and enhance the habitat for fish and wildlife. But as Frank Fuller wrote in a 1995 study, “Stripped of its bells and whistles... Wallisville is at its core a water supply project.”

Litigation prompted by environmental concerns, including the discovery of nesting bald eagles, halted construction and delayed the project for many years.

them), the wild grasses, and the alligators screen a still simmering controversy. While a shift to surface water had been inevitable for Houston in the wake of its breathtaking growth, in the case of Wallisville a public battle was waged that produced, at best, a temporary solution to the city's water needs, and comes at a price that some people are not willing to pay.

How many more times will controversies over surface water projects materialize as Houston continues to grow? The panacea of surface water did not magically solve the problems of subsidence and groundwater depletion, but instead shifted the challenge of meeting water demand from below the ground to above, and from a local concern to a regional issue. Linking water supply to urban growth has resulted in a series of unintended consequences—the drying up of the supposed never-ending supply of groundwater, subsidence, threats to water quality, and chronic jurisdictional battles—that make the provisions for a safe and bountiful water supply a major challenge for Houston. 