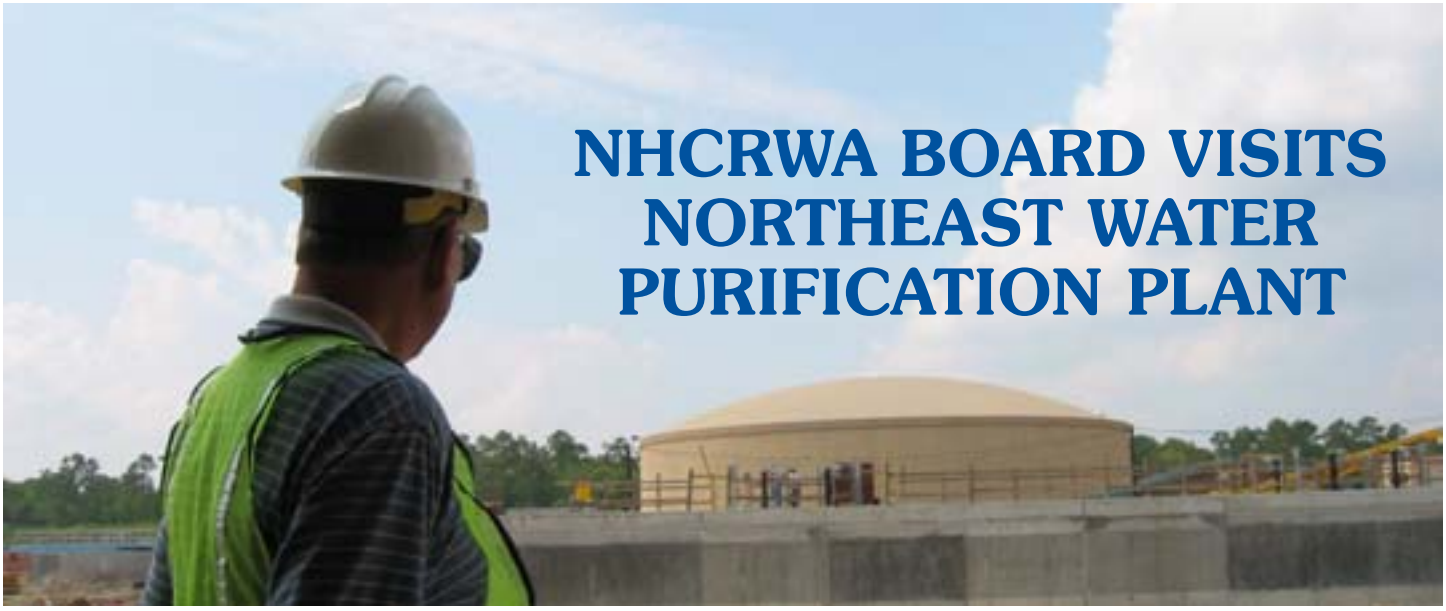


NHCRWA BOARD VISITS NORTHEAST WATER PURIFICATION PLANT

If you have ever wondered what roughly $100 million will buy these days, there's a major construction project adjacent to Lake Houston that provides an excellent example of a $97.6 million capital expenditure. That's the price tag for the Northeast Water Purification System Project (NEWPS) currently under construction for the City of Houston that will supply wholesale treated surface water from the Lake to the City as well as to the North Harris County Regional Water Authority, Humble and numerous other local MUDs.

Harris County has traditionally relied on groundwater drawn from a complex system of aquifers that occur at various depths throughout the state. By just about any standard, this has been some of the cheapest water in the country. Due in part to the rapid and sustained growth and development of the Houston area, this critical underground water supply is being depleted and the aquifer levels have dropped alarmingly -- as much as 200 feet in some areas. In some locations, this groundwater depletion has also caused significant subsidence of between 1 to 6 feet. In fact, we're taking water out of our aquifers about 10 times faster than they can recharge, and this is causing major problems in some of our local wells. There isn't a commodity on earth that can be taken so relentlessly without an opportunity to be replenished.

Looking Ahead…

More than 50 years ago, the City of Houston developed a long-range water supply plan that included the creation of man-made lakes and the confirmation of some important water rights in order to be able to meet steadily increasing demands for potable water. Houston's future role as the nation's top energy producer was already visible on the horizon, and this expansion would be accompanied by an influx of people and business development to support it.

Reviewing Houston's aggressive plan to secure our water future takes us through some of the city's most dazzling peaks of economic growth and prosperity and some valleys, as well. At the end of WWII, recognizing its extremely favorable geographic and economic situation, the Houston Chamber of Commerce outlined a strategy designed to "make Houston a great city as well as a big city." Its chairman, Jesse H. Jones, outlined the top three goals as: 1. Job creation (utilization of natural resources and diversification); 2. Expanding the Port of Houston; and 3. Providing a large, long-range and dependable supply of fresh water for domestic and industrial use. The emphasis during previous years of Houston's history (1836 to 1945) might have been on growth, but the Chamber recognized that in the future the emphasis had to be on the factors that would "make this growth livable."

In 1947, a study by the Chamber's Water Supply Committee confirmed the need for a "proper and systematic development" of groundwater resources, and urged financing, construction and expansion of the area's surface water storage and distribution facilities.

In 1949, television came to Houston, and an ambitious annexation program approved by City Council was carried out. This increased the city limits from 74 square miles to 216 square miles (by adding roughly a two-mile belt around the city)…with an estimated population of 620,000. Oil companies began moving their headquarters to Houston in 1950 and the construction of the Texas Medical Center was well underway. The Galveston freeway opened and metropolitan Houston or Harris County passed the magic million mark in population.

Construction finally got underway on the **San Jacinto Dam** project to provide Houston with a major source of surface water -- $20 million financed by

bond elections in 1944 and 1950. The project was designed to provide a dependable yield of 150 million gallons per day. The **Lake Houston** dam on the San Jacinto river, four miles north of Sheldon, was begun in 1951 and completed in 1953. It was originally built by the City of Houston for municipal, industrial, recreational, mining, and irrigation purposes. The east water purification plant was finished in 1954 and as it was reported by the City, "The water was so clean there was hardly any need to treat it."

There was widespread drought in 1953 that not only caused a dramatic decline in the number of livestock on the ranches in West Texas, but created serious water supply problems in more than 100 Texas towns. This drought experience -- and the firm conviction that an adequate water supply is essential to sustained economic growth and prosperity -- prompted the Chamber's Water Supply Committee to explore additional potential sources of future water supply that included the Colorado, Brazos, San Jacinto and Trinity Rivers. Water consumption consistently overran projections. In 1943, for example, the City's consultants forecast a demand of 268 million gallons of water per day by 1970. This demand was actually realized a little over 10 years later in 1954.

The 1947 study confirmed that water supply is a "complex matter, with legal, political and financial as well as engineering aspects." It was hard to imagine water becoming a priority need in an area with an average annual rainfall of about 50 inches and with what seemed to be an inexhaustible groundwater resource. The earlier leadership could also not anticipate the spiraling rise in per capita use of water -- for residential, industrial and agricultural purposes. And they didn't expect that aggressively drawing down the groundwater reserves would cause significant subsidence. In short, we took our water supplies completely for granted, and undervalued this finite natural resource, as well.

In 1954, with the San Jacinto River project complete, the Water Supply Committee turned its attention to a conservation-storage project on the Trinity River, and proposals were taken before the Texas Legislature to create a **Trinity River Authority** to develop this "stream for multiple purpose uses," and to preserve the rights to buy water from the Trinity River at "reasonable rates negotiated through regular state agencies.

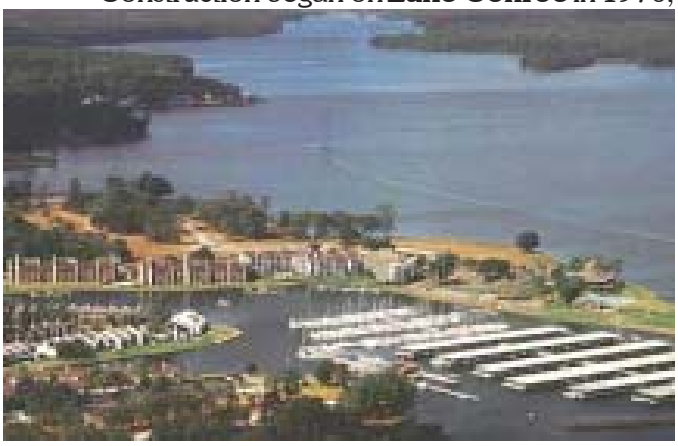
By 1956, water supply was identified as Houston's number one problem by the Chamber's leadership and the Mayor, as well. Mayor Oscar Holcombe had a comprehensive study completed to consider the feasibility of a dam and reservoir project on the Trinity River. A water rate increase to finance the project -- under Mayor Lewis Cutrer -- became a hot political issue, and the project dragged on until the election of Mayor Louie Welch. The City entered into a contract with the Trinity River Authority to build the dam and reservoir to "insure the Houston area an adequate supply for the next 50 years." After years of wrangling, ground was broken for the **Lake Livingston Dam** in November 1965.

The Chamber's president at the time, Mason G. Lockwood, heralded the agreement between the city and the Trinity River Authority as "one of the most significant events of our time."

The 1960 census showed that there were 1.24 million people in Harris County -- up 54 percent in just 10 years. This increase for Houston was approximately seven times the 8.2 percent average for the nation's other large cities. Houston's selection as "home" for NASA in 1961 and the inauguration of the manned flight space program put the city in the center of the world's stage. This decision came just one day after the city reached the 1 million population milestone.

By the time the 1970 census rolled around, the City of Houston's population equalled 1.2 million -- the population for all of Harris County just a decade earlier. In 1974, the Chamber calculated that 55,000 new people were moving to Houston every year. By 1978, 539 energy companies had their headquarters here.

Construction began on **Lake Conroe** in 1970,



to add another source of surface water for Houston on the West Fork of the San Jacinto River. The lake was completed in 1973, and soon enjoyed massive recreational development.

The **Harris Galveston Coastal Subsidence District** was created by the Texas Legislature in 1975 to regulate and reduce the withdrawal of groundwater. By 1976, the District had begun the process of compiling hydrologic information on the Chicot and Evangeline aquifers, engineering planning information on water usage and water supply in Harris and Galveston Counties, and implementing regulatory procedures associated with the first groundwater regulatory plan. Their first District Plan was initially adopted in 1977, then revised in 1985 and again 1992.

The latest District Regulatory Plan (1999 and revised in 2001) was developed for the period through the year 2030, with an overall goal to reduce groundwater withdrawal to no more than 20% of total water demand. This Plan establishes policy in the areas of groundwater regulation, permits and enforcement and establishes District regulatory areas and regulatory requirements for each area.

Enter the HAWC…

To help address the regional water supply issues, in 2000 the City of Houston created the **Houston Area Water Corporation** (HAWC) to develop the Northeast Water Purification System Plant at Lake Houston to provide wholesale treated surface water to the North Harris County Regional Water Authority, other water customers, as well as the City. The City issued a Request for Submittals to identify private sector companies to perform construction on the NEWPS and subsequently contracted with MWH to design, build and operate the plant. Other "partners" include: the City of Houston (Project Management); Locke Liddell & Sapp (Corporate Counsel); CH2MHILL (General Engineering Consultant); PBS&J (Owner Representative - Plant); Weston Solutions (Owner Representative - Pipeline); and A. O. Phillips (Diversity Consultant).

Contract negotiations were completed in 2001 for the Service Agreement and Fixed Construction Price of $92,206,000 for the 40 million gallon a day water purification plant and a 10 mile-long water pipeline. HAWC will oversee the contract operation for 10 years, with the potential to extend the contract for two more 5-year terms. The plant has an initial capability of expanding to 80 mgd, and is designed for future expansion to 240 mgd by 2020. The plant's maximum construction expansion capacity is 430 mgd.

The new water purification plant is situated on the west side of Lake Houston, and consists of a raw water intake; a water pump station to bring water into the plant from the Lake; the purification plant; chemical and ultra violet (UV) disinfection facilities; 10 million gallon ground storage tank; and a high-service pump station for transmitting the water out into the pipeline. Construction began in April 2002.

NHCRWA Board Visit…

By the end of June 2003 when the Board of Directors of the North Harris County Regional Water Authority visited the 240 acre site, 73 percent of the work on the project was in place within 53 percent of the contract schedule. Due to the cost of easement acquisition, the total project cost was increased to $97,609,686, with $13,733,000 allocated for development costs and $83,876,686 for construction.

In addition to Board members **Ron Graham, Len Sigler, Jim Pulliam, Al Rendl** and **Kelly Fessler**, two of Houston's former Directors of Public Works --**Jimmie Schindewolf** (now NHCRWA General Manager) and **Tom Rolen** (now the Authority's Engineering Manager) were present for the briefing and tour. Having been with the City when many of the historic water supply decisions were being made, their insight and observations added another dimension to the visit.

Schindewolf commented that it was especially rewarding to visit the plant and to see a 20-year vision actually become a reality. "Having been involved in the original purchase of the site all those years ago, it is truly exciting to see this historic project come online."

MWH Constructors won the Association of General Contractors National Award for Safety Excellence for all of its sites including the NEWPS, which has had 528 days (as of the visit) with no lost time accidents. The project has over 80 subcontractors, a substantial portion of which are small, disadvantaged, women or minority contractors.

On hand to conduct the briefing and tour for the Board were **Todd Larson**, P.E., Vice President and NEWPS Project Manager for MWH Constructors; **Dominic G'Benoba**, P.E., NEWPS Project Manager for the HAWC/Chief of Operations/Chief Engineer, City of Houston Public Works Department; **Fred Bauhof**, P.E., HAWC General Engineering Consultant/Water Business Group Manager, CH2MHill; **Doug Garnett**,

(Left to right, top down) Len Sigler, Jimmie Schindewolf, Tom Rolen, Ron Graham, Kelly Fessler, Jim Pulliam, Al Rendl, Fred Bauhof, Dominic G'Benoba, Todd Larson, and Doug Garnett.

P.E., HAWC Owner Representative-Pipeline, Project Manager, Weston Solutions; Trent Slovak, P.E., HAWC Owner Representative-Plant, Project Manager; and **Gary Oradat**, Deputy Director of Engineering, Construction, and Real Estate, City of Houston Public Works and Engineering Department.

The Plant wil have appropriate levels of security measures to protect the facility.

According to Gary Oradat, "This facility will meet the needs of the Authority and the City of Houston for the foreseeable future."

The new water purification plant is expected to be complete and in operation on June 15, 2004, and the Board anticipates another visit to the site as construction nears completion. ♦

Barbara Payne
NHCRWA Communications

The 84 inch pipe segments along Beltway 8.

Board member Al Rendl, 6'6" tall, stands in the 84 inch pipe with room to spare.

Board members Sigler, Graham and Fessler, stand in front of the 10 million gallon water storage tank.

The NHCRWA board members and consultant team members assemble in the relentless June sunshine to begin the tour.

(Left to right) Jimmie Schindewolf, Len Sigler, Jim Pulliam, Kelly Fessler, Ron Graham, Al Rendl, and Gary Ordat at the new Administration Bldg.

The reflective tape on the Board members' safety vests glowed in the filter building's underground pipe gallery.

Gary Oradat (left) visited with Jimmie Schindewolf.

Ultra Violet (UV) lamp bulbs are used for final disinfection in addition to chloramines.

Board members (left to right) Pulliam, Fessler, and Rendl joined Todd Larson (center) and Dominic G'Benoba in treking over the construction site, muddied by recent heavy rains.