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Concentrations of Selected Herbicides, Herbicide Degradation Products, and Nutrients in the Lower Mississippi River, Louisiana, April 1991 through December 2003

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

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Conversion Factors, Abbreviated Water-Quality Units, and Datum

Multiply	By	To obtain
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
foot (ft)	0.3048	meter (m)
inch per year (in/yr)	2.54	centimeter per year (cm/yr)
microliter (µL)	0.00003382	ounce (oz)
micrometer (µm)	0.00003937	inch (in.)
mile (mi)	1.609	kilometer (km)
milliliter (mL)	0.0338	ounce, fluid (oz)
square mile (mi^2)	2.590	square kilometer (km^2)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

°F = (1.8 x °C) + 32.

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

°C = (°F - 32) / 1.8.

Abbreviated Water-Quality Units

microgram per liter (µg/L)

microsiemens per centimeter at 25 degrees Celsius (µS/cm)

milligram per liter (mg/L)

Datum

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Concentrations of Selected Herbicides, Herbicide Degradation Products, and Nutrients in the Lower Mississippi River, Louisiana, April 1991 through December 2003

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Abstract

Water-quality samples were collected from three sites in the lower Mississippi River in Louisiana during April 1991 through December 2003 by the U.S. Geological Survey and analyzed for selected herbicides, herbicide degradation products, and nutrients (nitrogen, phosphorus, and silica). When this study first began in April 1991, water samples were analyzed for selected herbicides and herbicide degradation products by gas chromatography/mass spectrometry. As the study progressed, there were changes and additions to the herbicide compounds analyzed, which resulted in lower analytical reporting levels or the quantification of additional herbicides or herbicide degradation products. Alachlor ethanesulfonic acid was analyzed by solid-phase extraction and enzyme-linked immunosorbent assay from 1993 through 1998. In March 1998, analyses for the acetamide degradation products, ethanesulfonic acid and oxanilic acid, by high-performance liquid chromatography with diode-array detection, were added. This method was replaced by liquid chromatography/mass spectrometry in August 1999.

The data were collected to help determine the occurrence and transport of selected herbicides, their degradation products, and nutrients in the lower Mississippi River Basin and their delivery to the Gulf of Mexico. In addition to results of sample analysis, this report includes a description of the study area, sample-collection schedule and methods, laboratory analytical methods, and quality-assurance procedures.

Introduction

This is the ninth in a series of U.S. Geological Survey (USGS) water-quality reports that present the analytical results from studies of herbicide and nutrient occurrence in water resources of the Midwestern United States. This report presents the analytical results from long-term monitoring of herbicides, herbicide degradation products, and nutrients in the lower Mississippi River in Louisiana. Previous reports have presented analytical results from regional studies of herbicides and nutrients in ground water (Kolpin and others, 1993), surface water (Scribner and others, 1993), storm runoff (Scribner and others, 1994), precipitation (Goolsby and others, 1995), and reservoirs (Scribner and others, 1996), results from a study of the effects of changes in herbicide application rates (Scribner and others, 1998), results from a study of glyphosate occurrence (Scribner and others, 2003; Battaglin and others, 2005), and a summary of study results for triazine herbicides and their degradation products in water from the Midwestern United States during the 1990s (Scribner and others, 2005).

Previous studies have shown that runoff from watersheds within the Mississippi River Basin often contains significant amounts of herbicides and nutrients, such as nitrate (Goolsy and others, 1991a, 1991b, 1995; Thurman and others, 1992; Battaglin and others, 1993; Goolsby and Battaglin, 1993, 2000, 2001; Meade, 1995; Coupe and others, 1995; Clark and Goolsby, 1999; Clark and others, 1999; Coupe and Goolsby, 1999; Scribner and others, 2000). A portion of these herbicides and nutrients are transported into the Mississippi River and eventually into the Gulf of Mexico. The concentrations and mass transport (loads) of these compounds have been monitored by the USGS at two sites on the lower Mississippi River, St. Francisville and Baton Rouge (fig. 1). Long-term monitoring has been conducted by the USGS National Stream Quality Accounting Network (NASQAN) on the Mississippi River at St. Francisville, Louisiana, since 1955. Recently, more intensive monitoring has been conducted at Baton Rouge, Louisiana, about 85 mi downstream from St. Francisville (Coupe and Goolsby, 1999). In addition, the Jefferson Parish Water Treatment Plant monitors for selected herbicides and nitrate in the Mississippi River at New Orleans (fig. 1; Goolsby and others, 1993; Clark and others, 1999). The analytical results from these three sites provide a comprehensive record of the concentrations of herbicide compounds and nitrate in the lower Mississippi River in Louisiana for April 1991 through 2003.

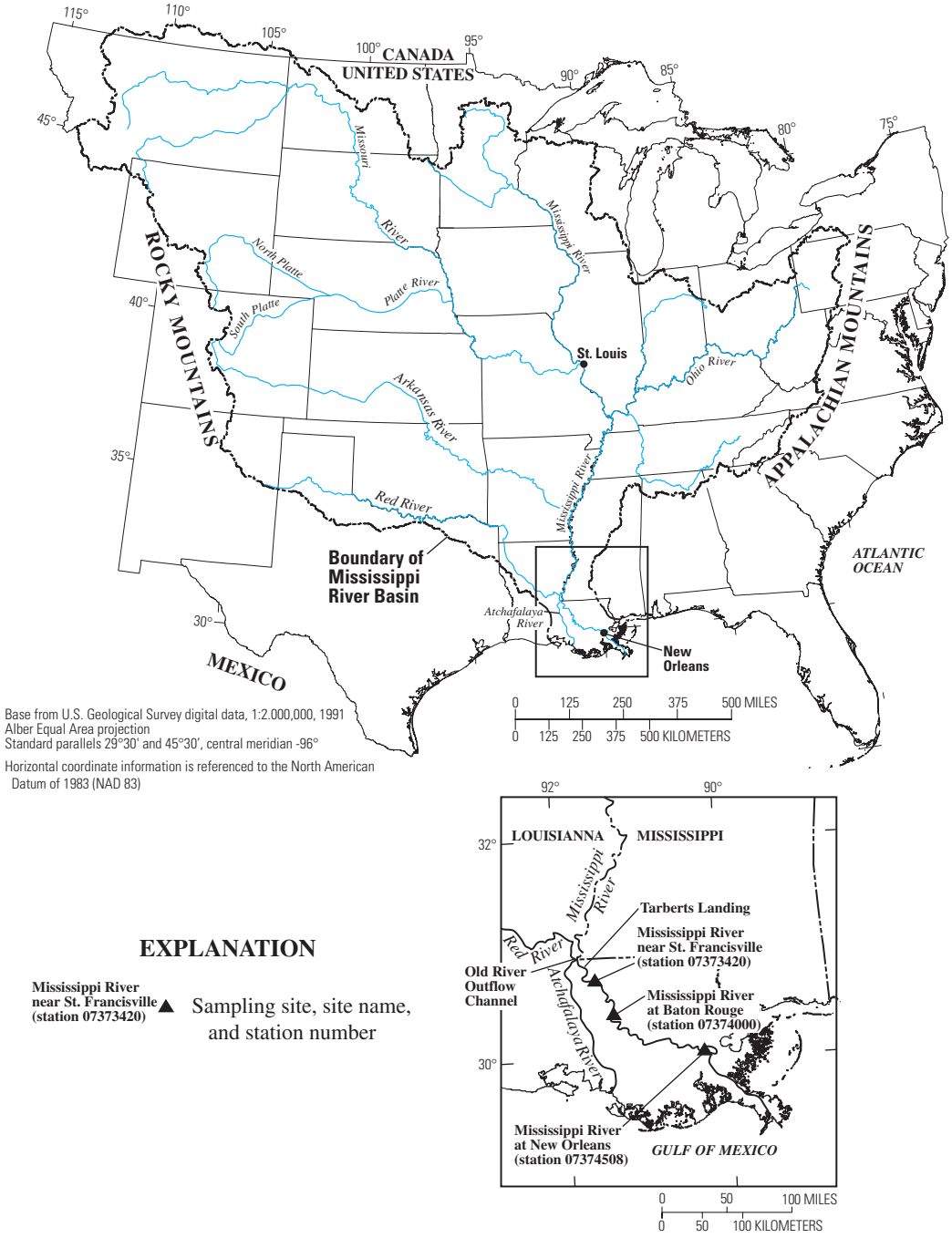

Figure 1. Location of Mississippi River Basin, major tributaries, and St. Francisville, Baton Rouge, and New Orleans, Louisiana, sampling sites.

Purpose and Scope

The purpose of this report is to present the results of laboratory analysis of water-quality samples collected to determine concentrations of selected herbicides, herbicide degradation products, and nutrients in the lower Mississippi River at St. Francisville, Baton Rouge, and New Orleans, Louisiana, for the period April 1991 through December 2003. This report also describes the study area, the methods used to collect the samples, laboratory analytical methods, and quality-assurance procedures.

Acknowledgments

The authors wish to thank USGS employees in the Louisiana Water Science Center (in particular, Charles Demas and Dennis Demcheck) in Baton Rouge for collecting water sam-

ples from the Mississippi River at St. Francisville and Baton Rouge. The authors thank Mr. Wayne Koffskey of the Jefferson Parish Water Quality Laboratory for providing data from the New Orleans sampling site. Also, thanks to Mr. John Miller of the U.S. Army Corps of Engineers for providing streamflow data for the lower Mississippi River. This study would not have been possible without their assistance.

Description of Study Area

The Mississippi River and its tributary, the Atchafalaya River, drain an area of more than 1,238,800 mi^2 or about 41 percent of the conterminous United States (fig. 1). The Mississippi River Basin is the largest river basin in North America. Its drainage covers much of the Central United States, including parts or all of 30 States extending from the Appalachian Mountains to the Rocky Mountains and from southern Canada to the Gulf of Mexico. About 72 million people live in the basin. The climate, land use, soils, and population density vary widely across the basin. The annual runoff ranges from less than 2 in/yr in the arid western part of the basin to more than 24 in/yr in the humid eastern part. About 58 percent of the basin is in cropland, whereas other land uses include woodland, range and barren land, wetlands and water, and urban land (Goolsby and Battaglin, 2000).

The majority of all agricultural chemicals used in the United States are applied to cropland in the Mississippi River Basin (Goolsby and Battaglin, 2000). As a result of rainfall runoff and ground-water discharge, many agricultural chemicals used in the Midwestern States are transported to the Mississippi River and its tributaries, making water quality an important issue (Goolsby and others, 1991; Battaglin and others, 1993; Goolsby and Battaglin, 1993; Clark and Goolsby, 1999; Coupe and Goolsby, 1999; Goolsby and Battaglin, 2000; Coupe and others, 2005).

METHODS

Sampling Frequency

Mississippi River near St. Francisville, Louisiana

Samples were collected bimonthly by the USGS from April 1991 through September 1995 at the Mississippi River near St. Francisville, Louisiana, sampling site. Since October 1995, samples were collected monthly with additional samples collected during high flow (Coupe and Goolsby, 1999). The sampling schedule was as follows:

May 1991–September 1995	6–12 samples per year;
October 1995–December 2003	1 sample per month plus additional samples during high-flow periods.

Mississippi River at Baton Rouge, Louisiana

Water samples were collected from April 1991 through December 2003 by the USGS at Baton Rouge, Louisiana (Goolsby and others, 1991b; Coupe and others, 1995). The sampling schedule was as follows:

April 1991–September 1992	1–2 samples per week;
October 1992–June 1993	not sampled;
July 1993–December 2003	approximately weekly during periods of high flow; 1–2 samples per month at other times.

Mississippi River at New Orleans, Louisiana

From October 1992 through June 1993, samples from the Mississippi River at New Orleans were collected and analyzed by the Jefferson Parish Water Quality Laboratory (Goolsby and others, 1993). This site is about 124 mi downstream from Baton Rouge. Nutrient samples from the Jefferson Parish Laboratory were used to complete the period from October 1992 through June 1993. Herbicide data from the Jefferson Parish Laboratory were used to complete the period from March 1993 through June 1993 when samples were not collected at Baton Rouge.

Sample Collection and Processing

Water samples from the St. Francisville and Baton Rouge sites were collected by USGS personnel. Samples from the St. Francisville site were collected by equal-discharge increment sampling procedures (Edwards and Glysson, 1988) using either a P–63 sampler or a Teflon bag sampler. Samples from three to five locations across the river were composited into a large glass container. Subsamples for analysis of herbicide compounds and nutrients were taken from the container. Samples from the Baton Rouge site were collected with a weighted bottle sampler from the upper 20 ft of the water column at the end of a pier that extends about 148 ft from shore. Previous work had indicated that the dissolved solutes in the river at this site are well-mixed vertically and horizontally (Coupe and others, 1995). Water samples from both sites were filtered through a 0.45-µm membrane filter for nutrient analysis, and samples for herbicide analyses were filtered through a 0.7-µm glass-fiber filter.

Water samples were collected at the New Orleans site by personnel of the Jefferson Parish Water Quality Laboratory. These samples were weekly composites collected continuously at two sampling points on opposite banks of the Mississippi River by using peristaltic pumps and storing the samples

at 4 °C. Samples from both locations were analyzed, and results were averaged.

Laboratory Methods

Herbicides

Laboratory methods and procedures for the analysis of herbicides changed throughout the course of this study. The type of herbicide, years sampled, and laboratory method analysis code for chemical compounds analyzed using gas chromatography/mass spectrometry (GC/MS), enzyme-linked immunosorbent assay (ELISA), high-performance liquid chromatography diode-array detection (HPLC/DAD), and liquid chromatography/mass spectrometry (LC/MS) are shown in table 1. All tables are presented at the back of this report.

Gas Chromatography/Mass Spectrometry

From May 1991 to December 2003, samples were collected from the Mississippi River near St. Francisville, Louisiana, and from April 1991 to September 1992, samples were collected from the Mississippi River at Baton Rouge, Louisiana (table 2). These samples were analyzed for herbicides by GC/MS at the USGS National Water-Quality Laboratory (NWQL), Lakewood, Colorado. During 1991–94 NWQL Method 1379 was used (Sandstrom and others, 1992). After 1994, samples were analyzed using NWQL Method 2001 (Zaugg and others, 1995). Samples collected by Jefferson Parish Water Quality Laboratory at New Orleans, Louisiana, during March 1993 through September 1993 (table 3) were analyzed for herbicides by gas chromatography using U.S. Environmental Protection Agency protocols (Goolsby and others, 1993). Various analytical detection levels for NWQL Methods 1379 and 2001 and for the Jefferson Parish Water Quality Laboratory were reported. Beginning in July 1993, samples were extracted using a solid-phase extraction (SPE) procedure at the USGS Organic Geochemistry Research Laboratory (OGRL), Lawrence, Kansas (Thurman and others, 1990; Meyer and others, 1993). Samples were analyzed by two USGS methods, including method number 0–2132–99 (Zimmerman and Thurman, 1999), using the OGRL method analysis code of GCS from July 1993 to July 1996, and method number 0–2132–99 (Kish and others, 2000), using the OGRL method analysis code GCR from August 1996 to May 2003 (table 4). The analytical reporting limit for both GC/MS methods is 0.05 µg/L.

Solid-Phase Extraction and Enzyme-Linked Immunosorbent Assay for Alachlor Ethanesulfonic Acid

Alachlor ethanesulfonic acid (ESA) was analyzed by SPE and ELISA (OGRL method analysis code IME) at the OGRL, Lawrence, Kansas (table 4). Results were quantified with solutions of alachlor concentration that ranged from 0 to 20 µg/L. Using the calibration curves, optical densities associated with calibration standards were examined. Samples were analyzed in duplicate and averaged. The reporting limit for alachlor ESA is 0.10 µg/L (Aga and others, 1994). The SPE-ELISA method was discontinued in September 1998 when a method that included alachlor ESA was developed using high-performance liquid chromatography (HPLC) with diode-array detection (DAD). Additional studies were published by Aga and others (1994) and Aga and Thurman (2001).

High-Performance Liquid Chromatography with Diode-Array Detection

From March 1998 through August 1999, water samples from the Mississippi River at Baton Rouge, Louisiana (table 5) were analyzed by HPLC/DAD for acetochlor, alachlor, and metolachlor degradation products of ESA and oxanilic acid (OXA). Recovery for HPLC/DAD is discussed in the work of Ferrer and others (1997). HPLC/DAD was suitable for the determination of low micrograms-per-liter concentrations of acetamide degradation products in natural water samples. The limit of quantitation for HPLC/DAD is 0.20 µg/L. The approved method number is 0–2133–00 (Zimmerman and others, 2000), and the method is identified by OGRL analysis code HPAA.

Liquid Chromatography/Mass Spectrometry

Beginning in April 1999, herbicide samples were analyzed by both the LC/MS and the HPLC/DAD method for comparison. The HPLC/DAD method was discontinued in August 1999. Water samples were extracted and analyzed by four different LC/MS methods at the OGRL as follows:

1. Method number 0–2134–00, which was approved by USGS in April 2000 (Lee and others, 2001), was used to analyze 10 acetamide degradation products. This method was used on water samples from the Mississippi River at Baton Rouge, Louisiana, from 1999 through 2002 (table 5) and is identified by the OGRL analysis code LCAA. The analytical reporting limit for LCAA is 0.05 µg/L.
2. Method number 0–2139–03, which was approved by USGS in May 2003 (Lee and Strahan, 2003), is an analytical method for the determination of six acetamide herbicides and 16 of their degradation products. This method was used on water samples from the Mississippi River at Baton Rouge, Louisiana, from December 2002 through December 2003 (table 5) and is identified by the OGRL analysis code LCPD. The analytical reporting limit for LCPD is 0.02 µg/L.
3. Method number 0–2138–02 method, which was approved by USGS in December 2002 (Lee and others, 2002b), was used to analyze four triazine parent compounds and 11 triazine degradation products plus three phenylurea parent compounds and one phenylurea degradation product in samples from the Mississippi River at Baton

Rouge, Louisiana, from August 1998 through December 2003 (Lee and others, 2002b; table 6) and is identified by the OGRL method analysis code LCEA. The method reporting levels for LCEA were 0.025 µg/L for all triazine herbicides except deethylcyanazine, which was 0.20 µg/L. The method reporting level for phenylurea herbicides was 0.20 µg/L.

4. Method number 0–2136–01, which was approved by USGS in December 2001 (Lee and others, 2002a), was used to analyze glyphosate, its degradation product aminomethylphosphonic acid (AMPA), and glufosinate in samples from the Mississippi River at Baton Rouge, Louisiana, from October 2001 through October 2003 (table 7) and is identified by the OGRL method analysis code LCGY (Lee and others, 2002a). The analytical reporting limit for LCGY is 0.10 µg/L.

Streamflow, Physical Properties, and Nutrients

Streamflow data for the Mississippi River in Louisiana were obtained from the U.S. Army Corps of Engineers (USCOE), New Orleans District Web site (http://www.mvn.usace.army.mil/eng/edhd/Wcontrol/discharge.htm). In northern Louisiana, about 25 percent of the flow of the Mississippi River is diverted into the Atchafalaya River via the Old River Outflow Channel (fig. 1). The flow diverted into the Old River Outflow Channel is reported by USCOE on their Web site. The remaining water flows down the Mississippi River through Baton Rouge and New Orleans to the Gulf of Mexico. This flow is measured at Tarberts Landing (fig. 1) and is also reported on the USCOE Web site. The total flow of the Mississippi River is the sum of the flows measured at the above two locations. The total streamflow, specific conductance, and water temperature associated with each sample for the days on which samples were collected are presented in table 8 at the back of this report.

Dissolved nitrite plus nitrate, nitrite, ammonia, orthophosphate, and silica (table 8) were determined by an automated colorimetric procedure. Dissolved nitrate was calculated as the difference between determinations for nitrite plus nitrate and nitrite (Fishman and Friedman, 1989).

Quality Assurance

Quality-assurance procedures for sample collection required that all bottles and sampling equipment be cleaned by washing glass containers, filter units, and tubing with a phosphate-free laboratory detergent; rinsing with tap water; organic-free, deionized, or distilled water; methanol; and rinsed again with organic-free water to remove traces of methanol. Herbicide sample containers (125-mL amber glass bottles) were cleaned by heating overnight to about 350 °C (Goolsby and others, 1991b). Approximately 10 percent of all herbicide samples were analyzed in duplicate at OGRL, and results are presented in tables at the back of this report.

Concentrations of Selected Herbicides, Herbicide Degradation Products, and Nutrients

The results of sample analyses are given in tables 2–15 at the back of this report. Results are reported by NWQL (Lakewood, Colorado), Jefferson Parish Water Quality Laboratory (Jefferson, Louisiana), and OGRL (Lawrence, Kansas). The results from OGRL are listed by method analysis codes, as described previously, and are accompanied by a statistical summary of the reported concentrations. For calculation of the statistics in these tables, all nondetections were treated as zeros. Data from this study are available in electronic form from USGS, OGRL (E-mail ks_orgl@usgs.gov).

The results for herbicides and degradation products analyzed by NWQL are listed in table 2. Statistical summaries of these results are given in table 9 at the back of this report. Atrazine was the most frequently detected compound, and deethylatrazine was the most frequently detected atrazine degradation product during 1991–2003. Cyanazine followed with 119 detections in 142 samples collected. The number of detections of acetochlor and metribuzin is notable with 105 detections in 118 samples collected and 110 detections in 114 samples collected, respectively.

The Jefferson Parish Water Quality Laboratory provided results for four herbicides, alachlor, atrazine, metolachlor, and simazine, March through September 1993 (table 3 at the back of this report). The statistical summary (table 10 at the back of this report) shows these four herbicides were found in most of the 26 samples collected with atrazine at a maximum concentration of 4.2 µg/L. These data provide information for the lower Mississippi River during the time when samples were not being collected by USGS. In the summer of 1993, a persistent wet-weather pattern resulted in flooding in the upper Mississippi River Basin. As a result of the flood, USGS began sample collection at several locations on the Mississippi River and in adjacent shallow wells after the floodwaters receded (Goolsby and others, 1993).

In July 1993, OGRL began analysis by GC/MS of 17 herbicides and eight herbicide degradation products for water samples collected from the Mississippi River at Baton Rouge, Louisiana, as shown in table 4 at the back of this report. Results of alachlor ESA by ELISA are also shown in table 4. The statistical summary (table 11 at the back of this report) shows that three herbicides, atrazine, cyanazine, and metolachlor, were detected most often of the 17 herbicides analyzed (table 4). Six of the herbicide degradation products, alachlor ESA, deethylatrazine, deisopropylatrazine, cyanazine amide, demethylfluometuron, and 3-trifluoromethylphenylurea, were detected out of the nine degradation products analyzed. Sample detection

frequencies included 197 of 277 samples for deethylatrazine, 162 of 166 samples for alachlor ESA, 122 of 277 samples for deisopropylatrazine, and 65 of 215 samples for cyanazine amide. Demethylfluometuron and 3-trifluromethlphenylurea were detected in one sample each. These results compare well with results from NWQL (table 9) and agree with previous investigations (Goolsby and others, 1991a, 1991b; Thurman and others, 1991, 1992; Scribner and others, 2003, 2005).

Methods for analyzing acetamide herbicides and acetamide degradation products were upgraded as new instrumentation was purchased for OGRL. As a result, these herbicide compounds were analyzed by three different liquid chromatography methods (table 5). The statistical results are shown in table 12. Degradation products of metolachlor, metolachlor ESA and metolachlor OXA, and the degradation product of alachlor, alachlor ESA, were detected most frequently from 1997 through 2003. The highest concentration was metolachlor ESA at 1.3 µg/L, and alachlor ESA had a maximum concentration of 0.44 µg/L.

Two LC/MS methods more recently developed by OGRL include analysis of triazine and phenylurea herbicides plus their degradation products (table 6) using method analysis code LCEA and analysis of glyphosate, its degradation product AMPA, and glufosinate (table 7) using method analysis code LCGY. Thirty-two samples were analyzed by LCEA as shown by the summary in table 13. Atrazine was detected in all 32 samples, and its degradation product deethylatrazine was detected in 30 of 32 samples. The maximum concentration was for atrazine at 1.3 µg/L, and the minimum concentration was for deisopropylhydroxyatrazine, a degradation product of atrazine, at 0.04 µg/L. There were three detections of diuron, which is a phenylurea herbicide.

The statistical summary for glyphosate, AMPA, and glufosinate analyzed using OGRL method analysis code LCGY is shown in table 14. There were 35 samples analyzed with no detections of either glyphosate or glufosinate. However, there were 32 detections of the degradation product of glyphosate, AMPA, in the 35 samples collected, with a maximum concentration of 0.38 µg/L. Results of analysis of water samples by the LCGY method can be found in Battaglin and others (2005).

Streamflow, physical property, and nutrient data are shown in table 8 for all three Mississippi River sampling sites described in this report. Statistical summaries of these data are given in table 15 at the back of this report. Details of nutrient sources, concentrations, trends, and mass transport (loads) are presented in Goolsby and others (1999) and Goolsby and Battaglin (2000, 2001).

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Data Tables

Table 1. Herbicides and their degradation products, years sampled, and method of analysis for water samples collected from the lower Mississippi River in Louisiana, 1991–2003.

[1379, National Water Quality Laboratory method (NWQL) number, 1991–94; 2001, NWQL method number, 1995–2003; GCR, rice and cotton method analysis code, 1996–2003; GCS, corn and soybean method analysis code, 1993–96; HPAA, acetamide degradation products method analysis code, 1998–2001; IME, alachlor immunoassay method analysis code, 1993–98; LCAA, acetamide degradation products method analysis code, 2001–02; LCEA, triazine and phenylurea herbicides and degradation products method analysis code, 1998–2003; LCPD, acetamide parents and degradation products method analysis code, 2002–03; LCGY, glyphosate, AMPA, and glufosinate method analysis code, 2001–03]

Herbicide or degradation product	Type of herbicide	Years sampled	Method analysis code
Acetochlor	acetamide	1994–2003	1379/2001/GCR/GCS/LCPD
Acetochlor ethanesulfonic acid (ESA)	acetamide degradation product	1998–2003	HPAA/LCAA/LCPD
Acetochlor oxanilic acid (OXA)	acetamide degradation product	1998–2003	HPAA/LCAA/LCPD
Acetochlor sulfynil acetic acid (SAA)	acetamide degradation product	2001–2003	LCAA/LCPD
Alachlor	acetamide	1991–2003	1379/2001/GCR/GCS/LCPD
Alachlor ESA by immunoassay	acetamide	1993–98	IME
Alachlor ESA	acetamide	1998–2003	HPAA/LCAA/LCPD
Alachlor OXA	acetamide	1998–2003	HPAA/LCAA/LCPD
Alachlor SAA	acetamide	2001–2003	LCAA/LCPD
Alachlor ESA 2nd amide	acetamide degradation product	2002–2003	LCPD
Ametryn	triazine	1991–96	1379/2001/GCS
Aminomethylphosphonic acid (AMPA)	not assigned degradation product	2001–2003	LCGY
Atrazine	triazine	1991–2003	1379/2001/GCR/GCS/LCEA
Bromacil	uracil	2003	LCEA
Cyanazine	triazine	1991–2003	1379/2001/GCR/GCS/LCEA
Cyanazine acid	triazine degradation product	1998–2003	LCEA
Cyanazine amide	triazine degradation product	1993–2003	GCR/GCS/LCEA
Deethylatrazine	triazine degradation product	1991–2003	1379/2001/GCR/GCS/LCEA
Deethylcyanazine	triazine degradation product	1998–2003	LCEA
Deethylcyanazine acid	triazine degradation product	1998–2003	LCEA
Deethylcyanazine amide	triazine degradation product	1998–2003	LCEA
Deethylhydroxyatrazine	triazine degradation product	1998–2003	LCEA
Deisopropylatrazine	triazine degradation product	1991–2003	1379/2001/GCR/GCS/LCEA
Deisopropylhydroxyatrazine	triazine degradation product	1998–2003	LCEA
Deisopropylprometryn	triazine degradation product	1996–2003	GCR
Demethylfluometuron (DMFM)	phenylurea degradation product	1995–2003	GCR/LCEA
Demethylnorflurazon	phenylurea degradation product	1995–2003	GCR
Didealkyatrazine (DDA)	phenylurea degradation product	1998–2003	LCEA
Dimethenamid	acetamide	1999–2003	GCR/LCPD
Dimethenamid ESA	acetamide degradation product	1999–2003	LCAA/LCPD
Dimethenamid OXA	acetamide degradation product	1999–2003	LCAA/LCPD
Diuron	phenylurea	1998–2003	LCEA
Flufenacet	acetamide	1999–2003	GCR/LCPD
Flufenacet ESA	acetamide degradation product	2002–2003	LCPD
Flufenacet OXA	acetamide degradation product	2002–2003	LCPD

Table 1. Herbicides and their degradation products, years sampled, and method of analysis for water samples collected from the lower Mississippi River in Louisiana, 1991–2003.—Continued

[1379, National Water Quality Laboratory method (NWQL) number, 1991–94; 2001, NWQL method number, 1995–2003; GCR, rice and cotton method analysis code, 1996–2003; GCS, corn and soybean method analysis code, 1993–96; HPAA, acetamide degradation products method analysis code, 1998–2001; IME, alachlor immunoassay method analysis code, 1993–98; LCAA, acetamide degradation products method analysis code, 2001–02; LCEA, triazine and phenylurea herbicides and degradation products method analysis code, 1998–2003; LCPD, acetamide parents and degradation products method analysis code, 2002–03; LCGY, glyphosate, AMPA, and glufosinate method analysis code, 2001–03]

Herbicide or degradation product	Type of herbicide	Years sampled	Method analysis code
Fluometuron	phenylurea	1995–2003	GCR/LCEA
Glufosinate	not assigned	2001–2003	LCGY
Glyphosate	not assigned	2001–2003	LCGY
Hydroxyatrazine	triazine degradation product	1998–2003	LCEA
Hydroxysimazine	triazine degradation product	2003	LCEA
Linuron	phenylurea	1998–2003	LCEA
Metolachlor	acetamide	1991–2003	1379/2001/GCR/GCS/LCPD
Metolachlor ESA	acetamide degradation product	1998–2003	HPAA/LCAA/LCPD
Metolachor OXA	acetamide degradation product	1998–2003	HPAA/LCAA/LCPD
Metolachlor ESA/Acetochlor 2nd amide	acetamide degradation product	2002–2003	LCPD
Metribuzin	triazine	1991–2003	1379/2001/GCR/GCS
Molinate	thiocarbamate	1995–2003	GCR
Norflurazon	pyridazinone	1995–2003	GCR
Pendimethalin	dinitroaniline	1996–2003	GCR/GCS
Prometon	triazine	1991–96	1379/2001/GCS
Prometryn	triazine	1991–2003	1379/2001/GCR/GCS
Propachlor	acetamide	1995–2003	1379/2001/GCS/LCPD
Propachlor ESA	acetamide degradation product	2001–2003	LCAA/LCPD
Propachlor OXA	acetamide degradation product	2002–2003	LCPD
Propanil	acetamide	1995–2003	GCR
Propazine	triazine	1991–2003	1379/2001/GCR/GCS/LCEA
Simazine	triazine	1991–2003	1379/2001/GCR/GCS/LCEA
Terbutryn	triazine	1993–96	GCS
3-trifluomethylaniline (TFMA)	phenylurea degradation product	1994–2003	GCR
3-trifluromethylphenylurea (TFMPU)	phenylurea degradation product	1995–2003	GCR
Trifluralin	dinitroaniline	1991–2003	1379/2001/GCR

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)												
05/06/91	--	0.11	0.70	<0.20	0.13	<0.05	0.24	<0.05	<0.05	<0.05	--	0.10
06/17/91	--	.22	1.8	.90	.14	.05	.76	<.05	<.05	.05	--	<.05
07/23/91	--	.10	.72	.40	.12	.05	.36	<.05	<.05	.05	--	<.05
11/05/91	--	<.05	.17	<.20	.06	.05	<.05	<.05	<.05	.05	--	<.05
11/19/91	--	<.05	.13	<.20	.05	.05	.05	<.05	<.05	.05	--	<.05
12/10/91	--	<.05	.11	<.20	.05	.05	.05	<.05	<.05	.05	--	.05
01/28/92	--	<.05	.08	<.20	<.05	.05	<.05	<.05	<.05	.05	--	<.05
02/26/92	--	<.05	.11	--	--	--	.07	<.05	--	--	--	--
03/25/92	--	<.05	.15	--	--	--	.09	<.05	--	--	--	--
05/14/92	--	.06	.90	.20	.13	.05	.35	<.05	<.05	.05	--	.12
05/26/92	--	<.05	.43	<.20	.10	.05	.19	<.05	<.05	.05	--	.08
06/17/92	--	.11	.98	.40	.15	.05	.46	.12	<.05	.05	--	.12
07/15/92	--	.13	1.2	.40	.23	.05	.39	<.05	<.05	.05	--	.09
08/18/92	--	.06	.88	.20	.30	.05	.24	.08	.06	.05	--	<.05
09/15/92	--	<.05	.36	<.20	<.05	.05	.08	<.05	<.05	.05	--	<.05
01/24/94	--	<.05	.08	<.20	<.05	.05	<.05	<.05	<.05	.05	--	.05
03/14/94	--	<.05	.10	<.20	<.05	.05	<.05	<.05	<.05	.05	--	<.05
06/28/94	--	<.05	.73	.30	.11	.05	.17	<.05	<.05	.05	--	.10
08/30/94	--	<.05	.26	1.2	.09	.05	<.05	<.05	<.05	.05	--	<.05
10/20/94	--	<.05	.05	<.20	<.05	.05	<.05	<.05	<.05	.05	--	<.05

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
01/23/95	--	<0.05	0.06	<0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05
02/21/95	--	<.05	.09	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
04/24/95	--	<.05	.07	<.20	<.05	<.05	.09	<.05	<.05	<.05	--	<.05
06/14/95	--	<.05	1.8	.90	.14	<.05	.47	<.05	<.05	<.05	--	.12
08/07/95	--	<.05	.91	.30	.14	<.05	.22	<.05	<.05	<.05	--	<.05
10/12/95	0.01	.01	.19	*.05	*.02	<.05	.08	<.01	*.01	<.05	<0.01	.02
10/17/95	--	<.05	.06	<.20	<.05	<.05	.05	<.05	<.05	<.05	--	<.05
12/06/95	.01	.01	.17	.03	*.02	<.05	.09	<.01	*.01	<.05	<.01	.03
02/07/96	.01	.01	.06	.02	*.01	<.05	.03	<.01	*.01	<.05	<.01	.02
03/27/96	.03	<.01	.12	.04	*.02	--	.11	<.01	<.01	--	<.01	.02
04/16/96	.02	<.05	.07	<.20	<.05	<.05	.08	<.05	<.05	<.05	<.01	<.05
05/01/96	.07	.05	1.1	.07	*.02	--	.49	.01	*.01	--	<.01	.09
05/17/96	.16	.04	2.1	.25	*.06	--	.62	.02	*.01	--	<.01	.22
05/31/96	.37	.05	3.9	.88	*.10	--	1.3	.02	*.01	--	<.01	.14
06/11/96	.24	.08	3.7	.92	*.11	--	1.2	.03	*.01	--	<.01	.15
06/21/96	.36	.12	4.4	.86	*.16	--	1.8	.05	*.01	--	<.01	.25
06/25/96	.37	.12	3.5	.85	*.19	--	1.4	.04	*.01	--	<.01	.27
07/23/96	.15	.17	1.5	.23	*.16	.08	.72	.11	.14	<.05	.13	.18
09/03/96	.01	.01	.37	.06	*.05	--	.14	<.01	*.01	--	<.01	.02
09/17/96	<.01	*.01	.29	.04	*.04	<.05	.11	<.01	*.01	<.05	<.01	.01
11/25/96	<.01	<.01	.16	.01	*.01	.10	.04	<.01	*.01	<.05	<.01	.03

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
01/15/97	0.01	0.01	0.10	0.03	*0.04	--	0.05	<0.01	<0.02	--	<0.01	0.02
02/03/97	.02	.01	.09	.02	*.02	--	.05	<.01	<.01	--	<.01	.02
02/20/97	.01	.01	.08	.02	*.01	--	.07	<.01	*.01	--	<.01	.02
03/14/97	.01	.01	.10	.02	*.03	--	.09	<.01	*.01	--	<.01	.02
03/26/97	.01	<.01	.07	.01	*.01	--	.07	<.01	<.01	--	<.01	.01
04/08/97	.01	.01	.09	.01	*.01	--	.11	<.01	<.01	--	<.01	.01
04/24/97	.08	.04	.73	.06	*.03	--	.34	<.01	*.01	--	<.01	.06
05/06/97	.12	.04	1.4	.10	*.05	--	.57	.07	*.01	--	<.01	.05
06/09/97	.29	.11	2.3	.29	*.09	--	.99	.05	*.01	--	<.01	.14
06/19/97	.49	.17	4.7	.74	*.17	--	2.4	.08	*.01	--	<.01	.41
07/09/97	.07	.03	1.5	.27	*.09	--	.57	.02	*.01	--	<.01	.10
08/04/97	.02	.01	.57	.08	*.05	--	.21	.01	*.01	--	<.01	.03
08/26/97	.01	.01	.34	.06	*.05	--	.14	<.01	*.01	--	<.01	.03
09/23/97	.01	.01	.23	<.01	*.02	--	.07	<.01	*.02	--	<.01	.02
11/17/97	.01	.01	.12	.01	*.01	--	.05	<.01	*.01	--	<.01	.02
12/16/97	<.01	.01	.12	.02	*.03	--	.04	<.01	*.01	--	<.01	.02
01/28/98	.01	<.01	.12	.02	*.02	--	.05	<.01	<.01	--	<.01	.02
02/27/98	.01	<.01	.07	.01	*.02	--	.03	<.01	<.01	--	<.01	.02
03/18/98	.01	<.01	.08	.02	*.02	--	.06	<.01	<.01	--	<.01	.02
04/30/98	.07	.01	.62	.06	*.02	--	.23	.01	*.01	--	<.01	.09
05/13/98	.19	.03	1.6	.16	*.05	--	.52	.01	*.01	--	<.01	.12
05/28/98	.21	.03	1.9	.29	*.10	--	.86	.02	*.01	--	<.01	.14

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
06/09/98	0.56	0.05	1.9	0.38	*0.12	--	1.4	0.04	*0.01	--	<0.01	0.12
06/25/98	.22	.05	1.1	.19	*.27	--	.86	.03	.02	--	<.01	.09
06/30/98	.21	.04	.90	.15	*.19	--	.78	.02	*.01	--	<.01	.08
07/09/98	.19	.04	.90	.13	*.45	--	1.1	.03	*.01	--	<.01	.07
08/19/98	.01	.01	.39	.06	*.08	--	.19	<.01	*.01	--	<.01	.02
09/28/98	<.01	<.01	.24	.03	*.07	--	.06	<.01	*.01	--	<.01	.02
11/18/98	<.01	<.01	.15	<.01	*.04	--	.05	<.01	<.02	--	<.01	.02
12/08/98	.01	<.01	.16	.02	*.05	--	.07	<.01	<.01	--	<.01	.01
01/12/99	.01	<.01	.08	.01	*.02	--	.04	<.01	<.01	--	<.01	.03
02/10/99	.01	<.01	.08	.01	*.02	--	.04	<.01	<.01	--	<.01	.02
03/15/99	.01	<.01	.08	.01	*.02	--	.03	<.01	<.01	--	<.01	.02
03/30/99	.01	<.01	.11	.01	*.01	--	.04	<.01	*.01	--	<.01	.02
04/19/99	.02	.01	.84	.03	*.03	--	.16	.01	<.01	--	<.01	.28
04/28/99	.08	.01	.72	.03	*.04	--	.21	.01	<.01	--	<.01	.07
05/06/99	.15	.01	1.3	.06	*.07	--	.46	.02	<.01	--	<.01	.05
05/26/99	.16	.02	1.8	.09	*.07	--	.46	.02	<.02	--	<.01	.21
06/10/99	.48	.03	.14	.01	*.12	--	.75	.02	*.01	--	<.01	.02
06/24/99	.32	.05	.41	.03	*.27	--	.82	.03	*.01	--	<.01	.04
07/21/99	.03	.02	.80	.12	*.22	--	.36	.01	*.01	--	<.01	.02
08/05/99	.03	.02	.71	.06	*.14	--	.22	<.01	*.01	--	<.01	.02
09/14/99	<.01	<.01	.21	.02	*.06	--	.05	<.01	*.01	--	<.01	.02
11/11/99	.01	<.01	.13	.01	*.03	--	.03	<.01	*.01	--	<.01	.02
12/01/99	.02	<.01	.11	<.02	*.03	--	.04	<.01	*.01	--	<.01	.05

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
01/27/00	0.01	0.01	0.14	0.01	*0.04	--	0.07	<0.01	*0.01	--	<0.01	0.04
02/17/00	.01	.01	.14	<.01	*.04	--	.04	<.01	*.01	--	<.01	.02
03/14/00	.02	<.01	.14	<.01	*.03	--	.07	.01	<.01	--	<.01	.05
03/29/00	.02	<.01	.36	.01	*.04	--	.11	<.01	<.01	--	<.01	.10
04/12/00	.03	.01	.56	.02	*.04	--	.17	<.01	*.01	--	<.01	.05
05/10/00	.07	.01	.90	.03	*.06	--	.31	.02	*.01	--	<.01	.08
05/23/00	.08	.06	1.3	.02	*.11	--	.28	.02	*.01	--	<.01	.09
06/06/00	.13	.04	2.0	.02	*.22	--	.45	.02	*.01	--	<.01	.17
06/23/00	.21	.02	2.0	.03	*.20	--	.61	.02	*.02	--	<.01	.06
07/18/00	.07	.01	1.1	.02	*.25	--	.33	.01	*.01	--	<.01	.05
08/25/00	.01	.01	.24	.02	*.07	--	.06	<.01	*.02	--	<.01	.03
09/21/00	<.01	<.01	.15	.01	*.06	--	.03	<.01	*.01	--	<.01	.01
11/28/00	<.01	<.01	.14	*.01	*.04	--	.04	<.01	*.01	--	<.01	.06
12/14/00	.01	<.01	.09	<.01	*.03	--	.02	<.01	<.01	--	<.01	.05
01/24/01	<.01	<.01	.09	<.01	*.02	--	.03	<.01	<.01	--	<.01	.04
02/27/01	<.01	<.01	.08	<.01	*.02	--	.05	<.01	<.01	--	<.01	.10
03/14/01	<.01	<.01	.09	<.01	*.02	--	.06	<.01	<.01	--	<.01	.06
04/02/01	.03	<.01	.11	<.01	*.02	--	.06	<.01	<.01	--	<.01	.03
04/16/01	.01	<.01	.41	*.01	*.02	--	.31	<.01	<.01	--	<.01	.09
04/23/01	.04	<.01	.42	*.01	*.03	--	.27	.01	<.01	--	<.01	.05
05/07/01	.05	.01	.39	<.01	*.04	--	.24	.01	*.01	--	<.01	.04
05/21/01	.19	.01	1.0	<.01	*.04	--	.42	.01	<.01	--	<.01	.06

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
06/25/01	0.19	0.02	0.61	0.02	*0.26	--	0.50	0.01	<0.01	--	<0.01	0.07
07/10/01	.16	.02	.77	.02	*.14	--	.35	.01	*.01	--	<.01	.04
07/18/01	.08	.02	.75	.04	*.08	--	.26	<.01	*.01	--	<.01	.03
08/27/01	.01	<.01	.26	*.01	*.05	--	.06	<.01	*.01	--	<.01	.02
09/19/01	.01	<.01	.16	<.01	*.03	--	.04	<.01	*.01	--	<.01	.01
10/30/01	.01	<.01	.14	<.01	*.04	--	.04	<.01	*.01	--	<.01	.05
12/18/01	<.01	<.01	.08	<.01	*.02	--	.02	<.01	*.01	--	<.01	.40
01/22/02	.02	<.01	.07	<.01	*.02	--	.03	<.01	<.01	--	<.01	.11
02/04/02	<.01	<.01	.06	<.01	*.02	--	.02	<.01	*.01	--	<.01	.08
02/18/02	.01	<.01	.09	<.01	*.03	--	.03	<.01	*.01	--	<.01	.10
03/13/02	.03	<.01	.08	<.01	*.01	--	.05	<.01	<.01	--	<.01	.06
03/25/02	.01	<.01	.23	<.01	*.01	--	.07	<.01	<.01	--	<.01	.11
04/10/02	<.01	<.01	.16	<.01	*.01	--	.04	<.01	<.01	--	<.01	.06
04/22/02	.01	.01	.31	<.01	*.01	--	.06	<.01	*.01	--	<.01	.05
05/07/02	.15	.02	2.1	<.01	*.06	--	.33	<.01	*.01	--	<.01	.25
05/28/02	.32	.03	2.7	*.01	*.14	--	.52	.01	*.01	--	<.01	.25
06/11/02	.23	.02	1.7	<.01	*.14	--	.44	.01	*.01	--	<.01	.16
08/05/02	.03	<.01	.92	*.02	*.08	--	.11	<.01	*.01	--	<.01	.05
08/19/02	.02	<.01	.49	<.01	*.05	--	.06	<.01	*.01	--	<.01	.03
09/09/02	.01	.01	.33	<.01	*.07	--	.05	<.01	*.01	--	<.01	.02
11/12/02	.01	<.01	.11	<.01	*.03	--	.03	<.01	*.01	--	<.01	.04
01/14/03	.01	<.01	.08	<.01	*.03	--	.03	*.01	*.01	--	<.01	.28

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued												
01/28/03	0.01	<0.01	0.06	<0.01	*0.02	--	0.02	<0.01	*0.01	--	<0.01	0.09
02/12/03	<.01	<.01	.06	<.01	*.02	--	.02	.01	<.01	--	<.01	.04
02/24/03	<.01	<.01	.06	<.01	*.02	--	.02	<.01	<.01	--	<.01	.06
03/10/03	<.01	<.01	.05	<.01	*.01	--	.02	<.01	<.01	--	<.01	.08
03/24/03	<.01	<.01	.07	<.01	*.02	--	.03	<.01	<.01	--	<.01	.05
04/15/03	.01	.01	1.5	<.01	*.04	--	.33	.01	<.01	--	<.01	.09
04/29/03	.03	.01	.73	<.01	*.03	--	.13	<.01	<.01	--	<.01	.06
05/12/03	.12	.02	2.8	<.01	*.10	--	.40	.01	*.01	--	<.01	.32
05/27/03	.29	.02	2.2	<.01	*.17	--	.45	.01	*.01	--	<.01	.19
06/16/03	.12	.01	1.3	<.01	*.10	--	.27	<.01	*.01	--	<.01	.09
07/14/03	.07	.01	1.0	<.01	*.10	--	.20	<.01	*.01	--	<.01	.03
08/12/03	.03	<.01	.35	<.01	*.07	--	.11	<.01	*.01	--	<.01	.02
09/23/03	.01	<.01	.16	<.01	*.04	--	.05	<.01	*.01	--	<.01	.02
10/27/03	.01	*.01	.13	<.01	*.01	--	.03	<.01	.01	--	<.01	.02
12/09/03	.01	.01	.08	<.01	*.01	--	.02	.01	.01	--	<.01	.23
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)												
04/11/91	--	<.05	.28	<.20	.05	<0.05	.12	<.05	<.05	<0.05	--	<.05
04/17/91	--	<.05	.23	<.20	<.05	<.05	.10	<.05	<.05	<.05	--	<.05
04/24//91	--	<.05	.39	<.20	<.05	<.05	.13	<.05	<.05	<.05	--	<.05
05/01/91	--	.06	.52	.30	<.05	<.05	.18	<.05	<.05	<.05	--	<.05
05/06/91	--	<.05	.49	.21	.16	<.05	.18	<.05	.09	<.05	--	.10
05/09/91	--	.13	1.0	.21	.16	<.05	.31	<.05	.09	<.05	--	.10
05/13/91	--	.10	.59	<.20	.13	<.05	.23	<.05	<.05	<.05	--	.08
05/16/91	--	<.05	.34	.20	<.05	<.05	.14	<.05	<.05	<.05	--	<.05

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued												
05/20/91	--	0.13	1.2	0.90	0.11	<0.05	0.38	<0.05	<0.05	<0.05	--	<0.05
05/24/91	--	.14	1.1	.60	.10	<.05	.40	<.05	<.05	<.05	--	<.05
05/28/91	--	.07	.83	.30	.09	<.05	.36	<.05	<.05	<.05	--	<.05
05/30/91	--	.13	1.1	.40	.11	<.05	.36	.09	<.05	<.05	--	.09
06/03/91	--	.18	1.6	.90	.17	<.05	.48	<.05	<.05	<.05	--	.08
06/06/91	--	.34	2.0	1.1	.16	<.05	.71	<.05	<.05	<.05	--	.08
06/10/91	--	.23	1.5	.80	.10	<.05	.67	<.05	<.05	<.05		.05
06/13/91	--	.29	2.6	1.2	.29	<.05	.97	.09	<.05	<.05	--	.11
06/17/91	--	.20	1.9	.80	.16	<.05	.71	<.05	<.05	<.05	--	.05
06/20/91	--	.30	2.5	.88	.22	<.05	.87	.20	<.05	<.05	--	.07
06/24/91	--	.44	3.6	1.8	.32	.19	1.4	.20	.05	<.05	--	.08
06/27/91	--	.40	2.6	1.5	.25	<.05	1.2	.09	<.05	<.05	--	.07
07/03/91	--	.22	1.5	.50	.18	<.05	.61	.10	<.05	<.05	--	.06
07/08/91	--	.16	1.3	.50	.16	<.05	.57	.10	<.05	<.05	--	.05
07/11/91	--	.46	3.3	1.2	.39	.15	1.3	.08	.08	<.05	--	.07
07/17/91	--	.16	1.1	.40	.17	.10	.51	.10	.13	.06	--	.05
07/23/91	--	.07	.64	<.20	<.05	<.05	.26	<.05	<.05	<.05	--	<.05
07/30/91	--	.08	.68	.30	.13	<.05	.25	<.05	<.05	<.05	--	<.05
08/06/91	--	<.05	.36	.20	.07	<.05	.16	<.05	<.05	<.05	--	<.05
08/12/91	--	.05	.40	.20	<.05	<.05	.20	<.05	<.05	<.05	--	<.05
08/20/91	--	<.05	.46	.30	<.05	<.05	.20	<.05	<.05	<.05	--	<.05
08/26/91	--	<.05	<.05	.25	.17	.14	<.05	<.05	.16	.07	--	.06

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued												
09/03/91	--	<0.05	<0.05	<0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05
09/09/91	--	<.05	.26	.30	<.05	<.05	.09	<.05	<.05	<.05	--	<.05
09/18/91	--	<.05	.17	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
09/23/91	--	<.05	.16	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
10/07/91	--	<.05	.15	<.20	.06	<.10	<.05	<.05	<.05	<.05	--	<.05
10/16/91	--	<.05	.10	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
10/23/91	--	<.05	<.05	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
10/31/91	--	<.05	.27	.39	.08	<.05	.06	<.05	.06	<.05	--	<.05
11/07/91	--	<.05	.17	<.20	.06	<.05	<.05	<.05	<.05	<.05	--	<.05
11/14/91	--	<.05	.18	<.20	.06	<.05	.05	<.05	<.05	<.05	--	<.05
11/19/91	--	<.05	.13	<.20	.05	<.05	.05	<.05	<.05	<.05	--	<.05
11/25/91	--	.05	.17	<.20	.06	<.05	.08	<.05	<.05	<.05	--	<.05
12/01/91	--	<.05	.12	<.20	.05	<.05	.05	<.05	<.05	<.05	--	<.05
12/10/91	--	<.05	.10	<.20	.05	<.05	.05	<.05	<.05	<.05	--	.07
12/17/91	--	<.05	.07	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
12/24/91	--	<.05	.09	<.20	<.05	<.05	.05	<.05	<.05	<.05	--	<.05
12/31/91	--	<.05	.10	<.20	.08	<.05	.05	<.05	<.05	<.05	--	<.05
01/07/92	--	<.05	.10	<.20	.07	<.05	.06	<.05	<.05	<.05	--	<.05
01/15/92	--	<.05	.12	<.20	.05	<.05	.07	<.05	<.05	<.05	--	<.05
01/20/92	--	<.05	.11	<.20	.05	<.05	.05	<.05	<.05	<.05	--	<.05
01/29/92	--	<.05	.09	<.20	.04	<.05	.05	<.05	.01	<.05	--	<.05
02/06/92	--	<.05	<.05	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued												
02/13/92	--	0.05	0.13	<0.20	0.08	<0.05	0.08	<0.05	<0.05	<0.05	--	0.06
02/20/92	--	<.05	<.10	<.20	.07	<.05	.07	<.05	<.05	<.05	--	<.05
02/26/92	--	<.05	<.05	<.20	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05
03/05/92	--	<.05	.07	<.20	<.05	<.05	.05	<.05	<.05	<.05	--	<.05
03/11/92	--	<.05	.11	<.20	.07	<.05	.08	<.05	<.05	<.05	--	<.05
03/19/92	--	<.05	.12	<.20	.05	<.05	.07	<.05	<.05	<.05	--	<.05
03/26/92	--	<.05	.15	<.20	.05	<.05	.10	<.05	<.05	<.05	--	.05
03/30/92	--	<.05	.19	<.20	.05	<.05	.08	<.05	<.05	<.05	--	<.05
04/10/92	--	<.05	.18	<.20	<.05	<.05	.08	<.05	<.05	<.05	--	<.05
04/15/92	--	<.05	.22	<.20	.05	<.05	.08	<.05	<.05	<.05	--	<.05
04/23/92	--	<.05	.09	<.20	<.05	<.05	<.10	<.05	<.05	<.05	--	<.05
04/30/92	--	.09	.64	<.20	<.05	<.05	.21	<.05	<.05	<.05	--	<.05
05/06/92	--	.10	1.1	<.20	.11	<.05	.52	<.05	<.05	<.05	--	.09
05/14/92	--	.08	.64	<.20	.10	<.05	.41	<.05	<.05	<.05	--	.07
05/20/92	--	<.05	.31	<.20	.08	<.05	.16	<.05	<.05	<.05	--	.08
05/28/92	--	<.05	.32	<.20	.08	<.05	.14	<.05	<.05	<.05	--	.09
06/03/92	--	.06	.37	<.20	.07	<.05	.17	<.05	<.05	<.05	--	.08
06/12/92	--	.16	1.1	.80	.14	<.10	.44	.10	<.05	<.05	--	.14
06/19/92	--	.09	.89	.30	.15	<.10	.39	.10	<.05	<.05	--	.14
06/25/92	--	.06	.70	.30	.13	.09	.22	.06	<.05	<.05	--	.09
07/02/92	--	.05	.76	<.20	.10	.09	.21	.06	<.05	<.05	--	.08
07/09/92	--	.05	.81	.30	.16	.10	.19	.05	<.05	<.05	--	.08
07/16/92	--	.12	1.2	.40	.23	.14	.38	.06	<.05	<.05	--	.10

Table 2. Results of analysis of selected herbicides and degradation products by U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, 1991–2003.—Continued

[--, no data; <, less than; *, reported estimates from laboratory; ametryn, molinate, pendamethalin, propanil, propazine, and trifluralin were not detected]

Date of collection (month/day/year)	Concentration, in micrograms per liter											
	Acetochlor	Alachlor	Atrazine	Cyanazine	Deethylatrazine	Deisopropylatrazine	Metolachlor	Metribuzin	Prometon	Prometryn	Propachlor	Simazine
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued												
07/23/92	--	0.10	0.80	0.30	0.18	0.12	0.18	<0.05	<0.05	<0.05	--	0.09
07/31/92	--	.11	1.5	.50	.33	.19	.39	.05	<.05	<.05	--	.10
08/05/92	--	.10	1.4	.40	.36	.22	.47	.05	<.05	<.05	--	.08
08/13/92	--	.07	1.1	.20	.34	.17	.33	.08	.06	<.05	--	.09
08/21/92	--	.07	.85	.20	.32	.16	.25	<.05	.06	<.05	--	<.05
09/04/92	--	.05	.50	.20	.23	.12	.16	<.05	.06	<.05	--	<.05
09/09/92	--	<.05	.41	<.20	.21	.12	.11	<.05	.05	<.05	--	<.05
09/16/92	--	<.05	.36	<.20	<.05	<.05	.08	<.05	<.05	<.05	--	<.05
09/23/92	--	<.05	.33	<.20	<.05	<.05	.07	<.05	<.05	<.05	--	<.05

Table 3. Results of analysis of alachlor, atrazine, metolachlor, and simazine by the Jefferson Parish Water Quality Laboratory, Jefferson, Louisiana, for water samples collected from the Mississippi River at New Orleans, Louisiana, March through September 1993.

[<, less than]

Date of collection (month/day/year)	Concentration, in micrograms per liter			
	Alachlor	Atrazine	Metolachlor	Simazine
03/03/93	<0.03	0.10	0.09	0.06
03/10/93	<.03	.05	.06	.02
03/17/93	<.03	.06	.03	.02
03/24/93	.05	.02	.06	.07
03/31/93	<.03	.06	.05	.02
04/07/93	<.01	.07	.09	.05
04/14/93	<.01	.07	.07	<.01
04/21/93	<.01	.08	.09	.01
04/28/93	.03	.20	.16	.12
05/05/93	.03	.35	.17	.18
05/12/93	.03	.37	.18	.31
05/19/93	.11	.85	.10	.14
05/26/93	.06	.90	.27	.35
06/02/93	.09	1.2	.28	.24
06/09/93	.05	.70	.32	.09
06/16/93	.05	1.0	.25	.09
06/23/93	.13	1.6	.39	.09
06/30/93	.40	4.2	1.3	.18
07/14/93	.36	3.8	1.5	.13
07/21/93	.20	3.1	.87	.20
07/28/93	.27	3.1	.65	.21
08/04/93	.18	2.8	.63	.11
08/11/93	.12	1.2	.63	.15
09/15/93	.03	1.3	.32	.11
09/22/93	.01	.46	.08	.02
09/29/93	.01	.66	.07	.02

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than; ESA, ethanesulfonic acid; ELISA, enzyme-linked immunosorbent assay; ametryn, deisopropylprometryn, demethylnorflurazon, flufenacet, norflurazon, pendimethalin, propachlor, propanil, propazine, prometryn, terbutryn, and 3-trifluoromethylaniline were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
07/07/93	1100	R	--	0.36	2.2	3.2	0.40	0.29	1.4	0.95	--	--	--	1.0	0.10	--	0.06	0.12	--	--
07/09/93	1430	R	--	.37	2.0	3.3	.46	.31	1.5	.99	--	--	--	1.1	.10	--	.07	.09	--	--
07/12/93	1605	R	--	.32	2.8	3.0	.52	.31	1.2	1.1	--	--	--	1.1	.08	--	<.05	.08	--	--
07/15/93	1440	R	--	.31	2.6	3.2	.50	.35	1.3	.97	--	--	--	.97	.08	--	.06	.09	--	--
07/19/93	1333	R	--	.23	1.7	2.7	.52	.33	1.2	.98	--	--	--	.87	.13	--	<.05	.07	--	--
07/22/93	0830	R	--	.17	1.4	2.1	.43	.27	.84	.78	--	--	--	.64	.12	--	<.05	.05	--	--
07/26/93	1400	R	--	.15	1.8	1.8	.40	.26	.96	--	--	--	--	.60	<.05	--	.06	<.05	--	--
07/29/93	1530	R	--	.14	2.0	1.7	.38	.27	.75	--	--	--	--	.56	<.05	--	<.05	<.05	--	--
08/02/93	1130	R	--	.12	1.7	1.6	.33	.22	.73	--	--	--	--	.52	<.05	--	<.05	<.05	--	--
08/05/93	1215	R	--	.13	2.3	2.0	.45	.35	.74	1.2	--	--	--	.63	<.05	--	<.05	<.05	--	--
08/06/93	1030	R	--	.14	1.2	2.2	.51	.38	.76	1.2	--	--	--	.70	<.05	--	<.05	<.05	--	--
08/09/93	1500	R	--	.10	1.7	1.8	.46	.37	.64	1.0	--	--	--	.59	<.05	--	<.05	<.05	--	--
08/09/93	1500	L	--	.12	1.7	1.9	.46	.37	.65	--	--	--	--	.60	<.05	--	<.05	<.05	--	--
08/12/93	1200	R	--	.09	1.3	1.5	.34	.25	.45	.75	--	--	--	.53	<.05	--	<.05	<.05	--	--
08/12/93	1200	L	--	.10	--	1.8	.40	.28	.53	.75	--	--	--	.57	<.05	--	<.05	<.05	--	--
08/16/93	1440	R	--	.18	2.0	1.4	.47	.31	.64	.78	--	--	--	.54	<.05	--	<.05	<.05	--	--
08/19/93	1340	R	--	.15	2.2	1.4	.46	.31	.58	.80	--	--	--	.52	<.05	--	<.05	<.05	--	--
08/23/93	1300	R	--	.10	1.2	1.4	.42	.29	.49	.89	--	--	--	.48	<.05	--	<.05	<.05	--	--
08/27/93	--	R	--	.09	1.3	1.4	.42	.28	.51	.78	--	--	--	.45	<.05	--	<.05	<.05	--	--
08/30/93	1040	R	--	.07	1.1	1.1	.38	.24	.34	.65	--	--	--	.35	<.05	--	<.05	<.05	--	--

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
09/02/93	1100	R	--	0.06	1.1	1.2	0.39	0.24	0.35	0.59	--	--	--	0.32	<0.05	--	<0.05	<0.05	--	--
09/07/93	1030	R	--	.05	1.2	.93	.32	.19	.24	.32	--	--	--	.25	<.05	--	<.05	<.05	--	--
09/16/93	--	R	--	.05	1.2	.85	.33	.20	.15	.27	--	--	--	.25	<.05	--	<.05	<.05	--	--
09/16/93	--	L	--	.05	.87	.90	.35	.18	.17	.25	--	--	--	.25	<.05	--	<.05	<.05	--	--
09/23/93	1515	R	--	<.05	1.2	.79	.32	.19	.12	.15	--	--	--	.21	<.05	--	<.05	<.05	--	--
10/01/93	1430	R	--	<.05	1.2	.63	.26	.16	.09	.10	--	--	--	.15	<.05	--	<.05	<.05	--	--
10/01/93	1430	L	--	<.05	1.2	.64	.24	.14	.08	.10	--	--	--	.15	<.05	--	<.05	<.05	--	--
10/08/93	1600	R	--	<.05	.73	.46	.17	.10	.06	.08	--	--	--	.10	<.05	--	<.05	<.05	--	--
10/15/93	1500	R	--	<.05	.89	.46	.18	.10	.06	<.05	--	--	--	.09	<.05	--	<.05	<.05	--	--
10/22/93	1130	R	--	<.05	.56	.35	.13	.08	.06	<.05	--	--	--	.07	<.05	--	<.05	<.05	--	--
10/22/93	1130	L	--	<.05	1.0	.50	.20	.12	.08	<.05	--	--	--	.10	<.05	--	<.05	<.05	--	--
11/05/93	1230	R	--	<.05	.78	.42	.15	.09	<.05	.08	--	--	--	.11	<.05	--	<.05	<.05	--	--
11/10/93	1100	R	--	<.05	.77	.37	.14	.09	.05	.09	--	--	--	.10	<.05	--	<.05	<.05	--	--
11/19/93	1430	R	--	<.05	1.2	.27	.07	.05	<.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
11/19/93	1430	L	--	<.05	1.1	.35	.09	.07	<.05	--	--	--	--	.10	<.05	--	<.05	<.05	--	--
11/24/93	1715	R	--	<.05	1.1	.31	.08	.06	<.05	--	--	--	--	.07	<.05	--	<.05	.06	--	--
12/04/93	1230	R	--	<.05	.85	.21	<.05	<.05	<.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
12/09/93	1130	R	--	<.05	.89	.25	.08	<.05	<.05	--	--	--	--	.10	<.05	--	<.05	<.05	--	--
12/22/93	1400	R	--	<.05	.68	.17	.05	<.05	<.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
12/31/93	1115	R	--	<.05	.82	.16	<.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
01/06/94	1415	R	--	<0.05	0.83	0.16	<0.05	<0.05	<0.05	--	--	--	--	0.06	<0.05	--	<0.05	<0.05	--	--
01/13/94	1430	R	--	<.05	.67	.17	<.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
01/21/94	1615	R	--	<.05	.37	.09	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
01/21/94	1615	L	--	<.05	.39	.10	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
01/27/94	1630	R	--	<.05	.25	.08	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/04/94	1145	R	--	<.05	.28	.07	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/10/94	1200	R	--	<.05	.30	.09	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/17/94	1400	R	--	<.05	.39	.09	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/25/94	1500	R	--	<.05	.27	.05	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/04/94	1700	R	--	<.05	.33	.08	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/04/94	1700	L	--	<.05	--	.06	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/11/94	1700	R	--	<.05	.40	.08	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/23/94	1330	R	--	<.05	.35	.09	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
04/01/94	1615	R	--	<.05	<.10	.11	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
04/08/94	1645	R	--	<.05	.34	.33	<.05	<.05	<.05	--	--	--	--	.13	<.05	--	<.05	<.05	--	--
04/22/94	1315	R	<0.05	<.05	.39	.38	<.05	<.05	<.05	--	--	--	--	.13	<.05	--	<.05	<.05	--	--
04/28/94	1245	R	<.05	.07	.41	.77	<.05	<.05	.27	--	--	--	--	.30	<.05	--	<.05	.08	--	--
05/04/94	1630	R	<.05	<.05	<.10	.41	.11	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	.06	--	--
05/13/94	1530	R	<.05	.20	.56	2.1	.13	.09	.93	--	--	--	--	.84	<.05	--	<.05	.19	--	--
06/24/94	1050	R	<.05	.15	.82	2.0	.24	.18	1.1	--	--	--	--	.71	<.05	--	<.05	.08	--	--

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
06/24/94	1050	L	<0.05	0.14	0.90	2.0	0.24	0.18	0.96	--	--	--	--	0.70	<0.05	--	<0.05	0.06	--	--
07/01/94	1645	R	<.05	.12	.96	2.0	.25	.18	.87	--	--	--	--	.65	<.05	--	<.05	.07	--	--
07/07/94	1500	R	<.05	.11	1.2	2.1	.29	.24	1.1	--	--	--	--	.81	<.05	--	<.05	.06	--	--
07/15/94	1210	R	<.05	.07	1.0	1.6	.28	.23	.77	--	--	--	--	.56	<.05	--	<.05	.06	--	--
07/22/94	1200	R	<.05	<.05	.76	1.1	.22	.17	.60	--	--	--	--	.50	<.05	--	<.05	<.05	--	--
08/05/94	1300	R	<.05	<.05	.97	.67	.16	.12	.36	--	--	--	--	.22	<.05	--	<.05	<.05	--	--
08/05/94	1300	L	<.05	<.05	1.1	.66	.16	.11	.38	--	--	--	--	.22	<.05	--	<.05	<.05	--	--
08/09/94	1100	R	<.05	<.05	1.1	.68	.16	.09	.31	--	--	--	--	.20	<.05	--	<.05	<.05	--	--
08/19/94	1300	R	<.05	<.05	.66	.35	.10	.06	.30	--	--	--	--	.09	<.05	--	<.05	<.05	--	--
08/29/94	1335	R	<.05	<.05	.54	.23	.07	.05	.05	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
08/29/94	1335	L	<.05	<.05	.55	.24	.07	.05	.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
09/08/94	1445	R	--	--	.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/16/94	1430	R	<.05	<.05	.51	.28	.07	.05	.05	--	--	--	--	.11	<.05	--	<.05	<.05	--	--
09/23/94	1515	R	<.05	<.05	.47	.28	.07	.07	.06	--	--	--	--	.11	<.05	--	<.05	<.05	--	--
09/30/94	1415	R	<.05	<.05	.43	.19	.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
10/05/94	1500	R	<.05	<.05	--	.22	.06	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
10/13/94	1345	R	<.05	<.05	.51	.18	.07	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
10/13/94	1345	L	<.05	<.05	.58	.18	.07	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
10/21/94	0915	R	<.05	<.05	.46	.16	.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
10/26/94	1530	R	<.05	<.05	.46	.16	.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--

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11/04/94	1230	R	<0.05	<0.05	0.40	0.15	0.05	<0.05	<0.05	--	--	--	--	0.07	<0.05	--	<0.05	<0.05	--	--
11/10/94	1205	R	<.05	<.05	.49	.13	.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
11/10/94	1205	L	<.05	<.05	.53	.15	.06	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
11/10/94	1315	R	<.05	<.05	.52	.18	.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
11/23/94	1400	R	<.05	<.05	.41	.31	.05	<.05	<.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
12/01/94	1420	R	<.05	<.05	.41	<.05	.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
12/07/94	1415	R	<.05	<.05	.35	.24	.06	<.05	.06	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
12/07/94	1415	L	<.05	<.05	.25	.24	.06	<.05	.06	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
12/15/94	1300	R	<.05	<.05	.31	.24	.06	<.05	<.05	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
12/23/94	--	R	<.05	<.05	.32	.19	.05	<.05	<.05	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
01/05/95	1250	R	<.05	<.05	.36	.17	.05	<.05	.07	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
01/13/95	1140	R	<.05	<.05	.41	.14	<.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
01/19/95	1430	R	<.05	<.05	.23	.13	.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	.05	--	--
01/27/95	1530	R	<.05	<.05	.31	.12	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/03/95	1530	R	<.05	<.05	.34	.14	.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
02/03/95	1530	L	<.05	<.05	.34	.14	<.05	<.05	<.05	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
02/10/95	1600	R	<.05	<.05	.39	.17	.05	<.05	<.05	--	--	--	--	.06	<.05	--	<.05	<.05	--	--
02/17/95	1530	R	<.05	<.05	.30	.17	.05	<.05	<.05	--	--	--	--	.05	<.05	--	<.05	<.05	--	--
02/24/95	1400	R	<.05	<.05	.31	.15	.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/02/95	1015	R	<.05	<.05	.20	.10	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than; ESA, ethanesulfonic acid; ELISA, enzyme-linked immunosorbent assay; ametryn, deisopropylprometryn, demethylnorflurazon, flufenacet, norflurazon, pendimethalin, propachlor, propanil, propazine, prometryn, terbutryn, and 3-trifluoromethylaniline were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
03/02/95	1015	L	<0.05	<0.05	0.24	0.10	<0.05	<0.05	<0.05	--	--	--	--	<0.05	<0.05	--	<0.05	<0.05	--	--
03/10/95	1410	R	<.05	<.05	.26	.10	<.05	<.05	<.05	--	--	--	--	<.05	<.05	--	<.05	<.05	--	--
03/15/95	1515	R	<.05	<.05	.32	.13	<.05	<.05	<.05	--	--	--	--	.07	<.05	--	<.05	<.05	--	--
03/29/95	1530	R	.07	<.05	.47	.20	<.05	<.05	<.05	<0.05	--	--	--	.09	<.05	--	<.05	.06	--	--
04/05/95	1510	R	<.05	<.05	.54	.24	.05	<.05	.09	<.05	--	--	--	.11	<.05	--	<.05	<.05	--	--
04/14/95	1315	R	<.05	<.05	.59	.22	<.05	<.05	<.05	<.05	--	--	--	.10	<.05	--	<.05	<.05	--	--
04/21/95	1530	R	<.05	<.05	.75	.44	<.05	<.05	<.05	<.05	--	--	--	.27	<.05	--	<.05	<.05	--	--
04/21/95	1530	L	<.05	<.05	.84	.46	<.05	<.05	.09	<.05	--	--	--	.28	<.05	--	<.05	<.05	--	--
04/28/95	1115	R	.06	<.05	.61	.65	.08	<.05	.24	.07	--	--	--	.49	.07	--	<.05	.05	--	--
05/05/95	1515	R	.08	<.05	.81	1.1	.13	.06	.16	.07	--	--	--	.38	<.05	--	<.05	.14	--	--
05/15/95	1430	R	.09	<.05	.67	.95	.12	.53	.15	.10	--	--	--	.30	<.05	--	<.05	.13	--	--
05/19/95	1330	R	.09	<.05	.67	1.1	.13	.14	.37	.18	--	--	--	.27	<.05	--	<.05	.07	--	--
05/19/95	1330	L	.09	<.05	.68	1.1	.14	.24	.43	.23	--	--	--	.28	<.05	--	<.05	.08	--	--
05/26/95	1400	R	.19	<.05	.63	1.4	.18	.10	.62	.23	--	--	--	.44	<.05	--	<.05	.15	--	--
06/07/95	1445	R	.20	.07	.65	2.0	.31	.16	.89	<.05	--	--	--	.61	<.05	--	<.05	.22	--	--
06/15/95	1410	R	.28	.07	.86	2.3	.34	.19	1.2	.56	--	--	--	.73	<.05	--	<.05	.20	--	--
06/15/95	1410	L	.22	.06	.93	2.0	.30	.16	1.0	.46	--	--	--	.64	<.05	--	<.05	.17	--	--
06/23/95	1315	R	.21	.07	.47	2.3	.27	.36	1.4	.60	<0.05	--	--	.68	<.05	--	<.05	.14	--	--
07/03/95	1400	R	.10	.05	.52	1.7	.22	.30	.92	.49	<.05	--	--	.54	<.05	--	<.05	.69	--	--
07/06/95	1030	R	.08	.05	.67	1.5	.22	.14	.75	.43	<.05	--	--	.48	<.05	--	<.05	.07	--	--

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
07/06/95	1030	L	0.07	<0.05	0.72	1.5	0.21	0.13	0.68	0.42	<0.05	--	--	0.48	<0.05	--	<0.05	0.10	--	--
07/20/95	1430	R	<.05	<.05	.83	1.3	.21	.12	.68	.36	<.05	--	<0.05	.44	<.05	<0.05	<.05	.05	--	<0.05
07/27/95	1150	R	<.05	<.05	.75	1.6	.27	.18	.88	.55	<.05	--	<.05	.44	<.05	<.05	<.05	.06	--	<.05
08/02/95	1400	R	<.05	<.05	.67	.97	.15	<.05	.35	.13	<.05	--	<.05	.27	<.05	<.05	<.05	<.05	<0.05	<.05
08/11/95	1100	R	<.05	<.05	.64	.63	.13	.07	.19	.10	<.05	--	<.05	.20	<.05	<.05	<.05	<.05	<.05	<.05
08/18/95	1300	R	<.05	<.05	.74	.69	.14	.47	.20	.13	<.05	--	<.05	.22	<.05	<.05	<.05	<.05	<.05	<.05
08/18/95	1300	L	<.05	<.05	.93	.71	.14	.33	.20	.10	<.05	--	<.05	.23	<.05	<.05	<.05	.05	<.05	<.05
08/25/95	1400	R	<.05	<.05	.94	.65	.15	.12	.17	<.05	<.05	--	<.05	.23	<.05	<.05	<.05	<.05	<.05	<.05
09/04/95	1430	R	<.05	<.05	1.1	.57	.15	.10	.13	<.05	<.05	--	<.05	.15	<.05	<.05	<.05	<.05	<.05	<.05
09/07/95	1330	R	<.05	<.05	1.2	.52	.13	.10	.11	<.05	<.05	--	<.05	.19	<.05	<.05	<.05	<.05	<.05	<.05
09/15/95	1100	R	<.05	<.05	1.2	.45	.11	.08	.10	<.05	<.05	--	<.05	.14	<.05	<.05	<.05	<.05	<.05	<.05
09/22/95	1400	R	<.05	<.05	.99	.24	.07	.06	.05	<.05	<.05	--	<.05	.06	<.05	<.05	<.05	<.05	<.05	<.05
09/22/95	1400	L	<.05	<.05	.87	.29	.09	.06	.05	<.05	<.05	--	<.05	.07	<.05	<.05	<.05	<.05	<.05	<.05
09/28/95	1330	R	<.05	<.05	.59	.20	.06	<.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	<.05	<.05	<.05	<.05
01/12/96	1300	R	<.05	<.05	.40	.12	<.05	<.05	<.05	<.05	<.05	--	<.05	.06	<.05	<.05	<.05	<.05	<.05	<.05
01/12/96	1300	L	<.05	<.05	.45	.11	<.05	<.05	<.05	<.05	<.05	--	<.05	.06	<.05	<.05	<.05	<.05	<.05	<.05
01/31/96	1330	R	<.05	<.05	.33	.10	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
01/31/96	1330	L	<.05	<.05	.28	.10	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
02/16/96	1100	R	<.05	<.05	.33	.11	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
02/29/96	1130	R	<.05	<.05	.25	.11	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
03/08/96	1400	R	<0.05	<0.05	0.32	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
03/15/96	1430	R	<.05	<.05	.26	.14	<.05	<.05	<.05	<.05	<.05	--	<.05	.11	<.05	<.05	<.05	<.05	<.05	<.05
03/15/96	1430	L	<.05	<.05	.22	.12	<.05	<.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	<.05	<.05	<.05	<.05
03/22/96	1330	R	<.05	<.05	.24	.12	<.05	<.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	<.05	<.05	<.05	<.05
04/05/96	1230	R	<.05	<.05	.43	.17	<.05	<.05	<.05	<.05	<.05	--	<.05	.10	<.05	<.05	<.05	<.05	<.05	<.05
04/12/96	1300	R	<.05	<.05	.32	.17	<.05	<.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	<.05	<.05	<.05	<.05
04/12/96	1300	L	<.05	<.05	.37	.18	<.05	<.05	<.05	<.05	<.05	--	<.05	.10	<.05	<.05	<.05	<.05	<.05	<.05
04/26/96	1400	R	<.05	<.05	.33	.76	.07	<.05	<.05	<.05	<.05	--	<.05	.48	.05	<.05	<.05	<.05	<.05	<.05
05/03/96	1030	R	.09	.05	.33	1.0	.08	.06	.07	<.05	<.05	--	<.05	.44	<.05	<.05	<.05	<.05	<.05	<.05
05/10/96	1830	R	.16	<.05	.37	1.8	.12	.08	.32	.08	<.05	--	<.05	.54	<.05	<.05	<.05	.21	<.05	<.05
05/17/96	1900	R	.12	<.05	.39	1.8	.14	.10	.31	.11	<.05	--	<.05	.56	<.05	<.05	<.05	.21	<.05	<.05
05/23/96	1700	R	.21	<.05	.46	3.0	.23	.13	.85	.32	<.05	--	<.05	.80	<.05	<.05	<.05	.17	<.05	<.05
05/31/96	1000	R	.34	<.05	.57	3.3	.28	.15	1.0	.40	<.05	--	<.05	1.1	<.05	<.05	<.05	.14	<.05	<.05
06/06/96	1025	R	.17	<.05	.58	2.2	.22	.12	.56	.31	<.05	--	<.05	.71	<.05	<.05	<.05	.11	<.05	<.05
06/06/96	1025	L	.18	<.05	.50	2.3	.24	.14	.58	.31	<.05	--	<.05	.74	<.05	<.05	<.05	.11	<.05	<.05
07/06/96	1030	R	.13	.06	1.2	2.1	.40	.47	.67	.44	<.05	--	<.05	.83	<.05	<.05	<.05	.15	<.05	<.05
07/10/96	1030	R	.11	.05	1.1	1.1	.38	.21	.40	.43	<.05	--	<.05	.75	<.05	<.05	<.05	.08	<.05	<.05
07/10/96	1030	L	.12	.05	1.4	1.1	.38	.09	.39	.41	<.05	--	<.05	.74	<.05	<.05	<.05	.07	<.05	<.05
07/18/96	1035	R	<.05	.05	.80	.70	.39	.25	.43	.79	<.05	--	<.05	.90	<.05	<.05	--	.08	<.05	<.05
08/02/96	1140	R	<.05	<.05	.51	.86	.22	.12	.35	<.05	<.05	--	<.05	.52	<.05	<.05	--	.08	<.05	<.05

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			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
08/09/96	1105	R	<0.05	<0.05	0.33	0.80	0.21	0.13	0.42	0.22	<0.05	--	<0.05	0.50	<0.05	<0.05	--	0.08	<0.05	<0.05
08/16/96	1130	R	<.05	<.05	.44	.74	.20	.12	.31	.17	<.05	--	<.05	.44	<.05	<.05	--	.06	<.05	<.05
08/30/96	1240	R	<.05	<.05	.59	.46	.16	.12	.16	<.05	<.05	--	<.05	.23	<.05	<.05	--	<.05	<.05	<.05
08/30/96	1240	R	<.05	<.05	.56	.48	.17	.11	.18	<.05	<.05	--	<.05	.24	<.05	<.05	--	.05	<.05	<.05
09/30/96	1500	R	<.05	<.05	.35	.20	.08	.05	.07	<.05	<.05	--	<.05	.10	<.05	<.05	--	<.05	<.05	<.05
10/30/96	1330	R	<.05	<.05	.25	.15	.06	<.05	<.05	<.05	<.05	--	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
11/21/96	1040	R	<.05	<.05	.25	.17	.08	<.05	<.05	<.05	<.05	--	<.05	.08	<.05	<.05	--	<.05	<.05	<.05
12/03/96	--	R	<.05	<.05	<.10	.09	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	
12/11/96	1545	R	<.05	<.05	.30	.12	.05	<.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
02/14/97	1130	R	<.05	<.05	.38	.07	<.05	<.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
03/05/97	1330	R	<.05	<.05	.39	.10	<.05	<.05	<.05	<.05	<.05	--	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
03/22/97	1130	R	<.05	<.05	.28	.08	<.05	<.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	--	<.05	<.05	<.05
03/27/97	1000	R	<.05	<.05	.36	.07	<.05	<.05	<.05	<.05	<.05	--	<.05	.08	<.05	<.05	--	<.05	<.05	<.05
04/03/97	1010	R	<.05	<.05	.40	.08	.05	<.05	<.05	<.05	<.05	--	<.05	.10	<.05	<.05	--	<.05	<.05	<.05
04/17/97	1505	R	.13	<.05	.34	.90	.06	.06	<.05	<.05	<.05	--	<.05	.39	<.05	<.05	--	.06	<.05	<.05
04/30/97	1600	R	.06	<.05	.38	.71	.06	.06	<.05	<.05	<.05	--	<.05	.33	<.05	<.05	--	<.05	<.05	<.05
05/16/97	0615	R	.12	<.05	.46	1.1	.11	.06	<.05	<.05	<.05	--	<.05	.60	<.05	<.05	--	.17	<.05	<.05
05/27/97	1255	R	.32	.05	.42	1.8	.14	.09	.81	.22	<.05	--	.06	.85	<.05	<.05	--	.09	<.05	<.05
06/06/97	1115	R	.10	<.05	<.10	.85	.07	.12	<.05	<.05	<.05	--	.17	.54	<.05	<.05	--	.05	<.05	<.05

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
06/06/97	1115	L	<0.05	<0.05	--	0.93	0.14	<0.05	0.32	0.11	<0.05	--	0.17	0.71	0.11	<0.05	--	0.06	<0.05	<0.05
06/27/97	1115	R	.17	<.05	0.86	2.2	.50	.39	.69	.49	<.05	--	.09	.92	<.05	.07	--	.24	<.05	<.05
07/01/97	1420	R	<.05	<.05	.85	2.0	.51	.40	.67	.55	<.05	--	.08	.79	<.05	.06	--	.20	<.05	<.05
07/14/97	1200	R	.07	<.05	.50	1.6	.35	.08	.46	.31	<.05	--	.09	.58	<.05	.06	--	.06	<.05	<.05
07/25/97	1030	R	<.05	<.05	.57	1.1	.28	<.05	.54	.14	<.05	--	<.05	.39	<.05	.10	--	<.05	<.05	<.05
08/14/97	1415	R	<.05	<.05	3.7	.46	.15	.10	.20	.09	<.05	--	<.05	.21	<.05	<.05	--	<.05	<.05	<.05
10/22/97	1045	R	<.05	<.05	1.8	.17	.07	<.05	.11	<.05	<.05	--	<.05	.10	<.05	<.05	--	<.05	<.05	<.05
12/10/97	1545	R	<.05	<.05	1.5	.13	.06	<.05	.10	<.05	<.05	--	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
12/10/97	1545	L	<.05	<.05	1.9	.13	.06	<.05	.10	<.05	<.05	--	<.05	.08	<.05	<.05	--	<.05	<.05	<.05
01/14/98	1430	R	<.05	<.05	.16	.14	.05	.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	--	.07	<.05	<.05
02/04/98	1015	R	<.05	<.05	.23	.09	.05	<.05	<.05	.05	<.05	--	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
02/19/98	1330	R	<.05	<.05	--	.08	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
02/19/98	1330	L	<.05	<.05	.25	.08	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
03/04/98	1000	R	<.05	<.05	.16	.07	.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
03/10/98	1000	R	<.05	<.05	.14	.09	.05	<.05	<.05	<.05	<.05	--	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
03/20/98	1010	R	<.05	<.05	.22	.09	.05	<.05	<.05	<.05	<.05	--	<.05	.14	<.05	<.05	--	<.05	<.05	<.05
03/27/98	1030	R	<.05	<.05	.02	.12	.05	<.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	--	<.05	<.05	<.05
04/10/98	1400	R	<.05	<.05	.35	.13	.07	<.05	<.05	<.05	<.05	--	<.05	.12	<.05	<.05	--	<.05	<.05	<.05
04/17/98	1200	R	<.05	<.05	.27	.16	.07	.05	.05	<.05	<.05	--	<.05	.13	<.05	<.05	--	<.05	<.05	<.05
04/22/98	1040	R	<.05	<.05	.47	.17	.09	<.05	<.05	<.05	<.05	--	<.05	.13	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
05/08/98	1200	R	0.07	<0.05	--	0.47	0.09	0.05	<0.05	<0.05	<0.05	--	<0.05	0.25	<0.05	<0.05	--	0.09	<0.05	<0.05
05/08/98	1200	L	<.05	<.05	0.32	.53	.09	.05	.08	<.05	<.05	--	<.05	.22	<.05	<.05	--	.08	<.05	<.05
07/24/98	1100	R	<.05	<.05	.86	.99	.43	.24	.36	.48	<.05	--	.05	.55	<.05	<.05	--	.06	<.05	<.05
08/07/98	1105	R	<.05	<.05	.38	.60	.14	.05	.20	.21	<.05	--	.09	.39	<.05	<.05	--	.05	<.05	.06
08/13/98	1345	R	<.05	<.05	.54	.44	.17	.10	.14	<.05	<.05	--	.06	.22	<.05	<.05	--	<.05	<.05	<.05
08/27/98	1120	R	<.05	<.05	--	.27	.12	<.05	<.05	.09	<.05	--	<.05	.17	<.05	<.05	--	<.05	<.05	<.05
09/11/98	1535	R	<.05	<.05	--	.25	.16	.05	.09	.06	<.05	--	<.05	.15	.07	<.05	--	<.05	<.05	<.05
09/18/98	1045	R	<.05	<.05	--	.23	.14	.08	.06	<.05	<.05	--	<.05	.11	<.05	<.05	--	<.05	<.05	<.05
10/02/98	1515	R	.10	<.05	--	.19	.12	.05	.06	.09	<.05	--	<.05	.09	<.05	<.05	--	<.05	<.05	<.05
10/23/98	1120	R	<.05	<.05	--	.28	.11	<.05	.05	<.05	<.05	--	<.05	.13	<.05	<.05	--	<.05	<.05	<.05
10/30/98	1330	R	<.05	<.05	--	.30	.13	<.05	.06	<.05	<.05	--	<.05	.12	.05	<.05	--	<.05	<.05	<.05
11/10/98	1430	R	<.05	<.05	--	.20	.10	.05	<.05	<.05	<.05	--	<.05	.09	<.05	<.05	--	<.05	<.05	<.05
11/23/98	0900	R	<.05	<.05	--	.16	.10	<.05	<.05	<.05	<.05	--	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
12/23/98	0745	R	<.05	<.05	--	.10	.06	<.05	<.05	<.05	<.05	--	<.05	.06	<.05	<.05	--	<.05	<.05	<.05
01/05/99	1100	R	<.05	<.05	--	.08	.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
01/20/99	1030	R	<.05	<.05	--	.08	.05	<.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
01/20/99	1030	L	<.05	<.05	--	.07	.05	<.05	<.05	<.05	<.05	--	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
02/03/99	1000	R	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
02/23/99	1000	R	<.05	<.05	--	.13	.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
02/23/99	1000	L	<.05	<.05	--	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
03/12/99	0945	R	<0.05	<0.05	--	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05
03/26/99	1000	R	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
04/02/99	0800	R	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
04/08/99	1300	R	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	.08	<.05	<.05	--	<.05	<.05	<.05
04/15/99	1515	R	<.05	<.05	--	.32	.05	<.05	<.05	.21	<.05	<.05	<.05	.15	<.05	<.05	--	<.05	<.05	<.05
04/23/99	1245	R	<.05	<.05	--	.43	.05	<.05	<.05	<.05	<.05	<.05	<.05	.13	<.05	<.05	--	.21	<.05	<.05
04/30/99	1500	R	.19	<.05	--	1.0	.06	<.05	.07	<.05	<.05	.10	<.05	.36	<.05	<.05	--	.06	<.05	<.05
05/07/99	1000	R	.11	<.05	--	.90	.05	<.05	<.05	<.05	<.05	<.05	<.05	.39	<.05	<.05	--	<.05	<.05	<.05
05/17/99	1000	R	.17	<.05	--	1.2	.17	.08	.07	<.05	<.05	<.05	.12	.52	<.05	<.05	--	.16	<.05	<.05
05/25/99	1100	R	.16	<.05	--	1.4	.17	<.05	.06	<.05	<.05	.06	.12	.50	<.05	<.05	--	.23	<.05	<.05
06/03/99	1030	R	.49	<.05	--	.92	.37	.17	.06	<.05	<.05	.23	<.05	.67	<.05	<.05	--	.06	<.05	<.05
06/10/99	1200	R	.47	<.05	--	.50	.16	.05	<.05	<.05	<.05	.12	<.05	1.0	<.05	<.05	--	<.05	<.05	<.05
06/18/99	1100	R	.18	<.05	--	.39	.18	.08	<.05	<.05	<.05	.22	<.05	.46	<.05	<.05	--	<.05	<.05	<.05
06/18/99	1100	L	.18	<.05	--	.36	.18	.08	<.05	<.05	<.05	.21	<.05	.36	<.05	<.05	--	<.05	<.05	<.05
06/25/99	1145	R	.37	.05	--	.39	.38	.20	<.05	<.05	<.05	<.05	.06	.78	<.05	<.05	--	<.05	<.05	<.05
06/25/99	1145	L	.37	<.05	--	.49	.29	.09	<.05	<.05	<.05	<.05	<.05	.84	<.05	<.05	--	<.05	<.05	<.05
07/09/99	1530	R	.08	<.05	--	.21	.22	.14	<.05	.22	<.05	<.05	<.05	.34	<.05	<.05	--	<.05	<.05	<.05
08/06/99	1045	R	<.05	<.05	--	.52	.20	.08	.08	.19	<.05	<.05	<.05	.23	<.05	<.05	--	<.05	<.05	<.05
08/17/99	1500	R	<.05	<.05	--	.32	.17	.07	<.05	.25	<.05	<.05	<.05	.13	<.05	<.05	--	<.05	<.05	<.05
08/17/99	1500	L	<.05	<.05	--	.31	.16	.06	<.05	.42	<.05	<.05	<.05	.13	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

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			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
08/23/99	1400	R	<0.05	<0.05	--	0.48	0.18	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	--	<0.05	<0.05	<0.05
08/23/99	1400	L	<.05	<.05	--	.37	.14	.05	<.05	<.05	<.05	<.05	<.05	.11	<.05	<.05	--	<.05	<.05	<.05
09/02/99	1445	R	<.05	<.05	--	.15	.07	<.05	<.05	<.05	<.05	<.05	<.05	.06	<.05	<.05	--	<.05	<.05	<.05
09/27/99	1530	R	<.05	<.05	--	.23	.08	<.05	<.05	<.05	<.05	<.05	<.05	.05	<.05	<.05	--	<.05	<.05	<.05
10/04/99	1400	R	<.05	<.05	--	.48	.13	<.05	<.05	<.05	<.05	<.05	<.05	.09	<.05	<.05	--	<.05	<.05	<.05
10/20/99	1430	R	<.05	<.05	--	.13	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	.06	<.05
10/20/99	1430	L	<.05	<.05	--	.14	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/01/99	1430	R	<.05	<.05	--	.09	<.05	<.05	<.05	.79	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/19/99	1700	R	<.05	<.05	--	.09	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
12/06/99	1330	R	<.05	<.05	--	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
01/13/00	1500	R	<.05	<.05	--	.08	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
02/14/00	1545	R	<.05	<.05	--	.08	<.05	<.05	<.05	.44	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
05/12/00	1500	R	<.05	<.05	--	1.1	.15	<.05	<.05	<.05	<.05	<.05	.16	.36	<.05	<.05	--	.12	<.05	<.05
05/23/00	1300	R	<.05	<.05	--	1.1	.10	<.05	<.05	<.05	<.05	<.05	.15	.20	<.05	<.05	--	.08	<.05	<.05
06/20/00	1000	R	.12	<.05	--	1.2	.22	.11	<.05	<.05	<.05	.05	<.05	.31	<.05	<.05	--	.05	<.05	<.05
06/29/00	1145	R	.05	<.05	--	.77	.20	.08	<.05	<.05	<.05	<.05	<.05	.17	<.05	<.05	--	<.05	<.05	<.05
06/29/00	1145	L	.05	<.05	--	.76	.18	.08	<.05	<.05	<.05	<.05	<.05	.16	<.05	<.05	--	<.05	<.05	<.05
07/07/00	1400	R	.05	<.05	--	1.1	.40	.19	<.05	<.05	<.05	<.05	<.05	.23	<.05	<.05	--	<.05	<.05	<.05
07/18/00	1200	R	<.05	<.05	--	.69	.21	.10	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
08/03/00	1125	R	<.05	<.05	--	.42	.15	<.05	<.05	<.05	<.05	<.05	<.05	.08	<.05	<.05	--	<.05	<.05	<.05

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08/11/00	1045	R	<0.05	<0.05	--	0.44	0.14	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05
08/21/00	1100	R	<.05	<.05	--	.30	.09	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
08/29/00	1230	R	<.05	<.05	--	.29	.09	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
09/11/00	1045	R	<.05	<.05	--	.19	.08	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
09/11/00	1045	L	<.05	<.05	--	.20	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
09/27/00	1400	R	<.05	<.05	--	.09	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
09/27/00	1400	L	<.05	<.05	--	.10	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/10/00	1130	R	<.05	<.05	--	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/19/00	1145	R	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/06/00	1400	R	<.05	<.05	--	.17	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/20/00	1230	R	<.05	<.05	--	.14	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
12/04/00	1330	R	<.05	<.05	--	.12	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.17	<.05	<.05
12/18/00	1130	R	<.05	<.05	--	.08	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.07	<.05	<.05
01/05/01	1000	R	<.05	<.05	--	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
01/05/01	1000	L	<.05	<.05	--	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
02/08/01	1130	R	<.05	<.05	--	.08	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.05	<.05	<.05
02/23/01	1400	R	<.05	<.05	--	.10	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.11	<.05	<.05
03/06/01	1100	R	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
03/23/01	1500	R	<.05	<.05	--	.10	<.05	<.05	<.05	<.05	<.05	<.05	<.05	.06	<.05	<.05	--	<.05	<.05	<.05
04/06/01	1430	R	<.05	<.05	--	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	.05	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than; ESA, ethanesulfonic acid; ELISA, enzyme-linked immunosorbent assay; ametryn, deisopropylprometryn, demethylnorflurazon, flufenacet, norflurazon, pendimethalin, propachlor, propanil, propazine, prometryn, terbutryn, and 3-trifluoromethylaniline were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
05/03/01	1200	R	<0.05	<0.05	--	0.38	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.20	<0.05	<0.05	--	<0.05	<0.05	<0.05
05/17/01	1415	R	<.05	<.05	--	.21	.06	<.05	<.05	<.05	<.05	<.05	<.05	.18	<.05	<.05	--	<.05	<.05	<.05
05/24/01	1400	R	.31	<.05	--	.74	.17	.09	<.05	<.05	<.05	.07	<.05	.47	<.05	<.05	--	<.05	<.05	<.05
05/24/01	1400	L	.32	<.05	--	.76	.18	.09	<.05	<.05	<.05	.07	<.05	.48	<.05	<.05	--	.05	<.05	<.05
05/31/01	1400	R	.19	<.05	--	.61	.19	.08	<.05	<.05	<.05	.07	<.05	.41	<.05	<.05	--	.05	<.05	<.05
06/08/01	1400	R	.16	<.05	--	.50	.22	.10	<.05	<.05	<.05	<.05	<.05	.35	<.05	<.05	--	.08	<.05	<.05
07/02/01	1200	R	.14	<.05	--	.75	.48	.08	<.05	<.05	<.05	.06	<.05	.40	<.05	<.05	--	.05	<.05	<.05
07/16/01	1330	R	<.05	<.05	--	.77	.16	<.05	<.05	<.05	<.05	<.05	<.05	.20	<.05	<.05	--	<.05	<.05	<.05
07/30/01	1430	R	<.05	<.05	--	.41	.13	.08	<.05	<.05	<.05	<.05	<.05	.11	<.05	<.05	--	<.05	<.05	<.05
07/30/01	1430	L	<.05	<.05	--	.39	.13	.09	<.05	<.05	<.05	<.05	<.05	.10	<.05	<.05	--	<.05	<.05	<.05
08/13/01	1130	R	<.05	<.05	--	.42	.15	.08	<.05	<.05	<.05	<.05	<.05	.07	<.05	<.05	--	<.05	<.05	<.05
08/28/01	1330	R	<.05	<.05	--	.26	.09	<.05	<.05	<.05	.18	<.05	<.05	<.05	<.05	<.05	--	.12	<.05	<.05
09/18/01	1100	R	<.05	<.05	--	.16	.06	<.05	<.05	<.05	.19	<.05	<.05	<.05	<.05	<.05	--	.12	<.05	<.05
10/01/01	1330	R	<.05	<.05	--	.15	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/16/01	1200	R	<.05	<.05	--	.15	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/16/01	1200	L	<.05	<.05	--	.14	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/31/01	1300	R	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/14/01	1300	R	<.05	<.05	--	.10	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/14/01	1300	L	<.05	<.05	--	.10	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/28/01	1200	R	<.05	<.05	--	.11	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than; ESA, ethanesulfonic acid; ELISA, enzyme-linked immunosorbent assay; ametryn, deisopropylprometryn, demethylnorflurazon, flufenacet, norflurazon, pendimethalin, propachlor, propanil, propazine, prometryn, terbutryn, and 3-trifluoromethylaniline were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																	
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
12/10/01	1300	R	<0.05	<0.05	--	0.12	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	0.95	<0.05	<0.05
01/03/02	1140	R	<.05	<.05	--	.07	<.05	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.31	<.05	<.05
01/03/02	1140	L	<.05	<.05	--	.07	<.05	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.27	<.05	<.05
01/17/02	1100	R	<.05	<.05	--	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.17	<.05	<.05
02/04/02	1300	R	<.05	<.05	--	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.08	<.05	<.05
02/28/02	1230	R	<.05	<.05	--	.10	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.11	<.05	<.05
02/28/02	1230	L	<.05	<.05	--	.10	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.11	<.05	<.05
03/11/02	1300	R	<.05	<.05	--	.08	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.07	<.05	<.05
03/28/02	1300	R	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.10	<.05	<.05
03/28/02	1300	L	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.10	<.05	<.05
04/12/02	1115	R	<.05	<.05	--	.13	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.07	<.05	<.05
04/12/02	1115	L	<.05	<.05	--	.14	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.07	<.05	<.05
05/02/02	1300	R	<.05	<.05	--	.54	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.16	<.05	<.05
05/15/02	1300	R	.17	<.05	--	2.1	.15	.09	<.05	<.05	.17	.10	<.05	.37	<.05	<.05	--	.24	<.05	<.05
05/15/02	1300	L	.17	<.05	--	2.3	.15	.09	<.05	<.05	.16	.09	<.05	.38	<.05	<.05	--	.24	<.05	<.05
06/05/02	1200	R	.22	<.05	--	1.9	.27	.16	<.05	<.05	<.05	.12	<.05	.44	<.05	<.05	--	.18	<.05	<.05
06/05/02	1200	L	.22	<.05	--	1.8	.28	.17	<.05	<.05	<.05	.10	<.05	.43	<.05	<.05	--	.17	<.05	<.05
06/11/02	1030	R	.18	<.05	--	1.4	.20	.17	<.05	<.05	<.05	.07	<.05	.43	<.05	<.05	--	.14	<.05	<.05
07/02/02	1130	R	.27	<.05	--	.41	.35	.33	<.05	<.05	<.05	.11	<.05	.66	<.05	<.05	--	<.05	<.05	<.05
07/02/02	1130	L	.26	<.05	--	.38	.34	.33	<.05	<.05	<.05	.10	<.05	.60	<.05	<.05	--	<.05	<.05	<.05

Table 4. Results of analysis of selected triazine herbicides and degradation products by gas chromatography/mass spectrometry methods GCS (1993–96) and GCR (1996–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than; ESA, ethanesulfonic acid; ELISA, enzyme-linked immunosorbent assay; ametryn, deisopropylprometryn, demethylnorflurazon, flufenacet, norflurazon, pendimethalin, propachlor, propanil, propazine, prometryn, terbutryn, and 3-trifluoromethylaniline were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentration, in micrograms per liter																
			Acetochlor	Alachlor	Alachlor ESA ELISA	Atrazine	Deethylatrazine	Deisopropylatrazine	Cyanazine	Cyanazine amide	Demethylfluometuron	Dimethenamid	Fluometuron	Metolachlor	Metribuzin	Molinate	Prometon	Simazine	Trifluralin	3-trifluoromethylphenylurea
07/25/02	1400	R	0.08	<0.05	--	0.90	0.17	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.05	--	0.05	<0.05	<0.05
08/21/02	1100	R	<.05	<.05	--	.40	.12	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
09/17/02	1400	R	<.05	<.05	--	.22	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
10/16/02	1500	R	<.05	<.05	--	.11	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
11/19/02	1400	R	<.05	<.05	--	.07	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.06	<.05	<.05
11/19/02	1400	L	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.06	<.05	<.05
12/18/02	1330	R	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.05	<.05	<.05
12/18/02	1330	L	<.05	<.05	--	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.05	<.05	<.05
01/15/03	1400	R	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.30	<.05	<.05
01/15/03	1400	L	<.05	<.05	--	.06	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.32	<.05	<.05
02/20/03	1330	R	<.05	.07	--	.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	<.05	<.05	<.05
03/13/03	1200	R	<.05	.05	--	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.06	<.05	<.05
04/03/03	1100	R	<.05	<.05	--	.15	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	--	.10	<.05	<.05
05/19/03	1330	R	.13	<.05	--	2.1	.27	.18	<.05	<.05	<.05	<.05	<.05	.39	<.05	<.05	--	.30	<.05	<.05

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter												
			Acetochlor	Acetochlor ethanesulfonic acid	Acetochlor oxanilic acid	Acetochlor sulfynil acetic acid	Alachlor	Alachlor ethanesulfonic acid	Alachlor oxanilic acid	Alachlor sulfynil acetic acid	Alachlor ethanesulfonic acid 2nd amide	Dimethenamid	Dimethenamid ethanesulfonic acid	Dimethenamid oxanilic acid	Flufenacet
03/10/98	1000	R	--	< 0.20	<0 .20	--	--	< 0.20	<0.20	--	--	--	--	--	--
03/20/98	1010	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
03/27/98	1030	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
04/10/98	1400	R	--	< .20	< .20	--	--	.21	< .20	--	--	--	--	--	--
04/17/98	1200	R	--	< .20	< .20	--	--	.22	< .20	--	--	--	--	--	--
04/22/98	1040	R	--	< .20	< .20	--	--	.33	< .20	--	--	--	--	--	--
05/08/98	1200	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
07/24/98	1100	R	--	.53	.49	--	--	.38	< .20	--	--	--	--	--	--
08/07/98	1105	R	--	.33	.32	--	--	.38	<.20	--	--	--	--	--	--
08/07/98	1105	L	--	.35	.27	--	--	.30	< .20	--	--	--	--	--	--
08/13/98	1345	R	--	<.20	.21	--	--	.22	<.20	--	--	--	--	--	--
08/13/98	1345	L	--	< .20	< .20	--	--	.23	< .20	--	--	--	--	--	--
08/27/98	1120	R	--	.40	< .20	--	--	.44	< .20	--	--	--	--	--	--
09/11/98	1535	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
09/18/98	1045	R	--	.31	< .20	--	--	.27	< .20	--	--	--	--	--	--
10/02/98	1515	R	--	< .20	< .20	--	--	.23	< .20	--	--	--	--	--	--
10/23/98	1120	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
10/30/98	1330	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
11/10/98	1430	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
11/23/98	0900	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
12/23/98	0745	R	--	< .20	< .20	--	--	.32	< .20	--	--	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter												
			Acetochlor	Acetochlor ethanesulfonic acid	Acetochlor oxanilic acid	Acetochlor sulfynil acetic acid	Alachlor	Alachlor ethanesulfonic acid	Alachlor oxanilic acid	Alachlor sulfynil acetic acid	Alachlor ethanesulfonic acid 2nd amide	Dimethenamid	Dimethenamid ethanesulfonic acid	Dimethenamid oxanilic acid	Flufenacet
01/05/99	1100	R	--	< 0.20	< 0.20	--	--	0.22	< 0.20	--	--	--	--	--	--
01/20/99	1030	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
01/20/99	1030	L	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
02/03/99	1000	R	--	< .20	< .20	--	--	.20	< .20	--	--	--	--	--	--
02/23/99	1000	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
02/23/99	1000	L	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
03/12/99	0945	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
03/26/99	1000	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
04/02/99	0800	R	--	<.20	< .20	--	--	< .20	<.20	--	--	--	--	--	--
04/08/99	1300	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
04/15/99	1515	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
04/23/99	1245	R	--	< .20	< .20	--	--	< .20	< .20	--	--	--	--	--	--
04/30/99	1500	R	--	.10	.11	--	--	.13	.05	--	--	--	<0.05	<0.05	--
05/07/99	1000	R	--	.11	.12	--	--	.11	<.05	--	--	--	<.05	<.05	--
05/17/99	1000	R	--	.17	.20	--	--	.10	<.05	--	--	--	<.05	<.05	--
05/25/99	1100	R	--	.13	.20	--	--	.10	.05	--	--	--	<.05	<.05	--
06/03/99	1030	R	--	.29	.41	--	--	.13	.07	--	--	--	<.05	.05	--
06/10/99	1200	R	--	.42	.60	--	--	.26	< .20	--	--	--	--	--	--
06/18/99	1100	R	--	.33	.42	--	--	.23	< .20	--	--	--	--	--	--
06/25/99	1145	R	--	.45	.56	--	--	.21	.12	--	--	--	.07	.11	--
07/09/99	1530	R	--	< .20	.32	--	--	<.20	< .20	--	--	--	--	--	--
07/16/99	1000	R	--	<.20	<.20	--	--	<.20	<.20	--	--	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter												
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08/06/99	1045	R	--	0.29	0.28	--	--	0.15	0.09	--	--	--	<0.05	<0.005	--
08/17/99	1500	R	--	.25	.22	--	--	<.20	< .20	--	--	--	--	--	--
08/17/99	1500	L	--	.24	.21	--	--	<.20	<.20	--	--	--	--	--	--
08/23/99	1400	R	--	.39	.20	--	--	.09	<.05	--	--	--	<.05	<.05	--
09/02/99	1445	R	--	.25	.17	--	--	.18	.07	--	--	--	<.05	<.05	--
09/27/99	1530	R	--	.12	.06	--	--	.16	.05	--	--	--	<.05	<.05	--
10/04/99	1400	R	--	.12	.06	--	--	.16	<.05	--	--	--	<.05	<.05	--
10/20/99	1430	R	--	.07	.05	--	--	.14	<.05	--	--	--	<.05	<.05	--
11/01/99	1430	R	--	<.05	.06	--	--	.18	<.05	--	--	--	<.05	<.05	--
11/01/99	1430	L	--	.07	.07	--	--	.18	<.05	--	--	--	<.05	<.05	--
11/19/99	1700	R	--	<.05	<.05	--	--	.12	<.05	--	--	--	<.05	<.05	--
12/06/99	1330	R	--	<.05	<.05	--	--	.16	<.05	--	--	--	<.05	<.05	--
12/06/99	1330	L	--	<.05	<.05	--	--	.15	<.05	--	--	--	<.05	<.05	--
01/13/00	1500	R	--	< .20	<.20	--	--	<.20	< .20	--	--	--	--	--	--
02/14/00	1545	R	--	<.05	<.05	--	--	.20	<.05	--	--	--	<.05	<.05	--
05/12/00	1500	R	--	.07	.07	--	--	.10	<.05	--	--	--	<.05	<.05	--
05/23/00	1330	R	--	.10	.09	--	--	.09	.05	--	--	--	<.05	<.05	--
06/20/00	1000	R	--	.30	.34	--	--	.15	.07	--	--	--	<.05	.05	--
06/29/00	1145	R	--	.38	.38	--	--	.40	.08	--	--	--	<.05	.06	--
07/07/00	1400	R	--	.55	.55	--	--	.13	.08	--	--	--	.06	.05	--
07/18/00	1200	R	--	.58	.55	--	--	.15	.08	--	--	--	.07	.05	--
08/03/00	1125	R	--	<.05	.29	--	--	.15	.06	--	--	--	.06	.05	--
08/11/00	1045	R	--	.34	.20	--	--	.14	<.05	--	--	--	<.05	<.05	--
08/21/00	1100	R	--	.19	.14	--	--	.11	<.05	--	--	--	<.05	<.05	--
08/29/00	1230	R	--	.15	.12	--	--	.12	<.05	--	--	--	<.05	<.05	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

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08/29/00	1230	L	--	0.15	0.12	--	--	0.12	<0.05	--	--	--	<0.05	<0.05	--
09/11/00	1045	R	--	.13	.11	--	--	.14	<.05	--	--	--	<.05	<.05	--
09/27/00	1400	R	--	.10	.07	--	--	.10	<.05	--	--	--	<.05	<.05	--
10/10/00	1130	R	--	<.05	.08	--	--	.18	.06	--	--	--	<.05	<.05	--
10/19/00	1145	R	--	.08	.06	--	--	.08	<.05	--	--	--	<.05	<.05	--
11/06/00	1400	R	--	.10	.08	--	--	.08	<.05	--	--	--	<.05	<.05	--
11/20/00	1230	R	--	<.05	<.05	--	--	.15	<.05	--	--	--	<.05	<.05	--
12/04/00	1330	R	--	.08	<.05	--	--	.06	<.05	--	--	--	<.05	<.05	--
12/04/00	1330	L	--	.09	<.05	--	--	.07	<.05	--	--	--	<.05	<.05	--
12/18/00	1130	R	--	.11	.07	--	--	.10	<.05	--	--	--	<.05	<.05	--
01/05/01	1000	R	--	<.05	<.05	--	--	<.05	<.05	--	--	--	<.05	<.05	--
01/05/01	1000	L	--	<.05	<.05	--	--	<.05	<.05	--	--	--	<.05	<.05	--
02/08/01	1130	R	--	<.05	<.05	--	--	.09	<.05	--	--	--	<.05	<.05	--
02/23/01	1400	R	--	.06	<.05	--	--	.10	<.05	--	--	--	<.05	<.05	--
03/06/01	1100	R	--	.06	<.05	--	--	.06	<.05	--	--	--	<.05	<.05	--
03/23/01	1500	R	--	.08	.06	--	--	.08	<.05	--	--	--	<.05	<.05	--
04/06/01	1430	R	--	.08	.06	--	--	.11	.05	--	--	--	<.05	<.05	--
05/17/01	1415	R	--	.20	.14	--	--	.16	<.05	--	--	--	<.05	<.05	--
05/24/01	1400	R	--	.25	.29	--	--	.17	<.05	--	--	--	<.05	<.05	--
05/24/01	1400	L	--	.26	.30	--	--	.17	<.05	--	--	--	<.05	<.05	--
05/31/01	1400	R	--	.25	.32	--	--	.13	<.05	--	--	--	<.05	<.05	--
06/08/01	1400	R	--	.20	.26	--	--	.11	<.05	--	--	--	.05	<.05	--
07/02/01	1200	R	--	.45	.49	--	--	.18	.07	--	--	--	.05	.05	--
07/16/01	1330	R	--	.33	.31	--	--	.17	.05	--	--	--	<.05	<.05	--
07/30/01	1430	R	--	.25	.26	--	--	.13	<.05	--	--	--	<.05	<.05	--

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07/30/01	1430	L	--	0.28	0.28	--	--	0.13	<0.05	--	--	--	<0.05	<0.05	--
08/13/01	1130	R	--	.20	.20	--	--	.14	<.05	--	--	--	<.05	<.05	--
08/28/01	1330	R	--	.08	.11	--	--	.07	<.05	--	--	--	<.05	<.05	--
09/18/01	1100	R	--	.07	.08	--	--	.07	.05	--	--	--	<.05	<.05	--
10/01/01	1330	R	--	<.05	.06	--	--	.11	<.05	--	--	--	<.05	<.05	--
10/16/01	1200	R	--	.05	.07	--	--	.11	<.05	--	--	--	<.05	<.05	--
10/16/01	1200	L	--	.05	.07	--	--	.11	<.05	--	--	--	<.05	<.05	--
10/31/01	1300	R	--	.05	.07	--	--	.09	<.05	--	--	--	<.05	<.05	--
11/14/01	1300	R	--	.16	.10	--	--	.13	<.05	--	--	--	<.05	<.05	--
11/14/01	1300	L	--	.13	.10	--	--	.17	<.05	--	--	--	<.05	<.05	--
11/28/01	1200	R	--	.19	.10	--	--	.15	<.05	--	--	--	<.05	<.05	--
12/10/01	1300	R	--	.05	.05	<0.05	--	<.05	<.05	<0.05	--	--	<.05	<.05	--
01/03/02	1140	R	--	<.05	<.05	<.05	--	.05	<.05	<.05	--	--	<.05	<.05	--
01/03/02	1140	L	--	<.05	<.05	<.05	--	.06	<.05	<.05	--	--	<.05	<.05	--
01/17/02	1100	R	--	.09	<.05	<.05	--	.09	<.05	<.05	--	--	<.05	<.05	--
02/04/02	1300	R	--	.06	<.05	<.05	--	.06	<.05	<.05	--	--	<.05	<.05	--
02/28/02	1230	R	--	.06	<.05	<.05	--	.09	<.05	<.05	--	--	<.05	<.05	--
02/28/02	1230	L	--	.08	<.05	<.05	--	.07	<.05	<.05	--	--	<.05	<.05	--
03/11/02	1300	R	--	.07	<.05	<.05	--	.12	<.05	<.05	--	--	<.05	<.05	--
03/28/02	1300	R	--	.06	<.05	<.05	--	.08	<.05	<.05	--	--	<.05	<.05	--
03/28/02	1300	L	--	.05	<.05	<.05	--	.07	<.05	<.05	--	--	<.05	<.05	--
04/12/02	1115	R	--	<.05	<.05	<.05	--	.06	<.05	<.05	--	--	<.05	<.05	--
04/12/02	1115	L	--	<.05	<.05	<.05	--	.05	<.05	<.05	--	--	<.05	<.05	--
05/02/02	1300	R	--	.06	.05	<.05	--	.10	<.05	<.05	--	--	<.05	<.05	--
05/15/02	1300	R	--	.11	.12	<.05	--	.07	<.05	<.05	--	--	<.05	<.05	--

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05/15/02	1300	L	--	0.11	0.11	<0.05	--	0.07	<0.05	<0.05	--	--	<0.05	<0.05	--
06/05/02	1200	R	--	.20	.22	.17	--	.07	<.05	<.05	--	--	<.05	<.05	--
06/05/02	1200	L	--	.20	.22	.17	--	.06	<.05	<.05	--	--	<.05	<.05	--
06/11/02	1030	R	--	.17	.15	<.05	--	.06	<.05	<.05	--	--	<.05	<.05	--
07/02/02	1130	R	--	.32	.38	<.05	--	.09	<.05	<.05	--	--	.06	<.05	--
07/02/02	1130	L	--	.35	.43	<.05	--	.08	<.05	<.05	--	--	.06	<.05	--
07/25/02	1400	R	--	.13	.12	<.05	--	.09	<.05	<.05	--	--	<.05	<.05	--
08/21/02	1100	R	--	.10	.10	<.05	--	.09	<.05	<.05	--	--	<.05	<.05	--
09/17/02	1400	R	--	.11	.11	<.05	--	.12	<.05	<.05	--	--	<.05	<.05	--
10/16/02	1500	R	--	.06	.05	<.05	--	.07	<.05	<.05	--	--	<.05	<.05	--
11/19/02	1400	R	--	<.05	<.05	<.05	--	.05	<.05	<.05	--	--	<.05	<.05	--
12/18/02	1330	R	<0.02	<.02	.03	<.02	<0.02	.03	.02	<.02	<0.02	<0.02	<.02	<.02	<0.02
01/15/03	1400	R	<.02	.04	.06	<.02	<.02	.04	.03	<.02	<.02	<.02	<.02	<.02	<.02
02/20/03	1330	R	<.02	<.02	.04	<.02	<.02	.08	<.02	<.02	<.02	<.02	<.02	<.02	<.02
03/13/03	1200	R	<.02	<.02	<.02	<.02	<.02	.03	<.02	<.02	<.02	<.02	<.02	<.02	<.02
04/03/03	1100	R	<.02	.06	.03	<.02	<.02	.08	<.02	<.02	<.02	<.02	<.02	<.02	<.02
05/19/03	1330	R	.11	.08	.11	.10	<.02	.09	.02	<.02	<.02	.06	.02	<.02	<.02
06/03/03	1230	R	.14	.14	.21	.09	<.02	.05	.03	<.02	.03	.04	.06	.02	<.02
06/19/03	0830	R	.07	.12	.13	.11	<.02	.07	.02	<.02	<.02	.02	.02	.02	<.02
07/03/03	1330	R	.07	.24	.27	.19	<.02	.05	.03	<.02	<.02	<.02	.02	<.02	<.02
07/15/03	1230	R	<.02	.13	.14	.10	<.02	.07	.03	<.02	<.02	<.02	.03	<.02	<.02
07/30/03	1130	R	.05	.34	.33	.27	<.02	.10	.04	.04	<.02	<.02	.04	<.02	<.02
09/17/03	1400	R	<.02	.06	.06	.02	<.02	.04	<.02	<.02	<.02	<.02	<.02	<.02	<.02
09/29/03	1300	R	<.02	.12	.10	.03	<.02	.05	.02	<.02	<.02	<.02	.02	<.02	<.02
10/15/03	1430	R	<.02	.05	.04	.06	<.02	.03	<.02	<.02	<.02	<.02	.11	<.02	<.02

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			Acetochlor	Acetochlor ethanesulfonic acid	Acetochlor oxanilic acid	Acetochlor sulfynil acetic acid	Alachlor	Alachlor ethanesulfonic acid	Alachlor oxanilic acid	Alachlor sulfynil acetic acid	Alachlor ethanesulfonic acid 2nd amide	Dimethenamid	Dimethenamid ethanesulfonic acid	Dimethenamid oxanilic acid	Flufenacet
11/05/03	1230	R	<0.02	0.05	0.05	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
12/01/03	1055	R	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
12/01/03	1100	R	<.02	.05	.04	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
12/10/03	1100	L	<.02	.07	.04	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.02
12/30/03	1030	R	<.02	.05	.06	.03	<.02	.04	<.02	<.02	<.02	<.02	<.02	<.02	<.02

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Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
03/10/98	1000	R	--	--	--	0.49	< 0.20	--	--	--	--
03/20/98	1010	R	--	--	--	.49	< .20	--	--	--	--
03/27/98	1030	R	--	--	--	.39	< .20	--	--	--	--
04/10/98	1400	R	--	--	--	.66	.22	--	--	--	--
04/17/98	1200	R	--	--	--	.57	< .20	--	--	--	--
04/22/98	1040	R	--	--	--	.84	.30	--	--	--	--
05/08/98	1200	R	--	--	--	.84	< .20	--	--	--	--
07/24/98	1100	R	--	--	--	.78	.57	--	--	--	--
08/07/98	1105	R	--	--	--	.63	.46	--	--	--	--
08/07/98	1105	L	--	--	--	.97	.55	--	--	--	--
08/13/98	1345	R	--	--	--	.45	.33	--	--	--	--
08/13/98	1345	L	--	--	--	.69	.34	--	--	--	--
08/27/98	1120	R	--	--	--	1.2	.51	--	--	--	--
09/11/98	1535	R	--	--	--	.67	.23	--	--	--	--
09/18/98	1045	R	--	--	--	.79	.36	--	--	--	--
10/02/98	1515	R	--	--	--	.56	< .20	--	--	--	--
10/23/98	1120	R	--	--	--	< .20	< .20	--	--	--	--
10/30/98	1330	R	--	--	--	1.3	< .20	--	--	--	--
11/10/98	1430	R	--	--	--	.50	< .20	--	--	--	--
11/23/98	0900	R	--	--	--	.44	< .20	--	--	--	--
12/23/98	0745	R	--	--	--	.85	.38	--	--	--	--
01/05/99	1100	R	--	--	--	.85	< .20	--	--	--	--
01/20/99	1030	R	--	--	--	.28	< .20	--	--	--	--
01/20/99	1030	L	--	--	--	.23	< .20	--	--	--	--
02/03/99	1000	R	--	--	--	.31	< .20	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
02/23/99	1000	R	--	--	--	0.43	< 0.20	--	--	--	--
02/23/99	1000	L	--	--	--	.43	< .20	--	--	--	--
03/12/99	0945	R	--	--	--	.32	< .20	--	--	--	--
03/26/99	1000	R	--	--	--	.21	< .20	--	--	--	--
04/02/99	0800	R	--	--	--	.22	<.20	--			
04/08/99	1300	R	--	--	--	.22	< .20	--	--	--	--
04/15/99	1515	R	--	--	--	.25	< .20	--	--	--	--
04/23/99	1245	R	--	--	--	.26	< .20	--	--	--	--
04/30/99	1500	R	--	--	--	.46	.18	--	--	--	--
05/07/99	1000	R	--	--	--	.44	.23	--	--	--	--
05/17/99	1000	R	--	--	--	.51	.27	--	--	--	--
05/25/99	1100	R	--	--	--	.41	.24	--	--	--	--
06/03/99	1030	R	--	--	--	.53	.30	--	--	--	--
06/10/99	1200	R	--	--	--	.80	.46	--	--	--	--
06/18/99	1100	R	--	--	--	.78	.30	--	--	--	--
06/25/99	1145	R	--	--	--	.80	.46	--	--	--	--
07/09/99	1530	R	--	--	--	.36	.36	--	--	--	--
07/16/99	1000	R	--	--	--	< .20	< .20	--	--	--	--
08/06/99	1045	R	--	--	--	.58	.33	--	--	--	--
08/17/99	1500	R	--	--	--	.48	< .20	--	--	--	--
08/17/99	1500	L	--	--	--	.47	< .20	--	--	--	--
08/23/99	1400	R	--	--	--	.79	.34	--	--	--	--
09/02/99	1445	R	--	--	--	.57	.28	--	--	--	--
09/27/99	1530	R	--	--	--	.34	.14	--	--	--	--
10/04/99	1400	R	--	--	--	.34	.14	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
10/20/99	1430	R	--	--	--	0.26	0.13	--	--	--	--
11/01/99	1430	R	--	--	--	.20	.09	--	--	--	--
11/01/99	1430	L	--	--	--	.28	.13	--	--	--	--
11/19/99	1700	R	--	--	--	.19	.08	--	--	--	--
12/06/99	1330	R	--	--	--	.18	.09	--	--	--	--
12/06/99	1330	L	--	--	--	.19	.07	--	--	--	--
01/13/00	1500	R	--	--	--	< .20	< .20	--	--	--	--
02/14/00	1545	R	--	--	--	.32	<.05	--	--	--	--
05/12/00	1500	R	--	--	--	.27	.16	--	--	--	--
05/23/00	1330	R	--	--	--	.27	.11	--	--	--	--
06/20/00	1000	R	--	--	--	.55	.28	--	--	--	--
06/29/00	1145	R	--	--	--	.54	.30	--	--	--	--
07/07/00	1400	R	--	--	--	.73	.45	--	--	--	--
07/18/00	1200	R	--	--	--	.88	.50	--	--	--	--
08/03/00	1125	R	--	--	--	.79	.39	--	--	--	--
08/11/00	1045	R	--	--	--	.61	.30	--	--	--	--
08/21/00	1100	R	--	--	--	.37	.20	--	--	--	--
08/29/00	1230	R	--	--	--	.34	.19	--	--	--	--
08/29/00	1230	L	--	--	--	.34	.20	--	--	--	--
09/11/00	1045	R	--	--	--	.36	.16	--	--	--	--
09/27/00	1400	R	--	--	--	.24	.13	--	--	--	--
10/10/00	1130	R	--	--	--	.26	.11	--	--	--	--
10/19/00	1145	R	--	--	--	.20	.08	--	--	--	--
11/06/00	1400	R	--	--	--	.28	.12	--	--	--	--
11/20/00	1230	R	--	--	--	.22	.11	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
12/04/00	1330	R	--	--	--	0.26	0.11	--	--	--	--
12/04/00	1330	L	--	--	--	.23	.13	--	--	--	--
12/18/00	1130	R	--	--	--	.34	.09	--	--	--	--
01/05/01	1000	R	--	--	--	.13	.09	--	--	--	--
01/05/01	1000	L	--	--	--	.15	.07	--	--	--	--
02/08/01	1130	R	--	--	--	.19	.08	--	--	--	--
02/23/01	1400	R	--	--	--	.26	.11	--	--	--	--
03/06/01	1100	R	--	--	--	.23	.10	--	--	--	--
03/23/01	1500	R	--	--	--	.24	.11	--	--	--	--
04/06/01	1430	R	--	--	--	.30	.14	--	--	--	--
05/17/01	1415	R	--	--	--	.53	.19	--	--	--	--
05/24/01	1400	R	--	--	--	.53	.22	--	--	--	--
05/24/01	1400	L	--	--	--	.54	.23	--	--	--	--
05/31/01	1400	R	--	--	--	.53	.25	--	--	--	--
06/08/01	1400	R	--	--	--	.37	.21	--	--	--	--
07/02/01	1200	R	--	--	--	.64	.37	--	--	--	--
07/16/01	1330	R	--	--	--	.57	.26	--	--	--	--
07/30/01	1430	R	--	--	--	.40	.21	--	--	--	--
07/30/01	1430	L	--	--	--	.42	.21	--	--	--	--
08/13/01	1130	R	--	--	--	.37	.21	--	--	--	--
08/28/01	1330	R	--	--	--	.10	.13	--	--	--	--
09/18/01	1100	R	--	--	--	.08	.10	--	--	--	--
10/01/01	1330	R	--	--	--	.22	.10	--	--	--	--
10/16/01	1200	R	--	--	--	.22	.12	--	--	--	--
10/16/01	1200	L	--	--	--	.21	.11	--	--	--	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
10/31/01	1300	R	--	--	--	0.23	0.13	--	--	--	--
11/14/01	1300	R	--	--	--	.43	.17	--	--	--	--
11/14/01	1300	L	--	--	--	.40	.16	--	--	--	--
11/28/01	1200	R	--	--	--	.51	.19	--	--	--	--
12/10/01	1300	R	--	--	--	.19	.11	--	--	<0.05	--
01/03/02	1140	R	--	--	--	.18	.09	--	--	<.05	--
01/03/02	1140	L	--	--	--	.18	.08	--	--	<.05	--
01/17/02	1100	R	--	--	--	.22	.08	--	--	<.05	--
02/04/02	1300	R	--	--	--	.14	.07	--	--	<.05	--
02/28/02	1230	R	--	--	--	.24	.07	--	--	<.05	--
02/28/02	1230	L	--	--	--	.24	.10	--	--	<.05	--
03/11/02	1300	R	--	--	--	.25	<.05	--	--	<.05	--
03/28/02	1300	R	--	--	--	.22	.09	--	--	<.05	--
03/28/02	1300	L	--	--	--	.23	.08	--	--	<.05	--
04/12/02	1115	R	--	--	--	.14	.06	--	--	<.05	--
04/12/02	1115	L	--	--	--	.13	.06	--	--	<.05	--
05/02/02	1300	R	--	--	--	.32	.11	--	--	<.05	--
05/15/02	1300	R	--	--	--	.26	.11	--	--	<.05	--
05/15/02	1300	L	--	--	--	.25	.12	--	--	<.05	--
06/05/02	1200	R	--	--	--	.36	.16	--	--	<.05	--
06/05/02	1200	L	--	--	--	.35	.16	--	--	<.05	--
06/11/02	1030	R	--	--	--	.28	.17	--	--	<.05	--
07/02/02	1130	R	--	--	--	.39	.24	--	--	<.05	--
07/02/02	1130	L	--	--	--	.43	.26	--	--	<.05	--
07/25/02	1400	R	--	--	--	.29	.08	--	--	<.05	--

Table 5. Results of analysis of selected acetamide herbicides and degradation products by liquid chromatography/mass spectrometry methods HPAA (1998–99), LCAA (1999–02), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; --, no data; <, less than]

Date of collection (month/ day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter								
			Flufenacet ethane-sulfonic acid	Flufenacet oxanilic acid	Meto-lachlor	Metolachlor ethane-sulfonic acid	Metolachlor oxanilic acid	Metolachlor/ acetochlor ethane-sulfonic acid 2nd amide	Propachlor	Propachlor ethane-sulfonic acid	Propachlor oxanilic acid
08/21/02	1100	R	--	--	--	0.19	0.09	--	--	<0.05	--
09/17/02	1400	R	--	--	--	.24	.11	--	--	<.05	--
10/16/02	1500	R	--	--	--	.11	.08	--	--	<.05	--
11/19/02	1400	R	--	--	--	.17	.05	--	--	<.05	--
12/18/02	1330	R	<0.02	<0.02	0.03	.08	.04	<0.02	<0.02	<.05	<0.02
01/15/03	1400	R	<.02	<.02	<.02	.13	.08	<.02	<.02	<.05	<.02
02/20/03	1330	R	<.02	<.02	.03	.11	.06	<.02	<.02	<.05	<.02
03/13/03	1200	R	<.02	<.02	<.02	.06	.03	<.02	<.02	<.05	<.02
04/03/03	1100	R	<.02	<.02	.04	.15	.06	<.02	<.02	<.05	<.02
05/19/03	1330	R	<.02	<.02	.38	.17	.11	.02	<.02	<.05	<.02
06/03/03	1230	R	<.02	<.02	.34	.20	.13	.04	<.02	<.05	<.02
06/19/03	0830	R	<.02	<.02	.17	.23	.10	.02	<.02	<.05	<.02
07/03/03	1330	R	<.02	<.02	.24	.28	.20	.06	<.02	<.05	<.02
07/15/03	1230	R	<.02	<.02	.13	.23	.12	.04	<.02	<.05	<.02
07/30/03	1130	R	<.02	<.02	.16	.45	.25	.09	<.02	<.05	<.02
09/17/03	1400	R	<.02	<.02	.02	.11	.07	<.02	<.02	.06	<.02
09/29/03	1300	R	<.02	<.02	.03	.25	.14	.05	<.02	<.05	<.02
10/15/03	1430	R	<.02	<.02	.02	.12	.07	.03	<.02	<.05	<.02
11/05/03	1230	R	<.02	<.02	.02	.16	.09	.03	<.02	<.05	<.02
12/01/03	1055	R	<.02	<.02	<.02	<.02	<.02	<.02	<.02	<.05	<.02
12/01/03	1100	R	<.02	<.02	.02	.10	.06	<.02	<.02	<.05	<.02
12/10/03	1100	L	<.02	<.02	.02	.15	.07	.03	<.02	<.05	<.02
12/30/03	1030	R	<.02	<.02	<.02	.12	.07	<.02	<.02	<.05	<.02

Table 6. Results of analysis of selected triazine and phenylurea herbicides and their degradation products analyzed by liquid chromatography/mass spectrometry method LCEA at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.

[R, regular sample; L, laboratory duplicate sample; <, less than; bromacil, cyanazine amide, deethylcyanazine, deethylcyanazine amide, demethylfluometuron, deethylhydroxyatrazine, fluometuron, hydroxysimazine, linuron, and propazine were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter										
			Atrazine	Cyanazine	Cyanazine acid	Deethyl-atrazine	Deethyl-cyanazine acid	Deiso-propyl-atrazine	Deiso-propyl-hydroxy-atrazine	Dide-alkyl-atrazine	Diuron	Hydroxy-atrazine	Simazine
08/27/98	1120	R	0.32	0.07	0.16	0.12	0.37	0.09	<0.025	0.07	<0.20	0.21	<0.025
10/30/98	1330	R	.24	<.025	<.025	<.025	<.025	<.025	<.025	.04	<.20	.13	<.025
12/23/98	0745	R	.08	<.025	<.025	.03	<.025	<.025	<.025	.04	<.20	.06	<.025
12/23/98	0745	L	.10	<.025	<.025	.05	<.025	<.025	<.025	.05	<.20	.09	<.025
01/05/99	1100	R	.37	<.025	<.025	.31	<.025	<.025	<.025	<.025	<.20	<.025	<.025
08/03/00	1125	R	.29	<.025	<.025	.10	<.025	<.025	<.025	<.025	<.20	.25	<.025
08/11/00	1045	R	.14	<.025	<.025	.05	<.025	<.025	<.025	<.025	<.20	.12	<.025
08/21/00	1100	R	.12	<.025	<.025	.05	<.025	<.025	<.025	<.025	<.20	.14	<.025
11/06/00	1400	R	.07	<.025	.04	.04	<.025	<.025	<.025	.07	<.20	.08	<.025
11/06/00	1400	L	.14	<.025	<.025	.07	<.025	<.025	<.025	.06	<.20	.12	<.025
12/18/00	1130	R	.14	<.025	<.025	.06	<.025	<.025	<.025	<.025	<.20	.08	.12
12/18/00	1130	L	.11	<.025	<.025	.04	<.025	<.025	<.025	<.025	<.20	.11	.10
05/17/01	1415	R	.22	<.025	<.025	.05	<.025	<.025	<.025	.10	<.20	.08	<.025
05/24/01	1400	R	.39	<.025	<.025	.25	.37	.16	<.025	.13	<.20	.13	.04
05/31/01	1400	R	.42	<.025	<.025	.18	<.025	.13	<.025	.07	<.20	.22	.05
06/08/01	1400	R	.42	<.025	<.025	.18	<.025	.17	<.025	<.025	<.20	.12	.06
07/02/01	1200	R	.48	<.025	<.025	.27	<.025	.14	<.025	.08	<.20	.27	.03
07/02/01	1200	L	.42	<.025	<.025	.25	<.025	.17	<.025	.17	<.20	.20	.03
07/16/01	1330	R	.89	<.025	<.025	.24	<.025	.15	<.025	.13	<.20	.22	.04
07/30/01	1430	R	.53	<.025	<.025	.14	<.025	<.025	<.025	.10	.14	.19	<.025

Table 6. Results of analysis of selected triazine and phenylurea herbicides and their degradation products analyzed by liquid chromatography/mass spectrometry method LCEA at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.—Continued

[R, regular sample; L, laboratory duplicate sample; <, less than; bromacil, cyanazine amide, deethylcyanazine, deethylcyanazine amide, demethylfluometuron, deethylhydroxyatrazine, fluometuron, hydroxysimazine, linuron, and propazine were not detected]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter										
			Atrazine	Cyanazine	Cyanazine acid	Deethyl-atrazine	Deethyl-cyanazine acid	Deiso-propyl-atrazine	Deiso-propyl-hydroxy-atrazine	Dide-alkyl-atrazine	Diuron	Hydroxy-atrazine	Simazine
08/13/01	1130	R	0.33	<0.025	<0.025	0.13	<0.025	0.08	<0.025	0.09	0.07	0.16	<0.025
11/14/01	1300	R	.07	<.025	<.025	.06	<.025	.06	<.025	.07	<.20	.11	.04
05/02/02	1300	R	.45	<.025	<.025	.05	<.025	<.025	.04	<.025	<.20	.07	.12
06/05/02	1200	R	.27	<.025	<.025	.21	<.025	.13	<.025	<.025	.14	<.025	.07
07/02/02	1130	R	.26	<.025	<.025	.37	<.025	.21	<.025	.12	<.20	.18	.03
06/03/03	1230	R	1.3	<.025	<.025	.20	<.025	.10	<.025	<.025	<.20	.13	.11
06/19/03	0830	R	1.1	<.025	<.025	.19	<.025	.11	<.025	.10	<.20	.18	.10
07/03/03	1330	R	.60	<.025	<.025	.22	<.025	.11	<.025	.11	<.20	.11	.08
07/15/03	1230	R	.72	<.025	<.025	.16	<.025	.09	<.025	.09	<.20	.14	.04
07/30/03	1130	R	.61	<.025	<.025	.22	<.025	.14	<.025	.21	<.20	.24	.04
09/17/03	1400	R	.13	<.025	<.025	.05	<.025	<.025	<.025	<.025	<.20	.08	<.025
09/29/03	1300	R	.16	<.025	<.025	.08	<.025	.05	<.025	.08	<.20	.14	<.025
10/15/03	1430	R	.12	<.025	<.025	.07	<.025	.03	<.025	.06	<.20	.10	<.025
11/05/03	1230	R	.09	<.025	<.025	.05	<.025	.03	<.025	.04	<.20	.13	.03
12/01/03	1055	B	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.025	<.20	<.025	<.025
12/01/03	1100	R	.11	<.025	<.025	<.025	<.025	.03	<.025	.03	<.20	.09	.11
12/10/03	1100	R	.07	<.025	<.025	.04	<.025	.06	<.025	<.025	<.20	.05	.26
12/30/03	1030	R	.08	<.025	<.025	.04	<.025	.03	<.025	<.025	<.20	<.025	.08

Table 7. Results of analysis of glyphosate, its degradation product aminomethylphosphonic acid, and glufosinate by liquid chromatography/mass spectrometry method LCGY at the U.S. Geological Survey Organic Geochemistry Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 2001–03.

[R, regular sample; L, laboratory duplicate sample; <, less than]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter		
			Glyphosate	Aminomethyl-phosphonic acid	Glufosinate
10/31/01	1300	R	<0.10	0.18	<0.10
11/14/01	1300	R	<.10	.18	<.10
11/28/01	1200	R	<.10	.23	<.10
12/10/01	1300	R	<.10	.14	<.10
12/10/01	1300	L	<.10	.11	<.10
01/03/02	1140	R	<.10	.15	<.10
01/03/02	1140	L	<.10	.10	<.10
01/17/02	1100	R	<.10	.12	<.10
01/17/02	1100	L	<.10	.13	<.10
02/04/02	1300	R	<.10	.15	<.10
02/04/02	1300	L	<.10	.14	<.10
02/28/02	1230	R	<.10	.15	<.10
02/28/02	1230	L	<.10	.18	<.10
03/11/02	1300	R	<.10	.24	<.10
03/28/02	1300	R	<.10	.38	<.10
04/12/02	1115	R	<.10	<.10	<.10
05/02/02	1300	R	<.10	<.10	<.10
05/15/02	1300	R	<.10	.12	<.10
06/05/02	1200	R	<.10	.16	<.10
06/11/02	1030	R	<.10	.16	<.10
07/02/02	1130	R	<.10	.17	<.10
07/25/02	1400	R	<.10	.21	<.10
08/21/02	1100	R	<.10	.21	<.10
09/17/02	1400	R	<.10	.27	<.10
09/17/02	1400	L	<.10	.22	<.10
10/16/02	1500	R	<.10	.24	<.10
11/19/02	1400	R	<.10	.12	<.10
11/19/02	1400	L	<.10	.13	<.10
12/18/02	1330	R	<.10	.10	<.10
01/15/03	1400	R	<.10	<.10	<.10
02/20/03	1330	R	<.10	.12	<.10
02/20/03	1330	L	<.10	.17	<.10
03/13/03	1200	R	<.10	.11	<.10
04/03/03	1100	R	<.10	.20	<.10
05/19/03	1330	R	<.10	.18	<.10

Table 7. Results of analysis of glyphosate, its degradation product aminomethylphosphonic acid, and glufosinate by liquid chromatography/mass spectrometry method LCGY at the U.S. Geological Survey Organic Geochemistry Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 2001–03.—Continued

[R, regular sample; L, laboratory duplicate sample; <, less than]

Date of collection (month/day/year)	Collection time (24-hour)	Sample type	Concentrations, in micrograms per liter		
			Glyphosate	Aminomethyl-phosphonic acid	Glufosinate
05/19/03	1330	R	<0.10	0.20	<0.10
06/03/03	1230	R	<.10	.19	<.10
06/19/03	0830	R	<.10	.20	<.10
07/03/03	1330	R	<.10	<.10	<.10
07/15/03	1230	R	<.10	.31	<.10
07/30/03	1130	R	<.10	.31	<.10
9/17/03	1400	R	<.10	.30	<.10
9/29/03	1300	R	<.10	.33	<.10
10/15/03	1430	R	<.10	.27	<.10

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)								
04/02/91	1,008,000	322	22.0	0.03	1.5	0.01	0.04	6.9
05/06/91	1,380,000	274	19.0	<.01	1.6	<.01	.06	--
06/17/91	826,000	389	27.5	<.01	2.6	.02	.08	7.3
06/17/91	826,000	387	27.5	<.01	2.5	.02	.08	--
07/23/91	457,000	--	--	<.01	2.0	.01	.08	--
09/23/91	258,000	433	27.0	<.01	.55	.03	.06	2.6
11/05/91	362,000	560	16.0	<.01	.64	.04	.06	5.1
11/05/91	362,000	560	16.0	<.01	.68	.05	.05	--
12/10/91	794,000	321	8.0	.03	1.3	.05	.06	6.6
01/28/92	578,000	348	5.0	.03	1.7	.04	.06	--
02/26/92	510,000	411	9.5	.02	1.9	.05	.05	7.2
02/26/92	510,000	411	9.5	.02	2.0	.05	.05	--
05/14/92	611,000	410	18.5	.01	3.0	.03	.07	6.6
05/14/92	611,000	410	18.5	<.01	2.9	.04	.06	--
05/26/92	466,000	404	24.0	.01	1.9	.02	.06	--
05/26/92	466,000	404	24.0	<.01	2.8	.04	.06	--
06/17/92	541,000	392	25.5	<.01	1.4	.03	.07	4.3
06/17/92	541,000	392	25.5	<.01	1.3	.02	.05	--
07/15/92	449,000	396	28.0	<.01	1.2	.05	.07	--
08/18/92	695,000	360	26.0	<.01	1.8	.04	.09	8.0
08/18/92	695,000	360	26.0	<.01	1.7	.02	.09	--
09/15/92	339,000	--	26.5	<.01	.88	.04	.08	--
10/14/92	335,000	384	21.0	<.01	1.3	.03	.09	7.8
12/15/92	808,000	--	7.0	.03	2.2	.03	.07	7.3
01/26/93	1,103,000	334	5.5	.04	1.7	.06	.06	7.2
03/03/93	894,000	386	6.0	.02	1.5	.04	.05	7.0
04/20/93	1,492,000	319	9.5	.03	1.6	.02	.05	6.5
05/24/93	1,516,000	388	22.0	<.01	1.6	.04	.07	7.0
06/22/93	917,000	426	--	<.01	2.2	.03	.07	7.2
08/23/93	1,130,000	408	29.5	<.01	1.7	.03	.10	10
11/08/93	486,000	469	12.5	.03	1.8	.03	.08	7.7
01/24/94	730,000	346	3.0	.01	1.1	.06	.04	6.9

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued								
03/14/94	1,277,000	305	8.0	0.02	1.3	0.06	0.04	6.0
06/28/94	492,000	412	29.0	<.01	.95	.03	.05	5.1
08/30/94	392,000	436	29.0	<.01	.73	.03	.06	2.9
10/20/94	255,000	408	20.0	<.01	.79	<.02	.08	6.6
01/23/95	680,000	356	8.0	.01	1.0	.04	--	6.2
02/21/95	482,000	350	5.0	<.01	1.2	.04	.04	7.1
04/24/95	695,000	380	18.0	.02	1.7	<.02	.04	6.1
06/14/95	1,620,000	361	25.5	<.01	1.4	<.01	.06	7.9
08/07/95	477,000	477	28.0	<.01	1.5	.02	.08	8.2
10/12/95	271,000	506	27.5	<.01	.50	<.02	.08	7.3
10/17/95	360,000	496	21.0	.01	.73	<.01	.08	7.4
12/06/95	395,000	484	9.5	<.01	1.3	.03	.08	7.2
02/07/96	1,040,000	323	2.0	.02	1.6	.09	.03	6.2
03/27/96	757,000	328	9.0	.04	1.2	.04	.08	6.8
04/16/96	835,000	339	12.0	.02	1.4	<.02	.06	6.2
05/01/96	899,000	408	17.4	.01	1.4	.02	.06	5.8
05/17/96	1,198,000	327	19.8	<.01	1.2	<.02	.06	6.2
05/31/96	1,390,000	313	24.0	<.01	1.1	.03	.08	6.7
06/11/96	1,409,000	319	23.5	<.01	1.5	.02	.07	6.5
06/21/96	1,327,000	337	25.0	<.01	2.1	.03	--	7.6
06/25/96	1,287,000	337	34.0	<.01	2.2	.03	--	6.7
07/23/96	493,000	482	29.0	<.01	2.4	.03	.11	7.6
09/03/96	400,000	470	28.0	<.01	.79	<.02	.06	6.2
09/17/96	323,000	471	27.5	<.01	.85	<.02	--	5.6
11/25/96	782,000	345	11.5	.01	.73	<.02	.05	6.0
01/15/97	798,000	328	9.5	.03	1.3	.03	.04	5.9
02/03/97	846,000	323	6.0	.03	1.4	.04	.03	6.9
02/20/97	1,022,000	320	6.5	.03	1.2	.04	.04	6.3
03/14/97	1,547,000	275	14.0	.03	1.1	.03	.04	5.7
03/26/97	1,899,000	256	13.0	.03	1.3	<.02	.04	6.1
04/08/97	1,731,000	299	15.0	.02	1.3	.03	.05	5.7
04/08/97	1,731,000	299	15.0	.02	1.3	.02	.04	6.2
04/24/97	1,122,000	345	15.0	.01	1.4	<.02	.06	6.9

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued								
05/06/97	1,006,000	361	16.0	0.03	1.4	<0.02	0.05	6.7
06/09/97	910,000	408	21.6	<.01	1.3	<.02	.05	4.1
06/19/97	1,079,000	353	23.0	<.01	2.0	.02	.06	5.2
07/09/97	942,000	379	28.5	<.01	1.3	<.02	.08	5.2
08/04/97	437,000	460	30.5	<.01	1.2	<.02	.09	5.6
08/26/97	402,000	473	28.0	<.01	.79	<.02	.06	2.6
09/23/97	285,000	503	27.0	<.01	.66	<.02	.08	5.7
11/17/97	359,000	465	24.0	<.01	.90	<.02	--	8.2
12/16/97	416,000	540	7.0	<.01	1.0	<.02	.06	5.8
01/28/98	1,166,000	310	7.0	.02	1.2	.03	.05	6.6
02/27/98	1,059,000	316	8.5	.01	1.2	.03	.05	5.9
03/18/98	1,002,000	350	9.0	.03	1.6	.03	.04	6.2
04/30/98	1,266,000	337	17.0	.02	2.0	.04	.06	6.6
05/13/98	1,506,000	360	20.0	.02	1.9	.03	.06	6.1
05/28/98	1,231,000	341	25.0	.02	1.6	<.02	.06	5.7
06/09/98	739,000	350	26.0	.01	2.0	.05	.08	6.5
06/25/98	958,000	370	26.0	<.01	2.1	.03	--	7.0
07/09/98	1,053,000	354	26.0	<.01	2.6	.04	.11	7.9
07/30/98	639,000	375	30.0	<.01	1.8	.02	--	8.8
08/19/98	578,000	321	28.5	.11	.59	.07	.10	6.3
09/28/98	309,000	471	27.5	<.01	.92	<.02	.08	5.3
11/18/98	592,000	419	13.5	<.01	1.3	.02	.10	8.0
12/08/98	410,000	473	14.7	.03	1.5	.04	.11	9.1
01/12/99	503,000	375	4.5	.01	1.1	.08	.05	7.0
02/10/99	1,403,000	311	10.5	.01	1.6	.03	.05	6.2
03/15/99	982,000	387	9.0	.02	1.6	.03	.06	6.4
04/19/99	744,000	375	17.4	.02	1.1	<.02	.05	5.1
04/28/99	925,000	458	17.0	<.01	2.0	.03	.07	6.7
05/06/99	1,105,000	446	--	<.01	2.8	.04	.07	7.9
05/26/99	1,026,000	395	23.0	<.01	2.2	<.02	.07	7.2
06/10/99	806,000	452	26.0	<.01	2.9	<.02	.10	8.0
06/24/99	685,000	444	26.5	<.01	2.6	.03	.11	8.9
07/21/99	677,000	396	29.4	<.01	2.0	<.02	.10	7.7

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig. 1)—Continued								
08/05/99	448,000	461	32.3	<0.01	1.8	<0.02	0.10	7.4
09/14/99	242,000	522	28.2	<.01	.95	<.02	.09	7.0
11/11/99	220,000	--	--	<.01	.72	<.02	.07	6.6
12/01/99	198,000	--	--	<.01	.74	.04	.05	6.7
01/27/00	280,000	425	7.0	.01	1.1	.06	.05	5.2
02/17/00	211,000	486	8.8	.01	1.1	.08	.04	7.2
03/14/00	653,000	401	13	.03	1.4	<.02	.05	6.2
03/29/00	697,000	413	14.2	.03	1.5	<.02	.06	6.2
04/12/00	694,000	416	16.1	.03	1.1	.02	.05	5.7
05/10/00	625,000	403	20.8	--	1.2	<.02	.06	4.8
05/23/00	399,000	374	23.6	<.01	1.2	<.02	.07	5.0
06/06/00	610,000	539	25.4	<.01	1.1	<.02	.05	3.8
07/18/00	591,000	440	30.5	<.01	2.8	<.02	.11	7.9
08/25/00	321,000	429	30.5	<.01	.98	<.02	.08	4.8
09/21/00	224,000	469	26.2	<.01	.64	<.02	.07	3.3
11/28/00	375,000	453	10.6	<.01	1.0	.03	.09	6.6
12/14/00	294,000	467	7.1	<.01	1.2	<.02	.07	6.8
01/24/01	341,000	375	4.5	<.01	1.2	.15	.03	6.2
02/27/01	1,084,000	320	7.9	.02	1.7	.07	.05	4.7
03/14/01	1,246,000	314	9.5	.03	1.6	.03	.05	5.9
04/02/01	958,000	347	10.3	.01	.97	<.02	.03	5.9
04/16/01	706,000	403	17.1	.04	2.5	<.02	.08	--
04/23/01	820,000	380	17.7	.01	2.4	<.02	.09	6.8
05/07/01	684,000	403	20.5	.01	2.8	<.02	.08	6.6
05/21/01	576,000	405	23.8	<.01	3.0	<.02	.10	9.2
06/25/01	869,000	385	26.9	<.01	2.7	.04	.09	7.0
07/10/01	557,000	414	29.0	<.01	2.7	<.02	.11	7.9
07/18/01	532,000	434	29.4	<.01	2.4	<.02	.11	8.3
08/27/01	315,000	398	30.0	.01	.90	<.02	.08	3.8
09/19/01	278,000	356	27.5	.01	.51	<.02	.09	4.5
10/30/01	445,000	383	17.7	<.01	.86	<.02	.09	5.2
12/18/01	836,000	272	12.3	.02	.87	<.02	.08	5.0
01/22/02	382,000	346	6.9	.01	1.2	.05	.05	7.4

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; ^oC, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (^oC)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River near St. Francisville, Louisiana, station 07373420 (fig .1)—Continued								
02/04/02	946,000	310	10.0	0.01	1.1	0.03	0.05	4.8
02/18/02	855,000	266	10.3	.02	1.3	.03	.05	5.4
03/13/02	516,000	387	8.6	<.01	1.9	.03	.05	5.5
03/25/02	919,000	311	11.5	.02	1.5	.02	.05	4.0
04/10/02	1,375,000	264	13.5	.02	1.0	<.02	.04	5.2
04/22/02	1,055,000	296	19.1	.03	1.3	<.02	.05	4.5
05/07/02	1,019,000	331	19.8	<.01	1.5	<.02	.06	5.2
05/28/02	1,409,000	288	20.7	.01	1.3	<.02	.05	6.0
08/05/02	364,000	430	30.3	<.01	1.2	<.02	.07	4.4
08/19/02	295,000	443	29.3	<.01	.68	<.02	.07	3.8
09/09/02	336,000	414	28.6	<.01	.94	<.02	.10	4.3
11/12/02	446,000	362	15.0	.01	1.1	<.02	.08	7.0
01/14/03	747,000	285	6.3	.01	1.2	<.02	.05	4.9
01/28/03	370,000	345	5.5	.01	1.2	.03	.04	6.4
02/12/03	333,000	360	6.0	.01	1.1	.03	.03	6.4
02/24/03	871,000	302	7.4	<.01	.85	.04	.03	4.5
03/10/03	1,279,000	255	7.3	.01	.90	.03	.03	5.0
03/24/03	844,000	289	11.6	.01	1.1	.02	.03	4.9
04/15/03	550,000	366	15.5	.04	1.3	<.02	.04	4.5
04/29/03	650,000	364	18.4	<.01	1.0	<.02	.04	3.7
05/12/03	778,000	362	22.3	<.01	1.1	<.02	.06	4.1
05/27/03	1,381,000	303	22.0	<.01	1.4	<.02	.06	5.3
06/16/03	771,000	354	23.5	<.01	1.4	<.02	.07	5.9
07/14/03	462,000	371	28.7	<.01	1.3	<.02	.07	5.1
08/12/03	516,000	397	28.9	<.01	1.6	<.02	.09	4.4
09/23/03	411,000	351	25.4	<.01	.77	<.02	.07	6.9
10/27/03	308,000	402	19.8	.04	.68	<.02	.06	5.3
12/09/03	815,000	298	9.6	.01	1.1	<.02	.05	7.3
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)								
04/11/91	1,153,000	366	16.5	.01	2.0	.02	.03	--
04/17/91	1,175,000	306	18.0	.02	1.9	.02	.04	--
04/24/91	1,198,000	293	18.0	.01	1.7	.02	.05	--
05/01/91	1,351,000	300	18.5	<.01	1.5	.02	.04	--
05/06/91	1,380,000	280	19.0	.01	1.6	.02	.04	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
05/09/91	1,319,000	277	19.0	<0.01	1.7	0.02	0.05	--
05/13/91	1,275,000	281	21.0	<.01	1.8	.02	.05	--
05/16/91	1,224,000	295	22.0	.01	1.9	.04	.04	--
05/20/91	1,159,000	291	22.5	.01	1.9	.04	.04	--
05/24/91	1,127,000	294	23.0	.01	1.9	.07	.07	--
05/28/91	1,070,000	311	24.5	<.01	2.0	.05	.06	--
05/30/91	1,050,000	316	25.0	<.01	1.9	.03	.07	--
06/03/91	995,000	336	26.0	<.01	2.0	.02	.06	--
06/06/91	1,003,000	353	27.0	<.01	2.4	.02	.07	--
06/10/91	1,015,000	307	26.5	<.01	2.0	.03	.07	--
06/13/91	952,000	338	27.0	<.01	2.3	.02	.07	--
06/17/91	826,000	382	27.5	.01	2.6	.04	.09	--
06/20/91	753,000	403	28.0	<.01	2.6	.05	.07	--
06/24/91	664,000	410	28.0	<.01	3.3	.04	.09	--
06/27/91	649,000	409	28.0	<.01	<.05	<.01	.01	--
07/03/91	572,000	426	29.5	<.01	2.9	.02	.10	--
07/08/91	507,000	413	29.0	<.01	2.6	.01	.08	--
07/11/91	471,000	390	30.0	<.01	2.6	.03	.10	--
07/17/91	434,000	426	30.5	<.01	2.7	.04	.10	--
07/23/91	457,000	440	30.5	<.01	2.1	.02	.08	--
07/23/91	457,000	--	--	<.01	2.1	.02	.07	--
07/23/91	457,000	--	--	<.01	2.0	.01	.07	--
07/23/91	457,000	--	--	<.01	2.0	.01	.07	--
07/23/91	457,000	--	--	<.01	2.0	<.01	.07	--
07/23/91	457,000	--	--	<.01	2.0	<.01	.07	--
07/30/91	369,000	413	30.0	<.01	1.8	.04	.08	--
08/06/91	330,000	450	30.5	<.01	1.7	.03	.06	--
08/12/91	302,000	456	30.5	<.01	1.3	.03	.05	--
08/20/91	296,000	464	29.5	.01	.89	.01	.05	--
08/26/91	288,000	451	29.5	<.01	.75	.02	.03	--
09/03/91	288,000	468	29.0	<.01	.74	<.01	.04	--
09/09/91	272,000	466	29.0	<.01	.82	.03	.04	--
09/18/91	248,000	425	30.5	<.01	.75	.08	.07	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
09/23/91	258,000	457	28.0	0.01	0.62	0.04	0.07	--
10/07/91	261,000	447	23.0	<.01	.64	.02	.07	--
10/16/91	264,000	479	22.0	<.01	.63	.05	.05	--
10/23/91	232,000	489	20.5	<.01	.78	.06	.09	--
10/31/91	256,000	453	21.0	.02	.83	.05	.03	--
11/07/91	407,000	596	17.0	<.01	.63	<.01	.06	--
11/14/91	405,000	462	12.0	.03	.77	.05	.07	--
11/19/91	383,000	455	16.0	<.01	<.05	<.01	<.01	--
11/25/91	483,000	407	13.0	.02	1.0	.07	.06	--
12/02/91	530,000	353	14.5	.04	1.3	.05	.06	--
12/10/91	794,000	312	10.0	.03	1.2	.07	.06	--
12/17/91	1,019,000	318	10.5	.03	1.1	.03	.05	--
12/24/91	1,024,000	280	10.0	.03	1.1	.05	.06	--
12/31/91	864,000	316	9.0	.03	1.4	.04	.06	--
01/07/92	756,000	341	8.5	.02	1.8	.05	.06	--
01/29/92	551,000	--	6.5	.03	1.6	.05	.06	--
02/06/92	559,000	379	8.5	.02	1.6	.06	.05	--
02/13/92	416,000	416	11.0	.01	1.9	.04	.05	--
02/20/92	419,000	407	12.0	.02	1.8	.06	.06	--
02/26/92	510,000	434	10.5	.02	2.1	.07	.06	--
03/05/92	646,000	420	11.0	.02	1.7	.10	.05	--
03/11/92	706,000	378	12.5	.03	2.0	.04	.05	--
03/19/92	803,000	378	12.5	.03	2.0	.06	.06	--
03/26/92	924,000	328	12.5	.01	1.6	.03	.06	--
03/30/92	959,000	335	12.5	.02	1.9	.03	.05	--
04/10/92	805,000	370	13.0	.02	2.3	.03	.06	--
04/15/92	660,000	384	15.0	.03	2.1	.04	.06	--
04/23/92	493,000	430	18.5	.02	2.3	.04	.06	--
04/30/92	737,000	462	19.0	<.01	1.2	.03	.04	--
05/06/92	850,000	396	18.0	<.01	2.1	.02	.06	--
05/14/92	611,000	434	23.0	<.01	2.9	.03	.07	--
05/20/92	533,000	469	23.0	.01	1.8	.03	.05	--
05/28/92	443,000	456	25.0	.02	1.8	.04	.06	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
06/03/92	405,000	470	24.0	<0.01	1.6	0.02	0.06	--
06/12/92	500,000	443	25.0	<.01	1.6	.02	.06	--
06/19/92	561,000	418	27.0	<.01	1.3	.03	.06	--
06/25/92	501,000	--	29.0	<.01	1.0	.03	.06	--
07/02/92	496,000	--	27.0	<.01	1.1	.03	.06	--
07/09/92	417,000	--	28.0	.01	1.1	.04	.07	--
07/16/92	449,000	427	27.0	.01	1.4	.06	.08	--
07/23/92	500,000	438	28.5	.01	.97	.06	.07	--
07/31/92	628,000	415	28.5	<.01	1.9	.01	.09	--
08/05/92	678,000	395	28.5	<.01	2.1	<.01	.09	--
08/13/92	783,000	420	29.0	<.01	2.0	.02	.09	--
08/21/92	609,000	388	27.0	<.01	1.8	.02	.09	--
09/04/92	359,000	--	--	<.01	1.4	.04	.09	--
09/09/92	396,000	--	--	<.01	1.1	.06	.10	--
09/16/92	347,000	442	28.0	<.01	.84	.04	.07	--
09/23/92	400,000	463	26.0	<.01	.83	.04	.08	--
07/07/93	843,000	351	28.5	<.01	2.5	.02	.10	--
07/09/93	835,000	345	28.5	<.01	2.4	.03	.10	--
07/12/93	848,000	418	28.5	<.01	2.5	.03	--	--
07/15/93	910,000	414	28.5	<.01	2.4	.04	--	--
07/19/93	959,000	--	--	<.01	2.2	.05	.08	--
07/22/93	993,000	347	28.5	<.01	2.0	.05	.07	--
07/26/93	1,028,000	344	30.0	<.01	2.1	.01	.07	--
07/29/93	1,054,000	345	29.5	<.01	2.0	.03	.08	--
08/02/93	1,088,000	360	30.0	<.01	2.0	.03	.08	--
08/05/93	1,110,000	380	30.0	<.01	2.1	.03	.09	--
08/06/93	1,115,000	394	29.0	<.01	2.1	.03	.09	--
08/09/93	1,137,000	378	28.0	<.01	1.9	.03	.09	--
08/12/93	1,159,000	358	28.5	<.01	1.7	.03	.08	--
08/16/93	1,172,000	364	28.5	<.01	1.7	.03	.07	--
08/19/93	1,156,000	381	29.5	<.01	1.7	.03	.07	--
08/23/93	1,130,000	406	30.5	<.01	1.7	.02	.09	--
08/26/93	1,106,000	395	30.0	<.01	1.5	.03	.09	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
08/30/93	1,063,000	389	30.0	<0.01	1.4	0.03	0.09	--
09/02/93	998,000	394	30.0	<.01	1.4	.03	.10	--
09/07/93	818,000	405	29.5	<.01	1.4	.02	.09	--
09/16/93	688,000	443	26.5	<.01	1.8	.02	.11	--
09/23/93	678,000	438	26.5	<.01	1.7	.03	.11	--
10/01/93	786,000	416	23.0	<.01	1.5	.03	.10	--
10/08/93	970,000	338	21.0	<.01	1.1	.04	.08	--
10/15/93	974,000	348	20.5	<.01	1.3	.04	.08	--
10/22/93	661,000	420	19.0	<.01	1.5	.03	.09	--
11/05/93	529,000	480	16.5	<.01	1.6	.03	.08	--
11/10/93	476,000	491	13.0	.03	1.7	.05	.08	--
11/19/93	553,000	431	14.0	.02	1.3	.06	.05	--
11/24/93	888,000	431	13.0	.02	1.4	.02	.06	--
12/04/93	1,033,000	342	12.5	<.01	1.1	.02	.07	--
12/09/93	977,000	368	10.0	.02	1.3	.03	.07	--
12/22/93	1,062,000	331	9.0	.02	1.2	.03	.07	--
12/31/93	665,000	371	8.5	.03	1.3	.05	.05	--
01/06/94	529,000	391	7.5	.03	1.4	.05	.05	--
01/13/94	506,000	412	6.0	.03	1.5	.06	.06	--
01/21/94	762,000	377	4.0	.02	1.3	.06	.04	--
01/27/94	648,000	344	6.5	.04	1.1	.07	.04	--
02/04/94	838,000	322	5.5	.02	1.0	.06	.04	--
02/10/94	1,045,000	314	6.0	.06	1.2	.09	.05	--
02/17/94	1,123,000	287	5.5	.05	1.3	.08	.04	--
02/25/94	1,094,000	278	8.0	.03	1.2	.04	.04	--
03/04/94	1,221,000	316	9.0	.02	1.1	.06	.04	--
03/11/94	1,279,000	313	9.0	.03	1.3	.06	.04	--
03/23/94	1,307,000	299	12.0	.03	1.4	.02	.04	--
04/01/94	1,235,000	313	13.0	.03	1.2	.04	.04	--
04/08/94	1,162,000	299	13.5	.03	1.3	.05	.04	--
04/22/94	1,346,000	299	18.0	.03	.86	.05	.03	--
04/28/94	1,473,000	282	19.5	.04	.99	.04	.18	--
06/24/94	493,000	403	27.5	<.01	1.1	.03	.07	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
07/01/94	479,000	407	29.5	<0.01	1.2	0.02	0.07	--
07/07/94	546,000	429	19.5	<.01	1.4	.03	.08	--
07/15/94	530,000	413	28.5	<.01	1.4	.05	.08	--
07/22/94	517,000	408	29.5	<.01	1.7	.03	.08	--
08/05/94	459,000	446	30.0	<.01	1.4	.03	.09	--
08/09/94	449,000	437	29.0	<.01	1.5	.02	.08	--
08/19/94	339,000	433	29.5	.01	.90	.02	.07	--
08/29/94	376,000	452	30.5	<.01	.49	.03	.04	--
09/08/94	343,000	444	30.5	<.01	.65	.03	.06	2.5
09/16/94	303,000	454	29.5	<.01	.66	.02	.06	4.2
09/23/94	272,000	452	26.0	<.01	.59	.01	.05	4.3
09/30/94	255,000	450	25.1	.02	.57	.03	.07	4.6
10/05/94	272,000	453	25.5	.01	.59	.03	.07	4.3
10/13/94	311,000	442	21.5	<.01	.79	.02	.08	5.9
10/21/94	257,000	422	21.0	<.01	.77	<.02	.08	7.5
10/26/94	314,000	456	21.0	<.01	.95	<.02	.08	8.5
11/04/94	276,000	444	21.0	<.01	.91	<.02	.08	15.0
11/10/94	358,000	435	19.0	<.01	1.0	.02	.07	9.9
11/18/94	462,000	420	18.0	<.01	1.1	<.02	.08	9.1
11/23/94	456,000	369	17.6	<.01	1.0	<.02	.07	9.1
12/01/94	455,000	365	16.0	.02	.99	.02	.07	8.8
12/08/94	570,000	374	16.0	.02	1.0	.02	.07	9.6
12/15/94	662,000	401	12.0	.01	1.0	.02	.06	6.9
12/23/94	738,000	359	10.0	.01	.97	.02	.05	6.0
01/05/95	422,000	383	8.0	.02	1.2	.04	.06	7.3
01/13/95	358,000	415	10.5	.02	1.3	.08	.06	7.7
01/19/95	509,000	351	7.5	.02	1.0	.05	.06	6.2
01/27/95	862,000	328	8.0	.02	1.1	.03	.06	6.2
02/03/95	898,000	331	7.5	.02	1.3	.03	.05	7.0
02/10/95	723,000	351	8.0	.01	1.4	.02	.05	7.6
02/17/95	550,000	366	11.0	.01	1.3	.04	.05	7.3
02/24/95	575,000	347	10.0	.01	1.2	.04	.05	6.6
03/02/95	731,000	343	8.0	.02	1.2	.04	.06	6.5

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
03/10/95	641,000	340	13.0	0.03	1.2	0.04	0.04	8.1
03/15/95	781,000	343	16.8	.05	1.4	.03	.04	5.5
03/29/95	837,000	406	16.5	.01	1.3	<.02	.05	6.9
04/05/95	587,000	413	17.0	.02	1.5	<.02	.06	5.4
04/14/95	470,000	431	18.5	.02	1.5	<.02	.05	8.4
04/21/95	530,000	382	20.5	<.01	1.7	<.02	.05	5.9
04/28/95	753,000	377	19.0	<.01	1.6	.02	.06	7.8
05/05/95	847,000	410	19.5	<.01	2.2	.02	.07	6.5
05/15/95	891,000	405	22.5	<.01	1.9	<.02	.06	7.6
05/19/95	937,000	382	23.5	<.01	1.6	.02	.06	6.2
05/26/95	1,051,000	371	24.0	<.01	1.8	.02	.08	8.3
06/07/95	1,500,000	324	24.5	<.01	1.4	<.02	.07	7.0
06/15/95	1,632,000	360	25.5	<.01	1.4	.02	.07	7.4
06/23/95	1,535,000	398	26.0	.01	1.6	.04	.09	7.7
07/03/95	1,180,000	407	28.0	<.01	1.7	.02	.08	8.0
07/06/95	1,042,000	434	27.0	.01	1.7	.02	.08	8.2
07/20/95	779,000	436	30.5	<.01	1.9	.02	.09	11
07/27/95	562,000	430	30.6	<.01	1.6	.02	.09	8.5
08/02/95	487,000	431	30.0	<.01	1.6	.06	.10	7.9
08/11/95	483,000	451	30.5	<.01	1.2	.05	.09	6.7
08/18/95	657,000	388	30.5	<.01	1.0	<.02	.08	6.0
08/25/95	528,000	445	32.0	<.01	1.0	<.02	.08	6.2
09/01/95	439,000	495	29.5	<.01	1.1	<.02	.10	8.3
09/07/95	373,000	502	29.5	<.01	.95	<.02	.10	9.0
09/15/95	298,000	532	29.0	<.01	.88	<.02	.09	9.0
09/22/95	316,000	537	27.0	<.01	.76	<.02	.10	8.8
09/28/95	293,000	528	25.0	<.01	.59	<.02	.08	7.3
01/12/96	400,000	428	5.0	.01	1.2	.07	.07	7.1
01/30/96	771,000	397	7.5	.02	1.2	.06	.06	6.8
02/16/96	824,000	347	6.5	.02	1.5	.04	.05	6.7
02/29/96	598,000	392	8.5	.03	1.4	.02	.05	7.2
03/08/96	641,000	375	9.0	.03	1.6	.04	.05	7.3
03/15/96	812,000	387	9.5	.03	1.6	.05	.06	6.8

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
04/12/96	889,000	388	12.0	0.02	1.5	0.03	0.04	6.4
04/26/96	617,000	391	18.5	.03	1.5	<.02	.06	6.6
05/03/96	963,000	382	18.0	<.01	1.2	.02	.06	5.5
05/10/96	1,122,000	--	--	<.01	1.4	<.02	.06	6.1
05/17/96	1,198,000	334	21.0	<.01	1.4	<.02	.06	6.1
05/23/96	1,294,000	319	23.2	<.01	1.4	<.02	.05	6.3
05/31/96	1,390,000	321	24.3	.01	1.2	.03	.07	7.3
06/06/96	1,423,000	326	25.1	<.01	1.2	.03	.07	6.7
07/18/96	543,000	471	28.5	<.01	2.7	.04	.12	8.9
08/02/96	648,000	--	--	<.01	1.9	<.02	.10	5.8
08/09/96	571,000	397	29.0	.01	1.7	.03	.10	7.2
08/30/96	402,000	472	28.5	<.01	1.5	<.02	.10	7.0
09/30/96	402,000	462	23.5	<.01	.80	<.02	.06	11
10/30/96	348,000	520	19.5	.01	.80	<.02	.07	7.2
11/21/96	816,000	400	13.5	.02	.78	<.02	.07	6.0
12/11/96	1,048,000	340	9.5	.03	.97	.02	.05	7.1
12/31/96	1,040,000	297	7.5	.03	1.0	.03	.06	6.7
03/05/97	1,081,000	444	12.1	.03	1.6	.13	.38	7.5
03/22/97	1,866,000	254	14.0	.03	1.2	.02	.05	5.8
03/27/97	1,915,000	263	14.5	.03	1.3	<.02	.04	6.5
04/03/97	1,831,000	291	15.5	.02	1.4	<.02	.05	6.5
04/17/97	1,346,000	320	16.5	.02	1.2	<.02	.06	6.1
04/30/97	1,115,000	360	16.0	.02	1.5	<.02	.06	6.8
05/16/97	994,000	412	20.5	<.01	1.3	<.02	.05	6.5
05/27/97	706,000	436	23.8	<.01	1.7	<.02	.06	6.6
06/06/97	797,000	454	24.0	<.01	1.6	<.02	.06	5.0
06/27/97	1,094,000	379	26.5	<.01	1.7	<.02	.06	5.6
07/01/97	1,104,000	375	27.5	<.01	1.7	<.02	.07	5.9
07/14/97	757,000	415	29.3	<.01	1.5	<.02	.07	6.4
07/25/97	481,000	480	30.9	<.01	1.7	.03	.08	7.3
08/14/97	365,000	507	30.5	<.01	1.0	<.02	.06	3.2
12/10/97	356,000	572	11.5	<.01	1.1	<.02	.06	6.3
01/14/98	742,000	386	10.0	.01	.79	<.02	.04	6.6

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
02/04/98	827,000	349	8.5	<0.01	1.2	<0.02	0.05	6.4
02/19/98	903,000	389	9.0	<.01	1.2	.04	.05	6.2
03/04/98	1,002,000	316	10.5	<.01	1.4	<.02	.06	6.7
03/10/98	1,009,000	340	11.0	.01	1.6	.02	.06	6.7
03/20/98	1,032,000	361	10.5	.01	1.7	.03	.05	6.4
03/27/98	1,126,000	342	11.5	.02	1.6	.05	.05	6.4
04/10/98	1,230,000	350	16.5	<.01	1.8	.03	.06	6.6
04/17/98	1,178,000	366	17.0	.01	2.2	.03	.07	7.4
04/22/98	1,192,000	394	17.0	.02	2.6	.03	.01	7.3
05/08/98	1,445,000	375	20.0	.03	1.8	.03	.07	6.5
07/24/98	842,000	--	--	<.01	2.3	.04	.10	10
08/07/98	610,000	408	29.5	<.01	2.0	.08	.11	8.9
08/13/98	587,000	343	29.0	<.01	1.4	.08	.10	7.5
08/27/98	443,000	407	30.5	<.01	1.4	<.02	.09	8.0
09/18/98	265,000	464	28.3	<.01	1.2	<.02	.09	6.4
10/02/98	291,000	510	28.5	<.01	1.0	<.02	.11	6.8
10/23/98	496,000	378	20.4	<.01	.93	<.02	.07	6.9
10/30/98	490,000	390	20.3	<.01	.91	<.02	.09	7.8
11/10/98	398,000	414	17.6	<.01	1.3	.04	.10	8.1
12/23/98	564,000	470	10.6	.02	1.5	.04	.09	9.3
01/05/99	490,000	445	6.7	.01	1.3	.04	.06	7.5
02/03/99	1,170,000	333	9.3	.02	1.5	.04	.05	6.3
02/23/99	1,347,000	326	10.7	.03	1.7	<.02	.07	7.8
03/12/99	789,000	418	10.5	.02	2.1	.02	.06	7.5
03/26/99	1,216,000	344	10.8	.01	1.4	<.02	.05	6.7
04/23/99	788,000	444	19.0	.01	1.4	.03	.07	5.1
04/30/99	949,000	465	18.1	<.01	2.2	.06	.06	7.4
05/07/99	1,129,000	457	19.5	<.01	2.8	.04	.07	7.2
05/17/99	1,228,000	397	22.0	<.01	2.7	.02	.06	6.9
05/25/99	1,043,000	390	23.4	<.01	2.1	.02	.07	6.4
06/03/99	868,000	448	26.5	<.01	2.6	.03	.08	7.6
06/10/99	806,000	469	26.5	<.01	2.9	<.02	.08	7.8
06/18/99	831,000	454	27.4	<.01	2.7	<.02	.08	7.7
06/25/99	668,000	463	26.8	<.01	2.8	.03	.09	8.8

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
07/09/99	779,000	465	29.3	<0.01	2.7	<0.02	0.10	--
07/16/99	780,000	--	--	<.01	2.2	<.02	.09	8.7
08/06/99	444,000	412	31.2	<.01	1.9	<.02	.09	8.7
08/17/99	401,000	480	31.8	<.01	2.2	<.02	.11	9.4
08/23/99	363,000	480	31.4	<.01	2.0	<.02	.10	9.2
09/02/99	269,000	480	32.8	<.01	1.5	.03	.08	9.0
09/27/99	207,000	573	26.8	<.01	.69	.03	.06	7.2
10/04/99	213,000	577	25.4	<.01	.85	.02	.08	7.5
10/20/99	250,000	548	22.8	<.01	.89	<.02	.08	8.0
11/01/99	196,000	552	19.9	<.01	.81	.02	.06	7.5
11/19/99	231,000	495	18.2	<.01	.81	.03	.06	6.6
12/06/99	227,000	581	15.1	.01	.93	.03	.05	7.5
01/13/00	395,000	583	11.3	.02	1.3	.10	.05	8.7
02/14/00	205,000	543	9.5	.02	1.1	.10	.05	8.2
05/02/00	589,000	414	19.5	<.01	1.3	<.01	.05	5.4
05/12/00	601,000	424	23.2	<.01	1.3	<.01	.06	4.9
05/22/00	434,000	434	25.0	<.01	1.3	<.01	.06	5.6
06/20/00	435,000	--	--	<.01	2.1	<.01	.09	6.4
06/29/00	777,000	416	27.5	<.01	2.1	<.01	.09	6.5
07/07/00	867,000	410	28.7	<.01	2.5	.04	.10	7.9
07/18/00	--	--	27.2	<.01	2.8	<.01	.10	8.4
08/03/00	425,000	458	28.5	<.01	2.5	<.01	.12	8.2
08/11/00	344,000	476	30.0	<.01	1.7	<.01	.10	7.4
08/21/00	396,000	447	30.5	<.01	.91	<.01	.07	.90
08/29/00	282,000	487	31.5	<.01	.92	<.01	.07	5.1
09/11/00	251,000	--	28.3	<.01	.83	<.01	.08	2.6
09/27/00	231,000	481	25.2	<.01	.55	<.01	.08	3.0
10/10/00	299,000	505	20.0	.03	.88	<.02	.09	5.1
10/19/00	277,000	498	20.1	.05	.94	<.02	.08	6.0
11/20/00	318,000	534	17.9	.05	.88	.03	.06	6.1
12/04/00	371,000	440	10.0	.01	1.0	.05	.08	6.7
01/05/01	444,000	412	2.5	.01	1.3	.09	.06	6.0
02/23/01	989,000	369	9.9	.03	1.7	.09	.06	6.8

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
03/06/01	1,332,000	320	9.9	0.03	1.6	0.02	0.04	6.2
03/23/01	909,000	351	12.0	.03	1.7	.04	.05	6.3
04/06/01	855,000	380	13.4	.03	2.0	<.02	.06	6.6
05/03/01	780,000	419	18.9	.01	2.9	<.02	.08	7.4
05/17/01	567,000	430	23.5	.01	2.9	<.02	.11	9.3
05/24/01	626,000	428	24.2	.01	2.9	<.02	.10	9.8
05/31/01	876,000	428	23.7	.01	2.7	<.02	.09	7.9
06/08/01	984,000	423	23.3	.01	2.0	<.02	.07	6.6
07/02/01	660,000	460	27.3	.01	2.8	<.01	.02	8.4
07/16/01	517,000	451	29.8	.01	2.5	<.02	.10	9.0
07/30/01	382,000	429	29.9	.01	1.9	<.02	.08	7.9
08/13/01	477,000	433	29.7	<.01	1.3	.03	.09	5.3
08/28/01	305,000	419	30.0	.01	.93	<.02	.09	4.6
09/18/01	275,000	440	28.0	<.01	.70	<.02	.08	4.7
10/01/01	264,000	486	24.4	<.01	.17	<.01	.02	3.0
10/16/01	307,000	474	20.3	<.01	.85	<.02	.09	6.4
10/31/01	437,000	437	18.2	<.01	.91	<.02	.09	5.9
11/14/01	346,000	473	16.7	<.01	1.5	<.02	.09	7.2
11/28/01	271,000	537	16.8	.01	1.6	.03	.08	7.9
12/10/01	940,000	316	13.1	<.01	.97	<.02	.05	5.5
01/03/02	1,103,000	285	7.0	.01	1.0	<.02	.06	7.0
01/17/02	417,000	354	7.3	.01	1.3	.04	.05	7.7
02/04/02	--	319	10.9	.02	1.2	.03	.05	5.7
02/28/02	600,000	359	9.8	.01	1.7	.02	.06	5.9
03/11/02	516,000	428	9.7	.01	1.8	<.02	.05	5.6
03/28/02	1,102,000	316	--	.03	1.5	.02	.05	4.6
04/12/02	1,375,000	275	14.6	.02	.99	<.02	.03	5.4
05/02/02	939,000	370	21.3	<.01	1.8	<.02	.07	5.2
05/15/02	1,107,000	311	20.3	<.01	1.5	<.02	.06	5.7
06/05/02	1,503,000	306	23.4	.01	1.5	<.02	.06	6.2
07/02/02	628,000	389	27.8	<.01	1.9	<.02	.09	7.2
07/25/02	406,000	440	29.4	<.01	1.3	<.02	.08	4.2
08/21/02	295,000	469	29.5	<.01	.61	<.02	.07	4.5

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
09/17/02	257,000	460	24.0	0.01	0.95	0.03	0.09	6.3
10/16/02	421,000	--	22.1	<.01	.54	<.02	.07	5.6
11/19/02	500,000	425	15.1	.01	1.2	<.02	.08	7.0
12/18/02	363,000	395	10.5	.01	1.0	<.02	.05	6.5
01/15/03	738,000	347	6.7	<.01	1.2	.03	.05	6.1
02/20/03	563,000	400	7.8	.01	1.2	.03	.03	5.7
03/13/03	1,257,000	238	8.9	.01	.90	.03	.03	5.4
04/03/03	741,000	438	15.0	.04	1.5	<.02	.04	4.7
05/05/03	644,000	425	21.0	<.01	1.1	<.02	.04	--
05/06/03	646,000	400	22.0	<.01	1.1	<.02	.05	3.9
05/07/03	642,000	405	22.1	<.01	1.1	<.02	.05	--
05/08/03	641,000	411	22.5	<.01	1.1	<.02	.05	4.1
05/12/03	--	400	22.3	<.01	1.2	<.02	.06	4.3
05/13/03	849,000	396	22.4	<.01	1.2	<.02	.06	--
05/16/03	1,014,000	376	22.3	<.01	1.1	.08	.04	5.0
05/19/03	1,127,000	316	22.6	<.01	1.2	<.02	.06	4.9
05/20/03	1,167,000	317	22.4	<.01	1.1	<.02	.06	5.1
05/21/03	1,191,000	318	22.7	<.01	1.2	<.02	.05	--
05/22/03	1,221,000	321	22.6	<.01	1.2	<.02	.06	5.2
05/28/03	1,401,000	315	22.4	.01	1.4	<.02	.06	5.8
06/04/03	1,416,000	322	23.9	.01	1.7	<.02	.07	--
06/09/03	1,112,000	325	23.9	<.01	1.5	<.02	.07	6.2
06/10/03	1,051,000	323	24.6	.01	1.5	<.02	.07	--
06/11/03	935,000	329	24.3	.01	1.5	<.02	.07	6.3
06/12/03	878,000	339	24.4	<.01	1.5	<.02	.08	--
06/13/03	832,000	329	24.5	.01	1.5	<.02	.07	6.5
06/16/03	--	321	24.1	.01	1.6	<.02	.07	--
06/17/03	779,000	335	24.3	<.01	1.7	<.02	.07	5.8
06/18/03	804,000	330	24.4	<.01	1.7	<.02	.07	--
06/19/03	833,000	341	24.0	<.01	1.7	<.02	.07	5.8
06/23/03	907,000	359	25.6	<.01	1.5	<.02	.06	--
06/24/03	905,000	364	25.4	<.01	1.5	<.02	.07	5.6
06/25/03	905,000	366	26.1	.01	1.5	<.02	.07	5.6

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)—Continued								
06/26/03	898,000	348	26.0	0.01	1.5	<0.02	0.06	--
06/27/03	875,000	333	26.0	.01	1.5	<.02	.06	5.5
06/30/03	839,000	--	--	.01	1.5	<.02	.07	--
07/01/03	823,000	354	25.6	.01	1.6	<.02	.07	6.0
07/02/03	791,000	369	27.0	<.01	1.6	<.02	.07	--
07/03/03	764,000	359	26.8	<.01	1.7	<.02	.07	6.1
07/07/03	621,000	386	27.2	<.01	1.4	<.02	.07	--
07/08/03	569,000	365	28.2	.01	1.4	<.02	.06	6.2
07/15/03	459,000	400	26.8	<.01	1.3	<.02	.07	5.3
07/30/03	566,000	407	26.9	<.01	2.0	<.02	.04	7.4
09/09/03	348,000	420	--	--	.45	--	--	--
09/10/03	390,000	415	28.7	--	.41	--	--	--
09/11/03	447,000	412	28.5	--	.42	--	--	--
09/15/03	630,000	397	27.8	--	.84	--	--	--
09/17/03	640,000	--	--	--	.91	--	--	--
09/18/03	603,000	374	26.6	--	.90	--	--	--
09/23/03	--	366	26.3	--	.89	--	--	--
09/29/03	330,000	428	25.1	<.01	.60	<.02	.07	6.2
10/15/03	367,000	408	22.0	<.01	.75	.11	.06	6.2
11/05/03	289,000	431	21.7	<.01	.68	.03	.05	5.3
12/10/03	778,000	337	10.2	<.01	1.2	.02	.05	6.5
Mississippi River at New Orleans, Louisiana (fig. 1)								
10/07/92	506,000	--	--	--	1.2	--	--	--
10/14/92	335,000	--	--	--	1.3	--	--	--
10/21/92	271,000	--	--	--	1.5	--	--	--
11/04/92	303,000	--	--	--	1.2	--	--	--
11/12/92	310,000	--	--	--	1.2	--	--	--
11/18/92	471,000	--	--	--	1.3	--	--	--
11/25/92	675,000	--	--	--	1.3	--	--	--
12/02/92	895,000	--	--	--	1.6	--	--	--
12/09/92	1,045,000	--	--	--	2.2	--	--	--
12/16/92	764,000	--	--	--	1.8	--	--	--
01/06/93	992,000	--	--	--	1.7	--	--	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (°C)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at New Orleans, Louisiana (fig. 1)—Continued								
01/13/93	1,064,000	--	--	--	1.9	--	--	--
01/20/93	1,135,000	--	--	--	1.9	--	--	--
01/27/93	1,100,000	--	--	--	1.5	--	--	--
02/03/93	1,075,000	--	--	--	1.9	--	--	--
02/10/93	963,000	--	--	--	1.8	--	--	--
02/17/93	720,000	--	--	--	1.8	--	--	--
02/24/93	733,000	--	--	--	1.7	--	--	--
03/03/93	894,000	--	--	--	1.8	--	--	--
03/10/93	976,000	--	--	--	1.6	--	--	--
03/17/93	1,118,000	--	--	--	1.4	--	--	--
03/24/93	1,256,000	--	--	--	1.7	--	--	--
03/31/93	1,194,000	--	--	--	2.0	--	--	--
04/07/93	1,275,000	--	--	--	1.9	--	--	--
04/14/93	1,421,000	--	--	--	1.6	--	--	--
04/21/93	1,491,000	--	--	--	1.6	--	--	--
04/28/93	1,525,000	--	--	--	1.6	--	--	--
05/05/93	1,474,000	--	--	--	1.8	--	--	--
05/12/93	1,452,000	--	--	--	2.0	--	--	--
05/19/93	1,549,000	--	--	--	1.9	--	--	--
05/26/93	1,465,000	--	--	--	1.8	--	--	--
06/02/93	1,276,000	--	--	--	1.8	--	--	--
06/09/93	980,000	--	--	--	1.8	--	--	--
06/16/93	869,000	--	--	--	1.7	--	--	--
06/23/93	916,000	--	--	--	2.0	--	--	--
06/30/93	840,000	--	--	--	2.1	--	--	--
07/07/93	843,000	--	--	--	2.5	--	--	--
07/14/93	890,000	--	--	--	2.1	--	--	--
07/21/93	982,000	--	--	--	2.7	--	--	--
07/28/93	1,044,000	--	--	--	2.3	--	--	--
08/04/93	1,102,000	--	--	--	2.0	--	--	--
08/11/93	1,150,000	--	--	--	2.0	--	--	--
08/18/93	1,163,000	--	--	--	1.7	--	--	--
08/25/93	1,113,000	--	--	--	1.7	--	--	--

Table 8. Results of analysis of streamflow, physical properties, and nutrients for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; ^oC, degrees Celsius; mg/L, milligrams per liter; <, less than; --, no data]

Collection (month/day/year)	Streamflow (ft^3/s)	Specific conductance (µS/cm)	Water temperature (^oC)	Nitrite as nitrogen (mg/L)	Nitrite plus nitrate as nitrogen (mg/L)	Ammonia as nitrogen (mg/L)	Orthophosphate as phosphorus (mg/L)	Silica as SiO_2 (mg/L)
Mississippi River at New Orleans, Louisiana (fig. 1)—Continued								
09/01/93	1,020,000	--	--	--	1.5	--	--	--
09/08/93	754,000	--	--	--	1.3	--	--	--
09/15/93	682,000	--	--	--	1.4	--	--	--
09/22/93	680,000	--	--	--	1.6	--	--	--
09/29/93	721,000	--	--	--	1.9	--	--	--
10/06/93	928,000	--	--	--	1.6	--	--	--
10/13/93	1,008,000	--	--	--	1.3	--	--	--
10/20/93	738,000	--	--	--	1.3	--	--	--
10/27/93	570,000	--	--	--	1.4	--	--	--
11/03/93	561,000	--	--	--	1.4	--	--	--

Table 9. Statistical summary of concentrations of selected herbicides and degradation products analyzed by the U.S. Geological Survey National Water-Quality Laboratory, Lakewood, Colorado, for water samples collected from the Mississippi River near St. Francisville and at Baton Rouge, Louisiana, 1991–2003.

[MRL, method reporting limit; <, less than]

Herbicide	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Mississippi River near Saint Francisville, Louisiana, station 007373420 (fig. 1)							
Acetochlor	118	101	0.077	0.02	0.12	0.36	0.56
Alachlor	144	77	.020	.01	.02	.11	.22
Atrazine	144	144	.689	.26	.91	2.3	4.7
Cyanazine	142	85	.096	.01	.06	.74	1.2
Deethylatrazine	142	132	.069	.04	.10	.22	.45
Deisopropylatrazine	31	2	.006	<.05	<.05	.08	.10
Metolachlor	144	136	.261	.09	.35	.99	2.4
Metribuzin	144	47	.008	<.05	.01	.04	.12
Prometon	142	81	.007	.01	.01	.01	.14
Prometryn	31	0	<.05	<.05	<.05	<.05	<.05
Propachlor	118	1	.001	<.05	<.05	<.05	.13
Simazine	142	126	.070	.05	.09	.25	.41
Mississippi River at Baton Rouge, Louisiana, station 07374000 (fig. 1)							
Alachlor	84	40	.069	<.05	.10	.30	.46
Atrazine	84	78	.668	.365	1.1	2.5	3.6
Cyanazine	84	38	.245	<.20	.30	1.1	1.8
Deethylatrazine	84	61	.099	.070	.16	.32	.39
Deisopropylatrazine	84	15	.025	<.05	<.05	.16	.22
Metolachlor	84	72	.249	.150	.37	.87	1.4
Metribuzin	84	18	.020	<.05	<.05	.10	.20
Prometon	84	12	.011	<.05	<.05	.08	.16
Prometryn	84	2	.002	<.05	<.05	<.05	.07
Simazine	84	35	.034	<.05	.08	.10	.14

Table 10. Statistical summary of concentrations of selected herbicides analyzed by the Jefferson Parish Water Quality Laboratory, Jefferson, Louisiana, for water samples collected from the Mississippi River at New Orleans, Louisiana, March through September 1993.

[MRL, method reporting limit; <, less than]

Herbicide	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Alachlor	26	19	0.116	0.040	0.12	0.36	0.40
Atrazine	26	26	.088	.680	1.3	3.8	4.2
Metolachlor	26	26	.335	.175	.39	1.3	1.5
Simazine	26	25	.120	.100	.18	.31	.35

Table 11. Statistical summary of concentrations of selected triazine herbicides and degradation products analyzed by gas chromatography/mass spectrometry methods GCS (1993-96) and GCR (1995–2003) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1993–2003.

[MRL, method reporting limit; ESA, ethanesulfonic acid; <, less than]

Herbicides	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Acetochlor	228	50	0.036	<0.05	<0.05	0.20	0.49
Alachlor	275	40	.018	<.05	<.05	.13	.37
Alachlor ESA	169	165	.710	.52	.86	2.0	3.7
Atrazine	275	272	.610	.27	.86	2.1	3.3
Deethylatrazine	275	197	.124	.07	.17	.43	.52
Deisopropylatrazine	275	122	.070	<.05	.10	.31	.53
Cyanazine	275	100	.159	<.05	.14	.89	1.5
Cyanazine amide	214	65	.129	<.05	.10	.79	1.2
Demethyl-fluometuron	178	3	.003	<.05	<.05	<.05	.19
Dimethenamid	91	13	.015	<.05	<.05	.11	.23
Fluometuron	175	13	.007	<.05	<.05	.08	.17
Metolachlor	275	196	.219	.10	.39	.80	1.1
Metribuzin	275	10	.003	<.05	<.05	<.05	.13
Molinate	175	4	.002	<.05	<.05	<.05	.10
Prometon	129	4	.002	<.05	<.05	<.05	.07
Simazine	275	87	.040	<.05	.06	.20	.95
Trifluralin	173	1	.0003	<.05	<.05	<.05	.06
3-trifluomethyl-phenylurea	175	1	.0003	<.05	<.05	<.05	.06

Table 12. Statistical summary of concentrations of selected acetamide herbicides and degradation products analyzed by liquid chromatography/mass spectrometry methods HPAA (1998–2001), LCAA (1999–2002), and LCPD (2002–03) at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.

[MRL, method reporting limit; ESA, ethanesulfonic acid; OXA, oxanilic acid; <, less than]

Herbicide	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Acetochlor	18	5	0.024	<0.025	0.05	0.14	0.14
Acetochlor ESA	126	81	.115	.07	.17	.40	.58
Acetochlor OXA	126	79	.113	.06	.17	.42	.60
Acetochlor SA	36	11	.033	<.025	.03	.19	.27
Alachlor	18	0	<.05	<.05	<.05	<.05	<.05
Alachlor ESA	126	100	.105	.09	.15	.27	.44
Alachlor OXA	126	27	.011	<.05	<.05	.07	.12
Alachlor SA	36	2	.002	<.05	<.05	.02	.04
Alachlor ESA 2nd amide	18	1	.002	<.05	<.05	.03	.03
Dimethenamid	18	3	.007	<.05	<.05	.06	.06
Dimethenamid ESA	91	15	.008	<.05	<.05	.06	.11
Dimethenamid OXA	91	10	.006	<.05	<.05	.05	.11
Flufenacet	18	0	<.05	<.05	<.05	<.05	<.05
Flufenacet SA	18	0	<.05	<.05	<.05	<.05	<.05
Flufenacet OA	18	0	<.05	<.05	<.05	<.05	<.05
Metolachlor	18	14	.091	.03	.16	.38	.38
Metolachlor ESA	126	122	.372	.295	.51	.84	1.3
Metolachlor OXA	126	100	.147	.11	.22	.45	.57
Metolachlor ESA 2nd amide	18	9	.021	.01	.04	.09	.09
Propachlor	18	0	<.05	<.05	<.05	<.05	<.05
Propachlor ESA	36	1	.002	<.05	<.05	<.05	.06
Propachlor OA	18	0	<.05	<.05	<.05	<.05	<.05

Table 13. Statistical summary of concentrations of selected triazine and phenylurea herbicides and degradation products analyzed by liquid chromatography/mass spectrometry method LCEA at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 1998–2003.

[MRL, method reporting limit; <, less than]

Herbicides	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Atrazine	33	33	0.351	0.27	0.45	1.1	1.3
Cyanazine	33	1	.002	<.025	<.025	<.025	.07
Cyanazine acid	33	2	.006	<.025	<.025	.04	.16
Deethylatrazine	33	31	.128	.10	.20	.31	.37
Deethylcyanazine acid	33	2	.022	<.025	<.025	.37	.37
Deisopropylatrazine	33	21	.064	.05	.11	.17	.21
Deisopropylhydroxyatrazine	33	1	.001	<.025	<.025	<.025	.04
Didealkylatrazine	33	21	.055	.06	.09	.130	.21
Diuron	33	3	.011	<.025	<.025	.14	.14
Hydroxyatrazine	33	30	.128	.08	.18	.25	.27
Simazine	33	19	.044	.03	.07	.12	.26

Table 14. Statistical summary of concentrations of glyphosate, its degradation product aminomethylphosphonic acid, and glufosinate analyzed by liquid chromatography/mass spectrometry method LCGY at the U.S. Geological Survey Organic Geochemistry Research Laboratory, Lawrence, Kansas, for water samples collected from the Mississippi River at Baton Rouge, Louisiana, 2001–03.

[MRL, method reporting limit; AMPA, aminomethylphosphonic acid, <, less than]

Constituent	Number of samples	Number of samples at or above MRL	Concentration, in micrograms per liter				
			Mean	Median	75th percentile	95th percentile	Maximum
Glyphosate	36	0	<0.10	<0.10	<0.10	<0.10	<0.10
AMPA	36	32	.18	.18	.24	.33	.38
Glufosinate	36	0	<.10	<.10	<.10	<.10	<.10

Table 15. Statistical summary of streamflow, physical properties, and nutrients analyzed for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water Quality Laboratory,Lakewood, Colorado. MRL, method reporting limit; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; ^oC, degrees Celsius; mg/L, milligrams per liter; <, less than]

Streamflow, physical property, or nutrient	Year	Number of samples	Number of samples at or above MRL	Mean	Median	75th percentile	95th percentile	Maximum
Mississippi River near St. Francisville, Louisiana (fig. 1)								
Streamflow(ft^3/s)	1991–2003	158	158	743,370	689,500	982,000	1,492,000	1,899,000
Specific conductance (µS/cm)	1991–2003	153	153	383	380	416	496	560
Water temperature (^oC)	1991–2003	153	153	18.4	19.0	26.0	30.0	34.0
Nitrite as N (mg/L)	1991–2003	157	73	.01	<.01	.02	.03	.11
Nitrite plus nitrate as N (mg/L)	1991–2003	158	158	1.5	1.3	1.7	2.8	3.0
	1991	8	8	1.5	1.5	2.3	2.6	2.6
	1992	15	15	1.9	1.8	2.2	3.0	3.0
	1993	7	7	1.7	1.7	1.8	2.2	2.2
	1994	5	5	.97	.95	1.1	1.3	1.3
	1995	8	8	1.2	1.3	1.5	1.7	1.7
	1996	13	13	1.4	1.4	1.6	2.4	2.4
	1997	17	17	1.2	1.3	1.3	2.0	2.0
	1998	14	14	1.6	1.6	2.0	2.6	2.6
	1999	14	14	1.7	1.7	2.2	2.9	2.9
	2000	13	13	1.3	1.1	1.2	2.8	2.8
	2001	15	15	1.8	1.7	2.7	3.0	3.0
	2002	13	13	1.2	1.2	1.3	1.9	1.9
	2003	16	16	1.1	1.1	1.3	1.6	1.6
Ammonia as N (mg/L)	1991–2003	158	89	.02	.02	.03	.06	.15
Orthophosphate as P (mg/L)	1991–2003	151	151	.06	.06	.08	.10	.11
Silica as SiO_2 (mg/L)	1991–2003	144	144	6.2	6.2	7.0	8.2	10.0
Mississippi River at Baton Rouge, Louisiana (fig. 1)								
Streamflow (ft^3/s)	1991–2003	385	385	722,980	660,000	984,000	1,332,000	1,915,000
Specific conductance in µS/cm	1991–2003	368	368	398	400	440	502	596
Water temperature (^oC)	1991–2003	373	373	20.9	22.5	28.0	30.5	32.8
Nitrite as N (mg/L)	1991–2003	383	163	.01	<.01	.01	.03	.06

Table 15. Statistical summary of streamflow, physical properties, and nutrients analyzed for water samples collected from three sampling sites in the lower Mississippi River, Louisiana, 1991–2003.—Continued

[Streamflow data from U.S. Army Corps of Engineers, New Orleans District. Physical property data from various collectors. Nutrient data from U.S. Geological Survey National Water Quality Laboratory, Lakewood, Colorado. MRL, method reporting limit; ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; ^oC, degrees Celsius; mg/L, milligrams per liter; <, less than]

Streamflow, physical property, or nutrient	Year	Number of samples	Number of samples at or above MRL	Mean	Median	75th percentile	95th percentile	Maximum
Mississippi River at Baton Rouge, Louisiana (fig. 1)—Continued								
Nitrite plus nitrate as N (mg/L) —Continued	1991–2003	390	388	1.5	1.4	1.8	2.6	3.3
	1991	52	50	1.7	1.8	2.0	2.7	3.3
	1992	35	35	1.7	1.8	2.0	2.3	2.9
	1993	34	34	1.7	1.7	2.0	2.5	2.5
	1994	40	40	1.1	1.1	1.3	1.5	1.7
	1995	36	36	1.4	1.4	1.6	1.9	2.2
	1996	23	23	1.4	1.4	1.5	1.9	2.7
	1997	15	15	1.4	1.5	1.7	1.7	1.7
	1998	21	21	1.5	1.4	1.8	2.3	2.6
	1999	26	26	1.8	2.0	2.6	2.8	2.9
	2000	19	19	1.4	1.3	2.1	2.8	2.8
	2001	22	22	1.7	1.7	2.5	2.9	2.9
	2002	17	17	1.3	1.3	1.5	1.9	1.9
	2003	50	50	1.3	1.3	1.5	1.7	2.0
Ammonia as N (mg/L)	1991–2003	383	241	.02	.02	.04	.07	.13
Orthophosphate as P (mg/L)	1991–2003	381	380	.07	.07	.08	.10	.38
Silica as SiO_2 (mg/L)	1991–2003	223	223	6.7	6.6	7.6	9.1	15.0
Mississippi River at New Orleans, Louisiana (fig. 1)								
Streamflow (ft^3/s)	1992–93	54	54	949,570	978,000	1,135,000	1,491,000	1,549,000
Nitrite plus nitrate as N (mg/L)	1992–93	54	54	1.7	1.7	1.9	2.3	2.7