

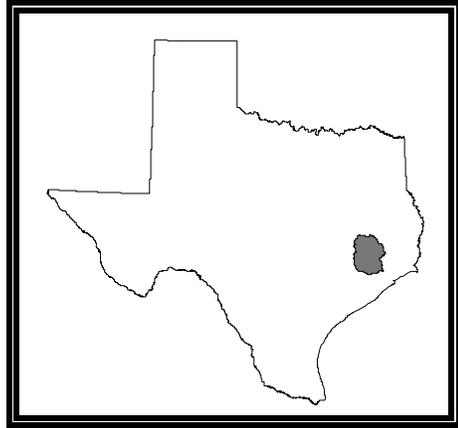
Below is an Electronic Version of an Out-of-Print Publication

You can scroll to view or print this publication here, or you can borrow a paper copy from the Texas State Library, 512/463-5455. You can also view a copy at the TCEQ Library, 512/239-0020, or borrow one through your branch library using interlibrary loan.

The TCEQ's current print publications are listed in our catalog at www.tnrcc.state.tx.us/admin/topdoc/index.html.

Basin 10

San Jacinto River



San Jacinto River Basin Narrative Summary

The East and West Forks of the San Jacinto River merge in the headwaters of Lake Houston. The San Jacinto River flows approximately 20 miles from Lake Houston to its confluence with the Houston Ship Channel. The river flows another 10 miles to Galveston Bay. This basin includes a portion of the Houston Ship Channel and associated tributaries. Total basin drainage area is 5,600 square miles. There are approximately 1,750 square miles in the West Fork drainage area, and 1,050 square miles in the East Fork drainage area. Buffalo Bayou, a major tributary to the Houston Ship Channel, has a drainage area of 1,034 square miles.

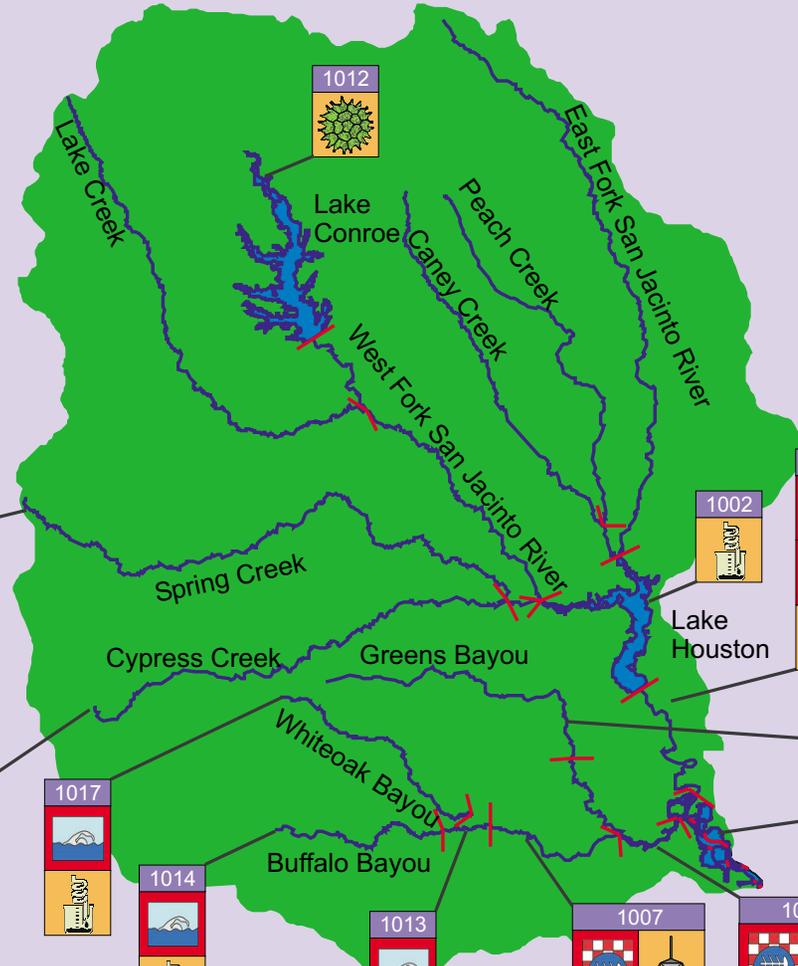
Approximately 92 percent of the basin population resides in Harris County. The City of Houston is the largest city in the basin. Other principal cities in the basin include Pasadena and Bellaire in Harris County and Conroe in Montgomery County.

The basin has been divided into 17 segments consisting of 517 stream miles and two reservoirs covering 51.9 square miles surface area. Monitoring coverage in the basin has improved through the coordinated efforts of the TNRCC, US Geological Survey, Houston-Galveston Area Council, the City of Houston, the San Jacinto River Authority, and Harris County Pollution Control. Throughout the basin, there are approximately 270 sites scheduled for monitoring in fiscal year 2001. This is a significant increase from the 70 sites reported in 1996.

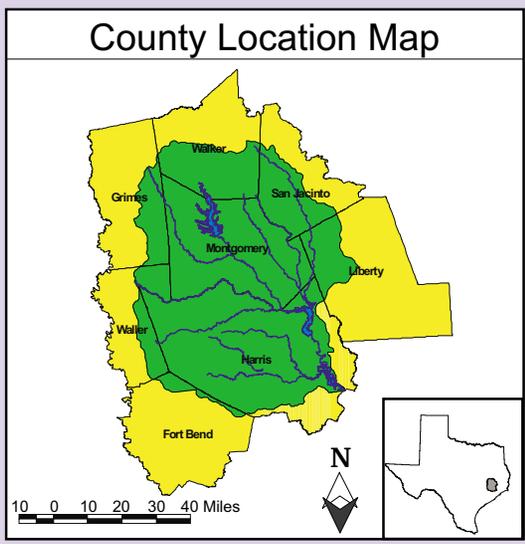
The San Jacinto River Basin exhibits wide variations in water quality. As the Houston metroplex expands to the north, numerous wastewater treatment plants and urban runoff increase the organic and nutrient loading and fecal coliform bacteria levels in all major tributaries to Lake Houston. Dissolved oxygen deficiencies can also occur in these streams. The Houston metropolitan area is drained almost entirely by Buffalo Bayou, which has been channelized to form the Houston Ship Channel in its lower reach. Buffalo Bayou receives heavy municipal, industrial and urban stormwater runoff loadings. During periods of low flow, low dissolved oxygen and elevated fecal coliform levels are common. The lower portion of Buffalo Bayou and the San Jacinto River were channelized in 1915, which opened the Houston area to ship traffic. Today, the Port of Houston is the third leading shipping terminal in the United States. Oil and petrochemical industries along the channel make it one of the most highly industrialized areas of the world. The area from the Houston Ship Channel at the San Jacinto River confluence to Buffalo Bayou at US Highway 59 has been deemed desirable for navigation and industrial water use only. Over the past several years, water quality in the Houston Ship Channel has improved due to advanced wastewater treatment and reduced waste loads.

Aquatic and/or marine organisms are inhabiting areas where few had previously been found.

San Jacinto River Basin Identified Water Quality Issues



- 1012**: Icon of a sun with rays.
- 1008**: Icon of a water drop and a bird.
- 1009**: Icon of a water drop, a plant, and a factory.
- 1017**: Icon of a water drop and a factory.
- 1014**: Icon of a water drop and a factory.
- 1013**: Icon of a water drop, a bird, and a factory.
- 1007**: Icon of a water drop, a bird, and a factory.
- 1006**: Icon of a water drop, a plant, a bird, and a factory.
- 1005**: Icon of a water drop and a bird.
- 1002**: Icon of a factory.
- 1001**: Icon of a water drop, a bird, and a factory.
- 1016**: Icon of a water drop, a bird, and a factory.

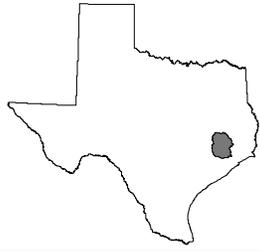


San Jacinto River Basin Graphical Summary

Basin Map	Water Bodies									
	Segment 1001 San Jacinto River Tidal	Segment 1002 Lake Houston	Segment 1003 East Fork San Jacinto River	Segment 1004 West Fork San Jacinto River	Segment 1005 Houston Ship Channel/San Jacinto River Tidal	Segment 1006 Houston Ship Channel Tidal	Segment 1007 Houston Ship Channel/Bufalo Bayou Tidal	Segment 1008 Spring Creek	Segment 1009 Cypress Creek	Segment 1010 Caney Creek
DESIGNATED USE SUPPORT										
Contact Recreation	N	S	S	S	X	X	X	N	N	S
Noncontact Recreation	X	X	X	X	S	S	S	X	X	X
Public Water Supply	X	S	S	S	X	X	X	S	S	S
Fish Consumption										
Human Health	S	S	NA	NA	S	S	S	NA	NA	NA
Advisories/Closures	N	S	NA	NA	N	N	N	NA	NA	NA
Aquatic Life										
Dissolved Oxygen (Grab)	S	S	S	S	S	S	S	N	S	S
Dissolved Oxygen (24-Hour)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals in Water	S	S	NA	NA	S	N	S	NA	NA	NA
Organics in Water	NA	S	NA	NA	NA	NA	NA	NA	NA	NA
Water Toxicity Tests	NA	NA	NA	NA	NA	N	S	NA	NA	NA
Sediment Toxicity Tests	NA	NA	NA	NA	NA	P	P	NA	NA	NA
Macrobenthos	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GENERAL USE SUPPORT										
Water Temperature	S	S	S	S	S	N	S	S	S	S
pH	S	S	S	S	S	S	S	S	S	S
Chloride	X	S	S	S	X	X	X	S	S	S
Sulfate	X	S	S	S	X	X	X	S	S	S
Total Dissolved Solids	X	S	S	S	X	X	X	S	N	S

S = Support; P = Partial Support; N = Nonsupport; T = Threatened; NC = No Concern; C = Concern; NA = Not Assessed; X = Not Applicable

San Jacinto River Basin Graphical Summary (Continued)

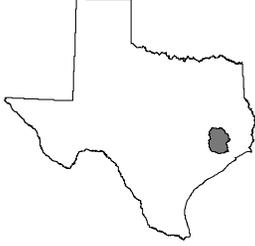
Basin Map	Water Bodies									
	Segment 1001 San Jacinto River Tidal	Segment 1002 Lake Houston	Segment 1003 East Fork San Jacinto River	Segment 1004 West Fork San Jacinto River	Segment 1005 Houston Ship Channel/San Jacinto River Tidal	Segment 1006 Houston Ship Channel Tidal	Segment 1007 Houston Ship Channel/Bufalo Bayou Tidal	Segment 1008 Spring Creek	Segment 1009 Cypress Creek	Segment 1010 Caney Creek
										
WATER QUALITY CONCERNS										
Contact Recreation	X	X	X	X	X	X	X	X	X	X
Noncontact Recreation	X	X	X	X	X	X	X	X	X	X
Fish Tissue	NC	NA	NA	NA	NC	NC	C	NA	NA	NA
Sediment	C	NA	NA	NA	C	C	C	NA	NA	NA
Narrative	NC	NC	NC	NC	NC	C	NC	NC	NC	NC
Nutrient Enrichment										
Ammonia Nitrogen	NC	NC	NC	NC	NC	NA	C	NC	NC	NC
Nitrite + Nitrate Nitrogen	NC	C	NC	NC	NC	NA	C	NC	C	NC
Orthophosphorus	NC	C	NC	NC	NC	NA	NC	NC	C	NC
Total Phosphorus	NC	C	NC	NC	NC	NA	NC	NC	C	NC
Chlorophyll <i>a</i>	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Public Water Supply										
Finished Water Chloride	X	NC	NC	NC	X	X	X	NC	NC	NC
Finished Water Sulfate	X	NC	NC	NC	X	X	X	NC	NC	NC
Finished Water TDS	X	NC	NC	NC	X	X	X	NC	NC	NC
Surface Water Chloride	X	NC	NC	NC	X	X	X	NC	NC	NC
Surface Water Sulfate	X	NC	NC	NC	X	X	X	NC	NC	NC
Surface Water TDS	X	NC	NC	NC	X	X	X	NC	NC	NC
Aquatic Life										
Dissolved Oxygen	X	X	X	X	X	X	X	X	X	X
Metals in Water	X	X	NA	NA	X	X	X	NA	NA	NA
Organics in Water	NA	X	NA	NA	NA	NA	NA	NA	NA	NA
Water Toxicity Tests	NA	NA	NA	NA	NA	X	X	NA	NA	NA
Sediment Toxicity Tests	NA	NA	NA	NA	NA	X	NA	NA	NA	NA

San Jacinto River Basin Graphical Summary

Basin Map	Water Bodies									
	Segment 1011 Peach Creek	Segment 1012 Lake Conroe	Segment 1013 Buffalo Bayou Tidal	Segment 1014 Buffalo Bayou Above Tidal	Segment 1015 Lake Creek	Segment 1016 Greens Bayou Above Tidal	Segment 1017 White Oak Bayou Above Tidal			
DESIGNATED USE SUPPORT										
Contact Recreation	NA	S	N	N	NA	N	N			
Noncontact Recreation	X	X	X	X	X	X	X			
Public Water Supply	S	S	X	X	S	X	X			
Fish Consumption										
Human Health	NA	S	S	NA	NA	NA	NA			
Advisories/Closures	NA	S	NA	NA	NA	NA	NA			
Aquatic Life										
Dissolved Oxygen (Grab)	S	S	S	S	NA	S	S			
Dissolved Oxygen (24-Hour)	NA	NA	NA	NA	NA	NA	NA			
Metals in Water	NA	S	N	NA	NA	S	S			
Organics in Water	NA	NA	NA	NA	NA	NA	NA			
Water Toxicity Tests	NA	NA	NA	NA	NA	NA	NA			
Sediment Toxicity Tests	NA	NA	NA	NA	NA	NA	NA			
Macrobenthos	NA	NA	NA	NA	NA	NA	NA			
Fish	NA	NA	NA	NA	NA	NA	NA			
GENERAL USE SUPPORT										
Water Temperature	S	S	S	S	NA	S	S			
pH	S	S	S	S	NA	S	S			
Chloride	S	S	X	S	NA	S	S			
Sulfate	S	S	X	S	NA	S	S			
Total Dissolved Solids	S	S	X	S	NA	S	S			

S = Support; P = Partial Support; N = Nonsupport; T = Threatened; NC = No Concern; C = Concern; NA = Not Assessed; X = Not Applicable

San Jacinto River Basin Graphical Summary (Continued)

Basin Map	Water Bodies									
	Segment 1011 Peach Creek	Segment 1012 Lake Conroe	Segment 1013 Buffalo Bayou Tidal	Segment 1014 Buffalo Bayou Above Tidal	Segment 1015 Lake Creek	Segment 1016 Greens Bayou Above Tidal	Segment 1017 White Oak Bayou Above Tidal			
										
WATER QUALITY CONCERNS										
Contact Recreation	X	X	X	X	NA	X	X			
Noncontact Recreation	X	X	X	X	X	X	X			
Fish Tissue	NA	NA	NA	NA	NA	NA	NA			
Sediment	NA	NA	NA	NA	NA	NA	NA			
Narrative	NC	NC	NC	NC	NC	NC	NC			
Nutrient Enrichment										
Ammonia Nitrogen	NC	NC	NC	NC	NA	NC	NC			
Nitrite + Nitrate Nitrogen	NC	NC	C	C	NA	C	C			
Orthophosphorus	NC	NC	NC	NC	NA	C	NC			
Total Phosphorus	NC	NC	NC	NC	NA	C	NC			
Chlorophyll <i>a</i>	NC	C	NC	NC	NA	C	NC			
Public Water Supply										
Finished Water Chloride	NC	NC	X	X	NC	X	X			
Finished Water Sulfate	NC	NC	X	X	NC	X	X			
Finished Water TDS	NC	NC	X	X	NC	X	X			
Surface Water Chloride	NC	NC	X	X	NA	X	X			
Surface Water Sulfate	NC	NC	X	X	NA	X	X			
Surface Water TDS	NC	NC	X	X	NA	X	X			
Aquatic Life										
Dissolved Oxygen	NA	NA	NA	NA	X	NA	NA			
Metals in Water	NA	X	X	NA	NA	X	X			
Organics in Water	NA	NA	NA	NA	NA	NA	NA			
Water Toxicity Tests	NA	NA	NA	NA	NA	NA	NA			
Sediment Toxicity Tests	NA	NA	NA	NA	NA	NA	NA			

San Jacinto River Basin

Segment 1001 - San Jacinto River Tidal

Water body description: From a point 100 meters (110yards) downstream of IH 10 in Harris County to Lake Houston Dam in Harris County

Water body classification: Classified

Water body type: Tidal Stream

Water body length / area: 17.00 Miles

Use support summary: The contact recreation use was not supported due to elevated fecal coliform densities. The fish consumption use is not supported based on a no-consumption advisory issued for sensitive subpopulations by the Texas Department of Health in September 1990 due to elevated concentrations of dioxin in fish and crab tissue. The aquatic life and general uses are supported.

Water quality concerns summary: Manganese and mercury in sediment are concerns.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1983 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A project is underway for dioxin in fish and crab tissue to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

A project is scheduled for fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program. For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11193	San Jacinto River Tidal IH 10 Bridge east of Channelview
11200	San Jacinto River Tidal at US 90 Bridge east of Sheldon

Published studies

Publication	Date	Author
AS-26/SR San Jacinto River Tidal	Jan. 1992	Luedke, M. (Region 12)
IS 86-10 San Jacinto River Tidal	Aug. 1982	Kirkpatrick, J.
IS 87-06 San Jacinto River Tidal	July 1984	Kirkpatrick, J.
IS 87-09 San Jacinto River Tidal	Feb. 1985	Kirkpatrick, J.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	14
Industrial	36

Historical fish kills

Start date	Location	Fish killed	Suspected cause
01/07/1995	Turkey Creek one mile from clear creek confluence	50	Low Dissolved Oxygen
11/22/1996	San Jacinto River, north of HWY 90 on San Jacinto River near Sheldon, Texas	10	Inorganic compound
03/23/1997	San Jacinto River-N. of old HWY 90 Bridge and below the Lake Houston cut off	75	Organic compound

San Jacinto River Basin

Segment 1002 - Lake Houston

Water body description: From Lake Houston Dam in Harris County to the confluence of Spring Creek on the West Fork San Jacinto Arm in Harris/Montgomery County and to the confluence of Caney Creek on the East Fork San Jacinto Arm in Harris County, up to normal pool elevation of 44.5 feet (impounds San Jacinto River)

Water body classification: Classified

Water body type: Reservoir

Water body length / area: 12,240 Acres

Use support summary: Available data indicate that all uses are supported.

Water quality concerns summary: Nitrite + nitrate nitrogen, orthophosphorus, and total phosphorus are concerns.

Additional information: Although the 1999 303(d) list indicated that mercury concentrations in water exceeded the human health criterion, further investigation indicates that older mercury analysis methods are not adequately sensitive to assess ambient concentrations. Recent data collected with more accurate instrumentation indicate that mercury concentrations are below the criterion. New methods are being used that will improve the accuracy of monitoring for metals in water. A risk assessment performed by the Texas Department of Health in 1998 found that the risk of adverse health effects from consuming fish caught in the lake is low.

Monitoring sites used in the assessment

Station	Station Description
11204	Lake Houston 300 m upstream from dam
11208	Lake Houston north side of Missouri-Pacific Railroad Bridge
11211	Lake Houston at FM 1960, West End Pass Bridge (City HO site 9)
11212	Lake Houston at FM 1960, East End Pass Bridge (City HO site 13)
11213	Lake Houston, West Fork San Jacinto Arm at US 59
13942	Lake Houston USGS site AC
13945	Lake Houston at south mid lake (USGS site BC)
13948	Lake Houston USGS site CC
13951	Lake Houston at east fork, 100m south of FM 1960 (McKay Bridge mid-channel) USGS site DC
13954	Lake Houston USGS site EC
13957	Lake Houston USGS site FC

Published studies

Publication	Date	Author
IMS 41 Lake Houston	Dec. 1974	Kirkpatrick, J.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	9
Industrial	1

Historical fish kills

Start date	Location	Fish killed	Suspected cause
02/01/1995	Ben's Branch Cr downstream of Woodland Hills Dr, Kingwood	2251	Inorganic compound
02/17/1999	Bens Branch at Kingwood Dr.	367	Unknown

San Jacinto River Basin

Segment 1003 - East Fork San Jacinto River

Water body description: From the confluence of Caney Creek in Harris County to US 190 in Walker County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 75.00 Miles

Use support summary: Available data indicate that the aquatic life, contact recreation, public water supply, and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Monitoring sites used in the assessment

Station	Station Description
11235	East Fork San Jacinto River at FM 1485
11238	East Fork San Jacinto River Bridge on SH 105 west of Cleveland
14242	East Fork San Jacinto River at US 59 at Red Bully

Wastewater dischargers

Permit type	Number of outfalls
Domestic	4
Industrial	5

San Jacinto River Basin

Segment 1004 - West Fork San Jacinto River

Water body description: From the confluence of Spring Creek in Harris/ Montgomery County to Conroe Dam in Montgomery County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 40.00 Miles

Use support summary: Available data indicate that the aquatic life, contact recreation, public water supply, and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1985 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

Monitoring sites used in the assessment

Station	Station Description
11245	West Fork San Jacinto River Bridge on IH 45 south of Conroe
11250	West Fork San Jacinto River FM 2854 west of Conroe
13611	West Fork San Jacinto River 4.4 mi SW of Porter, 5.0 mi upstream of Spring Creek, 6.2 mi NW of Humble

Published studies

Publication	Date	Author
AS-155/SR Crystal Creek	Nov 1995	Calvino/Luedke (Region 12)
IS 17 West Fork San Jacinto River	Dec. 1979	Twidwell, S.
IS 52 West Fork San Jacinto River	July 1982	Twidwell, S.
SR 92-02 West Fork San Jacinto River	April 1992	Luedke, M. (Region 12)

Wastewater dischargers

Permit type	Number of outfalls
Agriculture	1
Domestic	31
Industrial	8

Historical fish kills

Start date	Location	Fish killed	Suspected cause
06/02/1994	Crystal Creek near Exxon plant -- Conroe Field	30	Organic compound
01/23/1996	IH 45 North Bound, North Conroe at the Shepherd Hill Exit	50	Organic compound

San Jacinto River Basin

Segment 1005 - Houston Ship Channel/ San Jacinto River Tidal

Water body description: From the confluence with Galveston Bay at Morgan's Point in Harris/Chambers County to a point 100 meters (110 yards) downstream of IH 10 in Harris County

Water body classification: Classified

Water body type: Tidal Stream

Water body length / area: 12.00 Miles

Use support summary: The fish consumption use is not supported based on a no-consumption advisory issued for sensitive subpopulations by the Texas Department of Health in September 1990 due to elevated levels of dioxin in blue crabs and catfish. The aquatic life, noncontact recreation, and general uses are supported.

Water quality concerns summary: Nickel in sediment is a concern.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1983 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A total maximum daily load (TMDL) to evaluate the causes and sources of nickel [listed on the 1994 303(d) list] and allocate the allowable loading has been completed and approved by the Commission.

A project is underway for dioxin in fish and crab tissue to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11252	Houston Ship Channel at CM 91, Morgan's Point
11258	Houston Ship Channel at CM 120

Published studies

Publication	Date	Author
AS 09 Houston Ship Channel	Aug. 1993	Guillen, G. (Region 12)
AS-26/SR Houston Ship Channel	Jan. 1992	Luedke, M. (Reg
AS-33/SR Houston Ship Channel	Sept. 1994	Marks, L (Region 12)
IS 26 Houston Ship Channel	Aug. 1978	Kirkpatrick, J.
IS 86-10 Houston Ship Channel	Dec. 1986	Kirkpatrick, J.
IS 87-06 Houston Ship Channel	July 1984	Kirkpatrick, J.
IS 87-09 Houston Ship Channel	Feb. 1985	Kirkpatrick, J.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	2
Industrial	29

San Jacinto River Basin

Segment 1006 - Houston Ship Channel Tidal

Water body description: From the confluence with the San Jacinto River in Harris County to a point immediately upstream of Greens Bayou in Harris County, including tidal portions of tributaries

Water body classification: Classified

Water body type: Tidal Stream

Water body length / area: 9.00 Miles

Use support summary: The fish consumption use is not supported based on a no-consumption advisory issued for sensitive subpopulations in September 1990 by the Texas Department of Health due to elevated levels of dioxin in fish and crab tissue.

In the Patrick Bayou area, the minimal aquatic life use is not supported due to exceedance of the chronic criterion by the average dissolved copper concentrations. The aquatic life use is not supported due to significant effects in ambient water toxicity tests. The aquatic life use is also partially supported due to significant effects in ambient sediment toxicity tests. General uses are not supported due to elevated water temperature.

Water quality concerns summary:

Arsenic, manganese, mercury and nickel in sediment are concerns throughout the segment. In the Patrick's Bayou area, chromium, copper, manganese, mercury, nickel, zinc, anthracene, flouranthene, pyrene, bis (2-ethylhexyl) phthalate and aroclor 1248 are concerns. These elevated toxics in sediment may have contributed to the sediment toxicity and poor benthic macroinvertebrate community structure observed in the water body.

There are narrative water quality concerns in the Patrick Bayou area of the segment due to poor water and sediment quality, which is substantiated by a degraded benthic macroinvertebrate community.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1983 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

Additional information, continued: A total maximum daily load (TMDL) to evaluate the causes and sources of nickel [listed on the 1994 303(d) list] and allocate the allowable loading has been completed and approved by the Commission.

Projects are underway for dioxin in fish and crab tissue; copper in water; ambient toxicity in water and sediment; and water temperature to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

The basis for the assessment of Patrick Bayou is TNRCC's *1996 Contaminant Assessment of Patrick Bayou* (AS-122/sr) and City of Houston's "Houston Ship Channel Project Report" (ENSR Consulting and Engineering-July 1995). A voluntary source identification survey for four dischargers to Patrick's Bayou is underway.

Monitoring sites used in the assessment

Station	Station Description
11264	Houston Ship Channel at San Jacinto Park west of the Battleship Texas
11266	Houston Ship Channel Diamond Shamrock (Deer Park Plant) intake screens on the Houston Ship Channel mile 11.5
11271	Houston Ship Channel at confluence with Greens Bayou (CM 152)
11272	Carpenter Bayou tidal at South Sheldon Rd in Channelview
11273	Patrick Bayou tidal immediately upstream of bridge leading to occidental chemical intake station on Houston Ship Channel
11275	Greens Bayou Tidal at IH 10 Bridge east of Houston

Published studies

Publication	Date	Author
AS 122/SR Patrick Bayou	Dec. 1996	Broach, L (Region 12)
IS 30 Greens Bayou	Sept. 1980	Ottmers, D.
IS 31 Halls Bayou	Oct. 1979	Ottmers, D.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	80
Industrial	150

Historical fish kills

Start date	Location	Fish killed	Suspected cause
12/26/1994	Greens Bayou and I-10	20	Organic compound
08/12/1996	Houston Ship Channel - 9640 Clinton Drive, Houston, TX	45	Unknown
08/19/1997	Tidal inlet to the battleship mooring basin off SH 134 in the state park	200	Low Dissolved Oxygen

San Jacinto River Basin

Segment 1007 - Houston Ship Channel/ Buffalo Bayou Tidal

Water body description: From a point immediately upstream of Greens Bayou in Harris County to a point 100 meters (110 yards) upstream of US 59 in Harris County, including tidal portion of tributaries

Water body classification: Classified

Water body type: Tidal Stream

Water body length / area: 20.00 Miles

Use support summary: The fish consumption use is not supported based on a no-consumption advisory issued for sensitive subpopulations in September 1990 by the Texas Department of Health due to elevated levels of dioxin in fish and crab tissue.

Within the Vince Bayou area, the minimal aquatic life use is partially supported due to significant effects in ambient sediment toxicity tests. General water quality uses are supported in Vince Bayou.

Water quality concerns summary:

Arsenic, zinc, flouranthene, bis(2-ethyhexyl) phtlate and benzo (b) flouranthene in sediment are concerns. Chlor-dane and dieldrin in fish tissue are concerns. Ammonia and nitrite + nitrate nitrogen are also concerns. Within the Vince Bayou area, ammonia nitrogen is a concern.

Additional information: Routine monitoring data and the TNRCC report "Impacts of Point Source and Nonpoint Sources on Vince and Little Vince Bayou Segment 1007 of the Houston Ship Channel" (AS-130-SR) were used in the assessment.

A wasteload evaluation (WLE) for dissolved oxygen was approved in 1983 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

**Additional information,
continued:**

A total maximum daily load (TMDL) to evaluate the causes and sources of nickel [listed on the 1994 303(d) list] and allocate the allowable loading has been completed and approved by the Commission.

**Additional information
summary (continued):**

Projects are underway for dioxin in fish and crab tissue and ambient toxicity in sediment to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11284	Houston Ship Channel/Buffalo Bayou near FM 1165, 440 yds below Vince Bayou
11286	Houston Ship Channel/Buffalo Bayou Houston Lighting and Power deepwater plant intake screens on Houston Ship Channel
11287	Houston Ship Channel/Buffalo Bayou at confluence with Sim's Bayou
11292	Houston Ship Channel/Buffalo Bayou in middle of turning basin
11294	Buffalo Bayou Tidal at 69th street
11296	Buffalo Bayou Tidal at Hirsh and York Streets Bridge
11299	Vince Bayou 300 yds. upstream of the Houston Ship Channel confluence
11302	Sims Bayou at Lawndale Ave. in Houston
11307	Brays Bayou at IH 45 SE of Houston

Published studies

Publication	Date	Author
AS-130/SR Vince Bayou	Aug. 1993	Conley, G (Region 12)
IS 18 Brays Bayou	Oct. 1979	Buzan, D.
IS 21 Hunting Bayou	Oct. 1979	Petrick, D.
IS 24 SIMS Bayou	Sept. 1980	Petrick, D.
IS 32 White Oak Bayou	Nov. 1980	Buzan, D

Wastewater dischargers

Permit type	Number of outfalls
Domestic	49
Industrial	147

Historical fish kills

Start date	Location	Fish killed	Suspected cause
10/10/1994	Brays Bayou tidal area North and South of I-45	6000	Organic compound
11/15/1994	Keegans & Brays Bayou downstream from Bicentennial Apartment complex	278	Organic compound
05/22/1995	Brays Bayou near Ardmore and Medical Center	188	Unknown
08/18/1995	Sims Bayou upstream from I45	100	Low Dissolved Oxygen
10/25/1995	Brays Bayou at Old Spanish Trail	1500	Pollutant
06/26/1996	Brays Bayou at MacGregor Park	63360	Organic compound
09/30/1996	Little Vince Bayou at 1319 Red Bluff (Crown Petroleum)	40005	Organic compound
07/13/1998	Brays Bayou from Fannin (one mile downstream from STP) to Lawndale	16080	Organic compound

San Jacinto River Basin

Segment 1008 - Spring Creek

Water body description: From the confluence with the West Fork San Jacinto River in Harris/Montgomery County to the most upstream crossing of FM 1736 in Waller County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 69.00 Miles

Use support summary: The contact recreation use is not supported due to elevated fecal coliform densities. Upstream from the Kuykendahl Road bridge, the aquatic life use is not supported due to depressed dissolved oxygen concentrations. The public water supply and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Additional information: Projects are scheduled for dissolved oxygen and fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program. For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11310	Spring Creek at Lee Road in Houston
11312	Spring Creek at Riley Fussel Rd.
11313	Spring Creek Bridge at IH 45, 20 miles north of Houston
11314	Spring Creek at SH 249

Published studies

Publication	Date	Author
IS 15 Spring Creek	Nov. 1978	Petrick, D.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	50

San Jacinto River Basin

Segment 1009 - Cypress Creek

Water body description: From the confluence with Spring Creek in Harris County to the confluence of Snake Creek and Mound Creek in Waller County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 53.00 Miles

Use support summary: The contact recreation use is not supported due to elevated fecal coliform densities. General uses are not supported due to an elevated average total dissolved solids concentration. The aquatic life and public water supply uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Nitrite + nitrate-nitrogen, orthophosphorus, and total phosphorus are concerns.

Additional information: Assessment is verified by the publication "Water Quality in Cypress Creek: An Effluent Dominated Stream-Segment 1009" (TNRCC AS-55/SR).

Projects are scheduled for total dissolved solids and fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11324	Cypress Creek at Cypresswood Dr. Bridge (Old Tettar Rd extension)
11325	Cypress Creek at Treschwig Rd
11326	Cypress Creek at Aldine Westfield Road
11327	Cypress Creek at the Hardy Toll Rd located on the west side of the southbound feeder Road (Hardy St) approx 18 mi north of FM 1960 W
11328	Cypress Creek Bridge on IH 45, 15 mi. north of Houston
11329	Cypress Creek at Kuykendahl Road in Houston
11331	Cypress Creek at SH 249
11332	Cypress Creek at Grant Rd near Cypress

Published studies

Publication	Date	Author
AS-55/SR Cypress Creek	Aug. 1992	Kolbe, C. (Region 12)
IMS 65 Cypress Creek	Aug. 1974	Kirkpatrick, J.
IS 11 Cypress Creek	Oct. 1978	Petrick, D.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	88
Industrial	6

San Jacinto River Basin

Segment 1010 - Caney Creek

Water body description: From the confluence with the East Fork San Jacinto River in Harris County to SH 150 in Walker County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 57.00 Miles

Use support summary: Available data indicate that the aquatic life, contact recreation, public water supply, and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Monitoring sites used in the assessment

Station	Station Description
11334	Caney Creek at FM 1485
11335	Caney Creek Bridge on FM 2090 west of Splendora
14241	Caney Creek at SH 105

Wastewater dischargers

Permit type	Number of outfalls
Domestic	11

San Jacinto River Basin

Segment 1011 - Peach Creek

Water body description: From the confluence with Caney Creek in Montgomery County to SH 150 Walker County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 52.00 Miles

Use support summary: Available data indicate that the aquatic life, public water supply, and general uses are supported. The contact recreation and fish consumption uses were not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Monitoring sites used in the assessment

Station	Station Description
11336	Peach Creek at FM 1485
11338	Peach Creek at SH 105 west of Cleveland

Wastewater dischargers

Permit type	Number of outfalls
Domestic	5

San Jacinto River Basin

Segment 1012 - Lake Conroe

Water body description: From Conroe Dam in Montgomery County up to the normal pool elevation of 201 feet (impounds West Fork San Jacinto River)

Water body classification: Classified

Water body type: Reservoir

Water body length / area: 20,985 Acres

Use support summary: Available data indicate that all uses are supported.

Water quality concerns summary: Chlorophyll *a* is a concern.

Additional information: Although the 1999 303(d) list indicated that mercury concentrations in water exceeded the human health criterion, further investigation indicates that older mercury analysis methods are not adequately sensitive to assess ambient concentrations. Recent data collected with more accurate instrumentation indicate that mercury concentrations are below the criterion. New methods are being used that will improve the accuracy of monitoring for metals in water. A risk assessment performed by the Texas Department of Health in 1997 found that the risk of adverse health effects from consuming fish caught in the lake is low.

Monitoring sites used in the assessment

Station	Station Description
11342	Lake Conroe at dam, mid-channel at center of middle Tainter Gate, approx. 100 m out from Tainter Gate
11343	Lake Conroe at FM 1097 in the main channel
11344	Lake Conroe at FM 1375 in the main channel, 4th piling from the east
13921	Lake Conroe USGS site FC

Wastewater dischargers

Permit type	Number of outfalls
Domestic	33
Industrial	7

Historical fish kills

Start date	Location	Fish killed	Suspected cause
10/16/1997	Lake Conroe	100	Disease

San Jacinto River Basin

Segment 1013 - Buffalo Bayou Tidal

Water body description: From a point 100 meters (110 yards) upstream of US 59 in Harris County to a point 400 meters (440 yards) upstream of Shepherd Drive in Harris County

Water body classification: Classified

Water body type: Tidal Stream

Water body length / area: 4.00 Miles

Use support summary: The aquatic life use is not supported because the average dissolved copper concentration exceeds the chronic criterion. The contact recreation use is not supported due to elevated fecal coliform densities. The fish consumption and general uses are supported.

Water quality concerns summary: Nitrite + nitrate-nitrogen is a concern.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1996 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A project is underway for fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

A project is scheduled for copper in water to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program.

For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11345	Buffalo Bayou Tidal at McKee St. in Houston
11351	Buffalo Bayou Tidal at Shepherd Drive in Houston

Published studies

Publication	Date	Author
AS-26/SR Buffalo Bayou Tidal	May 1986	Luedke, M (Region 12)
IS 87-05 Buffalo Bayou Tidal	July 1985	Kirkpatrick, J.
IS 87-06 Buffalo Bayou Tidal	July 1984	Kirkpatrick, J.
IS 87-09 Buffalo Bayou Tidal	Feb. 1985	Kirkpatrick, J.

Wastewater dischargers

Permit type	Number of outfalls
Industrial	2

Historical fish kills

Start date	Location	Fish killed	Suspected cause
12/12/1995	White Oak Bayou	100	Temperature
12/28/1996	White Oak Bayou upstream from 1960	200	Inorganic compound
12/28/1996	White Oak Bayou upstream of 1960	204	Unknown

San Jacinto River Basin

Segment 1014 - Buffalo Bayou Above Tidal

Water body description: From a point 400 meters (440 yards) upstream of Shepherd Drive in Harris County to SH 6 in Harris County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 24.00 Miles

Use support summary: The contact recreation use is not supported due to elevated fecal coliform densities. The aquatic life and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Nitrite + nitrate-nitrogen is a concern.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1996 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A project is underway for fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program. For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11354	Buffalo Bayou at Woodway Drive
11358	Buffalo Bayou at Piney Point Rd 4.3 mi. west of IH 610 in West Houston
11360	Buffalo Bayou at West Belt in Houston
11362	Buffalo Bayou at Dairy Ashford Rd west of Houston

Published studies

Publication	Date	Author
IS 28 Buffalo Bayou	Sept. 1980	Kirkpatrick, J.
IS 87-05 Buffalo Bayou	July 1985 -	Kirkpatrick, J.
IS 87-06 Buffalo Bayou	July 1984	Kirkpatrick, J.
IS 87-09 Buffalo Bayou	Feb. 1985	Kirkpatrick, J.
IS 88-01 Buffalo Bayou	April 1987	Kirkpatrick, J.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	88
Industrial	18

Historical fish kills

Start date	Location	Fish killed	Suspected cause
09/07/1994	Buffalo Bayou at Eldridge downstream two miles to below Wilcrest.	125	Inorganic compound
10/05/1995	Brays Bayou between Scott St. and O.S.T.	1000	Inorganic compound
12/07/1995	Intermittent tributary to Buffalo Bayou	100	Low Dissolved Oxygen
06/09/1998	Buffalo Bayou from Westcott St downstream to Fannin at U of H downtown	1000	Low Dissolved Oxygen

San Jacinto River Basin

Segment 1015 - Lake Creek

Water body description: From the confluence with the West Fork San Jacinto River in Montgomery County to a point 4.0 km (2.5 miles) upstream of SH 30 in Grimes County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 48.00 Miles

Use support summary: Available data indicate that the public water supply use is supported. Other uses were not assessed due to insufficient data.

Water quality concerns summary: Available data indicate that there are no water quality concerns.

Monitoring sites used in the assessment

Station	Station Description
11366	Lake Creek at Smith-Stowe Rd 2 mi. upstream of west fork San Jacinto River

Wastewater dischargers

Permit type	Number of outfalls
Domestic	8

San Jacinto River Basin

Segment 1016 - Greens Bayou Above Tidal

Water body description: From a point 0.7 km (0.4 miles) above the confluence of Halls Bayou in Harris County to a point 100 meters (110 yards) above FM 1960 in Harris County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 24.00 Miles

Use support summary: The contact recreation use is not supported due to elevated fecal coliform densities. The aquatic life and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Nitrite + nitrate-nitrogen, orthophosphorus, total phosphorus and chlorophyll *a* are concerns.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1983 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A project is scheduled for fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program. For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11369	Greens Bayou at Tidwell Road in Harris Co.
11371	Greens Bayou at US 59 north of Houston
11376	Greens Bayou at West Greens Pkwy
13778	Greens Bayou at Knobcrest St, 600 ft. downstream from IH 45

Published studies

Publication	Date	Author
AS 106/IS Greens Bayou	June 1995	Twidwell, S.

Wastewater dischargers

Permit type	Number of outfalls
Domestic	89
Industrial	27

Historical fish kills

Start date	Location	Fish killed	Suspected cause
11/06/1997	Greens Bayou at Ella Blvd.	1000	Inorganic compound
07/08/1998	Greens Bayou at Beltway 8	6	Unknown

San Jacinto River Basin

Segment 1017 - Whiteoak Bayou Above Tidal

Water body description: From a point immediately upstream of the confluence of Little White Oak Bayou in Harris County to a point 3.0 km (1.9 miles) upstream of FM 1960 in Harris County

Water body classification: Classified

Water body type: Freshwater Stream

Water body length / area: 23.00 Miles

Use support summary: The contact recreation use is not supported due to elevated fecal coliform densities. The aquatic life and general uses are supported. The fish consumption use was not assessed due to insufficient data.

Water quality concerns summary: Nitrite + nitrate-nitrogen is a concern.

Additional information: A wasteload evaluation (WLE) for dissolved oxygen was approved in 1996 and has been incorporated into the state Water Quality Management Plan. Advanced waste treatment is required for one or more dischargers.

A project is underway for fecal coliform bacteria to do one or more of the following: assess the relevant water quality standard; to confirm the impairment; to conduct a total maximum daily load (TMDL) to evaluate the causes and sources and allocate the allowable loading; or to correct the impairment under another program. For more information on specific TMDL projects, visit the TNRCC Web site at www.tnrcc.state.tx.us/water/quality/tmdl/.

Monitoring sites used in the assessment

Station	Station Description
11387	Whiteoak Bayou at Heights Blvd in Houston
11398	Whiteoak Bayou at Jones Rd

Published studies

Publication	Date	Author
AS-26/SR White Oak Bayou	Jan.1992	Luedke, M. (Region 12)

Wastewater dischargers

Permit type	Number of outfalls
Domestic	49
Industrial	7

Historical fish kills

Start date	Location	Fish killed	Suspected cause
02/09/1995	White Oak Bayou at HL&P at Hwy 249 & Loop 610	200	Inorganic compound
11/06/1995	White Oak Bayou	9569	Inorganic compound