## Watershed Profile

**Area**
292 square miles

**Rainfall**
Ranges between 50-60 inches per year

**Elevation**
42.6 feet (at the dam) to 361 feet (Coldspring)

**Geology**
Sedimentary formations consisting of materials deposited by water

**Soils**
Clays, silts and local sands. Poorly-drained, tight clays

**Major Ecoregion**
Western Gulf Coastal Plain/Piney Woods

**Vegetation**
Loblolly Pine, Oak, Pecan and Willow

**Cities**
Houston
Humble
Kingwood
Cleveland
Atascocita

**Tributaries**
Tarkington Bayou
West Fork San Jacinto River
Luce Bayou
Peach Creek
Caney Creek
East Fork San Jacinto River
White Oak Creek

**Issues**
High bacteria levels
Sedimentation
Elevated nutrient levels

**Parks**
Alexander Deussen
Lake Houston Park

**Golf Courses**
Lake Houston Golf Course
Deerwood Country Club
Atascocita Country Club
Kingwood Country Club
Kingwood Cove Country Club
Tour 18 Golf Course

**No matter where you live, work or play, you are always in a watershed – an area of land that drains to a particular creek, river, bayou or lake. Understanding our role in watershed management is critical to the protection of our waterways, floodplains and drinking water, as well as our recreational and fishing areas.**

# Watershed

**As our population grows, so do the risks to our waterways from activities in the watershed.**


## Contacts

For more information about your watershed, please contact the following:

H-GAC
www.h-gac.com
(713) 627-3200

TCEQ Region 12
www.tceq.state.tx.us
(713) 767-3500

Harris County Flood Control District
www.hcfcd.org
(713) 684-4000

Harris County Precinct 1
www.co.harris.tx.us/comm_lee/
(713) 755-6111

Harris County Precinct 4
www.hcp4.net

Liberty County
www.co.liberty.tx.us

Montgomery County
www.co.montgomery.tx.us

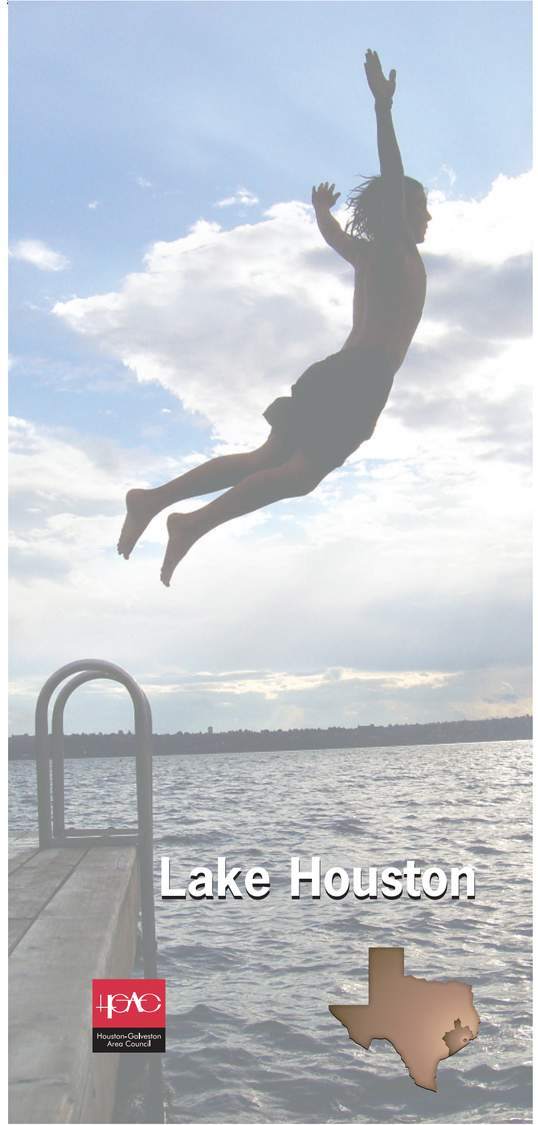
San Jacinto County
www.co.san-jacinto.tx.us

H-GAC Houston-Galveston Area Council

THE TEXAS CLEAN RIVERS PROGRAM

TCEQ

07/07




Twenty miles northeast of downtown, Lake Houston is the primary drinking water supply for the Houston area and also a popular recreational destination.

# Lake Houston Watershed

The northeast portion of the Lake Houston watershed originates in San Jacinto County at the headwaters of Tarkington Bayou and in Liberty County at the headwaters of Marsh Branch and Luce Bayou. The northwest portion of Lake Houston watershed originates at the confluence of White Oak Creek and Caney Creek and at the confluence of Cypress Creek and the West Fork of the San Jacinto River. The southern-most extent of the watershed is the Lake Houston Dam.

### History

Settlement in the western-most portion of the watershed, which later became Humble, Texas, began shortly after the Civil War. The main economic base was made up of farms and sawmills. In 1904, oil was discovered at Moonshine Hill. By 1905 the Humble Oilfield boasted the largest production in the State of Texas. The oil boom rapidly increased the population of the community from 700 to 20,000, and in 1911 the Humble Oil Company (now Exxon) came into being. The oil boom produced tremendous growth in the Houston area and helped spark the development of the Houston Ship Channel in 1914.

Houston continued to grow, and in 1950 Houston's population expanded to more than 1 million, establishing a need for a large, long-range and dependable supply of fresh water. The construction of the 62 foot high earthen dam, completed in 1953, created Lake Houston. The project was not only designed to provide a dependable yield of 150 million gallons per day but also to fulfill municipal, industrial and recreational purposes. Construction of the water purification plant was completed in 1954 and, as reported by the City, "The water was so clean there was hardly any need to treat it."

The opening of Houston Intercontinental Airport in the 1960s resulted in continued growth, and the communities of Kingwood, Forest Cove and others began to fill in the watershed's western area. However, much of the watershed's northeastern extent is still very rural and heavily forested.

### Water Quality

Portions of Lake Houston listed on the 2004 Texas Water Quality Inventory are of concern for nutrient enrichment. Nitrogen and phosphorus compounds are found naturally in water, fluctuating seasonally. However, when these compounds increase because of human

activity (primarily the use of fertilizers), nutrient levels can increase, encouraging higher rates of plant growth and wide spread algal blooms. Excessive algal blooms are a problem for several reasons. First, they cause loss of aesthetics because of water discoloration, musty odor and pungent taste. Second, death and decomposition of algal populations reduce the dissolved oxygen content of the lake, which fish need. Depletion of oxygen can lead to noxious conditions, fish kills and other aquatic stresses. Possible sources of nutrients include sewage from broken sewer lines, failing septic systems, animal waste and runoff from golf courses and residential lawns that wash into area waterways.

Another water quality concern is the presence of bacteria. The current water quality assessment shows elevated bacteria levels in the upper portion of the lake. This problem may stem from a variety of sources, including the following.

- Intermittent wastewater system overflows
- Failing septic systems
- Pet waste
- Stormwater runoff
- Wildlife and migratory bird populations scattered throughout the watershed

Determining a single cause for high bacteria levels is difficult because so many potential sources exist.

Resolving this problem will require the efforts of water quality managers, residents and other stakeholders. Water quality managers are currently conducting studies to help determine major contributors of bacteria to the watershed.

When these sources are identified, a number of solutions may be implemented, which include:

- Utilizing Best Management Practices (BMPs)
- Using appropriate enforcement actions if violations occur
- Repairing and maintaining failing infrastructures
- Developing watershed management plans

What can YOU do to prevent bacteria from entering Lake Houston?

- Report any leaking sewer lines or sewer overflows to the proper utility district.
- Contact your local county extension agent to learn how to best manage cow, horse or other livestock waste.
- Pick up and properly dispose of pet waste at home and in community parks.
- Perform routine maintenance of septic systems to avoid leaks and costly repairs.




## Drinking Water Supply

Lake Houston is located approximately 20 miles northeast of downtown Houston and currently supplies drinking water to more than 2 million customers for the city and surrounding area. Current output from the three major water production plants is 350 million gallons per day, which is about 25 percent of the total source water for the city. The majority of drinking water is from the withdrawal or pumping of groundwater, resulting in greater land subsidence.

As a result of groundwater subsidence regulations (effective in 2010), the lake will become the primary water supply source in the future. Lake Houston receives a large amount of precipitation run-off as its source water; therefore, the City has an important role in regional pollution prevention of storm water. Surface waters require more treatment and processing to remove impurities than do groundwater sources.

## Managing Water Quality in Lake Houston

To ensure the long-term sustainability of Lake Houston as a high quality source of drinking water, the City of Houston, in partnership with the U.S. Geological Survey (USGS), has initiated a study to understand the factors that affect water quality. Efforts of particular concern include the timing of large inflows from the surrounding watershed and the in-lake processes that might affect taste and odor in drinking water.

Additionally, the City has begun a program of evaluating alternative techniques for water quality management. The most challenging water quality concern for large open reservoirs is seasonal algal blooms.

Excessive algal blooms can lead to loss of aesthetics when water becomes discolored and acquires a musty odor and pungent taste. City water quality experts studied the problem and found a low-cost, effective solution that did not involve the use of additional chemicals. The solution was solar-powered, mechanical mixers called "SolarBees" to circulate high-oxygen surface waters with oxygen-poor, bottom waters. "SolarBees" require no power source, which allows them to be deployed freely in large reservoirs. In 2006, 20 "SolarBees" were deployed near the intake of the City's Northeast Water Purification Plant. The scientific validation of this study for preventing seasonal algal blooms and improving overall water quality will increase our understanding of lake hydrology and provide a valuable tool for the City as well as other cities around the country. To learn more about the project, please visit: www.houstontx.gov/environment/reports.html

## Parks and Marinas

There are ample access points to the Lake for water activities, including fishing, skiing and sailing. The Lake offers good fishing from the dock, the shoreline and along its many tributaries.

### *Alexander Deussen Park*

The 309 acre park, located near the spillway on the southern shore of Lake Houston, includes family picnic areas with pavilions, playgrounds, fishing ponds, rental shelters, as well as both jogging and nature trails. Two boat ramps, along with a one-lane sailboat ramp, can accommodate all boats on the lake. The park offers overnight camping, boat and bank access to fishing and excellent views of the south end of Lake Houston.

**LEGEND**

1. Alexander Deussen Park
2. Lake Houston Park
3. Lake Houston Marina
4. Bush Intercontinental Airport

City, Town or Place · Golf Course · Park · Marina

### *Lake Houston Park*

Lake Houston Park is located at the north end of Lake Houston at 22031 Baptist Encampment Road, in New Caney, Texas. It is situated between Caney Creek and the East Fork of the San Jacinto River. It is accessible from US 59 and FM 1485. With approximately 5,000 acres of forest, 12 miles of hike and bike trails, eight miles of equestrian trails and camping facilities, the park boasts a variety of activities for visitors although there is no direct boater access to the lake.

### *Lake Houston Marina*

Located across the FM 1960 bridge, Lake Houston Marina is a full-service marina offering live bait, cleaning stations, weigh stations, an RV park and overnight camping.

### *Rivers, Lakes, Bays 'N Bayous Trash Bash®*

Once a year, thousands of volunteers gather along the waterways of our region to do their part in cleaning up the environment. Dedicated teams of volunteers from schools, scout groups, local businesses, industry, local governments and state agencies have made the Rivers, Lakes, Bays 'N Bayous Trash Bash a success since 1994. The Lake Houston site is the largest, most attended of all the sites. The Lake Houston Marina provides the main staging location with two satellite locations around the Lake. To learn more about Trash Bash or to become a volunteer, visit www.trashbash.org.