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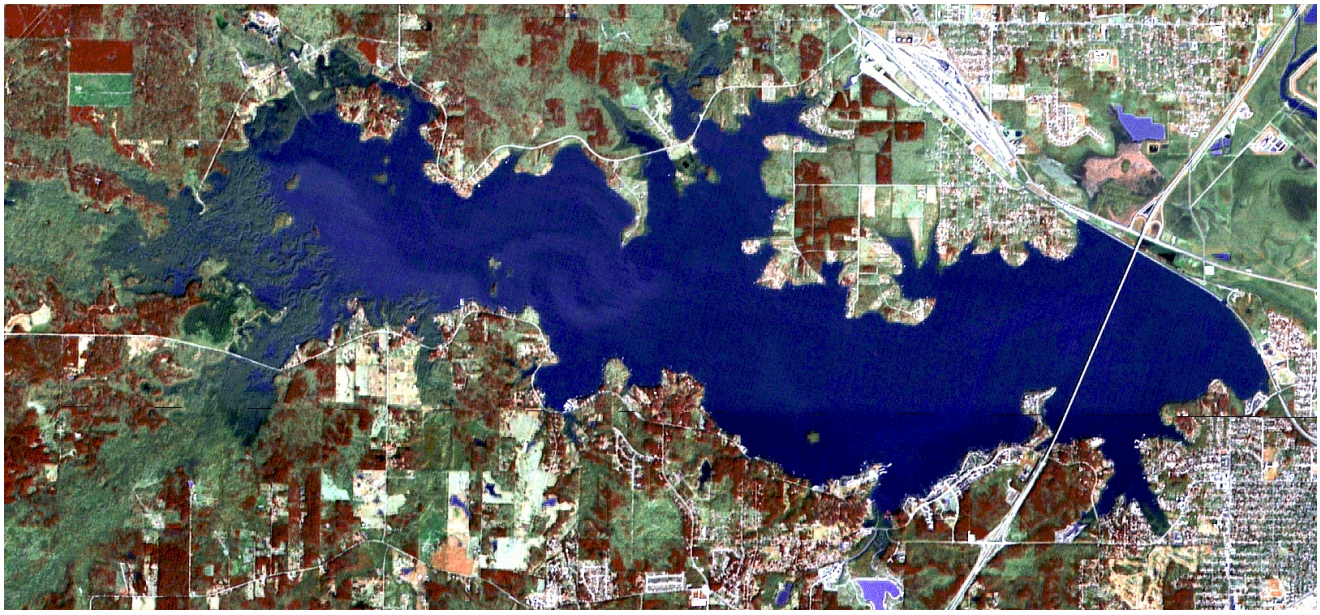
WATER-QUALITY AND BOTTOM-MATERIAL CHARACTERISTICS OF CROSS LAKE, CADDO PARISH, LOUISIANA, 1997-99

Water-Resources Investigations Report 03-4135



U.S. Department of the Interior
U.S. Geological Survey

Water-Quality and Bottom-Material Characteristics of Cross Lake, Caddo Parish, Louisiana, 1997-99

By Benton D. McGee

U.S. GEOLOGICAL SURVEY

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Baton Rouge, Louisiana

2004

U.S. DEPARTMENT OF THE INTERIOR

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CONVERSION FACTORS, DATUMS, AND ABBREVIATED WATER-QUALITY UNITS

Multiply	By	To obtain
inch (in.)	25.4	millimeter (mm)
inch per year (in/yr)	0.03937	millimeter per year (mm/yr)
foot (ft)	0.3048	meter (m)
square foot (ft^2)	0.09290	square meter (m^2)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
foot per day (ft/d)	0.3048	meter per day (m/d)
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)
gallon per minute (gal/min)	0.00006309	cubic meter per second (m^3/s)
gallon per minute per foot [(gal/min)/ft]	0.000207	cubic meter per second per meter ($m^3/s/m$)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
million gallons per day (Mgal/d)	3,785	cubic meter per second (m^3/s)
acre	0.4047	hectare (ha)
acre-foot (acre-ft)	0.001233	cubic hectometer (hm^3)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)

Temperature in degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) as follows: °F = 1.8(°C) + 32.

Vertical coordinate information in this report is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

Horizontal coordinate information in this report is referenced to the North American Datum of 1983.

Abbreviated water-quality units:

micrograms per gram (µg/g)
micrograms per liter (µg/L)
microsiemens per centimeter at 25 degrees Celsius (µS/cm)
colonies per 100 milliliters (cols/100 mL)
milligrams per liter (mg/L)
milligrams per kilogram (mg/kg)
parts per million (ppm)

Water-Quality and Bottom-Material Characteristics of Cross Lake, Caddo Parish, Louisiana, 1997-99

By Benton D. McGee

ABSTRACT

Cross Lake is a shallow, monomictic lake that was formed in 1926 by the impoundment of Cross Bayou. The lake is the primary drinking-water supply for the City of Shreveport, Louisiana. In recent years, the lakeshore has become increasingly urbanized. In addition, the land use of the watershed contributing runoff to Cross Lake has changed. Changes in land use and urbanization could affect the water chemistry and biology of the Lake.

Water-quality data were collected at 10 sites on Cross Lake from February 1997 to February 1999. Water-column and bottom-material samples were collected. The water-column samples were collected at least four times per year. These samples analyzed included physical and chemical-related properties such as water temperature, dissolved oxygen, pH, and specific conductance; selected major inorganic ions; nutrients; minor elements; organic chemical constituents; and bacteria. Suspended-sediment samples were collected seven times during the sampling period. The bottom-material samples, which were collected once during the sampling period, were analyzed for selected minor elements and inorganic carbon.

Aside from the nutrient-enriched condition of Cross Lake, the overall water-quality of Cross Lake is good. No primary Federal or State water-quality criteria were exceeded by any of the water-quality constituents analyzed for this report. Concentrations of major inorganic constituents, except iron and manganese, were low. Water from the lake is a sodium-bicarbonate type and is soft. Minor elements and organic compounds were present in low concentrations, many below detection limits.

Nitrogen and phosphorus were the nutrients occurring in the highest concentrations. Nutrients were evenly distributed across the lake with no particular water-quality site indicating consistently higher or lower nutrient concentrations. No water samples analyzed for nitrate exceeded the U.S. Environmental Protection Agency's Maximum Contaminant Level of 10 milligrams per liter.

Based on nitrogen to phosphorus ratios calculated for Cross Lake, median values for all water-quality sites were within the nitrogen-limited range (less than or equal to 5). Historical Trophic State Indexes for Cross Lake classified the lake as eutrophic. Recent (1998-99) Trophic State Indexes classify Cross Lake as mesotrophic-eutrophic, which might indicate a reduction in eutrophication. Sedimentation traps indicate that Cross Lake is filling at an average rate of 0.41 inch per year.

Concentrations of fecal-coliform and streptococci bacteria generally were low. Fecal coliform was detected in higher concentrations than fecal streptococci. High bacteria concentrations were measured shortly after rainfall-runoff events, possibly washing bacteria from surrounding areas into the lake.

INTRODUCTION

Cross Lake is located in northwestern Louisiana. The lake was formed by constructing a dam on Cross Bayou in 1926 to provide an adequate source of drinking water for the residents of the City of Shreveport. The lake is the primary source of public-water supply for the city. According to 1999 population statistics, the City of Shreveport had an estimated population of 196,667 (Northeast Louisiana University, 2000). In 1995, 30.36 Mgal/d (Lovelace and Johnson, 1996, p. 110) of water was withdrawn from the lake for public supply (Darren Fortenberry, City of Shreveport, oral commun., 2000). Furthermore, the lake is used for flood control and is a popular recreational area for the city and the surrounding area. Water quality and quantity are important concerns to those that benefit from Cross Lake.

In recent years, the lakeshore has become increasingly urbanized. In addition, the land use of the watershed contributing runoff to Cross Lake has changed. Changes in land use and urbanization may affect the water chemistry and biology of Cross Lake. Due to changes in the areas surrounding Cross Lake and the need for current water-quality information, the City of Shreveport, in 1997, began a cooperative program with the U.S. Geological Survey (USGS) to study water-quality characteristics of Cross Lake.

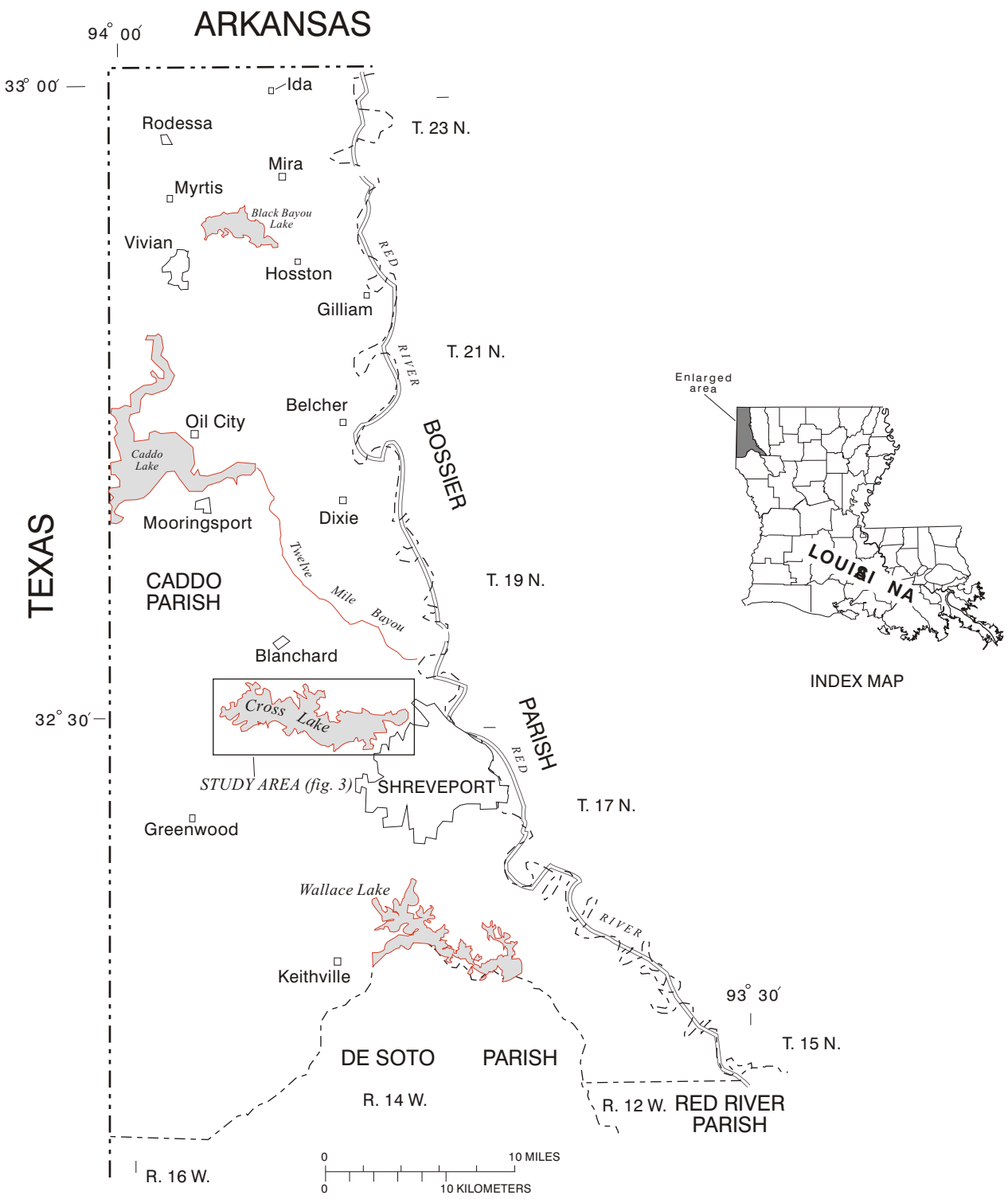
Purpose and Scope

This report describes the overall water quality of Cross Lake and the occurrence of minor elements in the water column and bottom material. Samples from the water column were collected at 10 sites. The sites were sampled seasonally (4 times per year) from February 1997 to February 1999. Water-column samples were analyzed for physical and chemical-related properties such as temperature, pH, dissolved oxygen, and specific conductance; major inorganic ions; nutrients; minor elements; synthetic organic chemical constituents such as pesticides, polychlorinated biphenols (PCB's), and phenols; and biologically-related properties such as biochemical oxygen demand (BOD), chlorophyll-*a* and *b*, turbidity, and fecal coliform and fecal streptococci bacteria. Suspended-solids samples were collected from the sites on seven occasions during the sampling period. Bottom-material samples were collected once from the sites. Bottom-material samples were analyzed for selected minor elements and inorganic carbon.

Description of Study Area

The study area includes all of Cross Lake (fig. 1) and is located in the northern part of the City of Shreveport in central Caddo Parish. The elongated lake is oriented east to west and is approximately 9 mi in length (McGee, 2001). The lake covers approximately 13.4 mi^2 in surface area and is 65,807 acre-ft in volume (at spillway crest, 171.19 ft above NGVD 29). Much of the lake's shoreline is urbanized, particularly along the eastern and southern areas. The major land use surrounding Cross Lake and within the Cross Lake watershed is forest land, forested wetlands, residential, and to a lesser degree, cropland and pastures. The average depth is 7.7 ft, and the lake receives inflow from a 253-square mile watershed (McGee, 2001). The lake receives inflow from eight major tributaries in this watershed, including supplemental flow through a pipeline from nearby Twelvemile Bayou. These tributaries are Paw Paw Bayou, Cross Bayou, Shettleworth Bayou, Logan Bayou, Piney Bayou, Page Bayou, Bickham Bayou, and the pipeline from Twelvemile Bayou (fig. 3). Most of the inflow enters at the western end of the lake. The three largest tributaries and watershed areas are Paw Paw Bayou (82.02 mi^2), Cross Bayou (62.43 mi^2), and Shettleworth Bayou (19.54 mi^2) (Sloss, 1971, p. 30). The lake has two distributaries (Cross Lake spillway and a water-treatment plant intake), located at the eastern end of the lake.

The level of Cross Lake is controlled by a spillway structure located on the eastern end of the lake. The spillway is 189 ft in length and has a crest of 171.19 ft above NGVD 29 (McGee, 2001). Recorded daily mean water-surface elevations on Cross Lake ranged from 168.03 to 173.72 ft with a mean of 170.21 ft



Map credit: Modified from Official Map of Louisiana, Louisiana Department of Transportation and Development, 1986

Figure 1. Location of study area at Cross Lake in Caddo Parish, Louisiana, 1997-99.

during the period of sample collection for the study described in this report (February 1997- February 1999) (fig. 2). Based on records kept by the City of Shreveport, the mean water-surface elevation of Cross Lake for the years 1984-86, 1989-90, and 1992-95 was 170.27 ft (Darren Fortenberry, City of Shreveport, written commun., 2000), which indicates that the water-surface elevation of Cross Lake during the study was normal.

Approximately 128 in. of rain fell in the Shreveport area during the 2-year period of sample collection. According to rainfall records from the National Weather Service, Shreveport receives, on average, approximately 51.30 in. of rainfall per year (National Weather Service, 2001). Therefore, rainfall during the Cross Lake study was above normal.

Previous Investigations

Previous investigations of Cross Lake include water-quality studies by the U.S. Environmental Protection Agency (USEPA, 1974); Espey, Huston & Associates, Inc. (EH&A, 1984), and Balar Associates, Inc. (1994). The studies by the USEPA and EH&A represented most of the water-quality information available on Cross Lake at that time.

In 1993, a study was done by the USGS and the Louisiana Department of Environmental Quality (DEQ) to assess the mercury concentration in fish tissue, water column, sediment, and epiphytic plant samples from lakes and rivers throughout the State, including Cross Lake (Louisiana Department of Environmental Quality, 1999).

Mercury concentrations from 12 largemouth bass fillet samples collected from Cross Lake were at or near 0.52 ppm. Although no fish consumption advisory was issued for Cross Lake, advisories are considered for water bodies with average mercury concentrations of 0.52 ppm or more in fish and shellfish (Louisiana Department of Environmental Quality, 1999).

Methods of Study

All water-quality samples were collected at the top of the water column in accordance with methods described in Brown and others (1970) and analyzed by the USGS National Water-Quality Laboratory in Denver, Colo., and the Water-Quality Service Unit in Ocala, Fla., using standard methods described by Fishman (1993). Bed-sediment samples were collected once from each sample site at the beginning of the study. All bottom-material samples were collected using a teflon-coated petite ponar sampler.

Sediment traps were deployed at the eastern and western ends of Cross Lake on May 27, 1998, and were retrieved 176 days later on November 19, 1999. Sediment thickness was measured at five points within each sediment trap and an average was calculated for each trap.

On site physical and chemical-related properties including temperature, pH, dissolved oxygen, and specific conductance were measured quarterly, except during the summer months (June-September) when the properties were measured monthly, using a Hydrolab Surveyor 3. Two Hydrolab MiniSonde 4's were used to measure and record continuous physical and chemical-related properties at the top and bottom of the water column at site 6 during September 6, 1998, and February 20, 1999. Water-quality instruments were calibrated at the beginning of each data-collection day. Transparency was measured using a Secchi disk. For the purposes of numerical calculations (nitrogen-phosphorus ratios and average and median concentrations), less than detectable level concentrations were assumed to be zero. Trophic State Index (TSI) was calculated for Cross Lake based upon chlorophyll-*a* data collected from Cross Lake and applied to Carlson's TSI equation (Cooke and others, 1993).

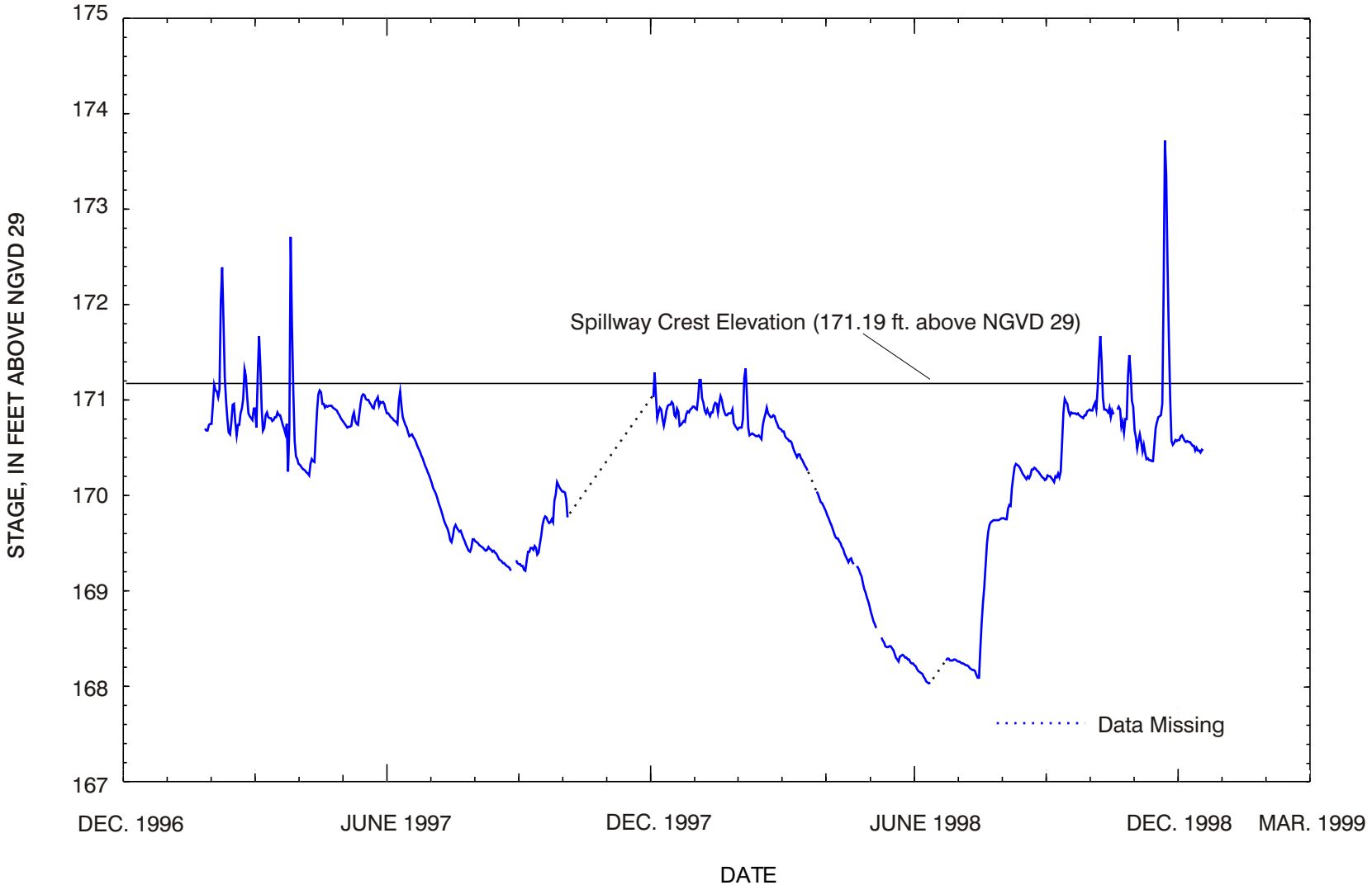


Figure 2. Stage at Cross Lake, Louisiana, February 1997 to February 1999.

The 10 water-quality sites (table 1 and fig. 3) are presented in the following east-to-west order: Cross Lake Spillway (site 1), Willow Point (site 2), Hatcher's Arm (site 3), Johnson's Arm (site 4), Hickman's Arm (site 5), Twin Bird Islands (site 6), Page Bayou Cove (site 7), Cross Bayou Cove (site 8), Fortney Bayou (site 9), and Goat Island (site 10). All water-quality sites were located in the vicinity of tributaries to the lake, except the Cross Lake spillway, Willow Point, and Twin Bird Island sites, which represent the interior of Cross Lake. Water-quality sites as distributed throughout the lake could represent inflow from the different tributaries of Cross Lake.

Table 1. Water-quality sites at Cross Lake, Caddo Parish, Louisiana, 1997-99

Site no. (fig. 3)	Site name and location	Site no. (fig. 3)	Site name and location
1	Cross Lake Spillway on Cross Lake, at Shreveport	6	Cross Lake at Twin Bird Islands, at Shreveport
2	Cross Lake at Willow Point, at Shreveport	7	Cross Lake at Page Bayou Cove, at Shreveport
3	Cross Lake at Hatcher's Arm, at Shreveport	8	Cross Lake at Cross Bayou Cove, at Shreveport
4	Cross Lake at Johnson's Arm, at Shreveport	9	Cross Lake at Fortney Bayou, at Shreveport
5	Cross Lake at Hickman's Arm, at Shreveport	10	Cross Lake at Goat Island, at Shreveport

Acknowledgments

The author extends appreciation to Robert "Bo" Williams, former Mayor of the City of Shreveport, and Mike Strong and Wes Wyche of the Department of Operational Services, City of Shreveport, for their cooperation and assistance provided during this study. Additionally, special thanks are given to the personnel of the Cross Lake Patrol and the Amiss Water Treatment Plant for the direction provided and the use of their facilities, and to the employees of the USGS office in Ruston, La., for their assistance in collection and analysis of data.

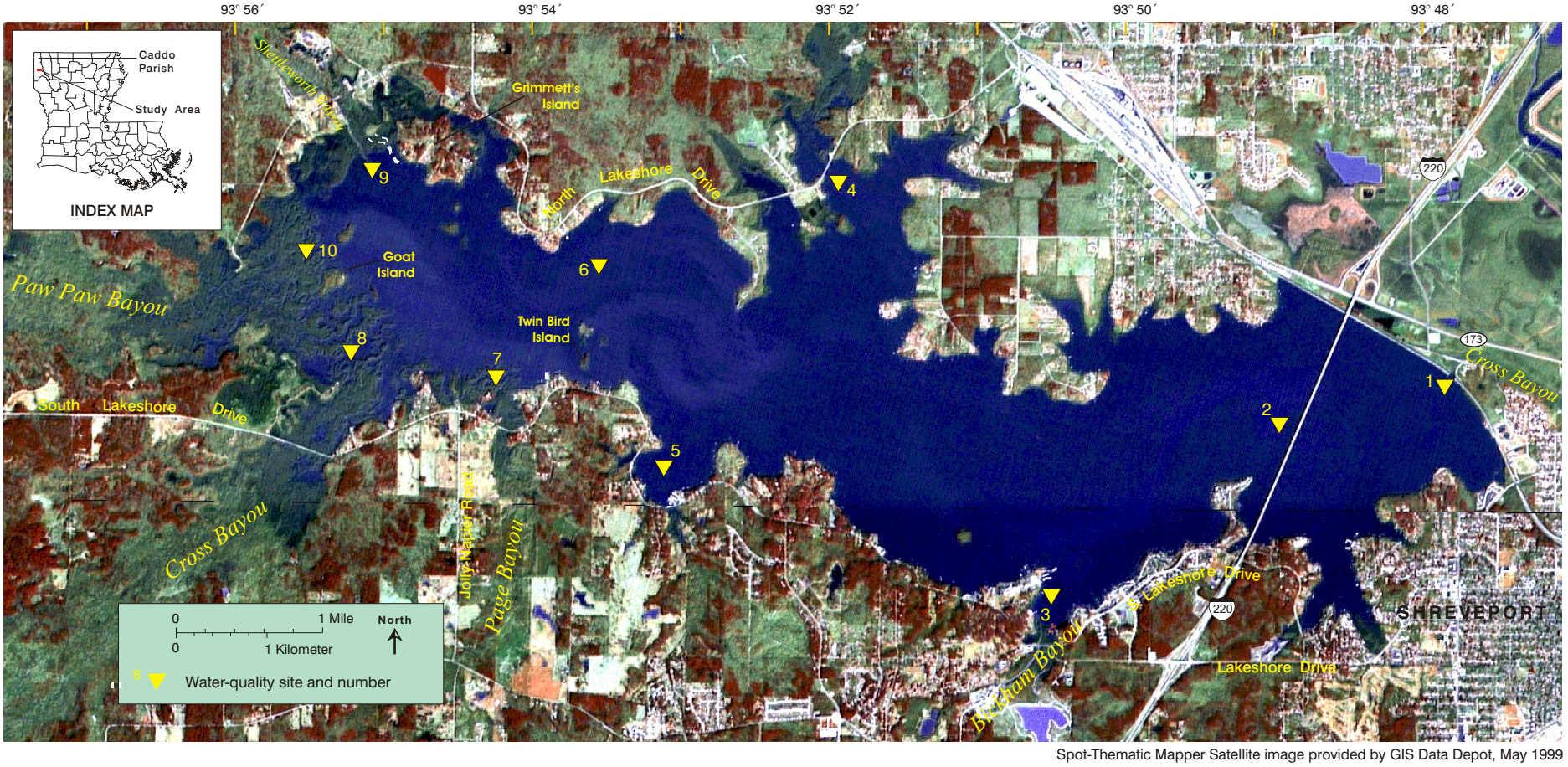
WATER-QUALITY AND BOTTOM-MATERIAL CHARACTERISTICS

Water

Physical and Chemical-Related Properties

The data for physical and chemical-related properties collected from Cross Lake include gage height, specific conductance, air and water temperature, field pH, dissolved oxygen, barometric pressure, color, turbidity, transparency, chemical and biochemical oxygen demand, hardness, alkalinity, and total dissolved solids. A discussion of selected physical and chemical properties is provided in this section. The data for physical and chemical-related properties are listed in table 2 (at the back of the report).

The DEQ (April 2002) has identified Cross Lake for the following uses: primary and secondary contact recreation, propagation of fish and wildlife, drinking-water supply, and agriculture (Louisiana Department of Environmental Quality, 1984, p. 82). Based upon these designated uses and other factors, the DEQ has developed "numerical criteria" for Cross Lake as listed in table 3. These water-quality criteria, if not exceeded, are expected to result in an ecosystem suitable for the highest designated uses given.



Spot-Thematic Mapper Satellite image provided by GIS Data Depot, May 1999

Figure 3. Location of water-quality sites at Cross Lake in Caddo Parish, Louisiana.

Table 3. Water-quality criteria for the designated uses of Cross Lake
[Source: Louisiana Department of Environmental Quality (1984, p. 82)]

Maximum water temperature, in degrees Celsius	pH, units	Minimum dissolved oxygen, in milligrams per liter	Sulfate, in milligrams per liter	Chloride, in milligrams per liter	Total dissolved solids (residue on evaporation at 180 degrees Celsius), in milligrams per liter	Bacteria, in colonies per 100 milliliters
32	6.0-8.5	5.0	25	75	150	1

Temperature

The surface temperature of the sampled sites ranged from 9.6 ^{o}C in February 1997 to 34.9 ^{o}C in July 1998. Cross Lake begins to stratify in late May and early June and remains stratified until mid to late September (fig. 4). Water temperatures remain relatively constant in the lake from year to year. Cross Lake mixes once per year (monomictic), usually in late September to early October. Once mixed, water temperatures continue to decline and vary less from top to bottom into the winter season. Nearly 8 percent of the temperature measurements exceeded the maximum temperature designated-use criteria (32 ^{o}C) established by the DEQ.

Dissolved Oxygen

The dissolved-oxygen concentrations of the sampled sites ranged from 0.1 mg/L in July 1998 to 12.9 mg/L in September 1998. Generally, higher concentrations of dissolved oxygen were observed in the winter months and lower concentrations in the summer months. Dissolved oxygen is stratified and exhibits a diel pattern during the summer months (fig. 5). Some dissolved-oxygen concentrations for Cross Lake were less than the minimum dissolved oxygen designated-use criteria (5.0 mg/L) established by the DEQ.

The pH

Measurements of pH were collected at all water-quality sites during sample collection. The pH also was measured at the laboratory during sample analysis. Field and laboratory measurements of pH were similar. In general, pH values were higher at the lake surface and lower at the lake bottom. The pH demonstrated stratification and a diel pattern during the summer months and was relatively the same (top to bottom) during the winter. Stratification of pH during the summer months may be caused, in part, by the low dissolved-oxygen concentrations (reducing conditions) of the lake bottom and higher water temperatures during the summer months.

The pH of Cross Lake ranged from 6.1 in February 1997 and 9.3 in July 1998. No field measurements of pH were less than the low pH designated-use criteria (6.0) during the study. However, approximately 14 percent of the field pH measurements for Cross Lake exceeded the high pH designated-use criteria (8.5) established for Cross Lake by the DEQ.

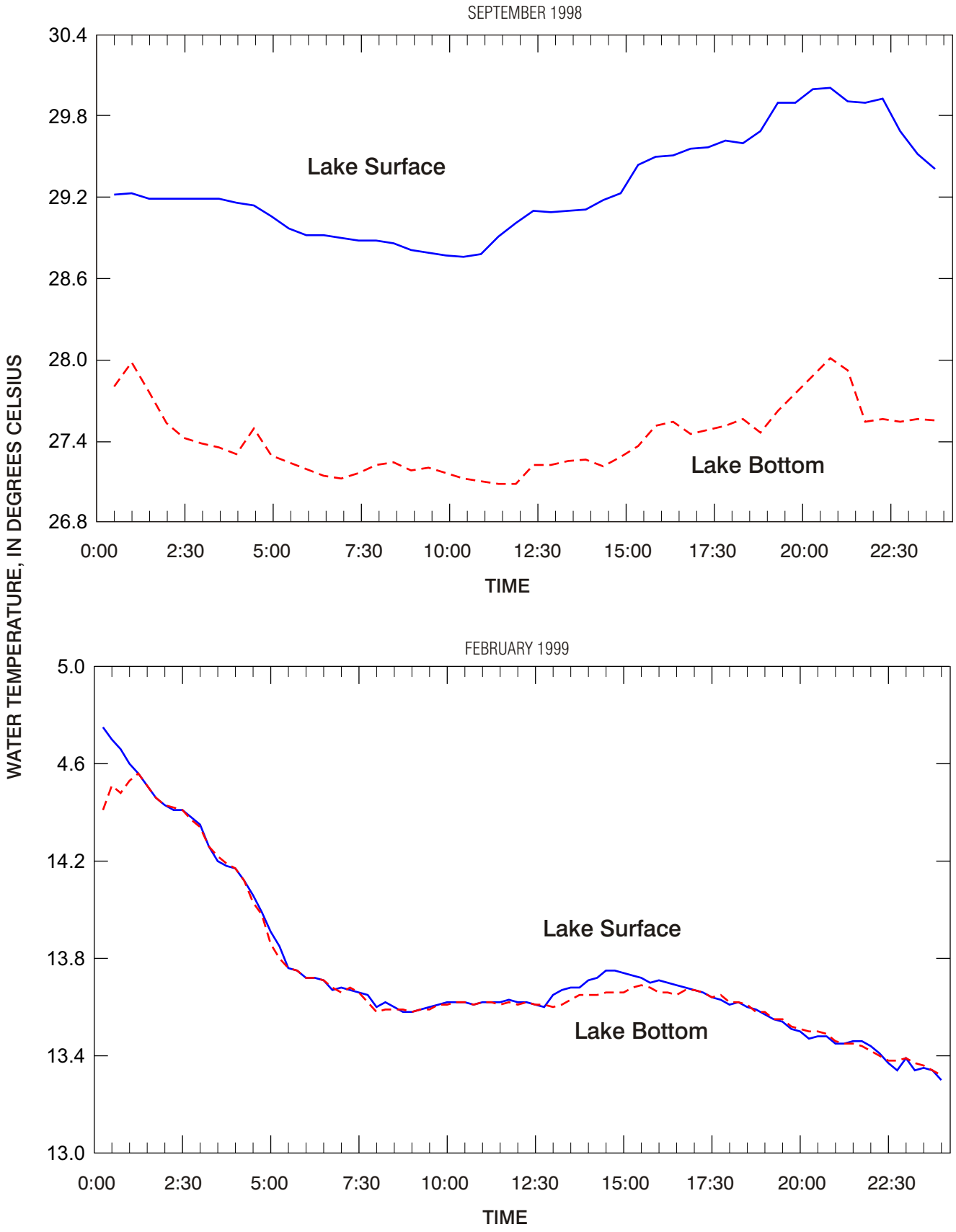


Figure 4. Water temperatures at the Twin Bird Island site at Cross Lake in Caddo Parish, Louisiana, September 1998 and February 1999.

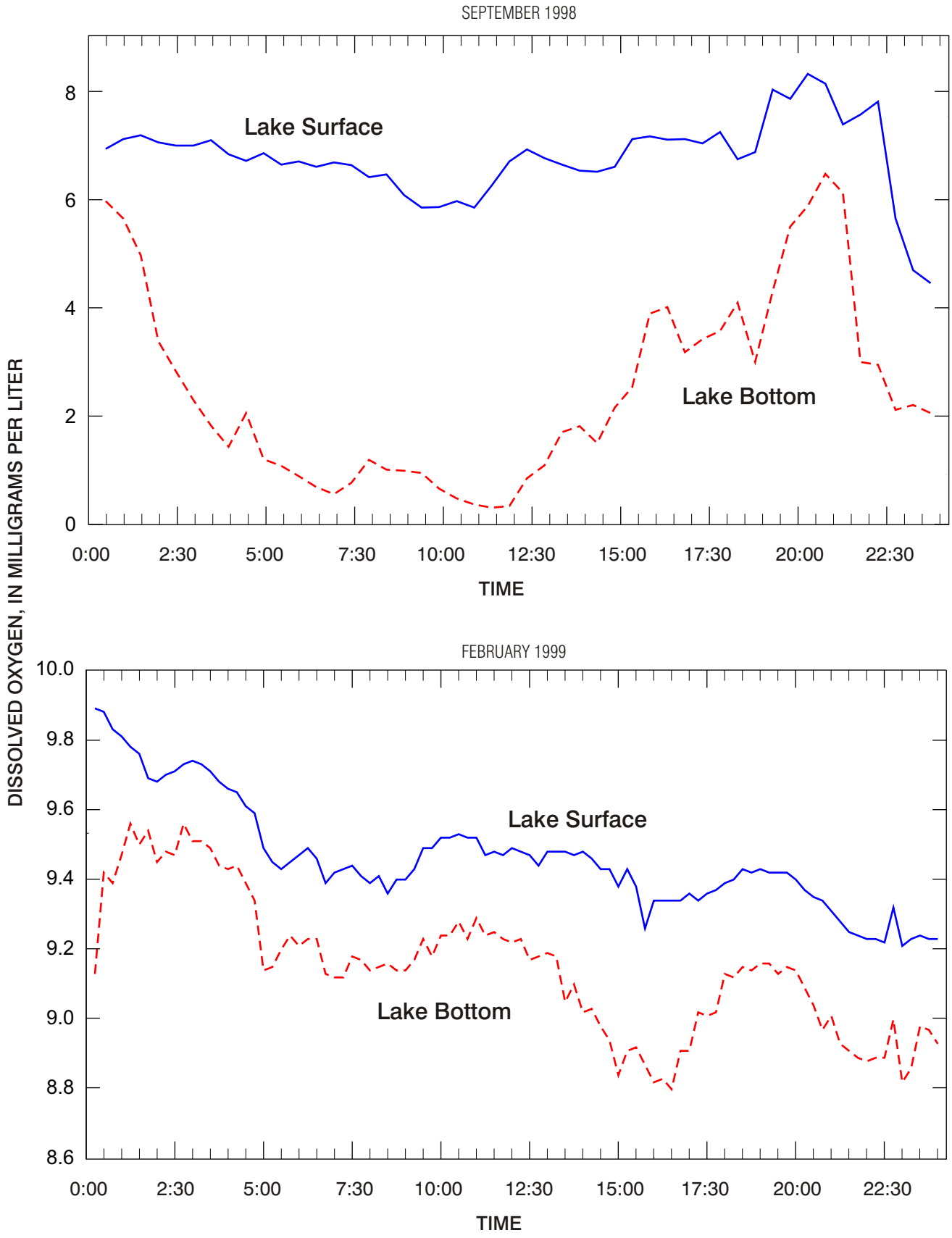


Figure 5. Dissolved-oxygen concentrations at the Twin Bird Island site at Cross Lake in Caddo Parish, Louisiana, September 1998 and February 1999.

Total Dissolved Solids

Total dissolved solids (residue on evaporation at 180 ^{o}C) were collected for all water-quality sites during sample collection. Total dissolved solids were determined using residue on evaporation at 180 ^{o}C. The median residue on evaporation concentration for Cross Lake was 96 mg/L. Residue on evaporation ranged from 58 mg/L in February 1997 to 292 mg/L in September 1998. Approximately 22 percent of the samples analyzed for residue on evaporation exceeded the DEQ's designated-use criteria of 150 mg/L for total dissolved solids. None of the samples analyzed for residue on evaporation exceeded the USEPA's Secondary Maximum Contaminant Level (SMCL) for total dissolved solids of 500 mg/L in drinking water (U.S. Environmental Protection Agency, 1976). Residue on evaporation concentrations were higher and varied more during the fall and winter and were lower and varied less during the spring and summer. In general, residue on evaporation concentrations decreased east to west on Cross Lake.

Suspended Sediment

Suspended-sediment samples were collected at all of the water-quality sites on seven occasions, except at site 5, where six samples were collected during the 2-year period of data collection (table 4). The minimum (17 mg/L) and maximum (548 mg/L) suspended-sediment concentrations were detected in samples collected on February 19, 1999, at site 8 and July 2, 1997, at site 1. Site 5, representing mainly an urban watershed, had the highest average suspended-sediment concentration (138 mg/L), and site 4, representing Logan Bayou, draining a mainly forested watershed, had the lowest average concentration (39 mg/L).

Table 4. Suspended-sediment concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99

[Concentrations are in milligrams per liter. --, no data]

Date	Cross Lake Spillway on Cross Lake, at Shreveport	Cross Lake at Willow Point, at Shreveport	Cross Lake at Hatcher's Arm, at Shreveport	Cross Lake at Johnson's Arm, at Shreveport	Cross Lake at Hickman's Arm, at Shreveport	Cross Lake at Twin Bird Island, at Shreveport	Cross Lake at Page Bayou Cove, at Shreveport	Cross Lake at Cross Bayou Cove, at Shreveport	Cross Lake at Fortney Bayou, at Shreveport	Cross Lake at Goat Island, at Shreveport
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
7- 2-97	548	281	28	26	--	321	359	60	35	98
11-20-97	20	19	56	36	381	45	112	119	49	86
6-29-98	26	22	37	26	23	23	19	53	184	30
7-28-98	57	68	65	68	48	57	52	--	78	--
7-29-98	--	--	--	--	--	--	--	83	--	99
9- 9-98	72	55	147	46	--	55	76	--	87	--
9-10-98	--	--	--	--	322	--	--	135	--	63
11-19-98	41	34	35	39	29	--	--	--	--	--
11-20-98	--	--	--	--	--	30	29	24	61	21
2-18-99	21	27	26	29	24	--	18	--	--	--
2-19-99	--	--	--	--	--	22	--	17	24	18

Major Inorganic Chemical Constituents

Eight major inorganic chemical constituents (calcium, magnesium, sodium, potassium, sulfate, chloride, fluoride, and silica) and another indicator of inorganic concentrations (hardness as calcium carbonate [$CaCO_3$]) were sampled from water-quality sites throughout Cross Lake during the period of sample collection (table 2, at the back of the report).

Based on the analyzed data, water in Cross Lake is a sodium-bicarbonate type. Sodium, the major cation, averaged 16.5 mg/L. The major anions were carbonate and bicarbonate, measured by alkalinity as $CaCO_3$, and averaged 33.2 mg/L overall. Therefore, water from Cross Lake is classified as soft. Associated with the sodium was chloride, the second most abundant anion. Chloride concentrations averaged 23.1 mg/L during the period of sample collection. Chloride and sodium concentrations were highest at the eastern end of Cross Lake and, in general, decreased westward.

Historical data indicate Twelvemile Bayou contains water with high concentrations (average 200 mg/L) of chloride (Garrison, 1997). Data collected from Cross Lake in 1999 indicate a substantial increase in chloride concentrations at water-quality sites 1-3 on the eastern end of Cross Lake when Cross Lake is supplemented with water from nearby Twelvemile Bayou, typically during the summer months. However, the assimilative capacity of Cross Lake effectively dilutes the high-chloride water from Twelvemile Bayou. The USEPA's SMCL for chloride is 250 mg/L (U.S. Environmental Protection Agency, 1976), and the criterium established for Cross Lake by the DEQ is 75 mg/L. Cross Lake did not exceed either water-quality standard for chloride concentrations; the highest concentration was 68 mg/L at sites 1 and 2. The USEPA also has established SMCL's for drinking water for fluoride and sulfate (2.0 and 250, respectively) (U.S.Environmental Protection Agency, 1976). Concentrations of these constituents did not exceed the USEPA's SMCL's for any sample collected during the study described in this report.

Nutrients

Nutrients reported include: total and dissolved concentrations for ammonia, ammonia plus organic nitrogen, nitrate, nitrite, phosphorus, and orthophosphorus (table 5, at the back of the report). No water samples analyzed for nitrate exceeded the USEPA's Maximum Contaminant Level (MCL) of 10 mg/L (U.S. Environmental Protection Agency, 1976). Nutrients were evenly distributed throughout the lake, and no particular water-quality site demonstrated a consistently higher or lower nutrient concentration.

Algal growth in Cross Lake is controlled by the available nutrients within the water column and bottom material. An indication as to which nutrient may be limiting the amount of algal growth in the lake may be determined by the nitrogen to phosphorus ratios. Generally, nitrogen to phosphorus ratios greater than 10 indicate that phosphorus may be limiting algal growth. However, ratios less than 5 indicate that nitrogen may be limiting algal growth. Ratios between 5 and 10 indicate both nitrogen and phosphorus limit the amount of algal growth (Demas, 1985). Based on nitrogen to phosphorus ratios calculated for Cross Lake, median values for all water-quality sites were within the nitrogen-limited range (less than or equal to 5). The low concentrations of nitrogen may be due, in part, to the management of the Cross Lake watershed by the City of Shreveport and its beneficial effect in regulating the water quality of Cross Lake.

Contributions of organic matter from the wooded, western end of the lake might be a potential source of phosphorus. Much of the phosphorus associated with lakes are deposited by direct sedimentation and subsequent sedimentation of phytoplankton (Espey, Huston & Associates, Inc., 1984).

The average total phosphorus concentration of Cross Lake during sample collection was 0.05 mg/L. According to the study performed by Espey, Huston & Associates, Inc. (1984, p. vi), the assumed baseline average phosphorus concentration for Cross Lake was 0.05 mg/L. According to these data, little or no change has occurred in the average concentration of total phosphorus in Cross Lake between 1984 and 1999. Typically, total phosphorus concentrations greater than 0.02 - 0.03 mg/L are considered to be indicative of eutrophic lake systems (Demas, 1985).

A previous study (1974) on Cross Lake, conducted by the USEPA, cites a TSI of 68, indicative of eutrophic lake systems (U.S. Environmental Protection Agency, 1974). The average TSI (51), based upon chlorophyll-*a* data collected during the Cross Lake study described in this report, indicates that Cross Lake is mesotrophic-eutrophic. Apparently, the Cross Lake TSI fluctuates from year to year; however, the current (1999) TSI might indicate a possible reduction in the amount of eutrophication of Cross Lake compared to the TSI calculated in the 1974 study by the USEPA.

Minor Elements

Minor elements in the water column may originate from natural or anthropogenic sources. Some of the potential anthropogenic sources of minor elements may be from industrial discharges, corrosion of galvanized pipes and plumbing, herbicides and fertilizers, and runoff from batteries and paints (McGee and Demcheck, 1995). Minor elements also occur naturally. The types and amounts of minor elements occurring naturally depend upon the local geology and environmental conditions.

Water-quality sites were sampled for total and dissolved arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, and zinc (table 6, at the back of the report). No concentrations exceeded the USEPA's MCL's for drinking water or the DEQ water-quality standards for drinking water supply (Louisiana Department of Environmental Quality, 1984) (table 7) for a minor element in either the total or dissolved phase, except iron and manganese in several samples exceeded the USEPA's SMCL's. Currently (2003), there are no established MCL's or SMCL's for nickel by USEPA or DEQ. Total and dissolved arsenic were detected at or less than the detection limit (1 µg/L) at all sites. Total and dissolved beryllium and cadmium concentrations at all sites were less than the detection limit (0.5 and 1.0 µg/L). Total chromium concentrations ranged from less than the detection limit (1 µg/L) to 8 µg/L at site 9. Concentrations of total chromium exceeded the detection limit at site 6 on November 20, 1998, site 8 on February 3, 1998, site 9 on May 28 and November 20, 1998, and site 10 on November 20, 1998. All concentrations of chromium were less than the USEPA's MCL for chromium (total) in drinking water (100 µg/L) (U.S. Environmental Protection Agency, 1976).

Iron and manganese were detected at concentrations greater than detection limits at all water-quality sites. Iron and manganese exhibited the highest concentrations and largest range of concentration of all the minor elements analyzed. In general, concentrations of iron and manganese increased westward from site 1. The USEPA's SMCL's for iron and manganese in drinking water are 300 and 50 µg/L (U.S. Environmental Protection Agency, 1976). Total and dissolved iron concentrations ranged from 110 to 1,400 µg/L and from 1.3 to 590 µg/L and had median concentrations of 480 and 120 µg/L. Total and dissolved manganese concentrations ranged from 53 to 360 µg/L and 0.2 to 200 µg/L and had median concentrations of 150 and 14 µg/L. Total iron and manganese concentrations exceeded the USEPA's SMCL at all water-quality sites. Both iron and manganese naturally occur in abundance in the sediments of the watershed contributing to Cross Lake. Therefore, the high concentrations of iron and manganese in Cross Lake are most likely from natural sources.

Table 7. Federal and State water-quality standards and criteria for selected minor elements in water

[Concentrations are in micrograms per liter; --, no data]

Minor Element	U.S. Environmental Protection Agency[1]		Louisiana Department of Environmental Quality water-quality standards for drinking water supply[2]
	Maximum Contaminant Level for drinking water	Secondary Maximum Contaminant Level for drinking water	
Arsenic	50.0	--	50.0
Beryllium	4.0	--	--
Cadmium	5.0	--	10.0
Chromium	100.0 (total)	--	50.0 (trivalent)
Copper	1,300	1,000	1,000
Iron	--	300.0	--
Lead	15.0	--	50.0
Manganese	--	50	--
Mercury	2.0	--	2.0
Selenium	50.0	--	--
Zinc	--	5,000	--

[1]Source: U.S. Environmental Protection Agency (1976).
[2]Source: Louisiana Department of Environmental Quality (1984).

In general, concentrations of copper decreased west of site 1. Sites 1-3 exhibited the highest median and overall concentrations and largest range of total copper concentrations compared to sites farther west (4-10). Total and dissolved copper concentrations in samples from all sites ranged from less than 1 µg/L for both total and dissolved samples to a maximum of 11 and 6.4 µg/L and had median concentrations of 2.0 and 1.3 µg/L. The concentrations of copper were less than the USEPA's MCL and SMCL's of 1,300 and 1,000 µg/L for drinking water (U.S. Environmental Protection Agency, 1976).

Total and dissolved lead concentrations ranged from less than 1 to 3 µg/L (site 5). All lead concentrations for Cross Lake were less than the USEPA's MCL of 15 µg/L (U.S. Environmental Protection Agency, 1976). The concentrations of mercury were less than the USEPA's MCL of 2 µg/L for drinking water (U.S. Environmental Protection Agency, 1976). Total and dissolved mercury concentrations ranged from less than 0.1 µg/L to a maximum of 0.1 µg/L at sites 5-7 and 10. Concentrations of total mercury were greater than the detection limit at sites 5-7 and at site 6 for dissolved mercury in 1997. However, only site 10 had total and dissolved mercury concentrations greater than the detection limit in 1998.

Other minor elements detected in trace amounts were nickel, selenium, and zinc. Of these minor elements, the USEPA has an MCL and SMCL for selenium and zinc, 50 and 5,000 µg/L (U.S. Environmental Protection Agency, 1976). None of the sample results for these minor elements exceeded the MCL or SMCL's.

Organic Chemical Constituents

Organic chemical (pesticide) usage may be associated with each of the land uses in the Cross Lake watershed; however, cropland typically has the highest associated pesticide usage. The majority of the cropland within the Cross Bayou watershed occurs along the Red River, northeast of Cross Lake, and mostly drains directly into Cross Bayou downstream from the Cross Lake spillway and Cross Lake.

Thirty-eight organic compounds, including various pesticides and PCB's, were analyzed in water samples collected at all water-quality sites on Cross Lake throughout the period of sample collection (table 8, at the back of the report). Of the 38 organic compounds, only two (2,4-D and diazinon) were detected at concentrations greater than the limit of detection. The maximum concentration of 2,4-D was 0.08 µg/L for a sample collected on June 10, 1997 at site 4, and the maximum concentration of diazinon was 0.01 µg/L for a sample collected on November 19, 1998 at site 4. All concentrations of analyzed organic chemicals were less than the Federal and State standards and criteria (table 9) for aquatic life protection and drinking-water supplies.

Table 9. Federal and State water-quality standards and criteria for selected organic chemicals

[Concentrations are in micrograms per liter]

Organic chemical	U.S. Environmental Protection Agency[1] freshwater aquatic life protection		Louisiana Department of Environmental Quality water-quality standards for drinking water supplies[2]
	Acute	Chronic	
Aldrin	3.00	--	40
Chlordane	2.40	.0043	190
DDT	1.10	.0010	190
DDD	.03	.0060	270
DDE	52.5	10.5000	190
Dieldrin	2.50	.0019	50
Endosulfan	.22	.0560	.47
Endrin	.18	.0023	.26
Heptachlor	.52	.0038	70
Lindane	5.30	.21	.11
PCB's	2.00	.0140	10
2,4-D	--	--	100.00
Silvex	--	--	10.00

[1]Source: U.S. Environmental Protection Agency (1976).
[2]Source: Louisiana Department of Environmental Quality (1984).

Bacteria

Samples for analysis of fecal coliform and fecal streptococci bacteria were collected at all water-quality sites throughout the period of sample collection (table 10, at the back of the report). Fecal coliform bacteria are "indicators" of possible pathogens produced from the wastes of warm-blooded animals and are a measure of the water quality (Wilde and Radtke, 1998), especially where body contact or water consumption occur. Sources of fecal coliform bacteria can include: unsewered areas, animal wastes, runoff from septic ponds, leaking septic tanks, and overland runoff from livestock areas.

Fecal coliform and fecal streptococci ranged from less than 1 to 580 and from less than 1 to 1,700 cols/100mL (table 10, at the back of the report). However, the median values for fecal coliform and fecal streptococci were 10.5 and 6.0 cols/100mL. In the months water samples were collected (February, May, June, July, August, September, and November), the highest concentrations of bacteria were consistently detected during February. Overall, fecal coliform were detected in higher concentrations than those of

Human waste contains approximately 2 to 4 times as much fecal coliform as fecal streptococci. Animal waste contains higher concentrations of fecal streptococci than fecal coliform (approximately 1.5 times). (Geldreich and Kenner, 1969). Fecal coliform to fecal streptococci ratios may indicate human or non-human sources of fecal bacteria input to a system; however, these ratios are only valid for the first 24 hours after input to the system. The median fecal coliform to fecal streptococci ratio for Cross Lake was 1.3. Therefore, while not in the 2 to 4 ratio range, indicative of human origins, the consistently higher concentrations of fecal coliform in Cross Lake might indicate a human source.

Concentrations of fecal bacteria were related to turbidity. During high runoff, bacteria within the watershed may be transported to the lake where they remain in suspension and may travel some distance from their point of entry into the lake. High concentrations of fecal bacteria were measured shortly after rainfall-runoff events. However, these high concentrations of fecal bacteria quickly returned to low levels shortly after the rainfall-runoff event.

According to the DEQ water-quality standards for primary contact recreation, fecal-coliform bacteria concentrations may not exceed 400 cols/100 mL annually in more than 10 percent of the samples analyzed for any 30-day period during the recreational period (May 1 to October 31). During the non-recreational period (November 1 - April 30), secondary contact recreation standards apply; fecal-coliform bacteria concentrations may not exceed 2,000 cols/100 mL annually in more than 10 percent of the samples analyzed for any 30-day period (Louisiana Department of Environmental Quality, 1984).

During 1997 (February - November), 60 fecal-coliform bacteria samples were collected and analyzed for water-quality sites throughout Cross Lake. Of those 60 samples, none had concentrations greater than 400 cols/100 mL. In 1998 (February - November), 64 fecal-coliform bacteria samples were collected and analyzed. Of those 64 samples, 2 samples (3.1 percent) had concentrations greater than 400 cols/100 mL. In February 1999, 10 bacteria samples were collected and analyzed. Of those 10 samples, none had concentrations greater than 400 cols/100 mL. Therefore, Cross Lake did not exceed the DEQ primary contact recreation standards for fecal-coliform bacteria during the period of sample collection for this report. However, Cross Lake did exceed the DEQ's designated-use criteria for bacteria (1 col/100 mL) in approximately 82 percent of the bacteria samples collected.

Bottom Material

Minor Elements

Bottom-material samples were collected at all water-quality sites on August 19, 1997. These samples were analyzed for concentrations of arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, and zinc (table 11). In general, site 9 had the lowest concentrations and sites 2 and 8 the highest concentrations of minor elements. Iron concentration was a strong indicator of the relative concentrations of other minor elements in the Cross Lake bottom materials. Bottom-material samples with high iron concentrations generally also had high concentrations of other minor elements. Currently (2003), the USEPA does not have established standards for minor elements in bottom material.

Concentrations of arsenic ranged from less than 2 μg/g at site 9 to 10 μg/g at site 10. Cadmium concentrations for all water-quality sites were less than detectable limits (1 μg/g). Chromium ranged from less than 10 μg/g at sites 6 and 9 to 33 μg/g at sites 2 and 8.

Concentration of copper ranged from 4 µg/g at sites 6 and 9 to 120 µg/g at site 1. Iron was detected at all water-quality sites and exhibited the widest range in concentrations (6,300 µg/g at site 9 to 43,000 µg/g at site 2). The average iron concentration from all water-quality sites was 21,900 µg/g. Total lead ranged from less than 10 µg/g at sites 6 and 9 to about 40 µg/g at sites 1, 2, 7, 8, and 10. Manganese, like iron, ranged widely and was found in concentrations from 220 µg/g at site 9 to over 10 times that concentration (2,300 µg/g) at site 2. The average concentration of manganese from sites 2 through 10 was 644 µg/g. Due to laboratory damage, data for the site 1 samples were destroyed. Mercury concentrations ranged from 0.03 µg/g at sites 3, 4, 6, and 9 to a high of 0.09 µg/g at sites 7, 8, and 10. The average zinc concentration from sites 1 through 10 was 70 µg/g. Sites 6 and 9 exhibited the lowest zinc concentration (20 µg/g) and site 8 the highest (130 µg/g).

Table 11. Concentrations of minor elements in bottom material from sites at Cross Lake, Caddo Parish, Louisiana, August 19, 1997

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. µg/g, micrograms per gram; <, actual value is known to be less than the value shown; --, no data]

Arsenic, total (µg/g as As)	Cadmium, total (µg/g as Cd)	Chromium, total (µg/g as Cr)	Copper, total (µg/g as Cu)	Iron, total (µg/g as Fe)	Lead, total (µg/g as Pb)	Manganese, total (µg/g as Mn)	Mercury, (µg/g as Hg)	Zinc, total (µg/g as Zn)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)								
6	<1.0	29	120	36,000	42	--	0.06	100
Cross Lake at Willow Point, at Shreveport (site 2)								
6	<1.0	33	73	43,000	38	2,300	.06	100
Cross Lake at Hatcher‘s Arm, at Shreveport (site 3)								
3	<1.0	8.0	7	8,600	10	430	.03	30
Cross Lake at Johnson‘s Arm, at Shreveport (site 4)								
2	<1.0	13	8	11,000	12	370	.03	30
Cross Lake at Hickman‘s Arm, at Shreveport (site 5)								
4	<1.0	21	17	24,000	24	490	.06	60
Cross Lake at Twin Bird Island, at Shreveport (site 6)								
2	<1.0	<10	4	8,100	<10	350	.03	20
Cross Lake at Page Bayou Cove, at Shreveport (site 7)								
5	<1.0	24	20	23,000	38	420	.09	90
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)								
7	<1.0	33	24	31,000	45	530	.09	130
Cross Lake at Fortney Bayou, at Shreveport (site 9)								
<2	<1.0	<10	4	6,300	<10	220	.03	20
Cross Lake at Goat Island, at Shreveport (site 10)								
10	<1.0	27	25	28,000	43	690	.09	120

Sedimentation Rate

The average sediment accumulation in the eastern and western sediment traps were 0.21 in. and 0.19 in. (0.43 and 0.39 in/yr). Although the eastern and western ends of Cross Lake differ in depth, potential for resuspension of bottom materials through wind and wave action and the vicinity of inflows, both sediment traps demonstrated similar sedimentation rates.

Data obtained from sedimentation traps give an approximation of the current sedimentation rate occurring in Cross Lake. A more detailed study, involving the collection and analysis of sediment cores and additional sediment traps would be necessary to refine the current and establish the historical sedimentation rates of Cross Lake.

SUMMARY AND CONCLUSIONS

Cross Lake is a shallow, monomictic lake that was formed in 1926 by the impoundment of Cross Bayou. The lake is the primary drinking-water supply for the City of Shreveport, Louisiana. The lake is approximately 13.4 square miles in surface area and 65,807 acre-feet in volume (at spillway crest 171.19 feet above NGVD 29). The average depth is 7.7 feet, and the lake receives inflow from a 253-square mile watershed. In recent years, the lakeshore has become increasingly urbanized. In addition, the land use of the watershed contributing runoff to Cross Lake has changed. Changes in land use and urbanization may affect the water chemistry and biology of the Lake. The lake receives most of its inflow from eight tributaries, mostly located at the western end of the lake, and two distributaries located on the eastern end of the lake.

Water-quality data were collected at 10 sites on Cross Lake from February 1997 to February 1999. Water-column and bottom-material samples were collected. The water-column samples were collected four times per year. These samples were analyzed for selected major inorganic ions; nutrients; minor elements; pesticides; biologically-related properties such as biochemical oxygen demand, phytoplankton (measured by chlorophyll-*a* and *b)*, turbidity, and fecal-coliform and fecal-streptococci bacteria); selected synthetic-organic compounds (polychlorinated biphenols and phenols); and physical and chemical-related properties such as specific conductance, temperature, pH, dissolved oxygen, and total dissolved solids. Suspended-sediment samples were collected seven times during the period of sample collection. The bottom-material samples, which were collected once during the study, were analyzed for selected minor elements and inorganic carbon.

The surface temperature of Cross Lake ranged from 9.6 to 34.9 degrees Celsius in the summer in the winter during the 2-year period of sample collection. The lake began to stratify in late May and early June and remained stratified for approximately 4 months, until mid to late September. Cross Lake mixes once per year, usually in late September to early October. Once mixed, the temperature of Cross lake declines and varies less from top to bottom into the winter season.

Dissolved-oxygen concentrations ranged from 0.1 to 12.9 mg/L (milligrams per liter). Concentrations of dissolved oxygen were highest during the winter months and exhibited a diel pattern during the summer months.

Nine inorganic chemical constituents, including total dissolved solids, were sampled from water-quality sites throughout Cross Lake. Water in Cross Lake is a sodium-bicarbonate type. Sources of sodium may be from the supplemental water from nearby Twelvemile Bayou, which according to historical records, exhibits high concentrations of chloride. Typically, water is only supplemented from Twelvemile Bayou during the summer months.

Bicarbonate, measured by alkalinity as calcium carbonate ($CaCO_3$), averaged 33.2 mg/L overall. Therefore, the water from Cross Lake is classified as soft. Other inorganic chemicals of concern were fluoride, sulfate, and total dissolved solids. Secondary Maximum Contaminant Level's (SMCL) exist for these constituents, however, no concentrations of these constituents were more than the SMCL's in the samples collected for this report.

Nutrients sampled during the Cross Lake water-quality study include ammonia, nitrate, nitrite, phosphorus, and orthophosphorus. Nutrients were evenly distributed across the lake and no sample site with consistently higher or lower nutrient concentrations. No water samples analyzed for nitrate exceeded the U.S. Environmental Protection Agency's (USEPA) Maximum Contaminant Level (MCL) of 10 mg/L.

Based on nitrogen to phosphorus ratios calculated for Cross Lake, median values for all water-quality sites were within the nitrogen-limited range (less than or equal to 5). The low concentrations of nitrogen may be due, in part, to the management of the Cross Lake watershed by the City of Shreveport and its beneficial effect in regulating the water quality of Cross Lake. Historical Trophic State Indexes (TSI) for Cross Lake classified the lake as eutrophic. The 1999 TSI classifies Cross Lake as borderline mesotrophic - eutrophic, which might indicate a reduction in eutrophication between 1974 and 1999.

Total and dissolved forms of 12 minor elements were analyzed in water samples collected from Cross Lake. Of the 12 minor elements, only iron and manganese exceeded the USEPA's SMCL and all twelve minor elements were less than the USEPA's MCL. Both iron and manganese occur naturally in the sediments of the Cross Lake watershed; therefore, the high concentrations of iron and manganese are most likely naturally occurring.

Thirty-eight organic compounds were analyzed from Cross Lake water samples. Of the 38 organic compounds analyzed, only two (2,4-D and diazinon) had concentrations greater than the detection limit. Concentrations for all 38 organic compounds were less than the Federal and State water-quality standards and criteria.

Fecal-coliform and streptococci bacteria concentrations ranged from less than 1 to 580 and 1,700 col/100 mL (colonies per 100 milliliters) during the period of sample collection. Median values of fecal coliform and streptococci bacteria were 10.5 and 6.0 col/100 mL. High concentrations of bacteria were measured shortly after rainfall-runoff events. However, these high bacteria concentrations quickly returned to low levels shortly after the rainfall-runoff event. Overall, fecal-coliform bacteria was found in the highest concentrations. Fecal coliform to streptococci ratios (median 1.3) might indicate a human source for Cross Lake bacteria levels. Fecal- coliform bacteria concentrations did not exceed the Department of Environmental Quality's primary contact recreation standard during the period of sample collection.

Sedimentation traps were deployed at the eastern and western ends of Cross Lake to determine the sedimentation rate. Results from the two sedimentation traps were similar considering the differing hydrologic conditions existing at the trap locations. The average sediment accumulation in the eastern and western sediment traps were 0.21 and 0.19 in. (0.43 and 0.39 inches per year). These data give an approximate current (1999) sedimentation rate; however, a more detailed study, involving the collection of sediment cores and additional sediment traps would be necessary to refine the current and establish the historical sedimentation rate of Cross Lake.

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Tables 2, 5, 6, 8, and 10

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. µS/cm at 25 °C, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mm, millimeters; NTU, nephelometric turbidity units; mg/L, milligrams per liter; --, no data; <, actual value is known to be less than the value shown]

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)													
02-19-97	1135	--	--	--	10.4	6.9	762	60	12	--	10.4	33	3.0
06-10-97	1350	170.97	118	--	29.4	8.1	760	15	4.7	--	8.1	26	3.4
07-02-97	1245	170.79	118	34.0	31.3	8.5	760	--	--	0.52	7.8	--	2.1
08-19-97	1440	169.46	154	40.0	30.6	8.4	760	15	6.2	.40	7.2	32	6.1
09-16-97	1135	169.29	256	22.0	27.6	8.6	761	--	--	--	8.9	--	3.7
11-20-97	1340	169.50	219	17.0	11.5	7.2	760	--	--	.70	10.4	--	3.0
02-03-98	1125	170.86	143	15.0	11.4	6.9	763	30	14	.45	8.6	19	2.6
02-06-98	0915	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	0845	169.55	168	25.0	27.2	7.0	763	10	4.3	.62	7.0	20	2.0
06-29-98	1300	--	215	36.7	30.0	8.2	762	--	--	.35	11.7	--	--
07-28-98	1040	169.16	303	39.4	31.6	8.5	764	--	--	.50	8.8	--	--
09-09-98	1045	168.17	502	31.0	28.5	7.3	762	5	3.6	.35	5.2	16	3.1
11-19-98	1540	--	355	--	16.2	7.8	760	.0	2.5	.65	10.3	15	3.9
02-18-99	1425	170.53	104	20.0	14.1	6.8	755	60	6.9	.35	9.1	27	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)--continued													
02-19-97	1135	--	--	--	--	--	21	--	--	--	--	--	--
06-10-97	1350	30	7.20	3.00	9.1	2.00	29	9.1	11.0	<0.1	2.0	82	61
07-02-97	1245	--	--	--	--	--	27	--	--	--	--	--	--
08-19-97	1440	41	9.60	4.20	11.0	2.30	43	6.8	15.0	.1	6.3	84	81
09-16-97	1135	--	--	--	--	--	48	--	--	--	--	--	--
11-20-97	1340	--	--	--	--	--	39	--	--	--	--	--	--
02-03-98	1125	34	8.10	3.40	13.0	2.20	--	16.0	18.0	.7	6.8	92	81
02-06-98	0915	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0845	39	9.20	3.90	16.0	2.30	22	20.0	21.0	<.1	6.3	106	92
06-29-98	1300	--	--	--	--	--	27	--	--	--	--	--	--
07-28-98	1040	--	--	--	--	--	51	--	--	--	--	--	--
09-09-98	1045	120	29.0	11.0	46.0	3.10	70	56.0	68.0	.2	7.0	280	262
11-19-98	1540	84	20.0	8.30	33.0	2.80	58	30.0	50.0	.1	4.9	204	184
02-18-99	1425	26	6.00	2.60	9.2	1.90	17	11.0	12.0	<.1	4.8	76	58

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Willow Point, at Shreveport (site 2)													
02-19-97	1155	--	163	--	10.9	6.9	761	70	18	--	10.4	33	4.0
06-10-97	1430	170.97	119	--	30.0	8.2	760	15	<1.0	--	8.4	28	3.9
07-02-97	1410	170.79	118	34.0	31.6	8.5	760	--	--	0.49	7.9	--	2.4
08-19-97	1830	169.46	154	33.0	31.0	8.2	760	10	5.1	.40	6.7	29	4.5
09-16-97	1600	169.29	305	39.0	29.4	8.8	760	--	--	.40	9.7	--	6.3
11-20-97	1400	169.50	218	17.0	11.1	7.6	760	--	--	.60	10.6	--	2.9
02-03-98	1145	170.86	136	15.0	11.2	6.8	763	50	17	.40	8.6	17	2.5
02-06-98	0910	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	0905	169.55	168	38.0	27.4	6.8	763	10	2.9	.62	6.7	16	1.5
06-29-98	1315	--	198	39.0	29.0	8.3	762	--	--	.43	9.2	--	6.9
07-28-98	1110	169.16	288	39.4	31.0	7.6	764	--	--	.40	7.6	--	--
09-09-98	1130	168.17	500	31.0	28.0	7.4	762	5	3.8	.35	6.1	17	3.7
11-19-98	1605	--	355	--	16.2	8.4	760	.0	0.9	.55	10.8	<10	3.1
02-18-99	1500	170.53	99	20.0	14.4	6.9	755	60	7.8	.40	9.5	26	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake at Willow Point, at Shreveport (site 2)--continued													
02-19-97	1155	34	7.60	3.70	15.0	2.30	19	16.0	25.0	<0.1	6.5	98	88
06-10-97	1430	30	7.20	3.00	9.1	1.90	27	9.3	11.0	<.1	1.8	86	60
07-02-97	1410	--	--	--	--	--	27	--	--	--	--	--	--
08-19-97	1830	42	9.80	4.30	12.0	2.40	39	6.9	15.0	.1	6.5	84	80
09-16-97	1600	--	--	--	--	--	54	--	--	--	--	--	--
11-20-97	1400	--	--	--	--	--	40	--	--	--	--	--	--
02-03-98	1145	32	7.50	3.20	13.0	2.10	16	15.0	17.0	<.1	7.0	94	75
02-06-98	0910	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0905	38	9.00	3.80	16.0	2.30	22	19.0	20.0	<.1	6.1	114	89
06-29-98	1315	--	--	--	--	--	29	--	--	--	--	--	--
07-28-98	1110	--	--	--	--	--	49	--	--	--	--	--	--
09-09-98	1130	120	28.0	11.0	47.0	3.30	78	51.0	68.0	.2	8.2	292	263
11-19-98	1605	88	21.0	8.60	34.0	2.80	60	30.0	51.0	.1	5.0	206	189
02-18-99	1500	25	5.90	2.60	8.7	2.00	16	10.0	11.0	<.1	4.6	72	55

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)													
02-19-97	1039	--	152	--	9.7	6.6	763	100	19	--	8.8	35	1.8
06-10-97	1300	170.97	119	--	28.3	7.2	760	15	5.8	--	7.7	32	4.5
07-02-97	1225	170.79	121	36.0	30.2	6.9	760	--	--	0.50	5.8	--	4.3
08-19-97	1400	169.46	156	33.9	29.4	6.3	760	15	7.9	.32	4.3	32	4.4
09-16-97	1045	169.29	188	22.0	20.0	7.0	761	--	--	.34	6.1	--	4.7
11-20-97	1105	169.50	215	20.0	11.6	6.5	760	--	--	.30	9.6	--	0.6
02-03-98	1045	170.86	139	15.0	10.5	6.6	763	70	36	.20	9.1	31	2.7
02-06-98	0900	170.93	--	--	--	--	--	--	--	.35	--	--	--
05-28-98	0815	169.55	172	25.0	26.9	6.8	763	10	4.5	.40	6.7	20	2.8
06-29-98	1235	--	188	39.0	29.0	7.3	762	--	--	--	8.8	--	5.4
07-28-98	1020	169.16	290	35.0	30.7	8.3	764	--	--	.30	8.3	--	--
09-09-98	1000	168.17	347	31.0	26.5	7.4	762	10	4.9	.25	7.8	17	5.5
11-19-98	1030	--	340	--	15.4	6.6	760	.0	3.6	.60	8.5	<10	3.2
02-18-99	1345	170.53	92	21.0	14.8	6.5	755	70	8.1	.78	9.7	--	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
						Cross Lake at Hatcher's Arm, at Shreveport (site 3)--continued							
02-19-97	1039	--	--	--	--	--	19	--	--	--	--	--	--
06-10-97	1300	30	7.20	3.00	9.3	2.00	38	9.6	12.0	<0.1	2.0	78	68
07-02-97	1225	--	--	--	--	--	34	--	--	--	--	--	--
08-19-97	1400	42	9.80	4.30	11.0	2.40	39	6.8	15.0	.1	6.6	84	79
09-16-97	1045	--	--	--	--	--	46	--	--	--	--	--	--
11-20-97	1105	--	--	--	--	--	37	--	--	--	--	--	--
02-03-98	1045	39	8.70	4.10	12.0	2.10	18	21.0	13.0	<.1	6.4	98	79
02-06-98	0900	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0815	40	9.40	4.00	16.0	2.30	22	19.0	21.0	<.1	6.0	106	91
06-29-98	1235	--	--	--	--	--	26	--	--	--	--	--	--
07-28-98	1020	--	--	--	--	--	42	--	--	--	--	--	--
09-09-98	1000	81	19.0	8.10	34.0	3.10	65	28.0	48.0	.2	8.7	198	188
11-19-98	1030	82	19.0	8.30	32.0	2.80	61	30.0	48.0	.1	5.2	207	182
02-18-99	1345	23	5.40	2.40	8.0	1.90	15	9.9	10.0	<.1	4.8	71	52

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Johnson's Arm, at Shreveport (site 4)													
02-19-97	1318	--	86	--	11.4	6.4	760	100	23	--	9.6	36	4.5
06-10-97	1620	170.97	116	--	27.6	8.1	760	15	5.4	0.54	8.4	31	4.0
07-02-97	1350	170.79	112	34.0	32.5	7.8	760	--	--	.56	7.5	--	2.4
08-19-97	1515	169.46	153	33.9	31.3	8.6	760	20	6.9	.38	7.1	34	7.1
09-16-97	1300	169.29	192	36.5	31.4	8.9	760	--	--	.35	9.2	--	6.2
11-20-97	1430	169.50	206	17.0	11.9	7.6	760	--	--	.50	10.6	--	3.4
02-03-98	1215	170.86	123	15.0	11.9	6.7	763	50	13	.40	8.6	24	3.1
02-06-98	0925	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	0945	169.55	164	25.0	27.9	7.1	763	10	4.7	.50	7.2	23	2.7
06-29-98	1350	--	188	36.7	32.5	8.8	761	--	--	--	10.3	--	8.4
07-28-98	1315	169.16	238	38.5	33.1	8.9	762	--	--	.40	9.6	--	--
09-09-98	1330	168.17	365	32.0	30.0	8.5	761	10	4.8	.30	9.2	18	5.3
11-19-98	1710	--	297	--	16.2	6.9	760	10	4.8	.60	9.9	<10	2.3
02-18-99	1530	170.53	88	20.0	15.3	7.0	755	70	7.4	.35	9.7	30	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
						Cross Lake at Johnson's Arm, at Shreveport (site 4)--continued							
02-19-97	1318	--	--	--	--	--	15	--	--	--	--	--	--
06-10-97	1620	29	6.70	3.00	8.7	1.90	22	8.7	12.0	<0.1	1.7	76	56
07-02-97	1350	--	--	--	--	--	26	--	--	--	--	--	--
08-19-97	1515	40	9.30	4.10	11.0	2.30	47	7.0	15.0	.1	6.4	90	83
09-16-97	1300	--	--	--	--	--	44	--	--	--	--	--	--
11-20-97	1430	--	--	--	--	--	37	--	--	--	--	--	--
02-03-98	1215	30	7.10	3.00	12.0	1.90	15	--	15.0	<.1	6.8	84	--
02-06-98	0925	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0945	37	8.70	3.60	16.0	2.30	23	18.0	21.0	<.1	5.6	100	89
06-29-98	1350	--	--	--	--	--	25	--	--	--	--	--	--
07-28-98	1315	--	--	--	--	--	44	--	--	--	--	--	--
09-09-98	1330	71	17.0	7.00	27.0	2.70	65	24.0	40.0	.1	4.8	173	162
11-19-98	1710	71	17.0	7.00	27.0	2.70	48	24.0	40.0	.1	4.8	173	151
02-18-99	1530	23	5.50	2.20	7.7	1.90	16	9.3	9.6	<.1	4.7	68	51

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Hickman's Arm, at Shreveport (site 5)													
02-19-97	1345	--	78	--	10.1	6.4	760	120	28	--	8.5	44	2.2
06-10-97	1635	170.97	124	--	30.7	8.8	760	20	5.3	0.55	9.3	32	4.5
07-02-97	1450	170.79	118	36.0	31.0	6.8	760	--	--	.58	3.9	--	2.4
08-19-97	1600	169.46	153	33.9	30.0	7.3	760	10	6.7	.35	5.1	30	6.6
09-16-97	1315	169.29	189	36.5	31.0	9.0	760	--	--	.35	9.5	--	5.8
11-20-97	1445	169.50	211	17.0	11.7	7.5	760	--	--	.60	9.9	--	3.2
02-03-98	1415	170.86	137	17.0	11.9	6.5	762	50	20	.40	8.7	22	2.9
02-06-98	0935	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	1005	169.55	167	25.0	27.6	6.8	763	10	4.2	.50	6.8	24	2.2
06-29-98	1420	--	202	36.7	31.0	8.4	761	--	--	.35	11.1	--	7.3
07-28-98	1345	169.16	224	38.5	32.3	9.3	762	--	--	.40	9.3	--	--
09-10-98	0830	168.08	290	32.0	23.0	6.7	763	5	4.6	.60	1.7	23	1.2
11-19-98	1730	--	286	--	15.5	7.2	760	10	4.8	.60	8.6	20	2.2
02-18-99	1550	170.53	86	20.0	14.6	6.8	755	60	7.7	.30	9.2	--	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
						Cross Lake at Hickman's Arm, at Shreveport (site 5)--continued							
02-19-97	1345	--	--	--	--	--	11	--	--	--	--	--	--
06-10-97	1635	30	6.90	3.00	9.9	2.00	25	9.5	13.0	<0.1	2.0	72	61
07-02-97	1450	--	--	--	--	--	30	--	--	--	--	--	--
08-19-97	1600	40	9.10	4.10	11.0	2.20	43	6.8	15.0	.1	6.4	90	80
09-16-97	1315	--	--	--	--	--	44	--	--	--	--	--	--
11-20-97	1445	--	--	--	--	--	38	--	--	--	--	--	--
02-03-98	1415	32	7.30	3.30	13.0	2.10	15	16.0	18.0	<.1	7.5	96	77
02-06-98	0935	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1005	37	8.70	3.80	16.0	2.30	22	18.0	21.0	<.1	5.1	102	88
06-29-98	1420	--	--	--	--	--	26	--	--	--	--	--	--
07-28-98	1345	--	--	--	--	--	43	--	--	--	--	--	--
09-10-98	0830	66	15.0	6.90	29.0	2.90	54	18.0	40.0	.1	7.3	168	152
11-19-98	1730	69	16.0	7.10	28.0	2.70	46	25.0	42.0	.1	5.7	176	154
02-18-99	1550	21	4.80	2.10	7.0	1.70	15	9.2	9.4	<.1	5.4	69	49

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Twin Bird Islands, at Shreveport (site 6)													
02-19-97	1710	--	78	--	10.1	6.5	760	120	28	--	8.3	31	2.9
06-11-97	1345	171.00	127	--	28.3	--	760	15	<1.0	0.54	8.7	32	5.7
07-02-97	1715	170.79	123	35.0	32.1	8.2	760	--	--	.57	8.1	--	2.3
08-19-97	1800	169.46	153	33.0	30.5	8.2	760	15	7	.38	7.2	31	3.9
09-16-97	1535	169.29	194	39.0	31.4	9.2	760	--	--	.35	12.2	--	8.2
11-20-97	1715	169.50	211	15.0	11.5	7.5	760	--	--	.65	10.5	--	3.1
02-04-98	0845	170.90	134	7.0	11.4	6.5	763	50	17	.40	8.2	23	2.2
02-06-98	1025	170.93	--	--	--	--	--	--	--	.35	--	--	--
05-28-98	1515	169.55	168	38.0	29.2	8.2	763	10	2.4	.55	8.8	14	3.3
06-29-98	1610	--	184	36.7	32.6	8.9	761	--	--	.38	10.3	--	9.2
07-28-98	1545	169.16	220	39.4	32.9	8.9	762	--	--	.40	10.3	--	--
09-09-98	1600	168.17	349	32.0	30.0	8.4	761	5	2.3	.30	8.9	21	5.2
11-20-98	1015	--	283	--	15.5	7.2	768	15	4.6	.60	9.0	21	--
02-19-99	1000	170.55	91	11.5	13.9	6.8	765	70	8.1	.40	9.2	36	6.4

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake at Twin Bird Islands, at Shreveport (site 6)--continued													
02-19-97	1710	21	4.70	2.20	7.9	1.90	13	9.8	12.0	<0.1	5.3	62	52
06-11-97	1345	30	7.00	3.00	10.0	1.80	27	9.5	13.0	<.1	2.2	96	63
07-02-97	1715	--	--	--	--	--	31	--	--	--	--	--	--
08-19-97	1800	42	9.40	4.40	12.0	2.30	38	7.3	16.0	.1	6.4	88	81
09-16-97	1535	--	--	--	--	--	48	--	--	--	--	--	--
11-20-97	1715	--	--	--	--	--	38	--	--	--	--	--	--
02-04-98	0845	30	7.00	3.10	13.0	2.10	14	15.0	18.0	<.1	7.8	94	75
02-06-98	1025	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1515	37	8.70	3.80	17.0	2.30	22	18.0	22.0	<.1	5.0	112	90
06-29-98	1610	--	--	--	--	--	25	--	--	--	--	--	--
07-28-98	1545	--	--	--	--	--	39	--	--	--	--	--	--
09-09-98	1600	80	19.0	8.00	32.0	3.10	64	28.0	48.0	.2	8.6	200	185
11-20-98	1015	68	16.0	6.90	27.0	2.70	46	24.0	41.0	.1	5.6	173	151
02-19-99	1000	23	5.30	2.30	8.1	2.0	14	9.6	10.0	<.1	4.7	70	50

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conduct-ance (µS/cm at 25 °C)	Air temper-ature (°C)	Water temper-ature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbi-dity (NTU)	Transpar-ency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Page Bayou Cove, at Shreveport (site 7)													
02-19-97	1428	--	87	--	10.9	6.3	759	120	26	--	--	27	1.5
06-11-97	0950	171.00	122	--	27.5	6.7	760	20	5.2	0.53	7.1	35	5.4
07-02-97	1525	170.79	118	36.0	31.0	7.0	760	--	--	.44	6.9	--	4.0
08-19-97	1640	169.46	148	34.0	30.0	7.0	760	10	3	.52	5.9	23	3.0
09-16-97	1400	169.29	178	35.0	25.9	8.5	760	--	--	.95	6.2	--	3.5
11-20-97	1545	169.50	147	16.0	10.4	7.1	760	--	--	.90	9.4	--	1.8
02-03-98	1510	170.86	120	17.0	11.8	6.2	762	70	22	.40	6.1	39	--
02-06-98	0955	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	1100	169.55	165	25.0	26.7	7.0	763	10	2.3	.85	8.6	20	1.5
06-29-98	1450	--	190	36.7	31.0	7.4	761	--	--	.70	4.4	--	8.1
07-28-98	1430	169.16	202	39.4	29.2	7.4	762	--	--	.50	1.0	--	--
09-09-98	1350	168.17	--	32.0	29.0	8.2	761	5	1.6	.35	8.2	21	5.0
11-20-98	0800	--	184	--	15.0	6.4	768	50	7.9	.60	4.4	<10	--
02-18-99	1635	170.53	109	20.0	14.7	6.8	756	70	--	.45	8.0	--	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
						Cross Lake at Page Bayou Cove, at Shreveport (site 7)--continued							
02-19-97	1428	21	4.6	2.20	7.2	2.00	13	10.0	10.0	<0.1	5.4	76	49
06-11-97	0950	29	6.50	3.00	9.8	2.00	34	8.5	12.0	<.1	2.6	70	65
07-02-97	1525	--	--	--	--	--	29	--	--	--	--	--	--
08-19-97	1640	38	8.40	4.10	12.0	1.20	34	6.5	15.0	.1	2.6	74	70
09-16-97	1400	--	--	--	--	--	41	--	--	--	--	--	--
11-20-97	1545	--	--	--	--	--	34	--	--	--	--	--	--
02-03-98	1510	28	6.40	2.80	12.0	2.00	16	--	15.0	<.1	7.4	90	--
02-06-98	0955	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1100	36	8.50	3.70	17.0	.90	24	14.0	22.0	<.1	1.8	102	82
06-29-98	1450	--	--	--	--	--	30	--	--	--	--	--	--
07-28-98	1430	--	--	--	--	--	64	--	--	--	--	--	--
09-09-98	1350	68	16.0	6.70	28.0	2.60	62	21.0	38.0	.1	8.0	--	158
11-20-98	0800	42	9.80	4.30	17.0	3.00	32	15.0	24.0	<.1	5.7	122	99
02-18-99	1635	--	--	--	--	--	17	--	--	--	--	--	--

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)													
02-19-97	1530	--	91	--	11.5	6.1	760	120	22	--	6.4	32	1.2
06-11-97	1030	171.00	132	--	27.0	6.8	760	20	1.0	0.58	7.6	33	6.2
07-02-97	1540	170.79	145	36.0	30.6	6.2	760	--	--	.76	4.3	--	6.1
08-19-97	1645	169.46	151	34.0	29.1	6.6	760	15	1.2	.60	2.7	24	6.7
09-16-97	1420	169.29	199	35.0	26.4	6.8	760	--	--	.10	4.8	--	6.3
11-20-97	1600	169.50	260	16.0	10.9	6.7	760	--	--	.75	8.7	--	4.3
02-03-98	1530	170.86	269	17.0	12.3	6.4	762	70	22	.35	7.0	26	2.0
02-06-98	1000	170.93	--	--	--	--	--	--	--	.40	--	--	--
05-28-98	1115	169.55	222	25.0	27.0	6.7	763	20	2.8	.95	7.0	26	1.4
06-29-98	1505	--	259	36.7	31.0	8.6	761	--	--	.74	9.1	--	7.9
07-29-98	0800	169.10	256	29.5	30.0	6.6	763	--	--	.63	.1	--	--
09-10-98	0915	168.08	262	32.0	24.0	7.0	763	5	7.6	.70	3.4	26	2.6
11-20-98	0830	--	91	--	14.5	6.1	768	70	12	.55	2.1	42	--
02-19-99	0824	170.55	182	11.5	13.0	6.3	765	60	2.2	.80	5.8	29	2.5

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)--continued													
02-19-97	1530	21	4.60	2.40	8.4	2.00	13	11.0	12.0	<0.1	5.8	76	54
06-11-97	1030	31	7.30	3.00	12.0	1.90	25	9.5	17.0	<.1	3.0	98	69
07-02-97	1540	--	--	--	--	--	34	--	--	--	--	--	--
08-19-97	1645	40	8.80	4.30	15.0	2.00	41	5.2	23.0	<.1	5.5	96	88
09-16-97	1420	--	--	--	--	--	42	--	--	--	--	--	--
11-20-97	1600	--	--	--	--	--	26	--	--	--	--	--	--
02-03-98	1530	60	13.0	6.60	27.0	2.10	21	32.0	41.0	<.1	9.1	166	144
02-06-98	1000	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1115	46	10.0	5.10	24.0	1.70	35	12.0	35.0	<.1	1.9	134	111
06-29-98	1505	--	--	--	--	--	41	--	--	--	--	--	--
07-29-98	0800	--	--	--	--	--	58	--	--	--	--	--	--
09-10-98	0915	58	13.0	6.20	26.0	2.80	63	8.7	38.0	.1	5.9	154	139
11-20-98	0830	21	4.60	2.20	8.8	2.20	14	11.0	11.0	<.1	7.2	--	56
02-19-99	0824	40	8.60	4.40	19.0	2.10	24	18.0	26.0	<.1	3.0	117	96

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Fortney Bayou, at Shreveport (site 9)													
02-19-97	1647	--	70	--	11.8	6.3	760	100	26	--	8.1	32	1.9
06-11-97	1300	171.00	129	--	28.2	6.8	760	20	<1.0	0.42	7.2	32	3.9
07-02-97	1650	170.79	119	35.0	32.3	6.7	760	--	--	.43	7.0	--	2.9
08-19-97	1750	169.46	159	33.0	30.8	7.0	760	20	8.3	.35	5.3	26	5.0
09-16-97	1517	169.29	189	35.0	32.2	9.1	760	--	--	.35	10.5	--	7.9
11-20-97	1700	169.50	207	15.0	12.0	7.3	760	--	--	.70	10.0	--	2.7
02-04-98	0945	170.90	150	20.0	11.1	6.6	764	60	15	.40	7.6	24	2.2
02-06-98	1015	170.93	--	--	--	--	--	--	--	.50	--	--	--
05-28-98	1445	169.55	171	38.0	29.5	8.3	763	10	6.8	.40	9.0	17	4.2
06-29-98	1600	--	193	36.7	31.0	8.9	761	--	--	.30	12.2	--	9.6
07-28-98	1500	169.16	206	39.4	34.9	9.1	762	--	--	.30	10.5	--	--
09-09-98	1530	168.17	298	32.0	30.0	9.0	761	5	3.7	.25	12.9	26	8.1
11-20-98	0930	--	152	--	15.6	6.7	768	70	11	.55	7.9	27	--
02-19-99	0930	170.55	133	11.5	13.2	6.7	765	70	8.0	.60	7.4	27	2.9

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake at Fortney Bayou, at Shreveport (site 9)--continued													
02-19-97	1647	18	4.10	2.00	7.5	1.70	12	12.0	8.8	--	6.2	60	50
06-11-97	1300	30	7.00	3.00	11.0	1.80	24	9.4	15.0	<0.1	2.8	96	65
07-02-97	1650	--	--	--	--	--	28	--	--	--	--	--	--
08-19-97	1750	40	9.10	4.10	13.0	2.20	37	7.7	16.0	.1	6.1	86	81
09-16-97	1517	--	--	--	--	--	45	--	--	--	--	--	--
11-20-97	1700	--	--	--	--	--	36	--	--	--	--	--	--
02-04-98	0945	33	7.60	3.50	17.0	2.00	--	19.0	20.0	<.1	8.6	106	89
02-06-98	1015	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1445	37	8.50	3.80	17.0	2.20	23	17.0	23.0	<.1	4.3	102	90
06-29-98	1600	--	--	--	--	--	24	--	--	--	--	--	--
07-28-98	1500	--	--	--	--	--	36	--	--	--	--	--	--
09-09-98	1530	68	16.0	6.70	28.0	2.80	55	19.0	41.0	.1	9.0	172	156
11-20-98	0930	35	8.00	3.60	15.0	2.40	22	17.0	20.0	<.1	6.5	112	86
02-19-99	0930	27	6.20	2.90	13.0	1.80	19	15.0	14.0	<.1	6.3	87	71

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Gage height (feet)	Specific conductance (µS/cm at 25 °C)	Air temperature (°C)	Water temperature (°C)	pH, water, whole, field (standard units)	Barometric pressure (mm of Mercury)	Color (platinum-cobalt units)	Turbidity (NTU)	Transparency, Secchi disk (meters)	Oxygen, dissolved (mg/L)	Chemical oxygen demand, high level (mg/L)	Biochemical oxygen demand, 5-day at 20 °C (mg/L)
Cross Lake at Goat Island, at Shreveport (site 10)													
02-19-97	1653	--	102	--	10.9	6.5	760	80	20	--	5.9	30	1.3
06-11-97	1110	171.00	129	--	27	6.4	760	30	<1.0	0.53	5.6	32	4.3
07-02-97	1630	170.79	120	35.0	30.4	6.5	760	--	--	.62	7.0	--	2.5
08-19-97	1740	169.46	151	33.0	28.9	6.6	760	15	2.6	.65	2.1	20	7.1
09-16-97	1500	169.29	181	35.0	31.9	8.8	760	--	--	.45	8.4	--	5.5
11-20-97	1620	169.50	180	16.0	10.4	6.9	760	--	--	.80	11.5	--	.9
02-04-98	0930	170.90	245	20.0	10.6	6.4	764	50	8.9	.90	5.5	23	.5
02-06-98	1010	170.93	--	--	--	--	--	--	--	.90	--	--	--
05-28-98	1400	169.55	173	38.0	27.4	6.6	763	10	2.0	.85	7.2	27	2.8
06-29-98	1545	--	208	36.7	26.0	7.0	761	--	--	.90	1.5	--	2.9
07-29-98	0840	169.10	221	38.8	29.2	6.7	763	--	--	.42	.3	--	--
09-10-98	1030	168.08	268	32.0	23.0	7.2	763	5	2.5	.60	3.1	21	1.2
11-20-98	0910	--	103	--	14.9	6.2	768	70	13	.55	2.5	18	--
02-19-99	0950	170.55	101	11.5	12.8	6.3	765	70	3.2	.90	5.4	33	2.3

Table 2. Physical and chemical-related properties and major inorganic chemical constituents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, fixed endpoint titration field (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Solids, residue on evaporation at 180 °C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)
Cross Lake at Goat Island, at Shreveport (site 10)--continued													
02-19-97	1653	19	4.20	2.00	6.7	1.80	12	10.0	8.8	<0.1	5.6	58	47
06-11-97	1110	30	6.90	3.00	12.0	1.90	24	9.1	15.0	<.1	2.9	112	65
07-02-97	1630	--	--	--	--	--	30	--	--	--	--	--	--
08-19-97	1740	37	8.50	3.90	12.0	2.10	36	6.2	16.0	<.1	4.6	84	75
09-16-97	1500	--	--	--	--	--	42	--	--	--	--	--	--
11-20-97	1620	--	--	--	--	--	26	--	--	--	--	--	--
02-04-98	0930	48	10.0	5.60	27.0	2.00	18	28.0	41.0	<.1	8.5	150	133
02-06-98	1010	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1400	38	8.80	3.90	17.0	2.20	26	--	23.0	<.1	1.7	100	--
06-29-98	1545	--	--	--	--	--	29	--	--	--	--	--	--
07-29-98	0840	--	--	--	--	--	45	--	--	--	--	--	--
09-10-98	1030	46	11.0	4.60	--	2.40	51	13.0	39.0	.1	6.6	160	--
11-20-98	0910	25	5.60	2.70	9.3	2.40	13	13.0	12.0	<.1	8.2	87	62
02-19-99	0950	24	5.30	2.50	9.6	1.90	16	10.0	13.0	<.1	1.3	72	53

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. mg/L, milligrams per liter; <, actual value is known to be less than the value shown; E, estimated value]

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)													
02-19-97	1135	0.04	<0.010	0.79	0.52	<0.02	<0.020	<0.01	<0.010	0.030	<0.020	0.020	<0.010
06-10-97	1350	E.10	E.072	E.78	E.39	<.02	<.020	<.01	<.010	E.030	<.020	E.020	<.010
07-02-97	1245	.03	.026	1.0	.45	<.02	<.020	<.01	<.010	<.020	<.020	<.010	.010
08-19-97	1440	.02	.012	1.3	.34	<.02	<.020	<.01	<.010	.110	.040	.030	<.010
09-16-97	1135	.09	.060	1.2	.40	<.02	<.020	<.01	<.010	.080	.020	<.010	<.010
11-20-97	1340	.07	<.010	.79	.34	--	.040	<.01	<.010	.040	<.020	<.010	<.010
02-03-98	1125	.05	<.010	.67	.41	.1	.060	<.01	<.010	.050	.030	.010	<.010
05-28-98	0845	.05	<.010	.61	.26	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1300	<.01	.044	.87	.39	<.02	.020	<.01	<.010	.030	<.020	.020	.020
07-28-98	1040	<.01	.022	.96	.38	<.02	<.020	<.01	<.010	.040	<.020	<.010	<.010
09-09-98	1045	.07	.035	.86	<.20	--	.020	.02	.020	.060	<.020	<.010	<.010
11-19-98	1540	.06	.016	.60	.31	<.02	<.020	<.01	<.010	.050	.020	<.010	<.010
02-18-99	1425	.02	.012	.65	.43	--	.030	<.01	<.010	.060	.040	.020	.020
Cross Lake at Willow Point, at Shreveport (site 2)													
02-19-97	1155	0.08	.010	.85	.44	<.02	<.020	<.01	<.010	.030	<.020	.020	<.010
06-10-97	1430	E.04	E.032	E.72	E1.9	<.02	<.020	<.00	<.010	<.020	<.020	E.020	<.010
07-02-97	1410	.03	.030	.85	.38	<.02	<.020	<.01	<.010	.030	<.020	<.010	<.010
08-19-97	1830	.02	.014	1.1	.27	<.02	<.020	<.01	<.010	.120	.050	.020	<.010
09-16-97	1600	.02	.022	1.0	.39	<.02	<.020	<.01	<.010	.060	.020	.010	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Willow Point, at Shreveport (site 2)--Continued													
11-20-97	1400	.07	.043	.73	.46	<.02	.020	<.01	<.010	.040	.030	<.010	<.010
02-03-98	1145	.040	.012	.70	.38	.1	.060	<.01	<.010	.050	.020	<.010	<.010
05-28-98	0905	.07	<.010	.58	.26	<.02	<.020	<.01	<.010	.020	<.020	<.010	<.010
06-29-98	1315	.01	.028	.81	.38	<.02	.020	<.01	<.010	.030	<.020	.020	.010
07-28-98	1110	.02	.011	.87	.38	<.02	<.020	<.01	<.010	.050	<.020	<.010	<.010
09-09-98	1130	.06	.028	1.0	.24	<.02	<.020	<.01	<.010	.080	<.020	.010	<.010
11-19-98	1605	.03	.013	.87	.42	<.02	<.020	.01	<.010	.040	.020	<.010	<.010
02-18-99	1500	.02	<.010	.78	.39	--	.020	<.01	<.010	.060	.040	.030	.020
Cross Lake at Hatcher's Arm, at Shreveport (site 3)													
02-19-97	1039	.06	.036	.75	.46	.1	.060	<.01	<.010	.040	<.020	.030	.010
06-10-97	1300	E.04	E.030	E.82	E.33	<.02	<.020	<.01	<.010	<.020	<.020	E.020	<.010
07-02-97	1225	.05	--	--	--	<.02	<.020	--	--	--	--	--	--
08-19-97	1400	.03	.023	1.5	.31	<.02	<.020	<.01	<.010	.120	.020	.030	.010
09-16-97	1045	.08	.016	1.5	.41	<.02	.030	<.01	<.010	.080	.030	<.010	<.010
11-20-97	1105	.10	.016	.88	.46	.1	.060	<.01	<.010	.060	<.020	.020	<.010
02-03-98	1045	.08	.052	.86	.51	.1	.090	<.01	<.010	.080	.040	.030	.010
05-28-98	0815	.06	.010	.70	.30	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1235	.01	.034	1.1	.67	<.02	.030	<.01	<.010	.050	<.020	.020	.020
07-28-98	1020	.03	<.010	1.2	.35	<.02	<.020	<.01	<.010	.080	<.020	.020	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)--Continued													
09-09-98	1000	.08	.036	.92	.31	--	.020	.02	.018	.120	<.020	.020	<.010
11-19-98	1030	.07	.014	.86	.59	<.02	<.020	<.01	<.010	.060	.030	<.010	<.010
02-18-99	1345	.02	<.010	.65	.40	--	.040	<.01	<.010	.080	.040	.020	.020
Cross Lake at Johnson's Arm, at Shreveport (site 4)													
02-19-97	1318	.12	.010	.89	.49	--	.040	.01	<.01	.030	<.020	.030	<.010
06-10-97	1620	E.05	E.033	E.98	E.38	<.02	<.020	<.01	<.010	E.020	<.020	E.020	E.010
07-02-97	1350	.03	.021	1.0	.57	<.02	<.020	<.01	<.010	.030	<.020	.010	.010
08-19-97	1515	.02	.013	1.2	.36	<.02	<.020	<.01	<.010	.090	.040	.030	<.010
09-16-97	1300	.03	.028	1.2	.47	<.02	<.020	<.01	<.010	.070	.030	<.010	<.010
11-20-97	1430	.08	.012	.74	.36	.1	.050	<.01	<.010	.040	<.020	<.010	<.010
02-03-98	1215	.10	.040	.86	.39	--	.040	<.01	<.010	.050	.020	.020	<.010
05-28-98	0945	.08	.010	.75	.28	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1350	--	.028	1.1	.45	<.02	<.020	<.01	<.010	.040	<.020	.020	.010
07-28-98	1315	.03	.014	1.1	.33	<.02	<.020	<.01	<.010	.060	<.020	.010	<.010
9-09-98	1330	.03	.034	1.2	.33	<.02	.020	.01	.020	.070	<.020	.010	<.010
11-19-98	1710	.08	.014	--	.37	<.02	<.020	<.01	<.010	.060	.020	<.010	<.010
02-18-99	1530	.07	<.010	.83	.47	<.02	<.020	<.01	<.010	.070	.040	.030	.020
Cross Lake at Hickman's Arm, at Shreveport (site 5)													
02-19-97	1345	.05	0.010	.77	.52	.1	.040	.02	<.010	.040	<.020	.040	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Hickman's Arm, at Shreveport (site 5)--Continued													
06-10-97	1635	E.04	E.032	E.97	E.36	<.02	<.020	<.01	<.010	<.020	<.020	E.020	<.010
07-02-97	1450	.10	.110	.88	.55	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
09-16-97	1315	.04	.025	1.4	.44	<.02	<.020	<.01	<.010	.080	.030	.010	<.010
11-20-97	1445	.10	.016	.78	.36	.1	.070	<.01	<.010	.040	<.020	<.010	<.010
02-03-98	1415	.09	.038	.95	.54	.1	.070	<.01	<.010	.060	.030	.010	<.010
05-28-98	1005	.09	.014	.71	.27	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1420	.02	.023	1.0	.43	<.02	<.020	<.01	<.010	.030	<.020	.010	.010
07-28-98	1345	.02	<.010	1.2	.36	<.02	<.020	<.01	<.010	.030	.050	.020	<.010
09-10-98	0830	.03	.024	.68	.59	<.02	<.020	<.01	<.010	.050	<.020	.010	<.010
11-19-98	1730	.05	.016	.90	.66	<.02	<.020	<.01	<.010	.050	.030	<.010	<.010
02-18-99	1550	.02	<.010	.77	.41	--	.020	<.01	<.010	.070	.040	.030	.020
Cross Lake at Twin Bird Islands, at Shreveport (site 6)													
02-19-97	1710	.06	.011	.78	.56	.1	.040	.01	<.010	.030	<.020	.040	<.010
06-11-97	1345	E.05	E.035	E.97	E.36	<.02	<.020	<.01	<.010	E.020	<.020	E.020	<.010
07-02-97	1715	.03	.031	.83	.42	<.02	.020	<.01	<.010	.030	.020	<.010	<.010
08-19-97	1600	.01	.010	1.2	.22	<.02	<.020	<.01	<.010	.090	.040	.030	<.010
08-19-97	1800	.02	.012	1.3	.24	<.02	<.020	<.01	<.010	.120	.070	.030	<.010
09-16-97	1535	.02	.026	1.3	.47	<.02	<.020	<.01	<.010	.070	.030	.020	<.010
11-20-97	1715	.00	.024	.75	.33	.1	.050	<.01	<.010	.040	<.020	<.010	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Twin Bird Islands, at Shreveport (site 6)--Continued													
02-04-98	0845	.08	.038	.71	.45	.1	.070	<.01	<.010	.060	.020	<.010	<.010
05-28-98	1515	.10	<.010	.76	.31	<.02	<.020	<.01	<.010	.020	<.020	<.010	<.010
06-29-98	1610	--	.028	1.0	.46	<.02	.020	<.01	<.010	.030	<.020	.010	.010
07-28-98	1545	.02	.010	.98	.37	<.02	<.020	<.01	<.010	.060	<.020	<.010	<.010
09-09-98	1600	.04	.026	1.3	<.20	<.02	<.020	<.01	<.010	.090	<.020	.020	<.010
11-20-98	1015	.06	.018	.98	.59	<.02	<.020	<.01	<.010	.050	.030	<.010	<.010
02-19-99	1000	.04	.011	.80	.44	<.02	<.020	<.01	<.010	.060	.030	.030	.020
Cross Lake at Page Bayou Cove, at Shreveport (site 7)													
02-19-97	1428	.06	.038	.88	.50	--	.040	.01	<0.010	.050	<.020	.040	.020
06-11-97	0950	E.07	E.056	E1.0	E.70	--	E.040	E.01	<.010	E.060	<.020	E.020	<.010
07-02-97	1525	.04	.022	.95	.45	<.02	.020	<.01	<.010	.050	<.020	.010	<.010
08-19-97	1640	.01	.012	.71	.41	<.02	<.020	<.01	<.010	.080	.050	.020	<.010
09-16-97	1400	.02	.020	.71	.46	<.02	<.020	<.01	<.010	.030	.030	.010	.010
11-20-97	1545	.08	.010	.65	.53	.1	.120	<.01	<.010	.060	.040	.040	.030
02-03-98	1510	.04	.032	.80	.54	.1	.060	<.01	<.010	.080	.040	.050	.020
05-28-98	1100	.04	<.010	.52	.35	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1450	.02	.013	.68	.39	<.02	<.020	<.01	<.010	.020	<.020	.030	.030
07-28-98	1430	.01	.010	1.2	.77	<.02	<.020	<.01	<.010	.060	.020	.030	.010
09-09-98	1350	.03	.022	1.2	.24	<.02	<.020	<.01	<.010	.080	<.020	.020	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Page Bayou Cove, at Shreveport (site 7)--Continued													
11-20-98	0800	.10	.055	.96	.71	--	.030	<.01	<.010	.080	.040	.030	.010
02-18-99	1635	.01	<.010	.67	.43	<.02	<.020	<.01	<.010	.080	.050	.030	.020
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)													
02-19-97	1530	.04	.030	.66	.51	<.02	.040	.02	<.010	.030	<.020	.040	.010
06-11-97	1030	E.04	E.034	E.87	E.42	<.02	<.020	<.01	<0.010	<.020	<.020	E.020	E.010
07-02-97	1540	.03	.022	.97	.57	<.02	<.020	<.01	<.010	.070	<.020	.030	.010
08-19-97	1645	.01	.014	.60	.51	<.02	<.020	<.01	<.010	.070	.060	<.010	<.010
09-16-97	1420	.01	.014	.71	.55	<.02	<.020	<.01	<.010	.040	.020	<.010	<.010
11-20-97	1600	.04	.020	.58	.44	<.02	<.020	<.01	<.010	.030	<.020	<.010	<.010
02-03-98	1530	.04	.027	.68	.36	.1	.070	<.01	<.010	.060	.030	.030	<.010
05-28-98	1115	.08	<.010	.67	.41	<.02	<.020	<.01	<.010	.020	<.020	<.010	<.010
06-29-98	1505	.04	.022	1.6	.60	<.02	<.020	<.01	<.010	.030	<.020	.020	.020
07-29-98	0800	.05	.030	1.3	.75	<.02	<.020	<.01	<.010	.100	<.020	.030	<.010
09-10-98	0915	.03	.024	1.1	.52	<.02	<.020	<.01	<.010	.060	<.020	.020	<.010
11-20-98	0830	.07	.048	.97	.68	<.02	<.020	.01	<.010	.140	.050	.020	<.010
12-19-99	0824	.03	<.010	.69	.42	<.02	<.020	<.01	<.010	.090	.030	.030	.020
Cross Lake at Fortney Bayou, at Shreveport (site 9)													
02-19-97	1647	.10	.072	.77	.53	.1	.070	.01	<.010	.030	<.020	.020	.010
06-11-97	1300	E.06	E.048	E.83	E.50	<.02	<.020	<.01	<.010	E.030	<.020	E.020	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Fortney Bayou, at Shreveport (site 9)--Continued													
07-02-97	1650	.02	.020	.84	.44	<.02	.030	<.01	<.010	<.020	<.020	.010	<.010
08-19-97	1750	.02	.014	1.1	.34	<.02	<.020	<.01	<.010	.090	.050	.020	<.010
09-16-97	1517	.02	.028	1.3	.48	<.02	.020	<.01	<.010	.070	.040	.010	.010
11-20-97	1700	.08	.035	.66	.41	.1	.080	<.01	<.010	.030	<.020	<.010	<.010
02-04-98	0945	.09	.060	.77	.38	.1	.070	<.01	<.010	.050	.020	.020	<.010
05-28-98	1445	.06	<.010	.89	.31	<.02	<.020	<.01	<.010	.020	<.020	<.010	<.010
06-29-98	1600	.02	.014	1.1	1.3	<.02	<.020	<.01	<.010	.030	.040	.020	.020
07-28-98	1500	.02	<.010	1.6	.56	<.02	<.020	<.01	<.010	.080	<.020	.020	<.010
09-09-98	1530	.05	.022	1.5	.40	<.02	<.020	<.01	<.010	.110	<.020	.030	<.010
11-20-98	0930	.14	.042	1.0	.69	.1	.050	.01	<.010	.070	.050	.020	<.010
02-19-99	0930	.05	.022	.84	.49	<.02	<.020	<.01	<.010	.060	.040	.040	.020
Cross Lake at Goat Island, at Shreveport (site 10)													
02-19-97	1653	.07	.032	.64	.46	--	.040	.01	<.010	.030	<.020	.030	<.010
06-11-97	1110	E.09	E.082	E.82	E.50	--	E.030	<.01	<.010	E.050	<.020	E.020	<.010
07-02-97	1630	.03	.031	.85	.78	<.02	.020	<.01	<.010	.030	<.020	<.010	<.010
08-19-97	1740	.02	.018	.99	.43	<.02	<.020	<.01	<.010	.110	.060	.020	.010
09-16-97	1500	.05	.032	1.3	.38	<.02	<.020	<.01	<.010	.080	.020	.010	<.010
11-20-97	1620	.04	.018	.51	.38	<.02	<.020	<.01	<.010	.020	<.020	<.010	<.010
02-04-98	0930	.03	.024	.76	.42	<.02	<.020	<.01	<.010	.040	.030	.020	<.010

Table 5. Concentrations of nutrients in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. mg/L, milligrams per liter; <, actual value is known to be less than the value shown; E, estimated value]

Date	Time	Nitrogen, ammonia, total (mg/l as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, ammonia + organic, total (mg/L as N)	Nitrogen, ammonia + organic, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, total (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, nitrite total (mg/L as N)	Nitrogen, nitrite dissolved (mg/L as N)	Phosphorus, total (mg/L as P)	Phosphorus, dissolved (mg/L as P)	Phosphorus, ortho, total (mg/L as P)	Phosphorus, ortho, dissolved (mg/L as P)
Cross Lake at Goat Island, at Shreveport (site 10)--Continued													
05-28-98	1400	.07	<.010	.70	.35	<.02	<.020	<.01	<.010	<.020	<.020	<.010	<.010
06-29-98	1545	.07	.310	.78	.68	<.02	.410	<.01	.220	.030	<.020	.030	.020
07-29-98	0840	.13	.018	3.5	.71	<.02	<.020	<.01	<.010	.410	.020	.080	<.010
09-10-98	1030	.07	.028	1.2	.48	<.02	<.020	<.01	<.010	.200	<.020	.010	<.010
11-20-98	0910	.10	<.010	1.0	.64	2.00	.020	<.01	<.010	.050	.020	.040	.010
02-19-99	0950	.02	.014	.78	.43	<.02	<.020	<.01	<.010	.070	.040	.040	.020

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. µg/L, micrograms per liter; <, actual value is known to be less than the value shown; --, no data]

Date	Time	Arsenic, total (µg/L as As)	Arsenic, dissolved (µg/L as As)	Beryllium, total (µg/L as Be)	Beryllium, dissolved (µg/L as Be)	Cadmium, total (µg/L as Cd)	Cadmium, dissolved (µg/L as Cd)	Chromium, total (µg/L as Cr	Chromium, dissolved (µg/L as Cr)	Copper, total (µg/L as Cu)	Copper, dissolved (µg/L as Cu)	Iron, total (µg/L as Fe)	Iron, dissolved (µg/L as Fe)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)													
06-10-97	1350	<1	1.3	<0.50	<0.50	<1.00	<1.00	<1	<1.0	8.0	6.3	310	120
02-03-98	1125	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	3.4	2.9	520	80
05-28-98	0845	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	4.0	2.0	280	--
11-19-98	1540	<1	1.0	<.50	<.50	<1.00	<1.00	<1	3.6	1.8	1.8	120	--
Cross Lake at Willow Point, at Shreveport (site 2)													
06-10-97	1430	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	8.5	6.4	230	80
02-03-98	1145	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	3.2	4.8	630	100
05-28-98	0905	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.7	1.8	270	--
11-19-98	1605	<1	1.3	<.50	<.50	<1.00	<1.00	<1	<1.0	1.4	1.2	110	--
Cross Lake at Hatcher's Arm, at Shreveport (site 3)													
06-10-97	1300	1	1.3	<.50	<.50	<1.00	<1.00	<1	<1.0	5.4	3.6	380	120
02-03-98	1045	1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	11.0	2.5	1,200	170
05-28-98	0815	1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	3.2	1.6	440	10
11-19-98	1030	<1	1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	<1.0	290	--

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Lead, total (µg/L as Pb)	Lead, dissolved (µg/L as Pb)	Manga-nese, total (µg/L as Mn)	Manga-nese, dissolved (µg/L as Mn)	Mercury, total recov-erable (µg/L as Hg)	Mercury, dissolved (µg/L as Hg)	Nickel, total (µg/L as Ni)	Nickel, dissolved (µg/L as Ni)	Selenium, total (µg/L as Se)	Selenium, dissolved (µg/L as Se)	Zinc,total (µg/L as Zn)	Zinc, dissolved (µg/L as Zn)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)--Continued													
06-10-97	1350	<1	<1.0	360	7.2	<.10	<.10	<1	1.2	<1.0	<1.0	<1	3
02-03-98	1125	<1	<1.0	69	8.7	--	<.10	2	1.3	<1.0	<1.0	3	<1
05-28-98	0845	<1	<1.0	190	.8	<.10	<.10	1	<1.00	<1.0	<1.0	3	<1
11-19-98	1540	<1	<1.0	120	.4	<.10	<.10	<1	<1.00	<1.0	<1.0	11	7
Cross Lake at Willow Point, at Shreveport (site 2)--Continued													
06-10-97	1430	<1	<1.0	150	4.2	<.10	<.10	<1	1.60	<1.0	<1.0	<1	1
02-03-98	1145	<1	<1.0	68	11.0	<.10	<.10	2	2.40	<1.0	<1.0	3	1
05-28-98	0905	<1	<1.0	190	1.0	<.10	<.10	1	<1.00	<1.0	<1.0	4	<1
11-19-98	1605	<1	<1.0	110	.2	<.10	<.10	1	<1.00	<1.0	<1.0	3	3
Cross Lake at Hatcher's Arm, at Shreveport (site 3)--Continued													
06-10-97	1300	<1	<1.0	160	7.1	<.10	<.10	<1	1.90	<1.0	<1.0	1	<1
02-03-98	1045	2	<1.0	130	60.0	--	<.10	4	2.20	<1.0	<1.0	8	3
05-28-98	0815	1	<1.0	320	1.0	<.10	<.10	2	<1.00	<1.0	<1.0	6	1
11-19-98	1030	<1	<1.0	150	2.7	<.10	<.10	1	<1.00	<1.0	<1.0	8	2

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Arsenic, total (µg/L as As)	Arsenic, dissolved (µg/L as As)	Beryllium, total (µg/L as Be)	Beryllium, dissolved (µg/L as Be)	Cadmium, total (µg/L as Cd)	Cadmium, dissolved (µg/L as Cd)	Chromium, total (µg/L as Cr	Chromium, dissolved (µg/L as Cr)	Copper, total (µg/L as Cu)	Copper, dissolved (µg/L as Cu)	Iron, total (µg/L as Fe)	Iron, dissolved (µg/L as Fe)
Cross Lake at Johnson's Arm, at Shreveport (site 4)													
06-10-97	1620	1	1.4	<.50	<.50	<1.00	<1.00	<1	<1.0	2.9	2.2	510	220
02-03-98	1215	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	2.3	690	150
05-28-98	0945	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	<1.0	330	10
09-09-98	1330	<1	1.1	<.50	<.50	<1.00	<1.00	<1	<1.0	1.3	<1.0	380	60
11-19-98	1710	<1	1.1	<.50	<.50	<1.00	<1.00	<1	<1.0	1.3	<1.0	380	60
Cross Lake at Hickman's Arm, at Shreveport (site 5)													
06-10-97	1635	<1	1.3	<.50	<.50	<1.00	<1.00	<1	<1.0	4.0	2.5	430	170
02-03-98	1415	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	2.1	760	150
05-28-98	1005	<1	1.1	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	<1.0	410	10
11-19-98	1730	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	3.6	<1.0	460	70
Cross Lake at Twin Bird Islands, at Shreveport (site 6)													
06-11-97	1345	<1	1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.9	2.4	470	190
02-04-98	0845	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.9	--	830	170
05-28-98	1515	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	2.0	1.3	260	10
11-20-98	1015	<1	<1.0	<.50	<.50	<1.00	<1.00	1	<1.0	2.1	<1.0	530	70

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Lead, total (µg/L as Pb)	Lead, dissolved (µg/L as Pb)	Manga-nese, total (µg/L as Mn)	Manga-nese, dissolved (µg/L as Mn)	Mercury, total recov-erable (µg/L as Hg)	Mercury, dissolved (µg/L as Hg)	Nickel, total (µg/L as Ni)	Nickel, dissolved (µg/L as Ni)	Selenium, total (µg/L as Se)	Selenium, dissolved (µg/L as Se)	Zinc,total (µg/L as Zn)	Zinc, dissolved (µg/L as Zn)
Cross Lake at Johnson's Arm, at Shreveport (site 4)--Continued													
06-10-97	1620	<1	<1.00	180	22.0	<.10	<.10	<1	<1.00	<1.0	<1.0	<1	<1
02-03-98	1215	<1	<1.00	73	33.0	<.10	<.10	2	<1.00	<1.0	<1.0	4	1
05-28-98	0945	<1	3.00	150	.7	<.10	<.10	1	<1.00	<1.0	<1.0	3	<1
09-09-98	1330	2	<1.00	80	1.5	<.10	<.10	1	<1.00	<1.0	<1.0	3	3
11-19-98	1710	2	<1.00	80	1.5	<.10	<.10	1	<1.00	<1.0	<1.0	3	3
Cross Lake at Hickman's Arm, at Shreveport (site 5)--Continued													
06-10-97	1635	2	<1.00	150	7.1	.10	<.10	<1	1.60	<1.0	<1.0	7	<1
02-03-98	1415	<1	<1.00	110	57.0	<.10	<.10	2	<1.00	<1.0	<1.0	4	1
05-28-98	1005	3	<1.00	240	1.0	<.10	<.10	2	<1.00	<1.0	<1.0	4	<1
11-19-98	1730	<1	<1.00	81	2.6	<.10	<.10	1	<1.00	<1.0	<1.0	6	3
Cross Lake at Twin Bird Island, at Shreveport (site 6)--Continued													
06-11-97	1345	<1	<1.00	190	26.0	.10	.10	<1	1.00	<1.0	<1.0	<1	<1
02-04-98	0845	<1	<1.00	100	37.0	<.10	<.10	2	1.60	<1.0	<1.0	4	1
05-28-98	1515	<1	<1.00	150	.5	<.10	<.10	<1	<1.00	<1.0	<1.0	3	2
11-20-98	1015	<1	<1.00	100	1.5	<.10	<.10	2	1.10	<1.0	<1.0	2	<1

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Arsenic, total (µg/L as As)	Arsenic, dissolved (µg/L as As)	Beryllium, total (µg/L as Be)	Beryllium, dissolved (µg/L as Be)	Cadmium, total (µg/L as Cd)	Cadmium, dissolved (µg/L as Cd)	Chromium, total (µg/L as Cr	Chromium, dissolved (µg/L as Cr)	Copper, total (µg/L as Cu)	Copper, dissolved (µg/L as Cu)	Iron, total (µg/L as Fe)	Iron, dissolved (µg/L as Fe)
Cross Lake at Page Bayou Cove, at Shreveport (site 7)													
06-11-97	0950	<1	1.4	<.50	<.50	<1.00	<1.00	<1	<1.0	2.3	1.5	600	190
02-03-98	1510	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	1.3	2.7	1.3	990	270
05-28-98	1100	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.3	<1.0	280	60
11-20-98	0800	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.7	1.1	820	230
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)													
06-11-97	1030	<1	1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.8	1.0	830	230
02-03-98	1530	<1	<1.0	<.50	<.50	<1.00	<1.00	1	<1.0	2.4	3.4	1,100	160
05-28-98	1115	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	<1.0	<1.0	480	90
11-20-98	0830	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.8	1.1	1,400	590
Cross Lake at Fortney Bayou, at Shreveport (site 9)													
06-11-97	1300	1	1.2	<.50	<.50	<1.00	<1.00	<1	<1.0	1.5	1.0	690	240
02-04-98	0945	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.6	1.2	850	150
05-28-98	1445	<1	<1.0	<.50	<.50	<1.00	<1.00	8	8.1	1.8	<1.0	410	20
11-20-98	0930	<1	<1.0	<.50	<.50	<1.00	<1.00	2	<1.0	1.6	1.5	830	250

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Lead, total (µg/L as Pb)	Lead, dissolved (µg/L as Pb)	Manganese, total (µg/L as Mn)	Manganese, dissolved (µg/L as Mn)	Mercury, total recoverable (µg/L as Hg)	Mercury, dissolved (µg/L as Hg)	Nickel, total (µg/L as Ni)	Nickel, dissolved (µg/L as Ni)	Selenium, total (µg/L as Se)	Selenium, dissolved (µg/L as Se)	Zinc,total (µg/L as Zn)	Zinc, dissolved (µg/L as Zn)
Cross Lake at Page Bayou Cove, at Shreveport (site 7)--Continued													
96-11-97	0950	1	<1.00	140	16.0	.10	<.10	<1	<1.00	<1.0	<1.0	2	<1
02-03-98	1510	<1	<1.00	65	51.0	<.10	<.10	3	2.40	<1.0	<1.0	5	3
05-28-98	1100	<1	<1.00	77	15.0	<.10	<.10	2	1.00	<1.0	1.0	3	<1
11-20-98	0800	<1	<1.00	220	200	<.10	<.10	2	1.20	<1.0	<1.0	5	--
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)--Continued													
06-11-97	1030	<1	<1.00	290	190	<.10	<.10	<1	1.40	<1.0	<1.0	1	<1
02-03-98	1530	1	<1.00	120	110	<.10	<.10	4	3.20	<1.0	<1.0	6	3
05-28-98	1115	<1	<1.00	160	34.0	<.10	<.10	<1	<1.00	<1.0	<1.0	2	1
11-20-98	0830	<1	<1.00	240	170	<.10	<.10	3	1.80	<1.0	<1.0	8	4
Cross Lake at Fortney Bayou, at Shreveport (site 9)--Continued													
06-11-97	1300	<1	<1.00	210	41.0	<.10	<.10	<1	1.60	<1.0	<1.0	2	<1
02-04-98	0945	<1	<1.00	130	95.0	<.10	<.10	2	2.30	<1.0	<1.0	3	<1
05-28-98	1445	<1	<1.00	190	6.1	<.10	<.10	1	<1.00	<1.0	1.0	2	<1
11-20-98	0930	<1	<1.00	53	35.0	<.10	<.10	3	1.60	<1.0	<1.0	3	2

Table 6. Concentrations of minor elements in water from sites at Cross Lake, Caddo Parish, Louisiana, 1997-99--Continued

Date	Time	Arsenic, total (µg/L as As)	Arsenic, dissolved (µg/L as As)	Beryllium, total (µg/L as Be)	Beryllium, dissolved (µg/L as Be)	Cadmium, total (µg/L as Cd)	Cadmium, dissolved (µg/L as Cd)	Chromium, total (µg/L as Cr	Chromium, dissolved (µg/L as Cr)	Copper, total (µg/L as Cu)	Copper, dissolved (µg/L as Cu)	Iron, total (µg/L as Fe)	Iron, dissolved (µg/L as Fe)
Cross Lake at Goat Island, at Shreveport (site 10)													
06-11-97	1110	<1	1.3	<.50	<.50	<1.00	<1.00	<1	<1.0	2.6	<1.0	680	150
02-04-98	0930	<1	<1.0	<.50	<.50	<1.00	<1.00	<1	<1.0	1.1	1.6	920	170
05-28-98	1400	<1	1.2	<.50	<.50	<1.00	<1.00	<1	<1.0	1.2	<1.0	350	70
11-20-98	0910	<1	<1.0	<.50	<.50	<1.00	<1.00	2	<1.0	2.2	1.0	1,100	370

Date	Time	Lead, total (µg/L as Pb)	Lead, dissolved (µg/L as Pb)	Manga-nese, total (µg/L as Mn)	Manga-nese, dissolved (µg/L as Mn)	Mercury, total recov-erable (µg/L as Hg)	Mercury, dissolved (µg/L as Hg)	Nickel, total (µg/L as Ni)	Nickel, dissolved (µg/L as Ni)	Selenium, total (µg/L as Se)	Selenium, dissolved (µg/L as Se)	Zinc,total (µg/L as Zn)	Zinc, dissolved (µg/L as Zn)
Cross Lake at Goat Island, at Shreveport (site 10)--Continued													
06-11-97	1110	<1	<1.00	180	80.0	<.1	<.10	<1	<1.00	<1.0	<1.0	2	2
02-04-98	0930	<1	<1.00	90	84.0	.1	.10	3	2.40	<1.0	<1.0	3	2
05-28-98	1400	<1	<1.00	74	14.0	<.1	<.10	<1	<1.00	<1.0	<1.0	3	1
11-20-98	0910	<1	<1.00	190	160	<.1	<.10	4	1.30	<1.0	<1.0	4	3

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999

[All sites are in Louisiana. Site numbers are the map numbers shown in figure 3. g/kg, grams per kilogram; µg/L, micrograms per liter; mg/L, milligrams per liter; <, actual value is known to be less than the value shown; --, no data; E, estimated value]

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)												
02-19-97	1135	--	--	0.7	<0.1	--	11	--	--	--	--	--
06-10-97	1350	--	--	6.4	.3	98	--	<0.01	<0.01	0.05	<0.010	<.1
08-19-97	1440	--	--	31.0	1.0	--	13	--	--	--	--	--
09-16-97	1135	<0.1	22	--	--	--	--	--	--	--	--	--
02-03-98	1125	--	--	11.0	<.1	7.0	9.2	--	--	--	--	--
05-28-98	0845	--	--	10.0	.7	7.3	7.1	<.01	<.01	<.01	<.010	<.1
09-09-98	1045	--	--	35.0	2.6	6.7	11	--	--	--	--	--
11-19-98	1540	--	--	15.0	E.5	6.4	8.4	<.01	<.01	.01	<.010	<.1
02-18-99	1425	--	--	7.2	.5	8.7	11	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)--Continued												
02-19-97	1135	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1350	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	.01
08-19-97	1440	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1135	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1125	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	0845	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1045	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1540	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-18-99	1425	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)--Continued												
02-19-97	1135	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1350	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1440	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1135	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1125	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0845	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1045	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1540	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-18-99	1425	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)--Continued													
02-19-97	1135	--	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1350	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1440	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1135	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1125	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0845	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1045	--	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1540	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-18-99	1425	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, --Continued

;

<, actual value is known to be less than the value shown; --, no data; E, estimated value]

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Willow Point, at Shreveport (site 2)--Continued												
02-19-97	1155	--	--	1.1	<.1	--	12	--	--	--	--	--
06-10-97	1430	--	--	10.0	.5	93	12	<.01	<.01	.04	<.010	<.1
08-19-97	1830	--	--	32.0	.9	8.5	12	--	--	--	--	--
09-16-97	1600	<.1	25	--	--	--	--	--	--	--	--	--
02-03-98	1145	--	--	14.0	E.4	16	9.5	--	--	--	--	--
05-28-98	0905	--	--	17.0	.8	6.5	6.8	<.01	<.01	<.01	<.010	<.1
09-09-98	1130	--	--	39.0	2.5	7.2	11	--	--	--	--	--
11-19-98	1605	--	--	16.0	E.2	6.6	9.0	<.01	<.01	.01	<.010	<.1
02-18-99	1500	--	--	8.6	.6	8.7	12	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Willow Point, at Shreveport (site 2)--Continued												
02-19-97	1155	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1430	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
08-19-97	1830	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1600	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1145	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	0905	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1130	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1605	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-18-99	1500	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Willow Point, at Shreveport (site 2)--Continued												
02-19-97	1155	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1430	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1830	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1600	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1145	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0905	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
9-09-98	1130	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1605	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-18-99	1500	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
					Cross Lake at Willow Point, at Shreveport (site 2)--Continued								
02-19-97	1155	--	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1430	<1	<.01	<.01	<.010	<.010	<.010	<.010	<.1	<.1	<.02	<.01	<.01
08-19-97	1830	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1600	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1145	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0905	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
9-09-98	1130	--	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1605	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-18-99	1500	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999 --Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
					Cross Lake at Hatcher's Arm, at Shreveport (site 3)							
02-19-97	1039	--	--	E.4	<.1	--	13	--	--	--	--	--
06-10-97	1300	--	--	13.0	.6	90	--	<.01	<.01	.05	<.010	<.1
08-19-97	1400	--	--	32.0	.8	8.2	11	--	--	--	--	--
09-16-97	1045	<.1	6.5	--	--	--	--	--	--	--	--	--
02-03-98	1045	--	--	3.2	<.1	10	14	--	--	--	--	--
05-28-98	0815	--	--	15.0	.6	7.2	7.5	<.01	<.01	<.01	<.010	<.1
09-09-98	1000	--	--	49.0	3.0	7.5	16	--	--	--	--	--
11-19-98	1030	--	--	18.0	E.5	6.8	8.9	<.01	<.01	<.01	<.010	<.1
02-18-99	1345	--	--	5.3	.3	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)--Continued												
02-19-97	1039	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1300	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	<.1	--	--
08-19-97	1400	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1045	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1045	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	0815	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1000	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1030	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-18-99	1345	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)--Continued												
02-19-97	1039	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1300	<.010	--	<.010	<.010	--	--	<.010	<.010	<.010	--	<.01
08-19-97	1400	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1045	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1045	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0815	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1000	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1030	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-18-99	1345	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)--Continued													
02-19-97	1039	--	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1300	<1	--	<.01	<.010	<.010	<.010	--	<.1	<.1	--	<.01	--
08-19-97	1400	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1045	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1045	--	--	--	--	--	--	--	--	--	--	--	--
5-28-98	0815	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1000	--	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1030	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-18-99	1345	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Johnson's Arm, at Shreveport (site 4)												
02-19-97	1318	--	--	2.9	.1	--	12	--	--	--	--	--
06-10-97	1620	--	--	9.0	.3	19	--	<.01	<.01	.08	<.010	<.1
08-19-97	1515	--	--	25.0	.5	9.1	9.8	--	--	--	--	--
09-16-97	1300	<.1	11	--	--	--	--	--	--	--	--	--
02-03-98	1215	--	--	7.6	<.1	11	9.7	--	--	--	--	--
05-28-98	0945	--	--	19.0	.6	7.5	7.5	<.01	<.01	<.01	<.010	<.1
09-09-98	1330	--	--	34.0	1.0	8.7	14	--	--	--	--	--
11-19-98	1710	--	--	11.0	E.2	7.9	10	<.01	<.01	.01	<.010	<.1
02-18-99	1530	--	--	5.7	.2	9.3	11	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Johnson's Arm, at Shreveport (site 4)--Continued												
02-19-97	1318	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1620	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	.01
08-19-97	1515	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1300	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1215	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	0945	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1330	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1710	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	E.01
02-18-99	1530	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Johnson's Arm, at Shreveport (site 4)--Continued												
02-19-97	1318	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1620	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1515	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1300	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1215	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0945	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1330	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1710	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-18-99	1530	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
					Cross Lake at Johnson's Arm, at Shreveport (site 4)--Continued								
02-19-97	1318	--	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1620	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1515	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1300	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1215	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	0945	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1330	--	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1710	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-18-99	1530	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999 --Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Hickman's Arm, at Shreveport (site 5)												
02-19-97	1345	--	--	E.3	<.1	--	15	--	--	--	--	--
06-10-97	1635	--	--	9.4	.1	130	--	<.01	<.01	.05	<.010	<.1
08-19-97	1600	--	--	46.0	1.7	8.6	8.8	--	--	--	--	--
09-16-97	1315	<.1	24	--	--	--	--	--	--	--	--	--
02-03-98	1415	--	--	11.0	<.1	8.7	11	--	--	--	--	--
05-28-98	1005	--	--	24.0	1.1	7.0	7.5	<.01	<.01	<.01	<.010	<.1
09-10-98	0830	--	--	38.0	5.4	9.2	13	--	--	--	--	--
11-19-98	1730	--	--	13.0	.7	8.4	11	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Hickman's Arm, at Shreveport (site 5)--Continued												
02-19-97	1345	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1635	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
08-19-97	1600	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1315	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1415	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	1005	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-10-98	0830	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1730	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Hickman's Arm, at Shreveport (site 5)--Continued												
02-19-97	1345	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1635	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1600	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1315	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1415	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1005	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-10-98	0830	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1730	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Hickman's Arm, at Shreveport (site 5)--Continued													
02-19-97	1345	--	--	--	--	--	--	--	--	--	--	--	--
06-10-97	1635	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1600	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1315	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1415	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1005	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-10-98	0830	--	--	--	--	--	--	--	--	--	--	--	--
11-19-98	1730	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
					Cross Lake at Twin Bird Island, at Shreveport (site 6)							
02-19-97	1710	--	--	.6	<.1	--	15	--	--	--	--	--
06-11-97	1345	--	--	8.6	.3	240	--	<.01	<.01	.05	<.010	<.1
08-19-97	1800	--	--	26.0	.6	8.7	14	--	--	--	--	--
09-16-97	1535	<.1	1.8	--	--	--	--	--	--	--	--	--
02-04-98	0845	--	--	4.3	E.1	9.4	12	--	--	--	--	--
05-28-98	1515	--	--	21.0	1.0	6.8	7.7	<.01	<.01	<.01	<.010	<.1
09-09-98	1600	--	--	44.0	2.1	8.5	14	--	--	--	--	--
11-20-98	1015	--	--	15.0	.5	8.9	12	<.01	<.01	.01	<.010	<.1
02-19-99	1000	--	--	10.0	.5	9.2	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Twin Bird Island, at Shreveport, La. (site 6)--Continued												
02-19-97	1710	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1345	--	--	--	--	--	--	--	<.01	<.1	<.01	.01
08-19-97	1800	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1535	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0845	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	1515	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1600	--	--	--	--	--	--	--	--	--	--	--
11-20-98	1015	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-19-99	1000	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Twin Bird Island, at Shreveport, La. (site 6)--Continued												
02-19-97	1710	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1345	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1800	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1535	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0845	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1515	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1600	--	--	--	--	--	--	--	--	--	--	--
11-20-98	1015	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-19-99	1000	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Twin Bird Island, at Shreveport, La. (site 6)--Continued													
02-19-97	1710	--	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1345	<1	<.01	<.010	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1800	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1535	--	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0845	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1515	<1	<.01	<.010	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1600	--	--	--	--	--	--	--	--	--	--	--	--
11-20-98	1015	<1	<.01	<.010	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-19-99	1000	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Page Bayou Cove, at Shreveport, La. (site 7)												
02-19-97	1428	--	--	<.1	<.1	--	15	--	--	--	--	--
06-11-97	0950	--	--	11.0	.4	53	13	--	--	--	--	--
08-19-97	1640	--	--	11.0	.6	9.0	12	--	--	--	--	--
09-16-97	1400	<.1	63	--	--	--	--	--	--	--	--	--
02-03-98	1510	--	--	2.1	<.1	12	14	--	--	--	--	--
05-28-98	1100	--	--	6.4	.2	8.0	7.2	<.01	<.01	<.01	<.010	<.1
09-09-98	1350	--	--	44.0	1.4	8.2	15	--	--	--	--	--
11-20-98	0800	--	--	3.9	.1	11	14	<.01	<.01	.05	<.010	<.1

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Page Bayou Cove, at Shreveport, La. (site 7)--Continued												
02-19-97	1428	--	--	--	--	--	--	--	--	--	--	--
06-11-97	0950	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
08-19-97	1640	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1400	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1510	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	1100	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1350	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0800	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	.01

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Page Bayou Cove, at Shreveport, La. (site 7)--Continued												
02-19-97	1428	--	--	--	--	--	--	--	--	--	--	--
06-11-97	0950	--	--	--	--	--	--	--	--	--	--	--
8-19-97	1640	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1400	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1510	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1100	<.01	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1350	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0800	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Page Bayou Cove, at Shreveport, La. (site 7)--Continued													
02-19-97	1428	--	--	--	--	--	--	--	--	--	--	--	--
06-11-97	0950	--	--	--	--	--	--	--	--	--	--	--	--
08-19-97	1640	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1400	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1510	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1100	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1350	--	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0800	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Cross Bayou Cove, at Shreveport, La. (site 8)												
02-19-97	1530	--	--	E.2	<.1	--	14	--	--	--	--	--
06-11-97	1030	--	--	18.0	.9	150	13	<.01	<.01	.03	<.010	<.1
08-19-97	1645	--	--	5.0	.5	11	12	--	--	--	--	--
09-16-97	1420	<.1	140	--	--	--	--	--	--	--	--	--
02-03-98	1530	--	--	1.5	<.1	--	18	--	--	--	--	--
05-28-98	1115	--	--	5.2	<.1	9.9	9.9	<.01	<.01	<.010	<.010	<.1
09-10-98	0915	--	--	30.0	E.5	9.6	14	--	--	--	--	--
11-20-98	0830	--	--	1.6	<.1	14	15	<.01	<.01	<.010	<.010	<.1
02-19-99	0824	--	--	1.0	<.1	9.9	12	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Cross Bayou Cove, at Shreveport, La. (site 8)--Continued												
02-19-97	1530	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1030	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
08-19-97	1645	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1420	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1530	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1115	<.1	<.1	<.1	<.1	<.1	--	<.1	<.01	<.1	<.01	<.01
09-10-98	0915	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0830	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-19-99	0824	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Cross Bayou Cove, at Shreveport, La. (site 8)--Continued												
02-19-97	1530	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1030	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1645	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1420	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1530	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1115	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-10-98	0915	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0830	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-19-99	0824	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Cross Bayou Cove, at Shreveport, La. (site 8)--Continued													
02-19-97	1530	--	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1030	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1645	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1420	--	--	--	--	--	--	--	--	--	--	--	--
02-03-98	1530	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1115	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-10-98	0915	--	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0830	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-19-99	0824	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Fortney Bayou, at Shreveport, La. (site 9)												
02-19-97	1647	--	--	.5	<.1	--	14	--	--	--	--	--
06-11-97	1300	--	--	15.0	.6	86	13	<.01	<.01	.04	<.010	<.1
08-19-97	1750	--	--	13.0	.3	8.1	9.8	--	--	--	--	--
09-16-97	1517	<.1	22	--	--	--	--	--	--	--	--	--
02-04-98	0945	--	--	3.4	<.1	13	11	--	--	--	--	--
05-28-98	1445	--	--	26.0	.8	7.4	8.8	<.01	<.01	<.01	<.010	<.1
09-09-98	1530	--	--	50.0	1.0	10	17	--	--	--	--	--
11-20-98	0930	--	--	12.0	E.1	13	16	<.01	<.01	<.01	<.010	<.1
02-19-99	0930	--	--	3.4	.2	9.7	11	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Fortney Bayou, at Shreveport, La. (site 9)--Continued												
02-19-97	1647	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1300	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	.01
08-19-97	1750	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1517	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0945	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	1445	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-09-98	1530	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0930	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-19-99	0930	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Fortney Bayou, at Shreveport, La. (site 9)--Continued												
02-19-97	1647	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1300	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1750	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1517	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0945	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1445	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-09-98	1530	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0930	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-19-99	0930	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Fortney Bayou, at Shreveport, La. (site 9)--Continued													
02-19-97	1647	--	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1300	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1750	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1517	--	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0945	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1445	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-09-98	1530	--	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0930	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-19-99	0930	--	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites on Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999—Continued

<, actual value is known to be less than the value shown; --, no data; E, estimated value]

Date	Time	Carbon, inorganic, bottom material (g/kg as C)	Carbon, total, bottom material (g/kg as C)	Chlorophyll *a*, phytoplankton, chromatographic (µg/L)	Chlorophyll *b*, phytoplankton, chromatographic (µg/L)	Carbon, organic, dissolved (mg/L as C)	Carbon, organic, total (mg/L as C)	2,4-DP, total (µg/L)	2,4,5-T, total (µg/L)	2,4-D, total (µg/L)	Aldrin, total (µg/L)	PCB, total (µg/L)
Cross Lake at Goat Island, at Shreveport, La. (site 10)												
02-19-97	1653	--	--	E.3	<.1	--	15	--	--	--	--	--
06-11-97	1110	--	--	13.0	1.1	110	12	<.01	<.01	.03	<.010	<.1
08-19-97	1740	--	--	18.0	.4	8.5	9.7	--	--	--	--	--
09-16-97	1500	<.1	50	--	--	--	--	--	--	--	--	--
02-04-98	0930	--	--	2.3	.1	8.7	9.5	--	--	--	--	--
05-28-98	1400	--	--	7.8	.6	8.7	8.3	<.01	<.01	<.01	<.010	<.1
09-10-98	1030	--	--	11.0	1.2	9.5	12	--	--	--	--	--
11-20-98	0910	--	--	1.8	<.1	13	13	<.01	<.01	<.01	<.010	<.1
02-19-99	0950	--	--	3.0	.1	10	11	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Aroclor, 1016 PCB, total (µg/L)	Aroclor, 1221 PCB, total (µg/L)	Aroclor, 1232 PCB, total (µg/L)	Aroclor, 1242 PCB, total (µg/L)	Aroclor, 1248 PCB, total (µg/L)	Aroclor, 1254 PCB, total (µg/L)	Aroclor, 1260 PCB, total (µg/L)	Chlorpyrifos, total recoverable (µg/L)	Chlordane, total (µg/L)	DEF, total (µg/L)	Diazinon, total (µg/L)
Cross Lake at Goat Island, at Shreveport, La. (site 10)--Continued												
02-19-97	1653	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1110	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
08-19-97	1740	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1500	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0930	<.1	<.1	<.1	<.1	<.1	<.1	<.1	--	--	--	--
05-28-98	1400	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
09-10-98	1030	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0910	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.01	<.1	<.01	<.01
02-19-99	0950	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Dieldrin, total (µg/L)	Disulfoton, unfiltered (µg/L)	Endosulfan I, total (µg/L)	Endrin, unfiltered, water recover-able (µg/L)	Ethion, total (µg/L)	Fonofos (dyfonate), (µg/L)	Heptachlor epoxide, total (µg/L)	Heptachlor, total (µg/L)	Lindane, total (µg/L)	Malathion, total (µg/L)	Methoxychlor, total (µg/L)
Cross Lake at Goat Island, at Shreveport, La. (site 10)--Continued												
02-19-97	1653	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1110	<.010	--	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
08-19-97	1740	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1500	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0930	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1400	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.01	<.01
09-10-98	1030	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0910	<.010	<.01	<.010	<.010	<.01	<.01	<.010	<.010	<.010	<.02	<.01
02-19-99	0950	--	--	--	--	--	--	--	--	--	--	--

Table 8. Concentrations of organic chemical constitutents in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Toxaphene, total (µg/L)	Methyl parathion, total (µg/L)	Mirex, total (µg/L)	P,P'-DDD, unfiltered recover-able (µg/L)	P,P'-DDE, total (µg/L)	P,P'-DDT, unfiltered (µg/L)	Parathion, total (µg/L)	PCN, total (µg/L)	Perthane, total (µg/L)	Phorate, total (µg/L)	Silvex, total (µg/L)	Carbopheno-thion, water, unfiltered, total (µg/L)
Cross Lake at Goat Island, at Shreveport, La. (site 10)--Continued													
02-19-97	1653	--	--	--	--	--	--	--	--	--	--	--	--
06-11-97	1110	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.02	<.01	<.01
08-19-97	1740	--	--	--	--	--	--	--	--	--	--	--	--
09-16-97	1500	--	--	--	--	--	--	--	--	--	--	--	--
02-04-98	0930	--	--	--	--	--	--	--	--	--	--	--	--
05-28-98	1400	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
09-10-98	1030	--	--	--	--	--	--	--	--	--	--	--	--
11-20-98	0910	<1	<.01	<.01	<.010	<.010	<.010	<.01	<.1	<.1	<.01	<.01	<.01
02-19-99	0950	--	--	--	--	--	--	--	--	--	--	--	--

Table 10. Fecal coliform and fecal streptococcus bacteria concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999

[K, results based on colony count outside the acceptance range (non-ideal colony count); <, actual value is known to be less than the value shown; --, no data]

Date	Time	Bacteria	
		Fecal coliform (colonies per 100 milliliters)	Fecal streptococcus (colonies per 100 milliliters)
Cross Lake Spillway on Cross Lake, at Shreveport (site 1)			
2-19-97	1135	68	130
6-10-97	1350	K13	K5
7- 2-97	1245	K18	K4
8-19-97	1440	K1	<2
9-16-97	1135	K8	K9
11-20-97	1340	K10	K4
2- 3-98	1125	150	330
2 -6-98	0915	K19	27
5-28-98	0845	<4	K12
6-29-98	1300	K1	<1
7-28-98	1040	K6	K4
9- 9-98	1045	--	K4
11-19-98	1540	K20	K2
2-18-99	1425	K8	K3
Cross Lake at Willow Point, at Shreveport (site 2)			
2-19-97	1155	80	83
6-10-97	1430	<2	<1
7- 2-97	1410	K5	K3
8-19-97	1830	K4	K3
9-16-97	1600	K3	<1
11-20-97	1400	K4	<1
2- 3-98	1145	60	K12
2- 6-98	0910	K28	35
5-28-98	0905	K4	K4
6-29-98	1315	K4	K1
7-28-98	1110	K2	K1
9- 9-98	1130	--	K8
11-19-98	1605	K11	K1
2-18-99	1500	K7	K3

Table 10. Fecal coliform and fecal streptococcus bacteria concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Bacteria	
		Fecal coliform (colonies per 100 milliliters)	Fecal streptococcus (colonies per 100 milliliters)
Cross Lake at Hatcher's Arm, at Shreveport (site 3)			
2-19-97	1039	67	120
6-10-97	1300	32	46
7- 2-97	1225	28	K7
8-19-97	1400	<46	<13
9-16-97	1045	24	K20
11-20-97	1105	K28	K5
2- 3-98	1045	K580	K1,700
2- 6-98	0900	33	26
5-28-98	0815	K16	K24
6-29-98	1235	27	K5
7-28-98	1020	K4	K2
9- 9-98	1000	--	K10
11-19-98	1030	47	K32
2-18-99	1345	K24	K7
Cross Lake at Johnson's Arm, at Shreveport (site 4)			
2-19-97	1318	78	150
6-10-97	1620	K20	K13
7- 2-97	1350	K15	K1
8-19-97	1515	K2	K2
9-16-97	1300	K9	K1
11-20-97	1430	K8	K4
2- 3-98	1215	K9	K11
2- 6-98	0925	K9	2
5-28-98	0945	K20	K12
6-29-98	1350	K2	K2
7-28-98	1315	K3	K6
9- 9-98	1330	--	<2
11-19-98	1710	K44	K12
2-18-99	1530	K7	K4

Table 10. Fecal coliform and fecal streptococcus bacteria concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Bacteria	
		Fecal coliform (colonies per 100 milliliters)	Fecal streptococcus (colonies per 100 milliliters)
Cross Lake at Hickman's Arm, at Shreveport (site 5)			
2-19-97	1345	150	160
6-10-97	1635	68	K18
7- 2-97	1450	K22	K4
8-19-97	1600	55	K32
9-16-97	1315	K17	38
11-20-97	1445	K10	K8
2- 3-98	1415	130	190
2- 6-98	0935	63	42
5-28-98	1005	K24	K40
6-29-98	1420	K17	K3
7-28-98	1345	K9	K4
9-10-98	0830	K14	K21
11-19-98	1730	36	K24
2-18-99	1550	K24	K8
Cross Lake at Twin Bird Islands, at Shreveport (site 6)			
2-19-97	1710	180	120
6-11-97	1345	5	<2
7- 2-97	1715	K16	<1
8-19-97	1800	K1	K12
9-16-97	1535	<1	<1
11-20-97	1715	K16	<1
2- 4-98	0845	25	K5
2- 6-98	1025	K31	K3
5-28-98	1515	K1	K2
6-29-98	1610	<1	K1
7-28-98	1545	<1	K8
9- 9-98	1600	--	<2
11-20-98	1015	38	K18
2-19-99	1000	K8	K10

Table 10. Fecal coliform and fecal streptococcus bacteria concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Bacteria	
		Fecal coliform (colonies per 100 milliliters)	Fecal streptococcus (colonies per 100 milliliters)
Cross Lake at Page Bayou Cove, at Shreveport (site 7)			
2-19-97	1428	K40	K47
6-11-97	0950	<1	K410
7- 2-97	1525	23	K11
8-19-97	1640	K4	K1
9-16-97	1400	K1	<1
11-20-97	1545	K2	<1
2- 3-98	1510	K340	170
2- 6-98	0955	K4	K8
5-28-98	1100	<1	K4
6-29-98	1450	K2	K6
7-28-98	1430	K4	23
9- 9-98	1350	K6	K8
11-20-98	0800	K24	K25
2-18-99	1635	K18	K2
Cross Lake at Cross Bayou Cove, at Shreveport (site 8)			
2-19-97	1530	K40	K12
6-11-97	1030	<1	K3
7- 2-97	1540	78	K2
8-19-97	1645	40	40
9-16-97	1420	K18	K3
11-20-97	1600	K11	K6
2- 3-98	1530	470	270
2- 6-98	1000	K31	26
5-28-98	1115	<2	<2
6-29-98	1505	K19	41
7-29-98	0800	K8	K4
9-10-98	0915	K2	48
11-20-98	0830	K9	K8
2-19-99	0824	K18	K3

Table 10. Fecal coliform and fecal streptococcus bacteria concentrations in water from sites at Cross Lake, Caddo Parish, Louisiana, February 1997 to February 1999--Continued

Date	Time	Bacteria	
		Fecal coliform (colonies per 100 milliliters)	Fecal streptococcus (colonies per 100 milliliters)
Cross Lake at Fortney Bayou, at Shreveport (site 9)			
2-19-97	1647	48	60
6-11-97	1300	<1	8
7- 2-97	1650	24	K3
8-19-97	1750	<2	K2
9-16-97	1517	K16	<1
11-20-97	1700	K2	K4
2- 4-98	0945	K17	K10
2- 6-98	1015	K12	K9
5-28-98	1445	K2	K4
6-29-98	1600	K1	K1
7-28-98	1500	K9	K8
9- 9-98	1530	--	<2
11-20-98	0930	41	K17
2-19-99	0930	K10	K4
Cross Lake at Goat Island, at Shreveport (site 10)			
2-19-97	1653	20	K6
6-11-97	1110	<1	K11
7- 2-97	1630	K6	K2
8-19-97	1740	K1	K5
9-16-97	1500	K1	K11
11-20-97	1620	K4	K5
2- 4-98	0930	K10	K5
2- 6-98	1010	K10	K2
5-28-98	1400	<1	<1
6-29-98	1545	<1	K6
7-29-98	0840	<1	100
9-10-98	1030	K4	140
11-20-98	0910	K15	K19
2-19-99	0950	K36	K4