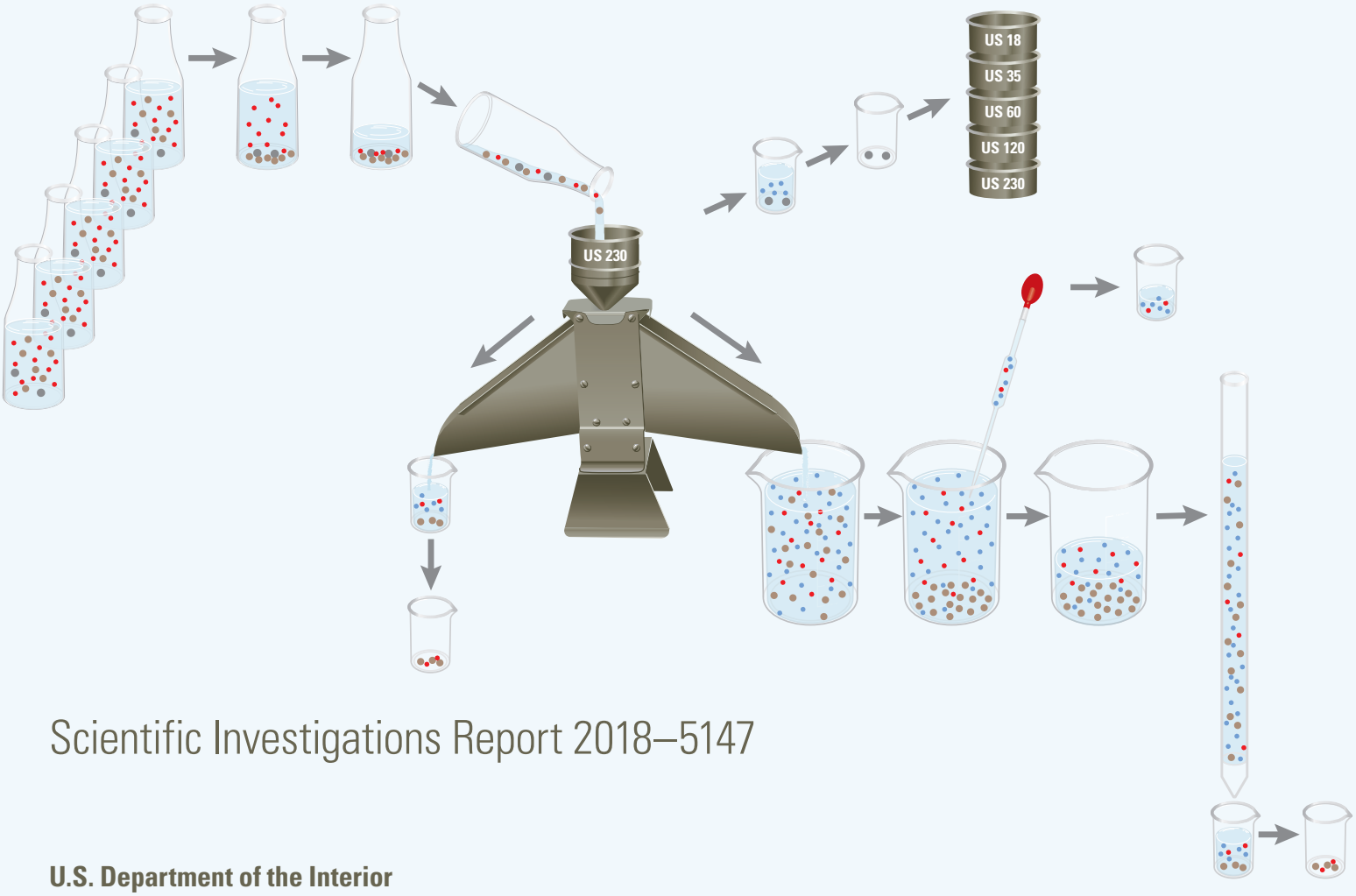
Prepared in cooperation with the U.S. Army Corps of Engineers, New Orleans District

Revisions to Suspended-Sediment Concentration, Percent Smaller Than 0.063 Millimeter, and Instantaneous Suspended-Sediment Discharge Reported for a Cooperative Program Between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the Lower Mississippi-Atchafalaya River Basin, October 1989 to February 2015



Scientific Investigations Report 2018–5147

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

Front cover. Schematic showing the laboratory method used in the cooperative program between the U.S. Army Corps of Engineers and the U.S. Geological Survey in the lower Mississippi-Atchafalaya River Basin (illustration by L.S. Coplin, U.S. Geological Survey; modified from fig. 3).

Back cover. Photograph showing a U.S. Geological Survey laboratory technician at the Baton Rouge Sediment Laboratory processing a water sample with the modified riffle splitter used to analyze cooperative program samples (photograph by Aimee Downs, U.S. Geological Survey).

Revisions to Suspended-Sediment Concentration, Percent Smaller Than 0.063 Millimeter, and Instantaneous Suspended-Sediment Discharge Reported for a Cooperative Program Between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the Lower Mississippi-Atchafalaya River Basin, October 1989 to February 2015

By Katherine K. Norton, Lisa D. Olsen, Todd E. Baumann, Lane B. Simmons, Athena P. Clark, Dennis K. Demcheck, and Marlon Johnson

Prepared in cooperation with the U.S. Army Corps of Engineers, New Orleans District

Scientific Investigations Report 2018–5147

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

U.S. Department of the Interior
DAVID BERNHARDT, Secretary

U.S. Geological Survey
James F. Reilly II, Director

U.S. Geological Survey, Reston, Virginia: 2019

For more information on the USGS—the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment—visit http://www.usgs.gov/ or call 1–888–ASK–USGS (1–888–275–8747).

For an overview of USGS information products, including maps, imagery, and publications, visit http://www.usgs.gov/pubprod/.

Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Although this information product, for the most part, is in the public domain, it also may contain copyrighted materials as noted in the text. Permission to reproduce copyrighted items must be secured from the copyright owner.

Suggested citation:
Norton, K.K., Olsen, L.D., Baumann, T.E., Simmons, L.B., Clark, A.P., Demcheck, D.K., and Johnson, M., 2019, Revisions to suspended-sediment concentration, percent smaller than 0.063 millimeter, and instantaneous suspended-sediment discharge reported for a cooperative program between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the lower Mississippi-Atchafalaya River Basin, October 1989 to February 2015: U.S. Geological Survey Scientific Investigations Report 2018–5147, 232 p., https://doi.org/10.3133/sir20185147.

ISSN 2328-031X (print)
ISSN 2328-0328 (online)

ISBN 1-4113-4290-3

Acknowledgments

The authors would like to extend our deep gratitude to Eric Glisch, U.S. Army Corps of Engineers Mississippi Valley Division, New Orleans District (USACE MVN), for his assistance in recovering digital and physical files critical to the production of this report. Additionally, Barbara Kleiss, USACE Mississippi Valley Division, was instrumental in providing financial support for the preparation of this report. We also received help uncovering elements of the program history from Nancy Powell, USACE MVN (retired), and David Biedenharn, USACE Engineer Research and Development Center.

Within the U.S. Geological Survey (USGS), Aimee Downs (Kentucky Water Science Center Sediment Laboratory), Dan Gooding (Cascades Volcano Observatory Sediment Laboratory), and Cheryl Joseph (Lower Mississippi-Gulf Water Science Center [LMGWSC] Baton Rouge Sediment Laboratory) helped with the physical testing of the sample splitter in August 2015 and provided many other valuable insights into laboratory processes. Mark Landers, Federal Interagency Sedimentation Project Chief, oversaw the review during critical early stages and organized the targeted concurrent sampling event; his many insightful comments and clear leadership were instrumental in accomplishing the review and revision. Christina Bartlett, Chief of the Information Management Branch, and her staff spent many hours entering laboratory data into spreadsheets and scanning original paper forms. Ron Seanor, Darlene Smothers, and Burl Goree from the LMGWSC data section assisted with the many requests for data retrievals and data changes in USGS information systems. Claire Rose of the LMGWSC provided geographic information system support for the site map. Jennifer Murphy and Scott Mize of the LMGWSC assisted with the review of instantaneous discharge values. Shannon Williams, LMGWSC Data Chief, reviewed the regression model for discharge at Union Point, Louisiana, and provided thoughtful feedback on the project at many stages.

Contents

Acknowledgments iii
Abstract 1
Introduction 1
Problem Statement 2
Purpose and Scope 2
Description of the Cooperative Program 7
Cooperative Program History 7
Site Locations 8
Sampling Design 8
Field Methods 9
Laboratory Analysis Methods 10
Data Flow and Information Systems Methods 12
Computations 13
Reporting 17
Critical Review of Field, Laboratory, and Computational Protocols 17
Sampling Design Review 18
Discharge-Weighted Average SSC 18
Daily Suspended-Sediment Load 18
Field Methods Review 19
Laboratory Analysis Review 20
Dissolved Solids 20
Particle-Size Distribution 22
Subsampling 22
Laboratory Method Performance 22
Information Systems Review 22
Computations Review 23
Reporting Review 24
Methods Used To Revise Results 24
Candidate Methods for Dissolved-Solids Correction 24
Preparation of Test Samples 25
Internally Prepared Test Samples 25
Externally Prepared Test Samples 25
Physical Testing 25
Revised Suspended-Fines Concentration Computation 26
Revised Suspended-Sand Concentration Computation 27
Revised SSC Computation 27
Estimation of Laboratory Uncertainty 27
Historical Sediment Data 30
Instantaneous Stream Discharge 32

Corrected SSC and Related Results 33
Change in Reported SSC 34
Uncertainty of SSC 35
Change in Reported Percent Fines 36
Change in Reported Instantaneous Stream Discharge 36
Change in Reported Suspended-Sediment Discharge 38
Change in Suspended-Sand Discharge 39
Change in Population-Scale Summary Statistics 40
Critical Evaluation of Revised Results 43
Effect of SSC Computation Method 43
Suspended-Sand Concentration 43
Suspended-Fines Concentration 44
Effect of Laboratory Practices on Revised Suspended-Fines Concentrations 44
Information About Bias and Uncertainty in Revised SSC 46
Conclusions 46
References Cited 47
Appendix 1. U.S. Army Corps of Engineers (USACE) FORTRAN source code for modules used to process laboratory results and compute suspended-sediment load for a cooperative program between the U.S. Geological Survey and the USACE in the lower Mississippi-Atchafalaya River Basin from 1973 to February 2015 49
Appendix 2. Example laboratory data sheet used for recording laboratory results for a cooperative program between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the lower Mississippi-Atchafalaya River Basin from 1973 to 2001, which also served as the basis for the Excel spreadsheet that was used from 2001 to February 2015 127
Appendix 3. Example 80-column text file (SED file) used as input to the U.S. Army Corps of Engineers (USACE) FORTRAN modules that computed suspended-sediment concentration, particle-size distribution, and suspended-sediment discharge for a cooperative program between the U.S. Geological Survey and the USACE in the lower Mississippi-Atchafalaya River Basin from 1973 to February 2015 131
Appendix 4. Corrected and original results for instantaneous stream discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from select sites in the lower Mississippi-Atchafalaya River Basin 135

Figures

1. Map showing the study area and station locations on the lower Mississippi River and Atchafalaya River for a cooperative program between the U.S. Army Corps of Engineers (USACE) and the U.S. Geological Survey (USGS) in the lower Mississippi-Atchafalaya River Basin that has been active since 1973 3
2. Diagram showing the flow direction, hydrologic nodes, and sites in the lower Mississippi-Atchafalaya River Basin sampled as part of the cooperative program between the U.S. Army Corps of Engineers and the U.S. Geological Survey 5

3. Diagram showing the laboratory method, including the wet sieve/split, "half fines," dry sieve, and bottom-withdrawal (BW) tube analysis steps, used in the cooperative program 11
4. Photograph showing a U.S. Geological Survey laboratory technician at the Baton Rouge Sediment Laboratory processing a water sample with the modified riffle splitter used to analyze cooperative program samples 12
5. Graph showing an example graph used to review sand concentrations in cross-sectional context for samples collected for the cooperative program between October 1989 and February 2015 in the lower Mississippi-Atchafalaya River Basin 32
6. Boxplot showing relative bias in reported suspended-sediment concentration for samples collected for the cooperative program between October 1989 and February 2015 in the lower Mississippi-Atchafalaya River Basin 35
7. Boxplot showing absolute change in percent fines for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 37
8. Boxplot showing revised instantaneous stream discharge from measurements that were made concurrently with cross-sectional suspended-sediment samples at each site in the lower Mississippi-Atchafalaya River Basin for the periods of revised record, October 1989 through February 2015 39
9. Boxplot showing absolute change between the revised values and the originally reported values of instantaneous suspended-sediment discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 40
10. Boxplot showing absolute change in the computed instantaneous suspended-sand discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 41
11. Graph showing the difference in the masses recovered from the bottom-withdrawal tube and "half fines" analyses, m_{dif}, over time 45

Tables

1. Site codes, station numbers, and sampling periods for nine sites included in a cooperative program between the U.S. Army Corps of Engineers and the U.S. Geological Survey in the lower Mississippi-Atchafalaya River Basin that has been active since 1973 4
2. Publicly available online data sources for retrieving revised results and metadata, and publicly available online data sources that contain results superseded by this report 6
3. Fields used in the laboratory data sheet transcribed by either the U.S. Army Corps of Engineers or the U.S. Geological Survey into an 80-column text file for input into the USACE FORTRAN software or to evaluate and compute the corrected results for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 14
4. Comparison between discharge-weighted average and numerical average suspended-sand concentration, suspended-fines concentration, and suspended-sediment concentration for 913 events for which data were available for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 19

5. Results from physical testing of the splitter used in the U.S. Geological Survey Baton Rouge Sediment Laboratory to process samples collected for the cooperative program in the lower Mississippi-Atchafalaya River Basin 28
6. Logical checks performed against final sample data with structured query language (SQL) queries to identify possible transcription errors in data recorded for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 31
7. Summary statistics for the relative bias in suspended-sediment concentration and the absolute change in suspended-sediment concentration by site and bottle type for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 36
8. Summary statistics for the absolute change in reported percent fines by site and bottle type for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 37
9. Summary statistics for the relative bias in suspended-sediment discharge, the absolute change in suspended-sediment discharge, and the relative change in suspended-sediment discharge by site for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 38
10. Summary statistics for the absolute change in suspended-sand discharge by site for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 41
11. Population-scale summary statistics for original and revised results for suspended-sediment concentrations for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 42
12. Population-scale summary statistics for original and revised results for suspended-sediment discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin 42
13. Linear regression models between composite suspended-sand concentration and average suspended-sand concentration for the 830 cross-sectional samples collected since October 1, 2005, for which revised suspended-sand concentration is reported for samples collected for the cooperative program in the lower Mississippi-Atchafalaya River Basin 43

Conversion Factors

U.S. customary units to International System of Units

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square foot (ft^2)	929.0	square centimeter (cm^2)
square foot (ft^2)	0.09290	square meter (m^2)
	Volume	
pint (pt)	0.4732	liter (L)
cubic foot (ft^3)	28.32	liter (L)
quart (qt)	0.9464	liter (L)
	Flow rate	
foot per second (ft/s)	0.3048	meter per second (m/s)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
	Mass	
ton, short [2,000 lb]	0.9072	metric ton (t)

International System of Units to U.S. customary units

Multiply	By	To obtain
	Length	
centimeter (cm)	0.3937	inch (in.)
millimeter (mm)	0.03937	inch (in.)
	Volume	
liter (L)	2.113	pint (pt)
liter (L)	1.057	quart (qt)
liter (L)	0.2642	gallon (gal)
cubic meter (m^3)	264.2	gallon (gal)
liter (L)	0.03531	cubic foot (ft^3)
	Mass	
gram (g)	0.03527	ounce, avoirdupois (oz)
kilogram (kg)	2.205	pound avoirdupois (lb)
metric ton (t)	1.102	ton, short [2,000 lb]
	Density	
gram per cubic centimeter (g/cm^3)	62.4220	pound per cubic foot (lb/ft^3)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as °F = (1.8 × °C) + 32°.

Concentrations of sediment are reported in units of milligrams of sediment per liter of water-sediment mixture. Instantaneous suspended-sediment discharge is reported in short tons per day. A standard conversion factor of 0.0027 s × L × short tons × day^{-1} × ft^{-3} × mg^{-1} is used when computing instantaneous suspended-sediment discharge in tons per day as the product of suspended-sediment concentration in milligrams per liter and stream discharge in cubic feet per second. The conversion factor is computed from other standard conversion factors:

$$86{,}400 \text{ seconds/day} \times 28.32 \text{ L/ft}^3 \times 1.102 \times 10^{-9} \text{ short tons/mg}$$

Particle-size distributions are reported in percent by mass of the sediment in a sample that is finer than the stated cutoff diameter, or "percent finer."

Abbreviations

ADCP	acoustic Doppler current profiler
BW	bottom withdrawal
CVO	Cascades Volcano Observatory
DI	deionized
FISP	Federal Interagency Sedimentation Project
MVN	Mississippi Valley Division, New Orleans District
NASQAN	National Stream Quality Accounting Network
NWIS	National Water Information System
ORCC	Old River Control Complex
QSB	Quality Systems Branch
QWDATA	water-quality data (discrete) module of NWIS
SLQA	Sediment Laboratory Quality Assurance
SSC	suspended-sediment concentration
TDS	total dissolved solids
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

Revisions to Suspended-Sediment Concentration, Percent Smaller Than 0.063 Millimeter, and Instantaneous Suspended-Sediment Discharge Reported for a Cooperative Program Between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the Lower Mississippi-Atchafalaya River Basin, October 1989 to February 2015

By Katherine K. Norton, Lisa D. Olsen, Todd E. Baumann, Lane B. Simmons, Athena P. Clark, Dennis K. Demcheck, and Marlon Johnson

Abstract

This report presents revised results for four parameters reported for suspended-sediment samples that were collected in the lower Mississippi-Atchafalaya River Basin as part of a cooperative program between the U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District and the U.S. Geological Survey (USGS). The cooperative program has been active since 1973 at seven sites: two sites on the main stem of the Mississippi River, three sites on the Atchafalaya River, one site on the Old River Outflow Channel, and one site on the lower Red River above the confluence with the Old River Outflow Channel. The four parameters—suspended-sediment concentration, percent by mass of the sediment that passes through a 0.063-millimeter (US 230) sieve, instantaneous stream discharge, and instantaneous suspended-sediment discharge—reported for 2,895 samples have been modified to reflect the findings of a full review of the cooperative program, which was initiated by both agencies in January 2015. The revised results are for samples collected from October 1989 through February 2015. Ninety-four percent of the revised values for suspended-sediment concentration are lower than their corresponding original reported values, indicating that less suspended sediment moves through the lower Mississippi River system than was previously reported. For example, the median revised instantaneous suspended-sediment discharge at the Mississippi River at Tarbert Landing, Miss. (USGS station 07295100), was 315,000 short tons per day, compared to 378,000 short tons per day as originally reported. At the Atchafalaya River at Simmesport, La. (USGS station 07381490), the median revised suspended-sediment discharge was 105,000 short tons per day, compared to 143,000 short tons per day as originally reported. The systematic downward revision in instantaneous suspended-sediment discharge values was due to a systematic downward revision in the suspended fine (less than 0.063 millimeter) sediment concentration. The effect of the revision on the suspended-sand concentration and instantaneous suspended-sand discharge was weaker. Any model of sediment load or transport processes in the basin that uses data from the affected samples should be reevaluated on the basis of the revised results.

Introduction

Understanding sediment transport is critical to an effective understanding of hydraulic and environmental processes in fluvial ecosystems. Sediment transport studies rely on high-quality, accurate measurements of stream discharge, suspended-sediment concentration (SSC), and particle-size distribution to compute sediment loads (Koltun and others, 2006; Porterfield, 1972) and to model erosion, transport, and deposition in river systems (for example, Hydrologic Engineering Center-River Analysis System [HEC-RAS], Brunner, 2016).

Sediment transport in the lower Mississippi-Atchafalaya River Basin is of national importance because of the need to maintain navigation and flood control along the Nation's central commercial waterway (Ngyuen and others, 2011), as well as manage sediment delivery to flood plains and coastal wetlands in the region (Allison and others, 2012; Thorne and others, 2008). The importance of these concerns has long placed Mississippi-Atchafalaya River Basin sediment

transport within the purview of the Federal Government. Specifically, the U.S. Army Corps of Engineers (USACE) is responsible for engineering and maintenance of the Old River Control Complex (ORCC). The ORCC prevents the lower Mississippi River from changing course and being captured by the Atchafalaya River (Heath and others, 2015), which has a steeper hydraulic gradient and shorter path to the Gulf of Mexico (fig. 1).

The ORCC is designed to maintain the flow of water between the Mississippi and Atchafalaya River system in a proportion similar to that which occurred in the early 1950s. This objective is operationalized by managing the ORCC so that 70 percent of the combined Red River and Mississippi River latitude flow above the ORCC discharges through the Mississippi River and 30 percent of the latitude flow discharges through the Atchafalaya River on a daily basis (Heath and others, 2015). Engineering and management decisions at the ORCC affect, and are affected by, sedimentation dynamics in the region (Heath and others, 2015). Managing the stream discharge and sediment requires an understanding of the sediment transport processes.

Since 1973, the USACE Mississippi Valley Division, New Orleans District (MVN) and the U.S. Geological Survey (USGS) have conducted a cooperative program to monitor suspended-sediment transport in the lower Mississippi-Atchafalaya River Basin that provides the hydrologic and sediment data to support the USACE management of the ORCC. The agreement that defines the cooperative program is between the USACE MVN and the USGS Lower Mississippi-Gulf Water Science Center (LMGWSC). Prior to the creation of the LMGWSC in 2014 the cooperative agreement was between the USACE MVN and the USGS Louisiana Water Science Center, which was incorporated into the LMGWSC along with water science centers from four other States. For brevity, the term “cooperative program” is used to refer to this partnership throughout this report.

The cooperative program collects suspended-sediment and stream discharge data at seven hydrologic nodes, represented by nine sampling locations, in the lower Mississippi-Atchafalaya River Basin (fig. 1, table 1). The hydrologic nodes are points above and below important confluences in the region (fig. 2). Abbreviations (or codes) used in this report to refer to the hydrologic nodes and the sampling stations are defined in table 1.

Problem Statement

In 2006, the USGS National Stream Quality Accounting Network (NASQAN) program began monitoring water quality, including SSC, at two sites on the Atchafalaya River (WLO, MCY) that were also monitored by the cooperative program (fig. 1). The NASQAN program used depth-integrated equal width increment (EWI) sampling (Edwards and Glysson, 1999) to collect suspended-sediment samples. Because USGS field crews also visited the two sites to collect sediment samples for the cooperative program, the samples for both the NASQAN program and the cooperative program were frequently collected on the same day.

Although the two programs differed in their respective goals and protocols, samples collected at the same station on the same day were expected to produce similar SSC with no systematic differences in values. However, cooperative program samples consistently produced higher SSC, and consequently higher estimates of instantaneous suspended-sediment discharge, than did the NASQAN program samples. In 2015, the USACE and USGS initiated a full review of the cooperative program, encompassing the protocols for the collection and handling of samples, laboratory procedures, and computation of SSC and related parameters. The purpose of the review was to determine the cause of the discrepancy in SSC data produced by the two programs.

The review team compared the methods used by the cooperative program to current USGS policies and methods. The cooperative program was not designed to implement USGS methods, nor was its design revised as USGS methods changed over time. However, the USGS personnel conducting the review were required to implement current practices for data review and dissemination; the team also believed that comparing past practices to current laboratory and field practices would lead to improved data quality. During the review, the team determined that the cooperative program produced SSCs that were biased high relative to the true values and that sufficient laboratory metadata existed to compute more accurate SSCs for samples collected for the cooperative program.

Purpose and Scope

The purpose of this report is to present revised results for four parameters reported for 2,895 suspended-sediment samples collected as part of the cooperative program in the lower Mississippi-Atchafalaya River Basin from October 1989 through February 2015. Revised results for samples collected from 1973 through September 1989 are beyond the scope of this report. This report presents revised values of SSC, percent by mass of the sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve), instantaneous stream discharge, and instantaneous suspended-sediment discharge. The term “fines” is used throughout this report to refer to sediment that passes through the 0.063-mm sieve; the term “percent fines” is used to refer to the percent by mass of the suspended sediment that passes through the 0.063-mm sieve. The term “stream discharge” is used to distinguish between the discharge of water in the stream and the suspended-sediment discharge. Stream discharge is also commonly called “streamflow” or, simply, “discharge.” The purpose of the revision is to provide more accurate values for the aforementioned parameters, which are reported to the USGS discrete water-quality database, QWDATA.

Figure 1. The study area and station locations on the lower Mississippi River and Atchafalaya River for a cooperative program between the U.S. Army Corps of Engineers (USACE) and the U.S. Geological Survey (USGS) in the lower Mississippi-Atchafalaya River Basin that has been active since 1973. Station labels for the sampling locations in this study—UPT1, UPT2, TAR, ORO1, ORO2, RDR, SIM, WLO, and MCY—correspond to points described in table 1. Four additional USGS stations are included for reference: STF (07373420), MEL (07381495), BRG (07374000), and BLC (07374525). Results from these four stations are not affected by the revisions presented in this report. The USACE discharge station at Red River Landing (RRL; 01120) is also shown because it is the location of the gage that is used to compute stream discharge at Tarbert Landing. NASQAN is the National Stream Quality Accounting Network, a USGS program.

Table 1. Site codes, station numbers, and sampling periods for nine sites included in a cooperative program between the U.S. Army Corps of Engineers (USACE) and the U.S. Geological Survey (USGS) in the lower Mississippi-Atchafalaya River Basin that has been active since 1973.

[Information about sampling prior to 1977 was taken from Keown and others (1977). The seven sites are represented by nine stations because the sampling locations for two of the sites (ORO, UPT) were moved during the study period. USGS, U.S. Geological Survey; USACE, U.S. Army Corps of Engineers; WY, water year; LA, Louisiana; MS, Mississippi]

Site code[1]	Sampling location code[2] (fig. 1)	Station name	USGS station number	USACE station number[3]	Sediment sampling period WY (agency)
		Mississippi River			
UPT	UPT1	Mississippi River at Coochie, LA	310552091361200	01020	1962–73 (USACE) 1975–91 (USACE)
UPT	UPT2	Mississippi River at Union Point (Mile 326)	07295025	01020	1991–present (USACE)
TAR	TAR	Mississippi River at Tarbert Landing, MS	07295100	01100/ 01100Q	1963–present (USACE)
		Old River Outflow Channel			
ORO	ORO1	Old River Outflow Channel near Knox Landing	310355091411500	02600	1963–2009 (USACE)
ORO	ORO2	Old River Outflow Channel below hydropower channel	07381482	02600/ 02600Q	2010–present (USGS)
		Red River			
RDR	RDR	Red River above Old River Outflow Channel above Simmesport	310408091424500	04800	1963–2005 (USACE)
		Atchafalaya River			
SIM	SIM	Atchafalaya River at Simmesport, LA	07381490	03045/ 03045Q	1952–2009 (USACE) 2010–present (USGS)
WLO	WLO	Wax Lake Outlet at Calumet, LA	07381590	03720	1973–present (USGS)
MCY	MCY	Lower Atchafalaya River at Morgan City, LA[4]	07381600	03780	1973–present (USGS)

[1]The three-letter site codes are a convention used only in this report. The site code is assigned to the hydrologic node represented by the sampling location.

[2]These sampling location codes are used only for this report; they are used to clarify the sampling location during different periods over the course of the history of the cooperative program.

[3]USACE station numbers that end with a Q are used to report daily discharge at a sampling location.

[4]At MCY, periodic sand deposition is observed near the left bank; the sand bar that forms is periodically dredged to maintain the open channel into a ship yard on the left bank.

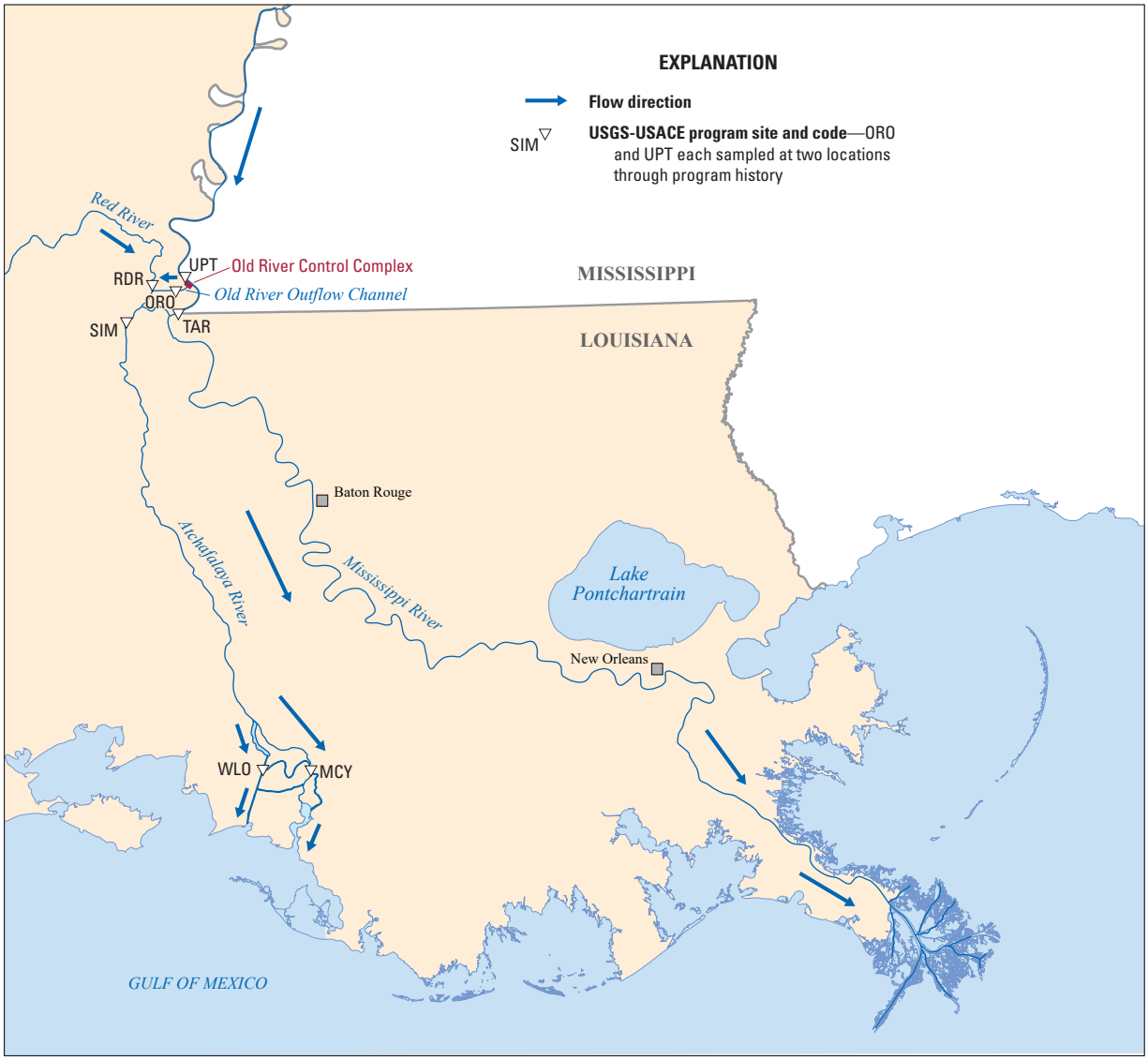
The USGS uses parameter codes to define physical properties when reporting results to QWDATA. SSC in milligrams per liter is reported on USGS parameter code (p) 80154. Percent fines in percent is reported on p70331. Instantaneous stream discharge in cubic feet per second is reported on p00061. Instantaneous suspended-sediment discharge in short tons per day is reported on p80155. There is a small apparent discrepancy for the percent fines between the formal name of p70331, “suspended sediment, sieve diameter, percent smaller than 0.0625 millimeters,” and the stated 0.063-mm opening size on the US 230 sieve. The American Society for Testing and Materials E-11 standard states that the average opening of the US 230 sieve is 0.063±0.0037 mm (American Society for Testing and Materials, 2014). The physical difference between 0.0625 mm and 0.063 mm is not resolvable using current sieve standards, so 0.063 mm and 0.0625 mm are treated as though they are equivalent in this report.

This report includes the following elements:

- A description of the cooperative program, including the program’s history, sampling design, and field, laboratory, and computational protocols;
- Details of the review findings comparing the cooperative program to USGS policies and practices;
- Detailed descriptions of methods used to compute revised SSC and percent fines, including consideration of alternative approaches, preparation and analysis of test samples, computation of corrected SSC and related parameters, and uncertainty analysis; and
- Results of a data correction presented in terms of the resulting change in reported values for SSC, percent fines, instantaneous stream discharge, and instantaneous suspended-sediment discharge.

The revised results for all four parameters are publicly hosted through the USGS National Water Information System (NWIS) web interface, NWISWeb (U.S. Geological Survey, 2018), for “water quality: field/lab samples” (table 2). Supporting information about site hydrology can also be found on NWISWeb (U.S. Geological Survey, 2018) and through the USACE Rivergages website (U.S. Army Corps of Engineers, 2017). Data that support the findings of the comprehensive review are publicly available in Norton and others (2019). Norton and others (2019) contains a machine-readable listing of the original and revised values for each cross-sectional sample, along with the values recorded for all phases of the laboratory analysis and supporting field metadata for individual bottles used to collect the cross-sectional samples.

Cooperative program data that were collected prior to October 1989 have been removed from public view on NWISWeb (U.S. Geological Survey, 2018) because they are known to have been produced with a biased method. The suspended-sediment data, including daily suspended-sediment loads, were also published in USGS Water-Year Summaries (2006–13) and Water-Data Reports (1973–2005) for the affected stations (table 2). These reports have been watermarked in the USGS-hosted online repositories to reflect the fact that the data are superseded by the data in this report. Data users that rely on local copies of printed reports should be aware that the suspended-sediment data produced by the cooperative program are no longer considered reliable on the basis of the findings of the review documented in this report.



NOT TO SCALE

Figure 2. The flow direction, hydrologic nodes, and sites in the lower Mississippi-Atchafalaya River Basin sampled as part of the cooperative program between the U.S. Army Corps of Engineers (USACE) and the U.S. Geological Survey (USGS). The UPT and ORO nodes were each sampled at two different locations during the program (table 1).

Table 2. Publicly available online data sources for retrieving revised results and metadata, and publicly available online data sources that contain results superseded by this report.

[Stations are organized in order approximately upstream to downstream. Printable reports available through U.S. Geological Survey (USGS) online repositories have been watermarked to reflect the findings presented in this report. Data users that rely on local copies of printed reports should be aware that the suspended-sediment data in the Water-Data Reports for these stations are no longer considered reliable. Printed Water-Data Reports for samples before 2003 are not available online but are also deprecated by this report. NWIS, USGS National Water Information System database; QWDATA, a database within NWIS that contains results of discrete water-quality samples; USACE, U.S. Army Corps of Engineers; URL, uniform resource locator]

Sampling location code[1]	URL
Revised suspended-sediment data: NWIS-QWDATA (water quality: field/lab samples)	
UPT1	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=310552091361200
UPT2	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07295025
TAR	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07295100
ORO1	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=310355091411500
ORO2	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07381482
RDR	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=310408091424500
SIM	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07381490
WLO	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07381590
MCY	https://nwis.waterdata.usgs.gov/usa/nwis/qwdata?site_no=07381600
USGS stream discharge field measurements: NWIS-FieldMeasurements (surface water: field measurements)	
ORO2	https://nwis.waterdata.usgs.gov/usa/nwis/measurements?site_no=07381482
SIM	https://nwis.waterdata.usgs.gov/usa/nwis/measurements?site_no=07381490
WLO	https://nwis.waterdata.usgs.gov/usa/nwis/measurements?site_no=07381590
MCY	https://nwis.waterdata.usgs.gov/usa/nwis/measurements?site_no=07381600
USGS stream discharge time series: NWIS-UnitValues (time-series: current/historical observations)	
ORO2	https://nwis.waterdata.usgs.gov/usa/nwis/uv?site_no=07381482
SIM	https://nwis.waterdata.usgs.gov/usa/nwis/uv?site_no=07381490
WLO	https://nwis.waterdata.usgs.gov/usa/nwis/uv?site_no=07381590
MCY	https://nwis.waterdata.usgs.gov/usa/nwis/uv?site_no=07381600
USACE once-daily stream discharge: Rivergages.com	
TAR	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=01100Q&fid=&dt=S
ORO	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=02600Q&fid=&dt=S
SIM	http://rivergages.mvr.usace.army.mil/WaterControl/stationinfo2.cfm?sid=03045Q&fid=&dt=S
Superseded online Water-Year Summary Reports (2006–13)[2]	
ORO2	https://nwis.waterdata.usgs.gov/usa/nwis/wys_rpt?site_no=07381482
SIM	https://nwis.waterdata.usgs.gov/usa/nwis/wys_rpt?site_no=07381490
WLO	https://nwis.waterdata.usgs.gov/usa/nwis/wys_rpt?site_no=07381590
MCY	https://nwis.waterdata.usgs.gov/usa/nwis/wys_rpt?site_no=07381600
Superseded online Water-Data Reports[3]	
UPT1[4]	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 640)
UPT1[4]	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 632)
UPT1[4]	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 690)
TAR	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 78)
TAR	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 81)
TAR	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 79)
ORO1	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 380)
ORO1	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 390)
ORO1	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 432)
RDR	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 640)

Table 2. Publicly available online data sources for retrieving revised results and metadata, and publicly available online data sources that contain results superseded by this report.—Continued

[Stations are organized in order approximately upstream to downstream. Printable reports available through U.S. Geological Survey (USGS) online repositories have been watermarked to reflect the findings presented in this report. Data users that rely on local copies of printed reports should be aware that the suspended-sediment data in the Water-Data Reports for these stations are no longer considered reliable. Printed Water-Data Reports for samples before 2003 are not available online but are also deprecated by this report. NWIS, USGS National Water Information System database; QWDATA, a database within NWIS that contains results of discrete water-quality samples; USACE, U.S. Army Corps of Engineers; URL, uniform resource locator]

Sampling location code[1]	URL
	Superseded online Water-Data Reports[3]—Continued
RDR	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 632)
SIM	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 382)
SIM	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 392)
SIM	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 434)
WLO	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 396)
WLO	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 406)
WLO	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 449)
MCY	https://pubs.usgs.gov/wdr/WDR-LA-03-1/pdf/wdrla03-1.pdf (p. 402)
MCY	https://pubs.usgs.gov/wdr/2004/wdr-la-04-1/pdfs/WDR-LA-04-1.pdf (p. 411)
MCY	https://pubs.usgs.gov/wdr/2005/wdr-la-05-1/pdfs/WDR_LA-05-1.pdf (p. 454)

[1]These three-letter codes are a convention used only in this report. Corresponding locations and station codes for the sites are found in figure 1 and table 1.

[2]Superseded Water-Year Summary Reports for inactive sites can be accessed at https://wdr.water.usgs.gov/allsearch.php by typing the desired station number in the search box.

[3]All suspended-sediment data for these stations in printed Water-Data Reports are superseded. Links shown here are for online Water-Data Reports only.

[4]The station number in use at the time the report was printed was for UPT1; the station number for UPT2 had not yet been created. The sampling location was UPT2 in 2003 through 2005 (fig. 1, table 1).

Description of the Cooperative Program

The cooperative program includes collection of stream discharge measurements and collection and analysis of suspended-sediment and bed-sediment samples. This report addresses the data pertaining to instantaneous stream discharge and suspended-sediment samples, as well as daily suspended-sediment loads modeled from suspended-sediment and discharge data. The purpose of the program description below is to document practices that were in place prior to February 2015. Samples collected and analyzed after February 2015 have been processed with different methods than the methods described below.

Cooperative Program History

The USACE MVN has been collecting sediment samples at selected sites (fig. 1, table 1) on the lower Mississippi and Atchafalaya Rivers since 1952 (Keown and others, 1977). By 1963, the USACE MVN had established sediment sampling at five of the sites (table 1) that eventually became part of the cooperative program with the USGS in 1973. From 1963 to 1973, the USACE MVN was exclusively responsible for sample collection, data analysis, and reporting of all information related to the project. During this period, the USACE MVN Testing and Materials Branch Sediment Laboratory in New Orleans, La., analyzed the sediment samples (Keown and others 1977, p. A24).

In June 1973, the USACE MVN entered into a cooperative agreement with the USGS Louisiana Water Science Center. Through the cooperative agreement, the USGS Baton Rouge Sediment Laboratory at the Louisiana Water Science Center in Baton Rouge, La., assumed responsibility for laboratory analysis, following the protocol developed by the USACE. Additionally, in 1973, USGS field crews began field sampling at two sites on the lower Atchafalaya River (fig. 1, table 1). The USGS field crews followed the same field protocols and sampling design that the USACE had been using for the other sites.

From 1973 through 1986, the USGS sent stream discharge measurements from the sites on the lower Atchafalaya River, as well as the raw data from laboratory analyses of all seven sites, to the USACE for processing. The USACE digitized the raw values and then used a FORTRAN program developed by the USACE MVN Hydraulics and Hydrologic Branch in 1974 (app. 1) to process the data. The USACE FORTRAN program used raw laboratory data, cross-sectional stream depth and velocity profiles, and daily stream discharge information to produce SSC, particle-size distribution, instantaneous suspended-sediment discharge, and daily suspended-sediment loads for a given water year. The USACE returned the results from their FORTRAN program to the USGS Louisiana Water Science Center for subsequent reporting by the USGS. The USGS stored the results for SSC, percent fines, instantaneous stream discharge, and instantaneous suspended-sediment discharge in QWDATA.

In 1986, the USGS received a copy of the USACE FORTRAN program from the USACE and began using it to process data. The USGS supplied raw laboratory data, digitized input files, and output reports from the FORTRAN program to the USACE during this period. Eventually the USACE stopped separately digitizing the laboratory data and relied on digitized input files produced by the USGS, which USACE used to produce their own independent outputs.

In 2007, the USACE discontinued their use of the USACE FORTRAN program. The USGS continued to use the USACE FORTRAN program and existing workflow without interruption to process and report sediment data. The USGS supplied output reports to the USACE but did not supply digitized input files or raw laboratory data.

In October 2009, the USGS took over field sampling at two of the sites, one on the Old River Outflow Channel and one on the upper Atchafalaya River (table 1). The USGS continued using the established cooperative program field protocols at these two sites through the project period covered by this report. The USACE continued to collect discharge measurements and field samples at the two sites on the Mississippi River (table 1). Suspended-sediment sampling at Red River was discontinued in February 2005.

Site Locations

The seven sites (table 1) are located in the lower Mississippi River system in the vicinity of the Old River Outflow Channel and its confluence with the Red and Atchafalaya Rivers, as well as near the mouth of the Atchafalaya River (fig. 1). The discharge from the main stem Mississippi River into the Atchafalaya River is maintained by the USACE through the Old River Outflow Channel and the ORCC. The Old River Outflow Channel flows into the Red River, and the Atchafalaya River is the combined system below the confluence. The Atchafalaya River flows south and discharges into the Gulf of Mexico through two distributaries near Morgan City, La. (figs. 1 and 2).

The sampling sites were selected to represent points upstream and downstream of major nodes in the hydrologic network around the ORCC (fig. 2). The Union Point/Coochie site (UPT) represents the stream discharge and suspended-sediment discharge of the Mississippi River upstream of the ORCC. The Tarbert Landing site (TAR) represents the stream discharge and suspended-sediment discharge on the main stem Mississippi River downstream of the ORCC. The Old River Outflow Channel site (ORO) represents the stream discharge and suspended-sediment discharge through the Old River Outflow Channel, which hydrologically connects the Mississippi and Atchafalaya Rivers. The Red River site (RDR) represents the stream discharge and suspended-sediment discharge in the Red River upstream of its confluence with the Old River Outflow Channel. The Simmesport site (SIM) represents the stream discharge and suspended-sediment discharge on the Atchafalaya River below the confluence of the Red River and the Old River Outflow Channel. The Wax Lake Outlet (WLO) and Morgan City (MCY) sites together represent the outflow of the Atchafalaya River that discharges into the lowermost delta and Gulf of Mexico.

Within the context of the node-based sampling design, the sediment sampling and gaging locations at each site have not been consistent for the entire program history. For example, in 1991, the construction of the hydropower channel on the ORCC necessitated a change in the UPT sediment sampling location from its original location near the mouth of the new channel (UPT1) to a point 9 miles upstream (UPT2; fig. 1, table 1). The Old River Outflow Channel sampling location at ORO was moved from ORO1 approximately 2 miles upstream (eastward) to ORO2 when the USGS took over field sampling from the USACE in October 2009 (fig. 1, table 1).

Sediment samples typically were collected within 1 river mile of the points marked on the map (fig. 1) during the corresponding time periods noted in table 1. When field conditions made collection unsafe or impractical, sediment samples were collected at a secondary location within 2 river miles of the marked points at the discretion of the field crew. When the field crew sampled at a secondary location they selected its position to maintain representativeness of the sample within the hydrologic context of the node-based sampling design.

Sampling Design

The sampling design for the USACE suspended-sediment program originally served four purposes. The goals were to

- Produce a discharge-weighted average SSC suitable for use in computing instantaneous suspended-sediment discharge and suspended-sand discharge;
- Estimate daily and annual suspended-sediment load through the different nodes of the system;
- Characterize the spatial distribution of SSC and particle size within the X-Y plane of the river cross section for subsequent parameterization of spatial models of sediment transport; and
- Characterize the particle-size distribution of the suspended sediment and the bed sediment.

To accomplish these goals, a multivertical point-sampling design was used to collect the samples. The verticals were collected at fixed horizontal positions across the stream cross section. At each vertical, point samples were collected at defined fractions of the total depth below the water surface. This allowed each point sample to be related to an X-Y position within the cross section. The horizontal position of the verticals in the cross section, the number of point samples in each vertical, and the target fraction of the total depth for each point sample were assigned by USACE program managers. In general, during the period covered by this report, point samples were collected at 4 or 5 depths at 3 or 4 verticals

for a total of 12–20 point samples for each cross-sectional sample. The number of verticals and target depths, and hence the number of point samples collected in each sampling event, changed over the history of the cooperative program and varied among the different sites.

The USACE program managers also set the number of samples collected in each water year, which varied by site over time. During the late 1970s and early 1980s, sampling occurred biweekly at most sites and more frequently at some sites. Later, samples were collected less frequently as resources were shifted away from sediment programs. By the middle of the period covered in this report, 12–18 cross-sectional samples were collected each water year at most sites, normally on a monthly basis for lower flow periods and on a biweekly basis during higher flow periods of the year.

Field Methods

Field crews measured instantaneous stream discharge at the cross sections where sediment samples were collected. Stream discharge measurements were made near the time of sampling, usually before sediment sampling so that the correct depths for the point samples could be determined. Discharge was measured with either a “conventional” Price AA current meter (Buchanan and Somers, 1969) or an acoustic Doppler current profiler (ADCP) (Mueller and Wagner, 2009).

Suspended-sediment samples for the cooperative program were collected with a P-61, P-63, or P-6-200 point sampler with a 3/16-inch nozzle suspended from a boat. These point samplers are designed to collect isokinetic samples when operated in the approved range of stream depths and water velocities (Davis, 2005). Isokinetic sampling ensures that the velocity of the flow into the sampler is equal, or nearly equal, to the stream velocity near the sampler nozzle; this condition must be met for representative sampling of suspended sediment (Edwards and Glysson, 1999, p. 15).

The P-61 and P-63 samplers can be used with either pint- or quart-sized bottles (Davis, 2005). Until March 2014, USGS crews used pint bottles, and USACE crews used quart bottles. The USGS began using the P-6-200 sampler (Federal Interagency Sedimentation Project, 2011) with quart bottles in March 2014.

Changes were made to the collection techniques over time. For example, an unpublished standard operating procedure from the USACE documented a switch from plastic to brass 3/16-inch nozzles for the point samplers. Similarly, in 2004, the USACE crews began including a nozzle rinse step between verticals to prevent cross contamination between the bottom sample bottle of one vertical and the top sample bottle of the next vertical.

During sample collection, the crew located the assigned vertical in the cross section by moving a fixed distance from a reference point on the bank or by moving to a set of Global Positioning System (GPS) coordinates that represented the correct position. The total depth at each vertical was determined by sounding weight, bed sampler, bottom sounder, fathometer, or ADCP. The sampler was lowered to the water surface, and the depth indicator was reset to zero. The sampler was then lowered to the target fraction of the depth specified in the cooperative program sampling plan. The sampler valve was opened, and the water sample was collected. The sampling duration was selected on the basis of the observed water velocity and nozzle size. The goal when setting the sampling duration was to allow the bottle to collect sufficient water without overfilling, although changes in field conditions during sampling sometimes resulted in some point samples not meeting the target volume. The valve was closed, and the sampler was lifted to deliver the sample to the operator. The boat operator held the boat as motionless as possible relative to banks and waypoints throughout the sampling process at each vertical.

The P-61, P-63, and P-6-200 samplers are expected to collect isokinetic samples when stream velocity is greater than 1.5 feet per second and less than 10 feet per second (P-61, P-6-200) or 15 feet per second (P-63) (Davis, 2005; Federal Interagency Sedimentation Project, 2011). When average stream velocities fell below 1.5 feet per second, USGS crews sometimes used a Van Dorn sampler (Wildco) to collect non-isokinetic samples. The Van Dorn sampler was manually lowered to the target fraction of the depth in the vertical and the messenger weight sent down the rope to close the sampler. The operator then pulled the sampler back up and transferred the water sample to the sample container as quickly as possible to not allow for settling. Water was poured swiftly and freely into a sample bottle without allowing the water to overfill, slosh, or spill from the bottle. Excess water in the Van Dorn sampler that did not fit into the bottle was discarded.

When stream velocities were too low to adequately fill the sample bottles by using standard procedures, field modifications such as towing the sampler through the water or sampling with the nozzle removed were sometimes used to collect non-isokinetic samples. At velocities less than 1.5 feet per second it was unlikely that any sand would be in suspension, and thus the effect of non-isokinetic sampling conditions would be negligible.

Field crews were not always able to use a uniform sampling duration for every bottle in a cross section. A sampling duration short enough to prevent overfilling the bottles in high-velocity areas of the cross section sometimes resulted in very small sample volumes in low-velocity areas of the cross section. At some points in the program history, some field crews responded to this situation by increasing the sampling duration for bottles in low-velocity zones of the stream cross section.

Following collection, water samples were stored in a cool, dark environment to prevent biological growth in the containers. Bottles were labeled with the appropriate field metadata and transferred to the USGS Baton Rouge Sediment Laboratory for analysis.

Laboratory Analysis Methods

The cooperative program laboratory protocol was developed by the USACE MVN Testing and Materials Branch Sediment Laboratory, New Orleans, La. The first known published description of the technique is in Keown and others (1977, p. A23). The cooperative program laboratory protocol was exclusively used on samples collected for the cooperative program; sample results for other programs that used the USGS Baton Rouge Sediment Laboratory were produced with other approved USGS methods, chiefly those described by Guy (1969).

Each point-sample bottle and the river water it contained were weighed to the nearest 0.1 gram. The sediment was allowed to settle until the overlying river water was clear. The settling period was usually a minimum of 2 weeks. The overlying river water was decanted from the settled sediment (fig. 3). Decanting is used to concentrate the sediment in a sample into a manageable volume (Guy, 1969), which improves handling during subsequent analysis. The river water was decanted with a vacuum line attached to a short length of copper pipe. The copper pipe had an inlet hole drilled 90 degrees to the main axis of the pipe near the end. The pipe was lowered slowly into each point-sample bottle to remove the overlying river water through the inlet hole, which allowed the analyst to remove most of the overlying water through the vacuum line without disturbing the sediment below the inlet hole. The overlying river water contained dissolved solids. The concentration of dissolved solids in the river water and the volume of the residual overlying river water remaining in each point-sample bottle were not measured during this step.

The sediment and residual overlying river water in each bottle were washed through a 3-inch-diameter 0.063-mm sieve (US 230 sieve) with deionized (DI) water to separate the sand from the fines (fig. 3). The material retained on the sieve was rinsed into a tared 100-milliliter beaker, allowed to settle for 3–5 seconds, decanted with the vacuum system, oven dried at 103±2 degrees Celsius (°C), cooled in a desiccator, and weighed to the nearest 0.0001 gram. Separating the sand in this way was comparable to a wet sieve “sand break” analysis, which separates suspended-sediment samples into sand and fines to allow the reporting of the percent fines along with SSC.

The dry sand in the beaker was transferred to a stack of 3-inch-diameter sieves (1.0-mm, 0.500-mm, 0.250-mm, 0.0125-mm, and 0.063-mm openings) and shaken for 1 minute on a small automatic sieve shaker (fig. 3). The cumulative weight retained on each sieve was recorded to the nearest 0.0001 gram to determine the particle-size distribution of the sand for each point-sample bottle. The cumulative weight retained on the 0.063-mm sieve during the dry sieve analysis could be compared to the sand mass from the wet sieve analysis; under ideal conditions the two values would be equal.

The 3-inch-diameter 0.063-mm sieve used for the wet sieve analysis was supported by a holder on top of a modified riffle splitter (figs. 3 and 4) that split the suspension passing the sieve into two separate portions. After the wet sieve step, the sieve and both sides of the splitter were thoroughly rinsed with DI water. The rinsate collected on one side of the splitter was used to determine the percent fines for the point sample. The rinsate from that side was captured in a tared 100-milliliter beaker, oven dried, and weighed to the nearest 0.0001 gram to determine the “half-fines” mass of fines for each bottle. The sand mass and the doubled “half-fines” mass were used to determine the SSC and percent fines for each bottle (app. 1).

The rinsate collected from the other side of the splitter was physically composited among all of the point-sample bottles in the cross-sectional sample and used to determine the composite particle-size distribution of fines. This portion of the rinsate was collected in a larger beaker that was tared to the nearest 0.1 gram. The composite subsample was typically collected off the left side of the splitter; that is, on the side of the splitter to the left of the analyst.

The composite subsample was allowed to settle until the overlying water was clear, usually for at least 2 weeks. A 50-milliliter aliquot of the supernatant was withdrawn with a pipette and transferred to a tared 100-milliliter beaker, oven dried, cooled in a desiccator, and weighed to the nearest 0.0001 gram (fig. 3). The composite subsample was then decanted with the vacuum system. The residual volume of the composite subsample after decanting was recorded as the net weight of the large beaker, rounded to the nearest gram, using an assumed density of 1 gram per milliliter for the sediment/water suspension in the beaker. The aliquot mass and the residual volume could be used to compute a dissolved-solids correction for the bottom-withdrawal (BW) tube analysis. The dissolved-solids concentration for the BW tube analysis was not equivalent to the environmental dissolved-solids concentration in the river water because the suspension in the beaker used for the composite subsample contained the DI water used to rinse the splitter.

The remaining suspension was transferred to a blender, where it was mechanically dispersed, and then rinsed into a BW tube. The BW tube, which is similar to a 500-milliliter burette, was filled to the 100-centimeter line with DI water. A BW tube analysis was conducted on the composite fines (fig. 3). The BW tube analysis generally followed the method described by Guy (1969), which was originally developed by the U.S. Subcommittee on Sedimentation, Inter-agency Committee on Water Resources (1943). In contrast to the specification in Guy (1969), no chemical dispersant was included in the BW tube suspension.

To start the BW tube analysis, the tube was inverted several times over a period of 5 minutes to fully mix the suspension in the tube. After 5 minutes, the tube was secured upright, and a stopwatch was started to time the analysis. At predetermined times of 4, 8, 13.5, 25, 50, 66, 88, 100, and 120 minutes after the beginning of the analysis, 10 centimeters of the overlying suspension was released through the valve at the bottom of the tube and collected into a tared 100-milliliter

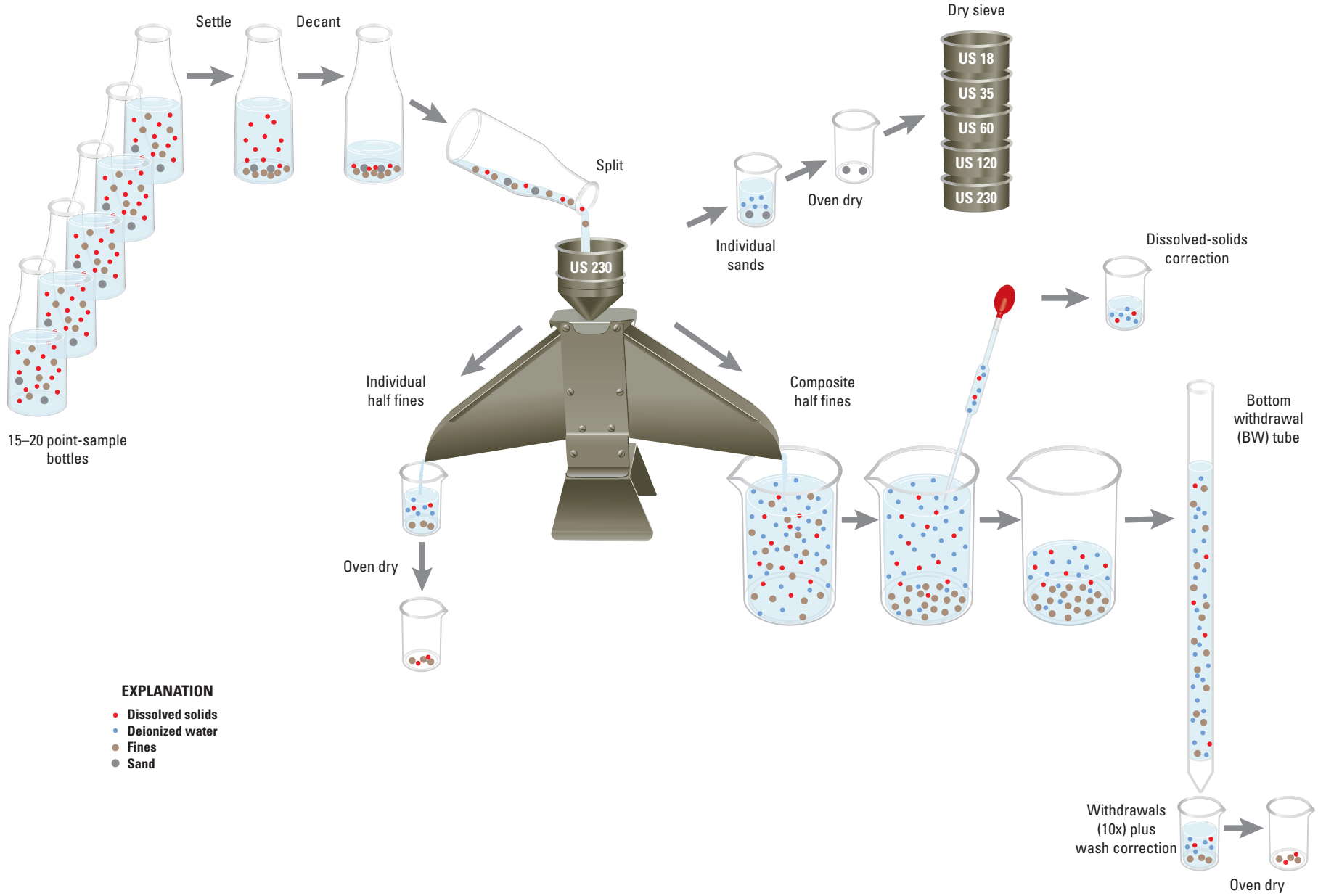


Figure 3. The laboratory method, including the wet sieve/split, "half fines," dry sieve, and bottom-withdrawal (BW) tube analysis steps, used in the cooperative program. The US 230 sieve has a 0.063-millimeter (mm) opening, the US 120 sieve has a 0.125-mm opening, the US 60 sieve has a 0.250-mm opening, the US 35 sieve has a 0.500-mm opening, and the US 18 sieve has a 1.0-mm opening. The term "fines" is used for sediment that passes a 0.063-mm sieve; the term "sand" is used for sediment that is retained on a 0.063-mm sieve (illustration by L.S. Coplin, U.S. Geological Survey).

Figure 4. U.S. Geological Survey laboratory technician at the Baton Rouge Sediment Laboratory processing a water sample with the modified riffle splitter used to analyze cooperative program samples (photograph by Aimee Downs, U.S. Geological Survey).

beaker. A 10th beaker containing the final 10 centimeters of suspension was collected immediately after the 120-minute withdrawal. After the timed withdrawals, no suspension remained in the BW tube. The walls of the BW tube were rinsed with DI water into a tared 100-milliliter beaker. All of the beakers were oven dried at 103±2 °C and then cooled in a desiccator, and their weights were recorded to the nearest 0.0001 gram.

Before the BW tube analysis started, the temperature of the suspension was recorded. Two more temperature readings were taken in the middle and near the end of the settling period. The final recorded temperature was the average of the three temperature readings.

The withdrawal weights, average water temperature, and settling times from a BW tube analysis can be used to compute particle-size distribution based on fall diameter on the basis of a graphical interpolation of the Oden curve (Guy, 1969; U.S. Subcommittee on Sedimentation, Inter-agency Committee on Water Resources, 1943). For the cooperative program, the USACE FORTRAN code computationally simulated a graphical interpolation of the Oden curve (app. 1).

The outcome of the BW tube analysis was a composite particle-size distribution for the fines in the cross section. The composite percent fines in the cross section was computed from the sand analysis, the “half fines” analysis, and the BW tube analysis and was used to scale the fine particle-size results from the BW tube to the sand analysis results for final reporting (app. 1).

The goal of the laboratory protocol for cooperative program samples was to provide SSC and particle-size distribution for every point-sample bottle in a cross section, as well as aggregated cross-sectional particle-size and SSC data. The technique was a compromise between the physical limitations of the laboratory methods used for determination of particle-size distribution of the fines and the goal of understanding the spatial distribution of suspended sediment by size within the cross section. Sediment in the fine-particle size range tends to be more homogenous in the stream cross section than are sand-sized particles (Edwards and Glysson, 1999, p. 2).

Data Flow and Information Systems Methods

The data generated by the laboratory analysis were recorded on a laboratory data sheet (app. 2) and subsequently entered into the USACE FORTRAN program (app. 1). The original USACE FORTRAN program required that data be prepared in an 80-column “card” format. Subsequent revisions to the software allowed the USACE FORTRAN code to read digital text files as inputs but did not change the structure of the input data. The information on the laboratory data sheet was transcribed by either the USACE or USGS into an 80-column text file (SED file, app. 3) for input into the software.

Prior to 2001, the source of the inputs to the USACE FORTRAN program was a handwritten laboratory form that was filled out by laboratory personnel as they completed different steps of the analysis (app. 2). After 2001, the source of the inputs to the USACE FORTRAN program was a printed Excel-format laboratory form that was used by the laboratory to automate some of the computations. The Excel spreadsheet was designed to replicate the paper laboratory form.

The laboratory form contained some information from the field forms that were submitted to the laboratory along with the point-sample bottles. Various field forms were used over time, but they all included the station code and name, date, time, and stream discharge at the time of sample collection, along with the cross-sectional location of each point-sample bottle and the total depth of the river at each vertical. Laboratory personnel transcribed the required information from the field form to the laboratory form.

The laboratory form included information that was not included in the 80-column text file (SED file). Specifically, the text file did not contain information on the dish type, dish number, gross weight, and tare weight of the dishes used in the analysis. The USACE FORTRAN program operated on only net weights. Prior to 2001, net weights for dishes were computed by hand or with a calculator. Since 2001, net weight computations have been performed in the Excel spreadsheet. The laboratory form also contained annotations about quality issues that may have been observed during the laboratory process, such as broken bottles, broken dishes, or visible glass particles that may have been present in the sample.

The laboratory form did not include fields for the gross weight and tare weight of the point-sample bottles. Information in this field was calculated manually, and the net weight was entered directly onto the laboratory form.

Bottle tare weights were inscribed on each bottle as is standard practice for sediment sampling programs. Bottle gross weights were measured in the laboratory for each sample to the nearest 0.1 gram.

The first page of the laboratory form held information for 15 point-sample bottles, along with the values produced during the BW tube analysis. When more than 15 point-sample bottles were collected for a cross-sectional sample, multiple pages, or multiple Excel files, were used to hold the information about the additional point-sample bottles.

When sufficient data were submitted by the field crew, the data technicians prepared SED files and other text files that contained cross-sectional depth and velocity profiles for the sampling events (DIS files). The DIS file for some discharge measurements included data for the horizontal position, total depth, and velocity at the 0.6 fraction of the depth for many verticals in the cross section. When the field crew did not submit sufficient data, the DIS file did not contain cross-sectional depth and velocity profiles. In such cases, the DIS file simply contained lists of sampling dates and the measured stream discharge for each sampling event.

A SED file and a DIS file were prepared for each water year (October 1 through September 30) at each site. The laboratory data for the first and last cross-sectional sample for each water year were duplicated so that the data for the first cross-sectional sample in one SED file were the same as the data for the last sample from the previous year.

The USACE FORTRAN program was used to produce the output files, which included a human-readable three-page report (3PG file), a water year summary of SSC and suspended-sediment discharge for each sampling event (SUM file), and a machine-readable file that was subsequently used by a different USACE FORTRAN module for computing daily loads (HES file). A third USACE FORTRAN module transformed the HES file into a different machine-readable format (SS1 file). A fourth USACE FORTRAN module (app. 1) paired the SS1 file with a list of daily discharge readings (DSS file) to estimate daily loads (DLD file).

The USGS data technicians submitted the output files and the laboratory forms to the leader of the local data management group or other science lead at the USGS Louisiana Water Science Center for review. The reviewer sometimes determined that specific bottles appeared to have been “busted”; that is, sampled too close to the river bottom. The data technicians would delete the rows for the rejected bottles from the SED files and rerun the software to produce updated results.

Computations

Details of the computations used for particle-size distributions and other results were inferred from the USACE FORTRAN code (app. 1). The description of the computations in this section serves to document past practices only. Some of the methods described below are not traced to citable method references. Documentation here does not imply that the methods represent USGS-approved techniques.

SSCs were computed in parts per million by mass, in units of milligrams per kilogram. At concentrations below 16,000 milligrams per kilogram, SSC in milligrams per kilogram is equivalent to SSC in milligrams per liter when rounded, assuming a standard sediment density of 2.65 grams per cubic centimeter and a standard water density of 1.00 gram per cubic centimeter (Guy, 1969); all environmental values for the entire dataset were well below this threshold. Symbols for the input values, along with their corresponding variable names and physical interpretation, are presented in table 3.

The concentrations of sand, fines, and suspended sediment were computed for each bottle by

$$C_S = \frac{m_{ds}}{V_b} \times 1{,}000 \frac{\text{mg sand}}{\text{g sand}} \times 1{,}000 \frac{\text{mL "water"}}{\text{L "water"}}, \quad (1)$$

$$C_t = \frac{m_{ws} + 2m_{hf}}{V_b} \times 1{,}000 \frac{\text{mg sediment}}{\text{g sediment}} \times 1{,}000 \frac{\text{mL "water"}}{\text{L "water"}}, \text{ and} \quad (2)$$

$$C_f = C_t - C_S, \quad (3)$$

where

C_S was the suspended-sand concentration, in milligrams per liter or parts per million, in each bottle; the USACE FORTRAN program called this fraction the “retained” fraction because it was retained on a 0.063-mm sieve;

m_{ds} was the cumulative mass of sand measured on the 0.063-mm sieve in the dry sieve sand analysis (table 3), in grams;

V_b was the volume of sediment/water suspension (“water”) in the bottle, in milliliters, converted from the bottle net weight by assuming the river water had a density of 1 gram per cubic centimeter (table 3);

C_t was the SSC, in milligrams per liter or parts per million, in each bottle;

m_{ws} was the mass of sand retained on the 0.063-mm sieve during the wet sieve/split procedure (table 3), in grams;

m_{hf} was the mass of fines in the “half fines” beaker (table 3), in grams; and

C_f was the suspended-fines concentration, in milligrams per liter or parts per million, in each bottle; the USACE FORTRAN program called this fraction the “passing” fraction because it passed a 0.063-mm sieve.

Table 3. Fields used in the laboratory data sheet transcribed by either the U.S. Army Corps of Engineers (USACE) or the U.S. Geological Survey (USGS) into an 80-column text file (SED file, app. 3) for input into the USACE FORTRAN software (app. 1) or to evaluate and compute the corrected results for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Only fields that were used to compute the revised results were fully verified during the program review. Other fields that did not affect the reported results, such as the bottom-withdrawal (BW) tube analysis average water temperature, are available from laboratory data but not cataloged here. "Fines" refers to sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve)]

Scale	Symbol	Variable name	Description	Unit	Precision	Source
Individual bottle	V_b	TVOL	Bottle volume	Milliliter[1]	1	Volume of sediment/water suspension in the bottle before lab analysis began.
	m_{ws}	SANDW	Wet sieved sand	Gram	0.0001	Mass of sand retained on the 0.063-mm sieve that covered the top of the splitter during the wet sieve/split procedure.
	m_{ds}	US230	Dry sieved sand	Gram	0.0001	Cumulative mass of sand retained on the 0.063-mm sieve during the dry sieve analysis of the sand fraction.
	m_{hf}	HFINE	"Half fines"	Gram	0.0001	Mass of material from the subsample of the fines that was not composited for BW tube analysis. This dish contained residual dissolved solids along with the fines.
	DISTRP	DISTRP	Distance from reference point	Foot	1	Horizontal position of the vertical within the stream cross section.
	DESTA	DESTA	Depth at station	Foot	1	The total depth of the vertical.
	DESAM	DESAM	Depth of sample	Foot	0.1	Depth below the water surface of the point from which the bottle was collected.
Composite subsample	V_{BW}	BWVOL	BW volume	Milliliter[1]	1	Residual supernatant volume remaining after decanting composite fines beaker.
	m_{dsol}	BWDS	BW dissolved solids	Gram	0.0001	Mass of material in 50 milliliters of supernatant from the composite fines beaker after settling.
	m_{BW}	BWW	BW weights (10)	Gram	0.0001	Mass of material in each of 10 withdrawals made during the BW tube analysis.
	m_{wc}	BWWC	BW wash correction	Gram	0.0001	Mass of material rinsed out of the BW tube after the final withdrawal.

[1]Volumes are measured by mass to the nearest 0.1 gram, assuming a density of 1 gram per milliliter, and then rounded before recording on the laboratory data sheet or transcription into the SED file.

When cross-sectional depth and velocity profiles were not entered in the DIS file, the cross-sectional suspended-fines concentration and SSC for the sample were computed as a numerical average:

$$\overline{C_f} = \frac{\Sigma_{i=1}^{n} C_{f(i)}}{n}, \text{ and} \tag{4}$$

$$\overline{C} = \frac{\Sigma_{i=1}^{n} C_{t(i)}}{n}, \tag{5}$$

where

$\overline{C_f}$ was the numerical average suspended-fines concentration, in milligrams per liter or parts per million;

n was the number of bottles in the cross-sectional sample; and

$\overline{C}$ was the numerical average SSC, reported as the cross-sectional SSC (p80154), in milligrams per liter or parts per million.

The suspended-sediment discharge was computed as the product of the stream discharge and the cross-sectional SSC, with a standard unit conversion:

$$Q_S = \overline{C}Q\left(0.0027\frac{\text{s L short tons}}{\text{day ft}^3\ \text{mg}}\right) \tag{6}$$

where

Q_S was the instantaneous suspended-sediment discharge for the sample (p80155), in short tons per day;

Q was the instantaneous stream discharge (p00061) recorded on the SED file, in cubic feet per second; and

0.0027 was a factor used to convert the units: 86,400 seconds/day × 28.32 L/ft^3 × 1.102 × 10^{-9} short tons/mg.

When cross-sectional depth and velocity profiles were entered in the DIS file, the cross-sectional SSC for the sample was computed as a discharge-weighted average by using the velocity-area method (app. 1). First, a grid was constructed through the points halfway between each sediment vertical and halfway between each sediment point depth. The grid was extended to the edge of the cross section on the left and right, and the cross-sectional area in each resulting cell, α, was calculated. The horizontal location, stream depth, and water velocity at the 0.6 fraction of the depth was used to estimate the velocity at 1-foot depth increments for each velocity vertical. Many more verticals were measured for depth and velocity than were used to collect point suspended-sediment samples. The velocity at each 1-foot depth increment was estimated with an unreferenced power law equation that depended on the water temperature:

$$z_v = 0.1198 + 0.00048\left(T_C \times 1.8 + 32\right), \text{ and} \tag{7}$$

$$v_h = v_{0.6d}\left(1 + z_v\right)\left(\frac{h}{d}\right)^{z_v}, \tag{8}$$

where

z_v was a temperature-dependent factor that defined the power law equation;

T_C was the water temperature, in degrees Celsius;

v_h was the velocity at a point located a distance h above the channel bed in the water column, in feet per second;

$v_{0.6d}$ was the velocity at the 0.6 fraction of the total depth at the vertical from the input file, in feet per second;

h was the distance from the channel bed to the point for which the velocity was being determined, in feet; and

d was the total depth of the stream at the vertical where the velocity was measured, in feet.

The initial average velocity for the sediment grid cell, $\overline{v}$, was computed as the numerical average of all of the estimated velocity points (eq. 8) that fell within the cell or on the edge of the cell boundary.

The initial average velocities were used to create an initial estimate of the stream discharge, Q_i, through each sediment grid cell:

$$Q_i = \overline{v}a, \tag{9}$$

where

Q_i was the initial estimate of the stream discharge in a sediment grid cell, in cubic feet per second;

$\overline{v}$ was initial average velocity for a sediment grid cell, in feet per second; and

a was the computed cross-sectional area of a sediment grid cell, in square feet.

The stream discharges for each of the sediment grid cells were summed to estimate the instantaneous stream discharge. The instantaneous stream discharge estimated by this method was compared to the instantaneous stream discharge recorded in the SED file. The stream discharge in each grid cell was adjusted to ensure that the instantaneous stream discharge recorded in the SED file and the sum of the sediment-grid-cell stream discharges were similar:

$$Q_{ba} = \Sigma_{(i=1)}^{n} Q_{i(i)}, \tag{10}$$

$$f_Q = \frac{Q}{Q_{ba}}, \tag{11}$$

$$Q_a = f_Q \overline{v}a, \text{ and} \tag{12}$$

$$Q_t = \Sigma_{i=1}^{n} Q_{a(i)}, \tag{13}$$

where

Q_{ba} was the estimated total stream discharge from the sediment grid cells, in cubic feet per second;

f_Q was a correction factor for adjusting the grid cell discharges;

Q_a was the adjusted stream discharge in each sediment-sampling grid cell, in cubic feet per second; and

Q_t was the stream discharge estimated by applying the velocity-area method to each sediment-sampling grid cell, in cubic feet per second.

The sediment discharge for each sediment grid cell was computed by multiplying the stream discharge computed for the sediment grid cell, Q_α, by the SSC recorded for the point at the center of the cell, with a standard unit conversion factor (eq. 6). The discharge-weighted average suspended-fines concentration and SSC were then determined as the total suspended-fines concentration and SSC divided by the total stream discharge:

$$Q_f = Q_a C_f \left(0.0027 \frac{\text{s L short tons}}{\text{day ft}^3 \text{ mg}}\right), \tag{14}$$

$$Q_{sc} = Q_a C_t \left(0.0027 \frac{\text{s L short tons}}{\text{day ft}^3 \text{ mg}}\right), \tag{15}$$

$$\overline{C_{fD}} = \frac{\Sigma_{i=1}^{n} Q_{f(i)}}{\left(0.0027 \frac{\text{s L short tons}}{\text{day ft}^3 \text{ mg}}\right) Q_t}, \text{ and} \tag{16}$$

$$\overline{C_D} = \frac{\Sigma_{i=1}^{n} Q_{sc(i)}}{\left(0.0027 \frac{\text{s L short tons}}{\text{day ft}^3 \text{ mg}}\right) Q_t}, \tag{17}$$

where

Q_f was the instantaneous suspended-fines discharge in a sediment grid cell, in short tons per day;

Q_{sc} was the instantaneous suspended-sediment discharge in a sediment grid cell, in short tons per day;

$\overline{C_{fD}}$ was the discharge-weighted suspended-fines concentration, in milligrams per kilogram or milligrams per liter; and

$\overline{C_D}$ was the discharge-weighted SSC, reported as the cross-sectional SSC (p80154), in milligrams per kilogram or milligrams per liter.

The instantaneous suspended-sediment discharge was the sum of the suspended-sediment discharge computed for each sediment-sampling grid cell:

$$Q_s = \Sigma_{i=1}^{n} Q_{sc(i)}, \tag{18}$$

where all variables are as described above.

For either method of producing the cross-sectional SSC, the USGS data technicians computed the percent fines by dividing the suspended-fines concentration by the SSC:

$$pf_{0.063} = \frac{\overline{C_f}}{\overline{C}} \times 100 \text{ percent, or} \tag{19}$$

$$pf_{0.063} = \frac{\overline{C_{fD}}}{\overline{C_D}} \times 100 \text{ percent,} \tag{20}$$

where

$pf_{0.063}$ was the percent fines (parameter code p70331).

The value for $pf_{0.063}$ used by the USGS was not directly reported on any output from the USACE FORTRAN program. Rather, the 3PG output file reported the numerical average or discharge-weighted average $pf_{0.063}$. The USACE FORTRAN algorithm did not use the reported $pf_{0.063}$ for scaling the results of the BW tube analysis to the sand analysis. Instead the algorithm computed a composite scaling factor that was similar to the composite:

$$k = 1 - \frac{\Sigma_{i=1}^{n} m_{ds}}{\left(\Sigma_{i=1}^{n} m_{ws} + \Sigma_{i=1}^{n} m_{hf} + \Sigma_{i=1}^{10} m_{BW} + m_{wc} + m_{dsol} \frac{V_{BW}}{50}\right)}, \tag{21}$$

where

k was a factor that was used to scale the fines particle-size distribution to the sand particle-size distribution, and other symbols were as described in table 3.

Neither the scaling factor nor the average $pf_{0.063}$ from the 3PG file was reported in USGS data dissemination applications.

The suspended-sediment discharge and instantaneous stream discharge pairs for each sampling event in a water year were used to construct a model for predicting daily suspended-sediment discharge. A linear regression was computed between the base-10 logarithm of the suspended-sediment discharge and the base-10 logarithm of the instantaneous stream discharge (app. 1). A record of stream discharge for each day in the water year was assembled from an appropriate gage. The stream discharges were used to predict the daily suspended-sediment discharges with the regression equation. The predicted daily suspended-sediment discharges from the regression equation were then adjusted mathematically to ensure that the final reported values agreed with the measured SSC and stream discharge value pairs (app. 1). The adjustments took into account the temporal relation among the measured SSC and stream discharge value pairs. The USACE FORTRAN program used this method to compute daily suspended-sediment loads for each water year (DLD file). The daily loads were summed to produce annual suspended-sediment loads.

Reporting

When a final output was approved for a water year, the USGS data technicians used the output from the SUM file to transcribe the sample results into QWDATA. The SUM file contained only the cross-sectional SSC, discharge, and suspended-sediment discharge data; data about SSC or particle-size distribution in individual point-sample bottles were not reported to QWDATA. The cross-sectional aggregate particle-size distribution for sizes other than 0.063 mm was similarly not reported to QWDATA. Data technicians transcribed the SSC (p80154), percent fines (p70331), instantaneous stream discharge (p00061), and instantaneous suspended-sediment discharge (p80155) results into QWDATA. When discharge weighting was used to compute the SSC for a sampling event, the 3PG file reported both the discharge-weighted and the numerical average SSC. The SUM file used the discharge-weighted average SSC when it was available and the numerical average when no discharge weighting was used. The p70331 value did not appear directly on the SUM file, so the data technicians computed it manually during the transcription process (eq. 19, eq. 20). The DLD and SUM files were used to prepare part of the Water-Data Reports for USGS surface-water stations. The USACE did not publicly serve results produced by the cooperative program.

Critical Review of Field, Laboratory, and Computational Protocols

In 2015, the USGS and USACE jointly initiated a comprehensive review of the cooperative program. The review was conducted by USGS personnel with active participation and support from the USACE. The review team compared cooperative program methods to current USGS policies and practices. After the review team determined that the laboratory methods used by the cooperative program caused systematic positive bias in SSC, a second purpose emerged of making recommendations for how to treat the previously published results. For SSC, percent fines, instantaneous stream discharge, and instantaneous suspended-sediment discharge, the review team determined that it was possible to provide revised results with methods that could be supported by current practices. The review documented recommendations for computing and reporting the revised results for these parameters. For particle-size distribution and daily/annual suspended-sediment loads, the review team determined that revised values could not be provided with current methods. The details and justifications for these conclusions are described in the following sections.

Sampling Design Review

The review team evaluated the sampling design relative to the goals of computing a discharge-weighted average SSC, suspended-sediment discharge, and daily/annual loads at the measured locations. In brief, the team found that while the original sampling design could produce discharge-weighted average SSC, changes to the program over time had resulted in a loss of the capacity to compute this value correctly. The team further found that the suspended-sediment samples were not collected frequently enough to enable the reliable computation of suspended-sediment loads for a daily time step; the computation of loads on a seasonal or annual basis may be defensible. Further details and explanations of both findings are described below.

Discharge-Weighted Average SSC

Issues: The computations used by the cooperative program to mathematically discharge-weight the point-sample bottle SSC could not be evaluated relative to current USGS techniques because standard USGS methods for sediment-sample collection produce physically discharge-weighted samples (Edwards and Glysson, 1999). Consequently, the quality of the mathematically discharge-weighted average SSC could not be effectively evaluated during the review, nor could the review team recommend that the technique be adopted when computing the revised results.

The representativeness of the fixed point-sample locations within the cross section was unknown and varied among sites and over the program history. The fixed verticals were not located at centroids of equal-discharge increments of the stream (EDI method, Edwards and Glysson, 1999), nor were there normally enough verticals to meet the requirements of the EWI method (Edwards and Glysson, 1999).

The number of point samples collected at each sampling event changed over the course of the program and varied among the sites. The review team expected that greater accuracy and precision were achieved when more point samples were collected. Some sampling events did not include bottles collected above the 0.5 fraction of the depth at any vertical. Underrepresentation of the upper portion of the vertical could lead to a high bias in the cross-sectional SSC because high SSC typically occurs deeper in the vertical.

Previously reported SSC for the cooperative program contained a mix of discharge-weighted average and numerical average values. After the ADCP was fully adopted, the reported SSC was no longer discharge-weighted mathematically because the USACE FORTRAN program was not updated to use the ADCP data. Prior to the adoption of the ADCP, any time the field crew did not submit depth and velocity profiles from the discharge measurements, the SSC was not discharge-weighted mathematically. The review team hypothesized that the numerical average SSC would be biased high relative to the discharge-weighted average SSC because higher SSC typically occurs at points collected deeper in the vertical, where stream velocity and stream discharge are typically lower. The higher SSC in the lower part of the vertical was expected to be caused by spatial differences in the suspended-sand concentration through the cross section; spatial differences in suspended-fines concentration were expected to be small.

Recommended Actions for Revising Results: The review team recommended that a single method of computing the SSC and percent fines for each sampling event should be used to eliminate the mixture of discharge-weighted averages and numerical averages that had been previously reported. The team further recommended that a comparison be made between the discharge-weighted average SSC and the numerical average SSC when both had been reported by the USACE FORTRAN program. The purpose of the comparison was to determine if the hypothesized bias could be verified and potentially quantified.

Further, the team recommended that the number of points collected for each sampling event (p00063) should be reported along with the revised results in the publicly available data repositories (table 2) to allow data users to account for variable sampling effort among different sampling events. The review team further recommended that samples with no points collected in the upper half of any vertical should be reported in publicly available data repositories (table 2) with annotations to reflect the lack of representation of the upper part of the verticals.

Outcomes: The revised results were reported to publicly available data repositories (table 2) with the recommended annotations. The effect of the aggregation method for SSC was analyzed in more detail. Output files (3PG) were recovered from both the USGS and USACE servers, and the discharge-weighted average SSC and numerical average SSC were extracted when both values were reported. Comparisons between discharge-weighted average and numerical average results were available for 913 pairs of events that occurred in the study period. Slopes of a linear regression model between the numerical average SSC and discharge-weighted average SSC showed that the discharge-weighted average SSC was 89–98 percent of the numerical average SSC for the cooperative program (table 4). Thus, numerical average SSC could be biased high by 2–11 percent relative to discharge-weighted average SSC, supporting the review team's hypothesis.

Daily Suspended-Sediment Load

Issues: The method used by the cooperative program to compute daily and annual suspended-sediment loads did not conform to current USGS standard policies and practices. First, the frequency of suspended-sediment data collection did not support the computation of daily suspended-sediment loads with an acceptable level of representativeness when using currently available models (for example, the USGS Graphical Constituent Loading and Analysis System [GCLAS; Koltun and others, 2006]) because the daily time step was

Table 4. Comparison between discharge-weighted average and numerical average suspended-sand concentration, suspended-fines concentration, and suspended-sediment concentration for 913 events for which data were available for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[The discharge weighting was performed mathematically as described in the section "Computations." The comparisons are based on results originally produced by the U.S. Army Corps of Engineers (USACE) FORTRAN software, not the revised results presented in this report. The values were computed from a linear regression of the straight numerical average value and the discharge-weighted value for the concentrations where both were available. All regressions were performed in R statistical software, version 3.2.1 (R Core Team, 2015). DWA, discharge-weighted average; r^2, coefficient of determination; SA, numerical average; SC, suspended-sand concentration; FC, suspended-fines concentration; SSC, suspended-sediment concentration. "Fines" refers to sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve)]

Site	Number of pairs	Sand model DWASC=	Sand r^2	Fines model DWAFC=	Fines r^2	SSC model DWASSC=	SSC r^2
UPT	130	0.922(SASC)+0.66	0.989	0.965(SAFC)+5.3	0.997	0.960(SASSC)+4.4	0.996
TAR	270	0.855(SASC)+2.9	0.894	0.999(SAFC)−0.4	0.992	0.968(SASSC)+0.52	0.969
ORO	154	0.852(SASC)+2.5	0.922	1.002(SAFC)+0.3	0.999	0.976(SASSC)+2.9	0.991
RDR	64	0.855(SASC)+4.5	0.955	0.991(SAFC)+0.5	0.993	0.915(SASSC)+13.5	0.980
SIM	221	0.885(SASC)+0.81	0.937	0.985(SAFC)+0.3	0.997	0.953(SASSC)+3.2	0.980
WLO	38	0.820(SASC)+0.25	0.988	0.938(SAFC)+6.3	0.989	0.901(SASSC)+11.4	0.989
MCY	36	0.804(SASC)+0.98	0.995	0.955(SAFC)+3.8	0.997	0.894(SASSC)+13.5	0.992

significantly shorter than the interval between measurements. Additionally, the approach used to compute the daily suspended-sediment loads did not account for bias introduced when converting log-scale predicted values to physical units (Cohn and others, 1989; U.S. Geological Survey, 1993). Further, the algorithm used to model daily suspended-sediment loads did not account for hysteresis in the relation between suspended-sediment load and stream discharge (Gray and Simões, 2008), which has been observed for the Mississippi River (Allison and others, 2012; Mossa, 1989). Hysteresis weakens the relation between suspended-sediment load and stream discharge because equal loads can occur at different discharges, or equal discharges can produce different loads depending on the timing of the load measurements relative to changes in discharge (that is, rising limb or falling limb of the hydrograph). Finally, for data furnished by the USACE, insufficient metadata were supplied to verify the daily stream discharge values in accordance with current USGS policies on furnished record (U.S. Geological Survey, 2016).

Recommended Actions for Revising Results: Because the sampling design and method of computing daily suspended-sediment discharge in use by the cooperative program did not conform to current USGS standard policies and practices, the review team determined that the historical data for daily suspended-sediment loads and the annual suspended-sediment loads computed by summing daily suspended-sediment loads should be removed from USGS products. The sampling design was likely adequate for computing annual or seasonal suspended-sediment loads within acceptable uncertainties (Thorne and others, 2008), which would require the use of techniques that the review team considered interpretive. Any estimation of suspended-sediment loads at any time step based on the revised dataset should consider the full range of data quality information presented in this report.

Outcomes: USGS data sources that include daily suspended-sediment loads are annotated with a watermark or errata page to inform users that the daily suspended-sediment loads are no longer considered reliable (table 2).

Field Methods Review

Issues: Suspended sediment must be collected isokinetically to produce a representative sample. Three issues were identified that could cause sampling to be non-isokinetic. First, overfull bottles could have prevented the river water from entering the bottle isokinetically, leading to an SSC that was biased high (Edwards and Glysson, 1999). Second, samplers that were operated outside the recommended operating conditions could have collected non-isokinetic samples. Third, USGS crews were known to have collected non-isokinetic samples using the Van Dorn sampler.

Outside the context of the sampling design, the methods used to collect samples in the field generally conformed to established practices at both agencies.

Recommended Actions for Revising Results: The review team recommended that any available information about the isokinetic nature of the field sampling be compiled and presented along with the revised results.

Outcomes: The review team used the guidance from the FISP for P-61 and P-63 samplers that pint bottles should be filled to a maximum volume of 400 milliliters and quart bottles should be filled to a maximum volume of 730 milliliters to prevent overfilling (Federal Interagency Sedimentation Project, n.d.). An analysis of the bottle volumes showed that overfilling occurred for 1,007 out of 43,321 total bottles collected for the cooperative program during the study period. Bottles that were overfilled can be identified from the

information in the data release that accompanies this report (Norton and others, 2019).

Stream velocity varies over short spatial and temporal scales within a stream cross section. Thus, ensuring that the P-61 or P-63 samplers were always operated within the target velocity ranges was difficult. The USACE field form data indicated that 93 bottles had been collected at velocities below 1.5 feet per second and 12 bottles had been collected at velocities greater than 10 feet per second. Corresponding data were not recorded for USGS samples, so it was not possible to definitively identify when non-isokinetic samples had been collected by USGS crews.

Sufficient data were recorded on USACE field forms for some samples after 2006 to quantitatively evaluate whether samples were collected under isokinetic conditions. In 2006, the USACE adopted a digital field form that contained the sampling date, nozzle diameter, bottle location in the cross section, sampling duration, and stream velocity at the sampled point. The bottle volumes, sampling durations, and stream velocity were used to compute the intake efficiency for each point-sample bottle according to the method described in USGS Office of Surface Water Technical Memorandum 2013.03 (U.S. Geological Survey, 2013):

$$IE = \frac{kV_b}{tv}, \tag{22}$$

where

- IE was the intake efficiency, ratio (unitless);
- k was a surface area and unit conversion factor for the 3/16-inch nozzle, equal to 0.1841 foot per milliliter (U.S. Geological Survey, 2013);
- t was the duration that the point sampler was open, in seconds; and
- v was the stream velocity at the point, recorded from the ADCP, in feet per second, and other symbols were as described in table 3.

The intake efficiency is exactly 1 (IE=1) if the velocity flowing into the sample bottle is the same as the velocity of the stream. When the velocities are equivalent, the sampling is isokinetic, and there is no bias in the SSC (U.S. Geological Survey, 2013). Low intake efficiency indicates sub-isokinetic sampling (IE<1), which can cause the SSC to be biased high, particularly for sand-sized particles. High intake efficiency or super-isokinetic sampling (IE>1) can cause the SSC to be biased low (U.S. Geological Survey, 2013). The USGS recommends that samples collected with intake efficiency less than 0.7 or greater than 1.3 be evaluated for potential bias in the sand concentrations (U.S. Geological Survey, 2013).

The median intake efficiency for 4,209 bottles that were collected at stream velocities greater than 1.5 feet per second was 0.545. Seventy-three percent of the intake efficiencies were less than 0.7 (sub-isokinetic), and 2.5 percent were greater than 1.3 (super-isokinetic). Intake efficiency was evaluated only for bottles collected after 2006 by USACE field crews, and thus these results could not be applied throughout the study period. Further, the quality of the velocity estimate could not be verified, as instantaneous point stream velocities can be highly variable in the field. Despite the fact that it was not possible to generalize these observations to point-sample bottles for which stream velocity and sampling duration were not available, the review suggested that it was possible that non-isokinetic sampling had affected at least some of the cooperative program results.

The effect of sub-isokinetic sampling is strongly dependent on particle size, with coarser particles showing a much stronger effect than finer particles (U.S. Geological Survey, 2013). For example, at stream velocities of 5 feet per second, an intake efficiency of 0.5 would result in an estimated 30 percent positive bias for 0.45-mm sand and an estimated 20 percent positive bias for 0.15-mm sand; the effect on 0.06-mm sand would be negligible (U.S. Geological Survey, 2013). Little, if any, sand would be held in suspension at velocities less than 1.5 feet per second. Insufficient data were available to quantify the impact of sub-isokinetic sampling on all of the revised results. However, the review team determined that the potential for positive bias in the suspended-sand concentrations measured in point-sample bottles was greater for bottles that contained significant amounts of medium and coarse sand.

Laboratory Analysis Review

The laboratory methods used by the cooperative program were evaluated relative to published methods (Guy, 1969). In brief, the review team documented two major deviations from standard practices. First, the evaporation method had been used without applying a dissolved-solids correction. Second, the SSC had been computed from a subsample of the fines rather than from the entire fines fraction in the sample. The lack of a dissolved-solids correction led to a high bias in the reported SSC and percent fines. Using a subsample of the fines to compute SSC led to higher uncertainty than is typical for other USGS sediment-analysis methods.

Dissolved Solids

Issues: In the cooperative program laboratory method, the evaporation method (Guy, 1969) was used without applying a dissolved-solids correction. Dissolved solids are materials that pass through a filter but leave a residue when the filtrate is evaporated. They occur in many environmental waters because of factors such as chemical weathering of geologic materials or pollution. Insufficient measurements were made to correct the “half fines” mass for the dissolved solids in each point-sample bottle. Consequently, the suspended-fines concentrations determined through the cooperative program method were biased high compared to the true value as discussed in the following sections. Because the fines masses were biased high, the resulting measurements of percent fines

in the sample were also biased high. The high bias in percent fines resulted in inaccurate scaling of the results of the BW tube analysis to the results of the sand analysis (eq. 21).

Current USGS guidance on the measurement of SSC supports two primary methods: evaporation and filtration (Guy, 1969). When the evaporation method is used, a correction must be made to adjust the sediment mass for the dissolved solids that are present in the residual overlying river water that is evaporated along with the suspended sediment, unless it can be demonstrated that the correction will not affect the SSC by more than 5 percent (Guy, 1969, p. 12). When the filtration method is used, no river water is retained in the dish that is used to measure the mass of the suspended sediment, and consequently a dissolved-solids correction is not required.

The significance of the dissolved-solids correction to the SSC varies with the relative masses of fines and dissolved solids in the evaporation dish used to perform the test. The dissolved-solids mass in the evaporation dish depends on the volume of residual river water in the point-sample bottle after decanting and on the environmental concentration of dissolved solids in the river water. For river water of a given SSC, the fines mass in each bottle is lower when a lower volume of river water is collected in the point-sample bottle. Thus, it was possible that when pint bottles were used and less river water was collected, the impact of the dissolved-solids correction would be greater than when quart bottles were used.

Recommended Actions for Revising Results: The review team recommended that the potential magnitude of the impact of the dissolved-solids contamination be quantified and that the previously published data should be revised if the impact of the dissolved-solids contamination had the potential to impact the environmental interpretation of the results.

Outcomes: The review team used written guidelines and targeted testing to initially assess the likely magnitude and impact of dissolved solids on the cooperative program data. The American Society for Testing and Materials method for SSC requires that the dissolved-solids correction be applied whenever the dissolved-solids concentration is more than 10 percent of the SSC (American Society for Testing and Materials, 2013). Guy (1969, p. 12) provided guidance that, when the dissolved-solids concentration and the SSC are similar, the dissolved-solids correction affects the accuracy of the results by the ratio of the volume of river water in the point-sample bottle before decanting to the volume after decanting (for example, if a 400-milliliter sample is decanted to 20 milliliters and the dissolved solids and SSCs are equal, then the dissolved-solids correction is 5 percent of the total mass measured in the evaporation dish).

The review team compared the environmental dissolved-solids concentration (milligrams per liter, p70300) and SSC among samples in the study region for which both parameters were reported. The samples used for the comparison of SSC and environmental dissolved-solids concentration were collected for other USGS programs at WLO and MCY and other sites that were not part of the cooperative program (STF, MEL, BRG, fig. 1). The SSC and dissolved-solids concentration data were retrieved from NWISWeb (U.S. Geological Survey, 2018, table 1) for the Atchafalaya River (WLO, MCY, MEL) and the Mississippi River (STF, BRG) for October 1, 1989, through October 1, 2015. The material used to measure the environmental dissolved-solids concentration (p70300) was dried at 180 °C, so the dissolved-solids concentration was not directly equivalent to the dissolved-solids correction that would be used in an evaporation method analysis, which specifies that the river water be dried at 105 °C. However, the two values were expected to be comparable. The SSCs were from samples that were not subject to the systematic bias that affected the cooperative program samples. For the 1,042 sample records that met the search criteria (that is, had both dissolved-solids concentration and SSC data collected at one of the identified sites, and were not collected for the cooperative program), the dissolved-solids concentration was greater than the SSC for 790 samples. The dissolved-solids concentration was 65 milligrams per liter greater than the SSC on average. Consequently, the relative bias caused by the lack of the dissolved-solids correction was anticipated to be greater than the ratio of the volume of river water in the point-sample bottle before decanting to the volume after decanting, as articulated in Guy (1969). If a typical point-sample bottle contained half the overfull volume for the bottle type and was decanted to 30 milliliters, then the dissolved solids would make up more than 8 percent of the measured suspended-sediment mass in quart bottles and more than 15 percent in pint bottles. The review team determined that this level of impact warranted further analysis.

The review team conducted an exploratory analysis of the 51 concurrent pairs of samples collected between 2006 and 2014 on the lower Atchafalaya River (WLO, MCY) for NASQAN and the cooperative program. The dissolved-solids concentration (p70300) of the NASQAN sample in each pair was used to estimate a dissolved-solids correction for each cooperative program point-sample bottle, assuming a uniform residual river water volume of 30 milliliters. The suspended-sediment mass was recomputed by applying the estimated dissolved-solids correction, and the estimated SSC was computed from the estimated “half fines” mass with the cooperative program computational method. The resulting estimated SSC was 40 percent lower than the original SSC, on average. Further, the estimated SSC more closely matched the SSC data for those samples that were collected by the NASQAN program on the same day. The exploratory analysis suggested that the lack of a dissolved-solids correction to sediment masses determined through the evaporation method was likely to be significant and that it had the potential to explain the observed discrepancies between the two sets of samples.

In March 2015, members of the review team and USGS Office of Surface Water personnel conducted targeted concurrent sampling in the study area at WLO, MCY, and BLC (fig. 1) on the main stem Mississippi River. Comparison samples were collected at the same location on the same day with both the cooperative program methods and NASQAN

program methods, which use depth-integrated EWI sampling and the filtration method for determining SSC. Sufficient data were collected in the laboratory to correct each point-sample bottle individually for the dissolved solids in the "half fines" beaker. Across 70 bottles collected with the cooperative program method for four cross-sectional samples collected during the concurrent sampling, the average proportion of the "half fines" mass that was attributable to the mass of dissolved solids was 20 percent. The true "half fines" mass was used to compute the SSC with the cooperative program computation method for each of the four cross-sectional samples. A comparison between the corrected and uncorrected SSC showed that the uncorrected SSC was biased high by an average of 19 percent. The review team concluded that the use of the evaporation method without a dissolved-solids correction was a significant source of systematic bias in the cooperative program suspended-sediment results. The review team found that it was necessary to revise the previously published data to account for the omission of the dissolved-solids correction. A dataset of the cooperative program laboratory data was compiled and used to compute revised values as documented in this report.

Particle-Size Distribution

Issues: The positive bias in the fines mass resulting from the lack of dissolved-solids correction in the "half fines" analysis led to positively biased results for the particle-size distributions that were produced for the cross-sectional sample. The percent fines (p70331) was higher than the true value because the measured mass of fines included the mass of dissolved solids.

The problem with overreporting the fines mass resulted in problems with the other cross-sectional particle-size distribution results from the dry sieve/BW tube analysis. The fine particle-size distribution results from the BW tube analysis were scaled to the sand particle-size distribution results on the basis of an inaccurate measurement of the total fines mass in the sample (eq. 21). Consequently, the results for particle-size distribution for sizes below 0.063 mm were all inaccurate.

Recommended Actions for Revising Results: The review team determined that the percent fines should be revised. Because the USGS did not report the particle-size distribution results in publicly available repositories, revised particle-size distribution results for other sizes were not computed.

Outcomes: Revised results for percent fines were computed and reported as described later in this report.

Subsampling

Issues: USGS guidance does not support reporting SSC produced from a subsample of the fines because of the high uncertainty associated with splitting a suspended-sediment sample (Guy, 1969, p. 2). The review team predicted that subsampling the fines would increase the uncertainty of the SSC computed for each point-sample bottle. The cooperative program laboratory method implicitly assumed that the splitter always separated the fines in each point-sample bottle into two equal-mass fractions (eq. 2). The overall uncertainty in the cross-sectional SSC may have been lower than the uncertainty in the individual point-sample bottle SSC because the error associated with any individual split was independent for each bottle; thus, errors in the splits for each individual point-sample bottle would have not all occurred in the same direction.

Recommended Actions for Revising Results: The review team determined that the uncertainty in SSC associated with the subsampling of the fines should be quantified.

Outcomes: Physical testing was conducted to assess the split quality as described in this report.

Laboratory Method Performance

Issues: Prior to 2015, the performance for the cooperative program laboratory method was not fully tested. Laboratory method performance for SSC is characterized by assessing the sediment recovery rates from samples of known SSC. Specifically, the typical amount of sediment mass gained (less likely) or lost (more likely) during the laboratory analysis was unknown. Sediment loss during handling would result in a negative bias in the reported SSC. The review team predicted that the use of the splitter could lead to lower recovery of the fines relative to methods used for other USGS programs. The splitter vanes and chute had a high surface area where fines could be retained, and the total rinse volume was constrained by the need to not overflow the 100-milliliter beaker that held the "half fines" subsample for each bottle. The limited rinse volume also had the potential to prevent all of the fines from being thoroughly washed off the sand that was retained on the sieve as the sediment/water suspension was introduced to the splitter.

Recommended Actions for Revising Results: The review team recommended that physical testing of the bias and uncertainty of the analytical method, including the splitting process, be conducted and the test results provided along with the revised suspended-sediment results.

Outcomes: Physical testing of the recovery rates of the sand and fines was conducted to quantify the performance of the cooperative program laboratory methods as described later in this report.

Information Systems Review

Issues: The method of transferring information from the field form to the laboratory form, from the laboratory form into the SED file, and from the SUM file into QWDATA was subject to infrequent but potentially significant transcription errors. Additionally, the USACE FORTRAN program did not have a clear method for capturing the decisions of reviewers

about the quality of point-sample bottle or cross-sectional sample data. The lack of a standard procedure for reviewing cooperative program data led to a mix of techniques to review and remove bottles from the analysis by various personnel over the history of the program. The SED files also did not contain a mechanism for reporting annotations from the laboratory data sheet that could affect the interpretation of the results.

Many of the stream discharge results were transcribed into QWDATA without review for hydrologic context because QWDATA was not the primary repository of surface-water field measurements used for gaging streams. In some cases, the same results were stored or transcribed elsewhere, which provided a basis for identifying transcription errors.

Recommended Actions for Revising Results: The review team found that the workflow that included the USACE FORTRAN program should be discontinued and a new procedure should be used for reviewing the revised cooperative program results for SSC and stream discharge.

Outcomes: The review team established a uniform data-review procedure for suspended-sediment and stream discharge data and implemented it for reporting the revised results. Reported values for instantaneous stream discharge were checked for consistency and plausibility with stream discharges measured at nearby stream gages, checked for consistency with other records of the same data where available, and reviewed within environmental and hydrologic context (for example, with respect to seasonal patterns and storm events). Further, all revised results were electronically uploaded to publicly available repositories to eliminate problems with transcription errors.

Computations Review

Issues: The USACE FORTRAN program implicitly assumed that the cumulative dry sieve sand weight was a more accurate measurement of the sand mass in each point-sample bottle than was the sand weight from the wet sieve/split step (eq. 1). The sand mass from the wet sieve/split step of the cooperative program laboratory method was determined by the review team to be a better representation of the sand mass in each point-sample bottle than the cumulative dry sieve sand weight because less handling occurred before the sand was measured.

Insufficient data were available to reliably discharge-weight the revised suspended-sand concentrations on the basis of concurrent depth-and-velocity profiles or ADCP data. The review team analyzed whether it was possible to compute a discharge-weighted average suspended-sand concentration from the available data. Two potential methods were identified from USGS documents: compositing all of the point-sample data from the cross-sectional samples and averaging the composite SSC within each vertical. If the verticals were spaced at representative intervals within the cross section, either of these techniques could be used to estimate a discharge-weighted average SSC (Edwards and Glysson, 1999, p. 51–52).

Assuming that the verticals were spaced at representative intervals, the applicability of either of these computational methods depended on the sampling duration used for each point-sample bottle during a sampling event. If a uniform sampling duration was used for every point-sample bottle in a cross-sectional sample, the composite SSC would be close to the discharge-weighted average SSC because less water would have flowed into the sample bottle in the low-velocity, and thus low-discharge, areas of the cross section. Point samples collected this way could be mathematically composited to produce a discharge-weighted average SSC (Edwards and Glysson, 1999, p. 51–52). If a uniform sampling duration was used within each vertical but the duration varied among verticals, the SSC could be composited within the vertical, and the discharge-weighted average SSC could be computed as the average of the composite SSC in each vertical (Edwards and Glysson, 1999, p. 51–52). If a non-uniform duration was used within a single vertical, the SSC would have to be computed by numerical average to avoid the effect of variable sampling duration on the composite SSC.

Recommended Actions for Revising Results: The review team determined that the sand mass from the wet sieve/split step had been measured with a similar procedure as the “sand break” analysis performed for other USGS programs (Guy, 1969) and should be used for computing the revised results. Further, the review team recommended that the original forms be reviewed to determine if the sampling duration had been uniform within or among the verticals for each sampling event to determine the best computational method for the revised results. The team recommended that a single computation method be used for all of the revised results to eliminate variability caused by the mixture of computation methods.

Outcomes: The revised results were computed on the basis of the wet sieve sand weight, not the dry sieve sand weight. The team hypothesized that this change would lead to an increase in the reported suspended-sand concentrations because the dry sieve sand weight was normally lower than the wet sieve sand weight.

In order to determine what aggregation method was most appropriate for the revised suspended-sand concentration results, the review team compiled the available information about the sampling duration. Prior to 2001, no systematic data source was found at either agency that included sampling duration. In 2001, the USACE adopted a field form that included the sampling duration and stream velocity from the ADCP for each point-sample bottle in a cross-sectional sample. In 2006, the USACE converted this form to a digital spreadsheet and routinely sent it to the laboratory along with the samples. Field forms for samples collected between 2001 and 2006 showed that the use of non-uniform sampling durations within a single vertical was not uncommon for the USACE field crews during this time period. Digital USACE field forms showed that after 2006 a uniform sampling duration was used exclusively. USGS field crews were trained

to use a uniform sampling duration since 1998 or earlier. However, it was possible that some USGS field collections contained non-uniform durations as field crews modified the collection method in response to low stream velocities below 1.5 feet per second. The review team concluded that, because written documentation showed that non-uniform sampling durations were used routinely for some periods in the sampling program history and no documentation existed for the majority of the cross-sectional samples, a single computation could not be used to report the discharge-weighted average suspended-sand concentration for all samples. To meet the recommendation that all revised results be computed with the same method, all revised suspended-sand concentrations were computed by numerical average. Because the numerical average was expected to produce suspended-sand concentrations that were biased high relative to the discharge-weighted value, a quantitative comparison between the composite (approximately discharge-weighted) and the numerical average suspended-sand concentrations for samples collected with a uniform duration was performed as described later in this report.

Reporting Review

Issue: The cooperative program results had been reported to QWDATA without making full use of available fields for documenting data quality.

Recommended Actions for Revising Results: The review team recommended that the available annotation fields be used to report revised results to QWDATA to fully capture the outcomes of the data review and revision. Available fields included sample comments, result comments, remark codes, null qualifier codes, value qualifier codes, and data quality indicator codes.

Outcomes: The revised results are stored with comments and codes that reflect the data quality. Data users are encouraged to use the “one result per row” with “expanded attributes” option to retrieve values from NWISWeb (U.S. Geological Survey, 2018, table 2) and inspect the sample comments, result comments, remark codes, null qualifier codes, value qualifier codes, and data quality indicator codes when interpreting the revised results.

Methods Used To Revise Results

Many of the review team recommendations required further effort to acquire information needed for implementation. Physical testing was performed to determine the most appropriate method of applying a dissolved-solids correction. Physical testing was also used to assess laboratory method performance. A complete dataset of original laboratory results was assembled and reviewed for logical consistency. The point-sample bottle data were reviewed in cross-sectional, seasonal, and hydrologic context. Records of stream discharge were assembled and used to review the instantaneous stream discharge record in hydrologic context. More details of the physical testing and data review steps are described in the following sections.

Candidate Methods for Dissolved-Solids Correction

The review team recommendation that the suspended-fines concentration be corrected for the dissolved solids in the “half fines” beaker for each point-sample bottle was anticipated to have the greatest impact on the reported results across the entire dataset. The team considered three options for removing the mass that was attributable to the dissolved solids. All of the options involved estimating a revised fines mass from one side of the split and then scaling it to the whole sample.

One option was to make an assumption about the residual volume of river water that was present in each “half fines” beaker and pair it with measured or modeled environmental dissolved-solids concentration. The validity of this method depended on the uniformity of the river-water volume in each bottle after decanting as well as the uniformity of the river-water volume in each beaker after the split.

A second option was to make an assumption about the final rinse water plus river-water volume in each “half fines” beaker and then assign the measured dissolved-solids concentration from the BW tube analysis to this volume in each beaker. The validity of this method depended on the uniformity of the rinse volumes on both sides of the split across all of the point-sample bottles in the cross-sectional sample.

A third option was to compute the composite mass of the fines from the BW tube analysis by summing the fines masses recovered in the BW tube analysis and making a dissolved-solids correction based on the recorded dissolved-solids values from the composite subsample. The third option did not preserve the ability to estimate the suspended-fines concentration for each point-sample bottle and consequently did not preserve the ability to compute the aggregate suspended-fines concentration by any other method than compositing. However, the third option involved the least number of assumptions about the stability of laboratory methods over time.

All three options for removing the dissolved-solids signal depended on assigning an appropriate multiplier to account for the effects of the sample splitting process. The review team conducted testing at the Baton Rouge Sediment Laboratory in August 2015 to determine the best option for the dissolved-solids correction. The testing also served the purpose of quantifying the laboratory method performance for the cooperative program laboratory method in terms of bias and uncertainty.

Preparation of Test Samples

Prepared test samples of known sediment mass mixed with known volumes of DI water were used to assess the mass recovery and split multiplier. Twenty-five test samples were internally prepared at the USGS Cascades Volcano Observatory (CVO). The samples prepared at CVO are designated as "internally prepared" because they were prepared by a member of the review team and thus were internal to the review process. An additional seven externally prepared samples were used from the USGS Quality Systems Branch (QSB) Sediment Laboratory Quality Assurance (SLQA) Project. Three of the SLQA samples were received as wet suspensions, and four were received as dry powders.

Internally Prepared Test Samples

The 25 target test masses of sand and fines for the internally prepared samples were constructed to span the normal range of masses recovered from the cooperative program samples. A matrix of the 10th, 25th, 50th, 75th, and 90th percentile sand mass and of the 10th, 30th, 60th, and 90th percentile doubled "half fines" mass was constructed from the laboratory data. The 5 by 4 matrix produced 20 target test masses for preparing samples of known mass. The geometric mean of the sand mass and the geometric mean of the doubled "half fines" mass were computed and used as the target mass to represent typical bottles for five additional test samples, which resulted in a total of 25 targets.

Test samples were prepared from residual sediment from two bed-sediment samples that had been collected in a California settling basin in 2014. The bed material was used because it was readily available, plentiful, and naturally separated into a sample that was predominately sand and another that was predominately fines. The material was dried overnight at 105 °C and dry sieved in a RO-TAP test sieve shaker (W.S. Tyler) for 15 minutes. The sand used to prepare test samples was created by combining sand retained on the 0.250-mm, 0.125-mm, and 0.063-mm sieves from the sandier sample. The fines used to prepare test samples were the pan material from the finer sample. The sand and fines were redried at 105 °C and stored in a desiccator until the weighing process.

The test material was transferred into a tared small plastic container until the actual mass was as close as possible to the predetermined target mass of sand and fines. The actual mass of sand and fines in each container was recorded and was used as the expected value for method performance testing. The container was sealed and shipped to the Baton Rouge Sediment Laboratory. At the laboratory, the dry material was rinsed into a pint bottle with DI water, and DI water was added to make up a final sample volume of 50–120 milliliters. This volume represented a typical residual volume of water remaining in point-sample bottles after they were decanted.

Externally Prepared Test Samples

QSB uses 0.125- to 0.250-mm-diameter sand particles and 0- to 0.050-mm-diameter Arizona Test Dust to prepare test samples with well-known expected sand and fines masses. Four QSB samples were requested through the QSB double-blind program and shipped to the Baton Rouge Sediment Laboratory as dry powder. The powder was rinsed into quart bottles at the Baton Rouge Sediment Laboratory and wetted with approximately 75 milliliters of DI water. Three QSB samples arrived at the laboratory as wet suspensions as part of the standard QSB single-blind SLQA study for fall 2015. The wet suspensions were allowed to settle for approximately 10 days. The suspensions were decanted before pouring through the splitter. The supernatant was collected, filtered, and weighed because the samples had not undergone a full 2-week settling period. The filtered supernatant weight was added to the total recovered fines for assessing recovery from these samples. The QSB supplied the expected masses for the externally prepared samples.

Physical Testing

Each test sample was weighed on a macro balance to determine the volume of sediment-water suspension that was poured through the splitter. This quantity represented the volume after decanting in a normal laboratory work flow. A tared 100-milliliter beaker was placed on each side of the splitter. The test sample was poured through the 3-inch-diameter 0.063-mm sieve onto the splitter as specified by the cooperative program laboratory method (fig. 3). The initial mass of the suspension on each side of the split was recorded by measuring the gross weight of each 100-milliliter beaker to the nearest 0.1 gram. The bottle and splitter were rinsed according to normal procedures for cooperative program samples, which required that the rinse volume not overflow the 100-milliliter beakers. The mass of the suspension on each side of the split after rinsing was recorded by measuring the gross weight of each 100-milliliter beaker a second time.

For the internally prepared samples and dry externally prepared samples, the suspension from both sides of the splitter was filtered through a tared 40-milliliter perforated-bottom ceramic Gooch crucible (CoorsTek) lined with a Whatman grade 934-AH glass microfiber filter (GE Healthcare). For the wet externally prepared SLQA samples, the suspension on the right side of the splitter was oven dried in the 100-milliliter beaker. The fines from the left side of the splitter for the three wet SLQA samples were used to perform a BW tube analysis for particle-size distribution. The total mass recovery from the left side of the splitter for these samples was calculated as the sum of the recovered masses from the BW tube analysis.

The sand was rinsed off the sieve and was either filtered or dried in a 100-milliliter beaker. The beakers and crucibles containing the sand and fines were dried for approximately 36 hours at 105 °C, cooled in a desiccator, and weighed to the nearest 0.0001 gram. Four different analysts conducted the tests. One analyst poured samples into the splitter from the left hand; the other three poured from the right hand. The analysts pouring the samples through the splitter and weighing the dishes did not know the expected masses of sediment in the dishes.

Additionally, 10 grab samples of Mississippi River water were collected off a dock at Baton Rouge, La., on August 3, 2015. Five of the samples were spiked with 0.018–0.019 gram of sand on August 14, 2015. These samples were allowed to settle in the laboratory until testing was conducted on August 25–26, 2015. A 100-milliliter aliquot of the supernatant was withdrawn and filtered through a glass Gooch crucible fitted with a 47-mm Whatman grade 934-AH glass microfiber filter. The filtered material represented residual suspended solids that might be present after settling had occurred. The filtrate was collected, and an 80-milliliter aliquot was pipetted into a tared 100-milliliter beaker to determine a dissolved-solids correction. The samples were decanted with the vacuum system, and their volume after decanting was recorded. The decanted samples were split into 100-milliliter beakers on each side of the splitter following the standard procedure for the cooperative program laboratory method. The post-split volume on each side of the splitter was recorded before rinsing the splitter. The splitter was rinsed with DI water, and the sand was washed off the sieve into a beaker. The supernatant from the sand beaker was collected into another tared beaker. The dissolved-solids beaker, sand beaker, sand-supernatant beaker, fines beakers, and the filter crucible were oven dried at 105 °C, cooled in a desiccator, and weighed. The mass in each fines beaker was corrected for the dissolved solids present in the overlying water with the method from Guy (1969), where the residual native-water volume was the recorded volume in the beaker after the split and before the rinse.

Laboratory method performance was assessed by computing the percent recovery for sand, fines, and total sediment for each test sample. The percent recovery was computed as

$$R(\%) = \frac{m_{obs}}{m_{exp}} \times 100 \text{ percent}, \tag{23}$$

where

R was the recovery rate, in percent;

m_{obs} was the observed mass of sand, fines, or total sediment, in grams; and

m_{exp} was the expected mass of sand, fines, or total sediment, in grams.

For environmental samples that were spiked with sand, the expected sand mass was the sum of the spiked mass and the average sand mass in the unspiked environmental samples (0.0014 gram±0.0008 gram, n=5).

The multiplier for scaling the fines from one side of the split to the whole sample was computed by taking the ratio of observed fines from both sides of the split to the observed fines from one side of the split:

$$K_L = \frac{m_{obs(L)} + m_{obs(R)}}{m_{obs(L)}}, \text{ and} \tag{24}$$

$$K_R = \frac{m_{obs(L)} + m_{obs(R)}}{m_{obs(R)}}, \tag{25}$$

where

K_L was the empirical multiplier for the left side of the splitter;

K_R was the empirical multiplier for the right side of the splitter;

$m_{obs(L)}$ was the observed mass of fines on the left side of the splitter, in grams; and

$m_{obs(R)}$ was the observed mass of fines on the right side of the splitter, in grams.

To check the assumption that the post-decanted volume was predictable, three analysts each used the equipment in the Baton Rouge Sediment Laboratory to decant pint or quart bottles of DI water. The volumes after decanting were measured and combined with similar data collected on environmental samples during the March 2015 concurrent sampling event and with data from other tests conducted in August 2015. Altogether, the post-decanted volumes of 121 bottles were recorded. The analysts were instructed to decant normally, replicating past practices, without consciously trying to achieve a uniform residual volume.

Revised Suspended-Fines Concentration Computation

The test of the post-decanted residual water volumes showed that the assumption that the volumes would be similar or predictable was not supported. The range of post-decanted volumes for pint bottles was 28.0–117.1 milliliters (n=100); the range for quart bottles was 81.4–239.5 milliliters (n=21). Further, the values could vary systematically; that is, one analyst at one time might decant more or less thoroughly than another analyst at another time. Any uncertainty produced by the wide range in potential values was not likely to be independent from bottle to bottle, so using any volume-based method could introduce systematic errors in the outputs. Laboratory personnel also indicated that they did not expect the assumption of consistent volumes to be borne out over time because many different analysts had worked in the laboratory. The review team consequently abandoned the attempt to correct the “half fines” beakers for dissolved solids at an individual-bottle scale. Instead, the review team selected the dissolved-solids correction method that used the data from the BW tube analysis to compute the revised suspended-fines concentration for the composite sample.

Because the data from the BW tube analysis were used to compute the corrected fines mass, the review team used the left-side multiplier, K_L in the correction method. The observed K_L was 2.04±0.16 (median ± interquartile range, n=41, table 5). We used this multiplier to scale the composite fines from the BW tube analysis to the whole sample after correcting the BW tube sediment mass for dissolved solids:

$$m_f = \left\{ \left[\Sigma_{i=1}^{l} m_{BW(i)} \right] + m_{wc} - \left(\frac{m_{dsol}}{\text{50 mL aliquot volume}} \times V_{BW} \right) \right\} K_L, \text{ and} \quad (26)$$

$$\overline{C_{fC}} = \frac{m_f}{\Sigma_{i=1}^{n} V_{b(i)}} \times 1,000 \frac{\text{mg fines}}{\text{g fines}} \times 1,000 \frac{\text{mL "water"}}{\text{L "water"}}, \quad (27)$$

where

m_f was the composite mass of fines in the sample, in grams;

l was the number of BW tube withdrawal weights collected, always 10;

n was the number of bottles that contributed to the composite fines subsample;

K_L was the empirically determined multiplier for the split, 2.04±0.16 (table 4); and

$\overline{C_{fC}}$ was the composite suspended-fines concentration, in milligrams per liter.

The term “water” indicates river water, which contains water and suspended sediment. Other inputs were as described in table 3. The volume of the residual water in the suspension, V_{BW}, was computed by dividing the net weight of the beaker that held the residual water by an assumed density of 1 gram per milliliter, equivalent to the density of water (table 3).

Revised Suspended-Sand Concentration Computation

The suspended-sand concentration for the cross-sectional sample was computed by numerical average:

$$C_S = \frac{m_{ws}}{V_b} \times 1,000 \frac{\text{mg sand}}{\text{g sand}} \times 1,000 \frac{\text{mL "water"}}{\text{L "water"}}, \text{ and} \quad (28)$$

$$\overline{C_S} = \frac{\Sigma_{i=1}^{t} C_{S(i)}}{t}, \quad (29)$$

where

C_S was the average suspended-sand concentration in the cross section, in milligrams per liter; and

t was the number of bottles that were accepted by reviewers.

Other inputs were as described in table 4. Bottles that were rejected by reviewers were simply excluded from the computation of the average suspended-sand concentration. The wet-sieve sand mass was used to compute the suspended-sand concentrations.

Revised SSC Computation

The revised average suspended-sand concentration and the revised composite suspended-fines concentration were used to compute the revised reported parameters:

$$C = \overline{C_S} + \overline{C_{fC}}, \text{ and} \quad (30)$$

$$pf_{0.063} = \frac{\overline{C_{fC}}}{C} \times 100 \text{ percent}, \quad (31)$$

where

C was the revised cross-sectional SSC (p80154), in milligrams per liter.

The revised suspended-sediment discharge (p80155, short tons per day) was computed from the stream discharge (p00061) and the SSC as described in equation 6. The revised SSC, percent fines, stream discharge, and suspended-sediment discharge results are available from NWISWeb (U.S. Geological Survey, 2018; table 1). The originally reported results and the revised results are provided in a publicly accessible data release (Norton and others, 2019) and in appendix 4 of this report.

Estimation of Laboratory Uncertainty

The need to use the split multiplier to scale subsamples of the fines to the whole sample meant that any revised values had inherently higher laboratory uncertainty than would be expected for laboratory results for other USGS programs. The cumulative uncertainty associated with the various measurements in the laboratory was estimated through the use of a Monte Carlo simulation with 10,000 repetitions (Joint Committee for Guides in Metrology, 2008). The Monte Carlo method was chosen because it was flexible and because it was able to model the treatment of the low masses that had been observed in samples collected for the cooperative program. The standard deviation of the outputs from the Monte Carlo analysis was reported as the uncertainty of the result. The relative measurement uncertainty was the standard deviation of the 10,000 Monte Carlo outputs divided by the measurement result.

The Monte Carlo method required that an uncertainty distribution be assigned to every input variable. Most inputs were net weights; that is, weight computed as the difference between a gross weight and a tare weight of a dish or bottle. The Baton Rouge Sediment Laboratory could not provide sufficient data to verify the standard uncertainty associated with a single mass measurement of a 100-milliliter beaker. A mass measurement in a 100-milliliter beaker was assumed to have a standard uncertainty of ±0.0005 gram, which represented an expanded uncertainty (k=2.5) of the standard uncertainty on a single measurement of the mass of a process blank in a crucible or beaker maintained by the laboratory from October 2015 to May 2017 (n=635). A process blank is a dish that is tared normally and used to

Table 5. Results from physical testing of the splitter used in the U.S. Geological Survey Baton Rouge Sediment Laboratory to process samples collected for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

["Fines" refers to sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve). K_L is the ratio of the total fines mass to the fines mass on the left side of the splitter (eq. 24). "Percent fines" is percent by mass of the sediment that passes through a 0.063-mm sieve. Asterisk (*) denotes results for which the measured mass was within ±0.0015 gram of the expected mass. Sample type: externally prepared sample, U.S. Geological Survey (USGS) Quality Systems Branch samples from the Sediment Laboratory Quality Assurance Project; internally prepared sample, fluvial bed material collected from a settling basin in California prepared by a member of the review team at USGS Cascades Volcano Observatory; MS River grab sample, grab sample of water from the Mississippi River at Baton Rouge, La.; MS River grab sample sand spike, grab sample of water from the Mississippi River at Baton Rouge, La., spiked with sand. Results coded as "—" were not relevant to the sample type indicated and so were not available]

Sample type	Expected sand mass, grams	Sand recovery, percent	Expected fines mass, grams	Fines recovery, percent	Total sediment recovery, percent (eq. 23)	K_L, unitless ratio (eq. 24)	Difference from expected percent fines, percentage points
Externally prepared (dry) sample	0.0000	(−0.0005 gram)*	Known error in pour through the splitter				
	0.0303	137	0.0253	124	126	2.00*	−1.6
	0.0327	1	0.1203	66	53	1.90	19.6
	0.0224	85	0.1299	95	94	2.06	1.0
Externally prepared (wet) sample[1]	0.0300	107	0.2025	92	95	2.43	−2.8
	0.1702	97	0.1005	91	92	2.23	−1.0
	0.1707	97	0.7508	87	89	2.12	−1.6
Internally prepared sample	0.0014	36*	0.7508	89	87	1.99*	2.5
	0.0022	109*	0.0320	106	107	1.93*	−0.2
	0.0068	101*	0.0252	103*	103	1.98*	0.2
	0.0210	100*	0.0250	97*	98	2.12*	−1.0
	0.0494	97	0.0268	103*	99	2.04*	1.3
	0.0006	200*	0.0266	95	96	1.91	−1.3
	0.0028	111*	0.0510	102*	103	2.21	−0.4
	0.0080	99*	0.0495	99*	99	1.93	0.0
	0.0190	94*	0.0403	92	92	2.10	−0.5
	0.0478	94	0.0408	94	94	2.11	0.2
	0.0013	77*	0.0425	92	92	2.14	0.3
	0.0030	83*	0.0634	92	91	2.04*	0.4
	0.0078	87*	0.0613	95	94	1.98*	0.8
	0.0213	88	0.0619	97	94	2.08	1.8
	0.0480	84	0.0623	94	90	1.94	2.7
	0.0010	150*	0.0659	94	94	2.01*	−0.5
	0.0019	116*	0.1073	92	93	2.04	−0.4
	0.0078	113*	0.1072	91	92	1.93	−1.5
	0.0211	82	0.1097	79	79	1.95	−0.6
	0.0491	97	0.1083	100*	99	1.98*	0.8
	0.0102	88*	0.0643	99*	98	2.02*	1.3
	0.0108	97*	0.0641	100*	99	1.98*	0.3
	0.0103	83	0.0639	99*	97	1.97*	1.9
	0.0111	84	0.0667	94	92	1.97	1.3
	0.0086	98*	0.0699	95	96	1.89	−0.2

Table 5. Results from physical testing of the splitter used in the U.S. Geological Survey Baton Rouge Sediment Laboratory to process samples collected for the cooperative program in the lower Mississippi-Atchafalaya River Basin.—Continued

["Fines" refers to sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve). K_L is the ratio of the total fines mass to the fines mass on the left side of the splitter. "Percent fines" is percent by mass of the sediment that passes through a 0.063-mm sieve. Asterisk (*) denotes results for which the measured mass was within ±0.0015 gram of the expected mass. Sample type: externally prepared sample, U.S. Geological Survey (USGS) Quality Systems Branch samples from the Sediment Laboratory Quality Assurance Project; internally prepared sample, fluvial bed material collected from a settling basin in California prepared by a member of the review team at USGS Cascades Volcano Observatory; MS River grab sample, grab sample of water from the Mississippi River at Baton Rouge, La.; MS River grab sample sand spike, grab sample of water from the Mississippi River at Baton Rouge, La., spiked with sand. Results coded as "—" were not relevant to the sample type indicated and so were not available]

Sample type	Expected sand mass, grams	Sand recovery, percent	Expected fines mass, grams	Fines recovery, percent	Total sediment recovery, percent (eq. 23)	K_L, unitless ratio (eq. 24)	Difference from expected percent fines, percentage points
MS River-grab sample	—	—	—	—	—	2.02*	—
	—	—	—	—	—	2.16	—
	—	—	—	—	—	2.17*	—
	—	—	—	—	—	2.05*	—
	—	—	—	—	—	2.10*	—
MS River-grab sample, sand spike	0.0202	83	—	—	—	2.32	—
	0.0201	77	—	—	—	2.60	—
	0.0195	97*	—	—	—	2.55	—
	0.0196	64	—	—	—	2.21	—
	0.0201	74	—	—	—	2.43	—
	Median:	96	—	95	94	2.04	0.2
	Interquartile range:	±17	—	±7	±7	±0.16	±1.7

[1]The subsamples from the left side of the splitter for the three wet SLQA samples were processed through the bottom-withdrawal (BW) tube. The recovery was the sum of the masses recovered from the BW tube analysis.

process a prepared sample of DI water that is inserted into the batch by the analyst. The gross weight of the dish is recorded with others in the batch. As long as the net weight of the blank shows no significant presence of sediment in the dish, the difference between the gross and tare weights represents the measurement uncertainty due to dish handling and environmental factors in the laboratory during weighing. The expanded uncertainty accounted for variability in dish handling methods over time and the difference in surface area between the beakers and the crucibles, which could lead to a stronger signal from environmental factors for beakers.

Each net weight was the difference of two weights. The standard uncertainty of the net weights for the Monte Carlo analysis was computed as

$$u_{net} = \sqrt{2 \times \left(u_{dish}\right)^2}, \tag{32}$$

where

u_{net} was the uncertainty of a single net weight, in grams; and

u_{dish} was the uncertainty of a single dish weight, in grams, assumed to be a constant 0.0005 gram.

The distribution for each net weight used as an input was constructed by creating a set of 10,000 normally distributed values with a mean equal to the measured net weight and a standard deviation equal to u_{net}. When the observed net weight was low, the distribution sometimes included negative net weights. Negative net weights were reassigned to zero to mimic the laboratory practice of adjusting slightly negative net weights to zero during weighing. The uncertainty analysis was conducted with R statistical software version 3.2.1 (R Core Team, 2015).

The uncertainty of the overall composite fines value depends on uncertainty introduced by the splitter, the number of bottles that contributed to the composite fines subsample, and the relative mass of fines in each bottle. A biased split for a bottle with a large amount of fines would have had a stronger effect on the composite value than would a biased split for a bottle with a small amount of fines. For each sample, the number of bottles was known, but the amount of fines contributed by each bottle was unknown. To estimate an uncertainty for K_L, we assumed that a single bottle dominated the split so that the distribution of the composite-scale K_L was similar to the observed distribution of bottle-scale K_L. This assumption provided a conservative estimate of the uncertainty on the composite suspended-fines concentration.

If all of the bottles in a sample contained similar masses of fines, the actual uncertainty would be lower than the reported uncertainty.

The distributions for the other inputs were constructed from normal distributions with estimated standard deviations. For the bottle net weight, a similar technique was used as described in equation 32, with an assumed uncertainty for a bottle mass measurement of ±1.0 gram. The macro balances weigh to the nearest 0.1 gram, so this was a conservative estimate of the uncertainty for a bottle mass measurement. The volume of the dissolved-solids aliquot in the BW tube analysis was assumed to be 50±0.2 milliliters. The density of river water was assumed to be 1.000±0.005 grams per cubic centimeter (Guy, 1969). The density of the decanted composite subsample used in the BW tube analysis was assumed to be 1.000±0.010 grams per cubic centimeter. The expanded uncertainty in the density accounted for the unknown, but potentially significant, sediment concentration in the suspension.

Historical Sediment Data

The correction method required that the review team compile a complete set of historical original laboratory data because the information required for the computation could not be inferred from the previously published data alone. The original laboratory data were also used to correct transcription errors and review the results in a robust and consistent manner.

Digitized input files (SED files) and primary laboratory spreadsheets (Excel files) were recovered from USGS and USACE servers and imported into an SQL Server 2008 R2 database. Primary laboratory paper records were retrieved from USACE and USGS archives, scanned, and cataloged so that they could be linked to their corresponding digitized data. When a primary paper form could not be linked to a digitized dataset, the laboratory data were digitized from the paper form into a blank laboratory spreadsheet and imported into the project database. Paper forms or digital primary data sources were recovered for 2,867 of 2,895 cross-sectional samples collected during the period covered by this report. For the 28 cross-sectional samples where SED files existed but no primary data could be recovered, revised results were computed if the digitized data in the SED files passed the other checks described below.

To link input data with their originally reported values, data from the project sites were retrieved from QWDATA with the internal NWIS Reporting Application in 2015. The QWDATA information was downloaded in text files and imported into the project database.

After all of the data were assembled into the project database, the digitized laboratory data, QWDATA record, and scanned laboratory data sheet were linked by site, date, and time. When the times were unknown or conflicting, the records were linked by site and date. It was rare that more than one sample was collected for the cooperative program at a single site on the same day, which is why this method of linking data was used. Records of samples that had site and date values that did not match any other record were checked to see if they had transcription errors in the date by comparing the values for fields other than site, date, and time to the values for the same fields in other records. If the QWDATA record was determined to have an incorrect date or time, the QWDATA record was updated. Where the correct time could not be ascertained, the sample was recorded to have been collected at noon, which was likely close to the true sampling time since nearly all of the samples were collected between 10 a.m. and 2 p.m.

Each cross-sectional sample had either one or no QWDATA record. It was not possible to determine if samples with no QWDATA record had been rejected by reviewers or omitted inadvertently. Samples that had no matching QWDATA record were added to QWDATA during the upload of revised values if they passed the other data quality checks (table 6).

A single cross-sectional sample could have multiple digital representations (for example, scanned original, SED files, Excel file, QWDATA record). For example, SED files deliberately duplicated the first and last samples of each water year. Both a SED file and an Excel file existed for most events since 2001. In some cases, both the USACE and the USGS servers contained SED files for a given sample. Data technicians sometimes prepared multiple SED files for a sample with different discharge values (that is, conventional discharge or ADCP discharge) or reflecting the decisions of different reviewers.

When all of the fields used in the recomputation of the results were identical among all of the digital representations of a sample, any of the representations could be used as the final data for the sample. When there was conflicting information in the multiple representations, the review team compared the conflicting values to the primary laboratory data sheet to determine the correct final data for the sample. The end result of this cleanup step was that each sample was associated with one final digital representation of its laboratory data, which was then evaluated for further quality checks.

It was not possible to exhaustively verify every digitized laboratory value against its value on the primary laboratory data sheet. Instead, the review team applied a series of logical checks to the final data to identify fields that might be in error (table 6). The logical checks were implemented with structured query language (SQL) queries against the database. The review team confirmed fields that failed these logical checks against the primary data and updated the values if they were in error. If a sample failed a check even after all transcription errors were corrected, the team made a determination about whether to accept or reject that sample on a case-by-case basis.

In addition to the logical checks, the team reviewed the suspended-sand concentrations for each point-sample bottle in cross-sectional spatial context. Graphs were prepared for every sample showing each point-sample bottle at its recorded depth

Table 6. Logical checks performed against final sample data with structured query language (SQL) queries to identify possible transcription errors in data recorded for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[The logical checks were used to identify possible transcription errors. Samples that failed logical checks after correcting transcription errors were reviewed on a case-by-case basis. BW, bottom-withdrawal; <, less than; %, percent]

Analysis	Description	Variable name (table 3)
BW tube	All 10 BW weights present, positive, and non-null	BWW
	All 10 BW weights <0.9999 gram	BWW
	Dissolved-solids correction <0.0125 gram[1]	BWDS[1]
	Each successive BW weight within 0.0010 gram of previous weight or declining	BWW
	Wash correction not more than 10% of total BW mass	BWWC
	No single BW weight more than 40% of the sum of all of the BW weights for the cross-sectional sample	BWW
	No single BW weight less than 1% of the sum of all of the BW weights for the cross-sectional sample	BWW
	Residual BW volume between 35 and 500 milliliters	BWVOL
Sand	Wet-sieve sand weights for all bottles are non-null and between 0 and 0.9999 gram	SANDW
	Wet-sieve sand weight greater than dry sieve sand weight for all bottles	SANDW, US230
	Dry-sieve sand weight at least half of the wet sieve sand weight, or within 0.0050 gram	SANDW, US230
Bottle volume	All bottles have a non-null, positive volume	TVOL
	The recorded volume can be contained by the bottle[2]	TVOL
	The bottle volume is not too low[2]	TVOL
Split	The sum of the BW weights plus the wash correction is not more than 0.0150 gram larger than the sum of the "half fines" weights[3]	BWW, BWWC, HFINE

[1]A dissolved-solids correction greater than 0.0125 gram in 50 milliliters (250 milligrams per liter) was higher than most of the recorded environmental total dissolved solids (TDS) values for this system; the BWDS was expected to have a lower concentration than the TDS because it contained both river water and deionized water used to rinse the splitter.

[2]For 11 bottles where the volume was out of range, the suspect volume was replaced with the average bottle volume for the set before computing the revised values. These bottles have a review code of "s" in the data release that accompanies this report (Norton and others, 2019).

[3]Because the majority of the dissolved solids in the composite subsample were removed when the composite subsample was decanted, it was normal for the sum of the BW weights to be less than the sum of the "half fines" weights.

and horizontal position in the cross section. The graphs were symbolized with a color ramp and text annotation to indicate the suspended-sand concentration in each point-sample bottle. Any point-sample bottle that would change the composite suspended-sand concentration by more than 10 milligrams per liter if rejected was symbolized with a thick border (fig. 5).

A Portable Document Format (PDF) document was created for each site in R statistical software, version 3.2.1 (R Core Team, 2015), showing the graphs in order by sampling date at each site. Review team members inspected each sample for the environmental plausibility of the suspended-sand concentrations in cross-sectional context, taking into account their understanding of sampling practices and spatial and seasonal patterns at each site. Suspended-sand concentrations could have been implausibly high if the sediment sampler struck the river bottom during collection, especially for deep samples. Sometimes a bottom strike could result in residual sand in the nozzle, which could contaminate the next sample collected at the top of an adjacent vertical. Reviewers also identified bottles where the suspended-sand concentration was implausibly low, possibly as the result of something blocking the nozzle during collection. Suspect bottles were first checked for transcription errors in the sand mass or bottle volume. When a reviewer determined that a bottle was implausibly high or low in sand, the bottle was annotated accordingly and removed from subsequent computations of suspended-sand concentration. The review team rejected 381 bottles for implausible suspended-sand concentrations out of 43,321 total bottles.

The cross-sectional graphs (example in fig. 5) were also used to correct significant errors in the cross-sectional positions of the point-sample bottles and to identify samples that had missing bottles when compared to the target sampling design for the site. Data for specific bottles could have been missing for multiple reasons, including unusually high or low sediment mass, breakage, or inadvertent omission. It was difficult to identify the reason because the only tool that had been available for removing rejected bottles in the USACE FORTRAN program was to delete the row for the bottle from the SED file. To ensure a uniform review, the missing bottle data were added to the database from the primary paper form and reviewed in cross-sectional context to determine whether inclusion was appropriate.

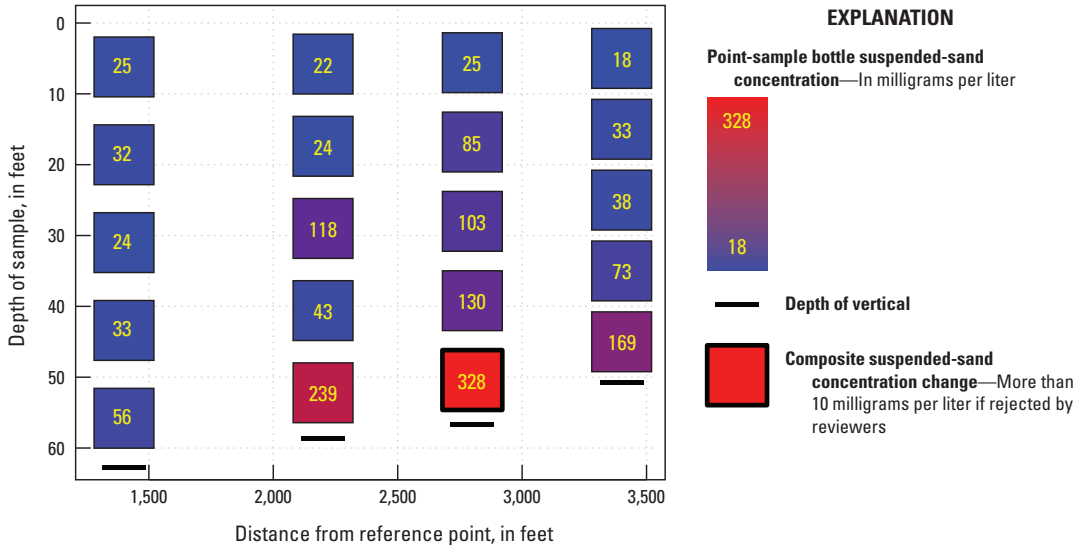


Figure 5. Example graph used to review sand concentrations in cross-sectional context for samples collected for the cooperative program between October 1989 and February 2015 in the lower Mississippi-Atchafalaya River Basin. Point samples collected for suspended-sediment concentration and particle-size distribution are shown in their X-Y (horizontal-depth) locations in the cross section. All of the bottles depicted in the figure were accepted by the review team.

The USACE FORTRAN program did not provide a field for comments about the laboratory analysis. Various treatments of observations such as “glass particles observed” or “algae in sample” were used by different digitizers at different times. Every scanned primary laboratory data sheet was visually inspected for these types of comments. When notes were found, the bottle data were annotated accordingly, and if appropriate, the bottle was removed from the subsequent suspended-sand analysis.

At the end of the sediment data cleanup, the final representation of each cross-sectional sample matched the primary laboratory data. The point-sample bottle data and BW tube data had been checked for logical consistency, transcription errors had been corrected, and the point-sample bottle data had been reviewed in cross-sectional context.

Instantaneous Stream Discharge

The purpose of the instantaneous stream discharge review was to determine the most representative instantaneous stream discharge (p00061) results to use in computing instantaneous suspended-sediment discharge (p80155) for each sampling event. The reported values are not intended for use in computing ratings for gages in the study region.

For all sites, the results in QWDATA for instantaneous stream discharge (p00061) were first verified against the most original form of the result. In order of preference, the most original result was

1. The primary field form, or a scanned copy of the field form.
2. The primary laboratory data sheet, or a scanned copy of the laboratory data sheet.
3. Electronic data transcribed from the field form or laboratory data sheet, if originals were not available.

Two other sources of discharge data were used to check the reported p00061 values in QWDATA: USGS field measurements and USACE-hosted instantaneous discharges (table 2). Additionally, reported values for p00061 were checked to determine if they matched the stream discharge that was used to compute the instantaneous suspended-sediment discharge (p80155) from the reported SSC (p80154) (eq. 6).

For events in which a measurement had been recorded in the field measurements section of the USGS NWIS database (table 2), the value in QWDATA p00061 was verified against this measurement. Measurements were not recorded in the field measurements section for all samples because the field measurements section is a part of the USGS reporting structure and was not used by the USACE. When there was a discrepancy between the QWDATA p00061 value and the value in the field measurements section of the NWIS database for an event, the field measurement was used because it had undergone fewer transcription steps and was considered more reliable.

For some sites, stream discharge data had been collected by the USACE and transcribed into QWDATA by USGS staff. In these instances, results in QWDATA were verified against the USACE-hosted data. In addition, the USACE results were reviewed for continuity and environmental plausibility by visual inspection of the hydrograph, comparison to

hydrographs from nearby sites, and comparison to independent measurements where possible, in accordance with USGS policies for the review of furnished record (U.S. Geological Survey, 2016).

All discharge results, and especially results with discrepancies among multiple sources, were checked against the longer term hydrograph for that site and nearby sites to verify that the result was representative for the time of day during which sample collection occurred, depending on whether the hydrology showed rising limb or falling limb conditions. This check was also used as a test of reasonableness to identify and correct transcription errors.

All results were also verified for correct rounding. If a result had been misrounded and additional significant digits were available, the rounding was corrected to three significant digits, which was the defined precision for stream discharge in QWDATA.

At TAR, the Tarbert Landing site (fig. 1, table 1), data for p00061 in QWDATA had been manually entered from the USACE once-daily data collected at noon from USACE station 01100Q, which is colocated with the suspended-sediment cross section. Stream discharge values at USACE station 1100Q were computed from stages recorded at a gage at Red River Landing, approximately 4 river miles downstream (fig. 1). The original results in QWDATA were found to have several transcription errors. Rather than fix these errors on an individual basis, the USACE data were downloaded from the USACE website (U.S. Army Corps of Engineers, 2017) and used to populate the results for p00061 in QWDATA.

At ORO, the Old River Outflow site (fig. 1, table 1), data for p00061 were compared to data collected at 8 or 9 a.m. from the USACE station 02600Q, which is colocated with ORO2 (fig. 1, table 1), to identify any results that had been affected by large errors in data entry. If results for p00061 were missing from all other data sources, the USACE result was used.

At SIM, the Simmesport site (fig. 1, table 1), data for p00061 were compared to data collected at 8 or 9 a.m. from the USACE station 03045Q to identify any results that had been affected by large errors in data entry. If results for p00061 were missing from all other sources, the USACE result was used.

At RDR, the Red River site (fig. 1, table 1), results for p00061 were compared to the differences of the USACE daily stream discharge measurements collected at SIM and ORO (SIM minus ORO) to identify and correct any results affected by large errors in data entry or errors in sampling date.

At MCY, the Morgan City site, and WLO, the Wax Lake Outlet site (fig. 1, table 1), results from both sites were evaluated for proportionality to each other and to USACE station 03045Q at SIM to identify any results that had been affected by large errors in data entry or misidentifications of sampling date or location. Suspected errors were resolved by reviewing all data sources relative to the longer term hydrograph stream discharge data for these sites.

At UPT, the Union Point site (fig. 1, table 1), no measurements were recorded in the field measurements section of the database, and several sampling events lacked primary field forms with recorded results for discharge. Some cross-sectional samples that had not been recorded in QWDATA appeared to have been collected from a nearby site on the Mississippi River that was downstream of the Old River Outflow Channel and therefore were not representative of the UPT site. These samples were rejected for UPT on the basis of the hydrologic data and other annotations in the field notes. Discrete data for p00061 at UPT were compared to the sums of the USACE daily measurements collected at TAR and ORO. These checks were useful in identifying large errors in data entry and errors with sampling dates.

At high flows, the comparison of UPT to TAR+ORO showed that the reported discharge at UPT was below that predicted by the TAR+ORO value. The review team determined that, when the value of TAR+ORO discharge was greater than 1,120,000 cubic feet per second, the flow at UPT was not well constrained within the stream banks. Consequently, stream discharge at UPT tended to be underreported at these higher flows. The originally reported stream discharges were measured from bank to bank and an estimate added for the overbank flow. The estimate appeared to be low relative to the stream discharge that was predicted on the basis of the hydrologic analysis. A linear regression model of the relation between UPT and TAR+ORO, $\{UPT=[(TAR+ORO) \times 0.9813] + 6182.4, r^2=0.9872, n=316\}$, was used to calculate estimates of stream discharge for 47 events with higher flows at UPT. The estimated stream discharge was used to estimate the suspended-sediment discharge for these 47 cross-sectional samples (eq. 6). The suspended-sediment discharge is based on the SSC measured in the channel because no sampling was conducted in the overbank portion of the flow. If the overbank flow carried less suspended sediment than did the channel flow, suspended-sediment discharge estimated with this method could be higher than the true value. Both the stream discharge and the suspended-sediment discharge are annotated with a remark code that indicates they are estimated; data users should be aware that results for these cross-sectional samples are likely less reliable than for samples where the flow was well constrained by the channel.

Corrected SSC and Related Results

Revised results for the stream discharge and suspended-sediment parameters are presented in appendix 4 and are publicly available through NWISWeb (U.S. Geological Survey, 2018, table 2) and in the data release that accompanies this report (Norton and others, 2019). The environmental impact of the change in reported results could be described by quantifying the amount by which the originally reported

results were biased relative to the revised results. The bias in the originally reported results could be quantified in either the original units or in relative terms:

$$\Delta_b = X_{old} - X_{new}, \text{ and} \tag{33}$$

$$b_r = \frac{\Delta_b}{X_{new}} \times 100 \text{ percent,} \tag{34}$$

where

Δ_b was the difference between the old and new results, in their original units (that is, milligrams per liter or short tons per day);

X_{old} was the originally reported result;

X_{new} was the revised result; and

b_r was the relative bias in the original result, in percent.

The relative bias in samples where the revised result was low could be high, even if the absolute change due to the revision was of minimal environmental impact (for example, if SSC was revised from 10 milligrams per liter to 5 milligrams per liter, the relative bias was 100 percent). Conversely, the relative bias in a high value could be low even when the environmental change might be large (for example, if suspended-sediment discharge was revised from 450,000 short tons per day to 400,000 short tons per day, then the relative bias was 12.5 percent, but the environmental effect was a reduction in estimated suspended-sediment discharge of 50,000 short tons per day). Where one value provided more relevant information, we have discussed that value in the text. Data users can derive either value for any specific sample from the data release that accompanies this report (Norton and others, 2019).

A second method of quantifying the effect of the revision could be used to describe the apparent change in the result due to the revision, again in either the original units or in relative terms:

$$\Delta_c = X_{new} - X_{old}, \text{ and} \tag{35}$$

$$c_r = \frac{\Delta_c}{X_{old}} \times 100 \text{ percent,} \tag{36}$$

where

Δ_c was the “absolute change” defined as the difference between the new and old results, in their original units (that is, milligrams per liter or short tons per day); and

c_r was the relative change from the original result, in percent.

The relative change was negative when the result was revised downward. The absolute value of the relative change was usually less than the absolute value of the relative bias because the originally reported values for suspended-sediment parameters were usually larger than their corresponding revised values. The relative change is less environmentally relevant than the relative bias, so it is not discussed extensively in the text. However, the information about the change is presented in tables and can be computed from the information in the data release that accompanies this report (Norton and others, 2019).

Change in Reported SSC

The revised SSC was lower than the originally reported SSC for 94 percent of the 2,361 cross-sectional samples that had both a revised and an original SSC. Sites on the lower Atchafalaya River (MCY, WLO) were more strongly affected than were sites on the main stem Mississippi River (UPT, TAR) (fig. 6, table 7). However, the location of the site was not the only factor that affected the strength of the downward revision. Samples that were collected in pint bottles were revised downward more strongly than were samples that were collected in quart bottles. Because some sites were collected exclusively in pint bottles whereas others were collected exclusively in quart bottles, it was not possible to separate the effect of the bottle type from the effect of the site.

The median relative bias in the originally reported SSC was 59 percent for samples collected in pint bottles (n=768) and 23 percent for samples collected in quart bottles (n=1,593). The median absolute change in SSC was −66 milligrams per liter for samples collected in pint bottles and −40 milligrams per liter for samples collected in quart bottles. Pint bottles contained less suspended-sediment mass than did quart bottles for the same SSC, so the impact of the dissolved-solids contamination was greater for samples collected in the pint bottles than for those collected in the quart bottles.

The comparison of revised to original SSC incorporates the effect of all of the changes that were implemented by the review team, not just the dissolved-solids correction. However, the dissolved-solids signal was the main source of systematic bias in the previously reported SSC. For all tables, the records for UPT1/UPT2 and ORO1/ORO2 (table 1) have been combined because the two sampling locations represent the same hydrologic node in the system.

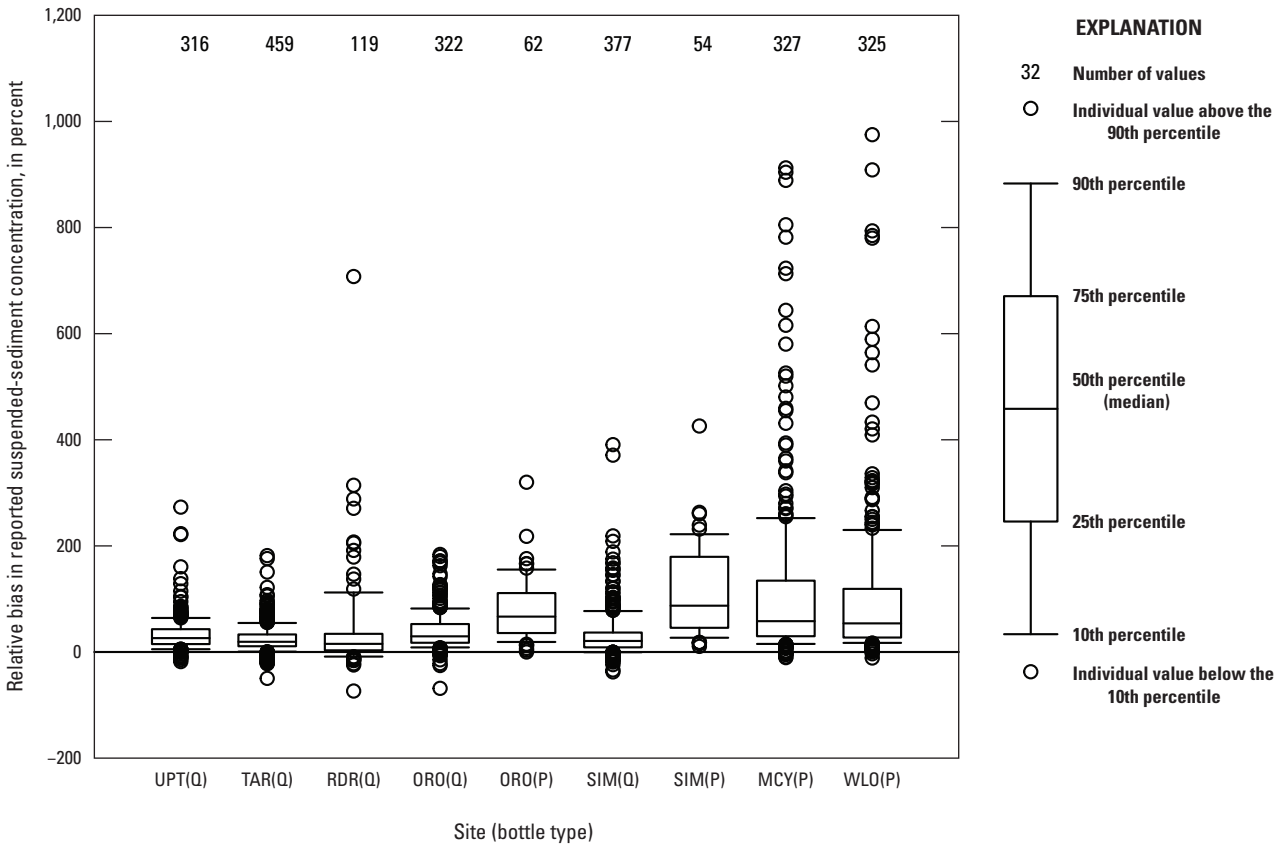


Figure 6. Relative bias in reported suspended-sediment concentration for samples collected for the cooperative program between October 1989 and February 2015 in the lower Mississippi-Atchafalaya River Basin. The relative bias is computed as described in equation 34. For sites (fig. 1, table 1) where samples were collected in pint (P) and quart (Q) bottles, separate boxes are shown for both bottle types. Further details of the change are presented in table 7.

Uncertainty of SSC

The measurement uncertainty for the original and revised SSC results incorporated the uncertainty that was introduced by the mass measurements and the split. Though no formal data quality objectives existed for measurement uncertainty, the review team believed that relative measurement uncertainty in SSC below 10 percent or 10 milligrams per liter would indicate that the revised results were acceptably precise. The relative measurement uncertainty met these criteria for all but 1 of the 2,697 cross-sectional samples for which revised SSC was reported. The measurement uncertainty for the revised SSC and percent fines are reported in the data release that accompanies this report (Norton and others, 2019).

Other sources of uncertainty arise from unmeasured handling steps such as potential drips or incomplete rinses of the sieve. The measurement uncertainty is therefore a lower limit of the true uncertainty for the entire laboratory process. There were not sufficient data available to quantify the whole process uncertainty over the life of the program.

Table 7. Summary statistics for the relative bias in suspended-sediment concentration and the absolute change in suspended-sediment concentration by site and bottle type for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Percentiles were computed by using the default quantile algorithm in R statistical computing software, version 3.2.1 (R Core Team, 2015). %, percent; Q, quart bottle; P, pint bottle]

Site code[1]	Bottle type	Count	10th%	25th%	50th%	75th%	90th%
Relative bias in original suspended-sediment concentration results, percent (eq. 34)							
UPT	Q	316	5.6	15.0	26.2	42.9	63.7
TAR	Q	459	0.8	10.9	19.3	32.8	54.6
RDR	Q	119	−7.7	3.3	15.3	34.1	110.9
ORO	Q	322	8.7	17.4	29.5	52.6	82.0
ORO	P	62	19.0	35.8	66.7	110.4	154.9
SIM	Q	377	0.0	8.8	20.8	36.7	76.4
SIM	P	54	27.8	45.6	87.3	178.7	220.4
MCY	P	327	15.6	29.9	58.1	133.1	249.6
WLO	P	325	17.3	27.3	54.0	119.0	229.5
Absolute change from original suspended-sediment concentration results, milligrams per liter (eq. 35)							
UPT	Q	316	−81	−59	−43	−30	−16
TAR	Q	459	−71	−54	−40	−24	−2
RDR	Q	119	−102	−52	−22	−7	19
ORO	Q	322	−77	−58	−43	−26	−12
ORO	P	62	−113	−87	−70	−54	−40
SIM	Q	377	−73	−53	−38	−22	−0.2
SIM	P	54	−178	−114	−83	−58	−43
MCY	P	327	−143	−97	−67	−48	−32
WLO	P	325	−125	−88	−62	−43	−33

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

Change in Reported Percent Fines

The revised percent fines was lower than or equal to the originally reported percent fines for 93 percent of the 2,361 cross-sectional samples that had both a revised and an original percent fines. Only the absolute change is reported for particle-size results because the reporting units are already scaled relative to the sample mass; the relative change in a relative value is difficult to interpret. The absolute change in the percent fines was similar across all sites and both bottle types (fig. 7, table 8). The overall median change in the percent fines was −4 percentage points. The effect of the revision was weaker for percent fines than for SSC because cross-sectional samples with very large relative changes in SSC usually had little to no suspended sand, so the resulting percent fines was still very close to 100 percent even when the SSC was revised strongly downward.

Change in Reported Instantaneous Stream Discharge

At most sites the revised instantaneous stream discharge was similar to the original instantaneous stream discharge, and the review process corrected transcription errors or resolved conflicts among multiple data sources. Correction of transcription errors and the resolution of conflicts among data sources resulted in a few large changes to the reported discharge, but there was no overall trend of upward or downward revision except for the 47 samples collected at high flows at the UPT site, subsite UPT2 (fig. 1, table 1). At UPT2, a regression model was used to estimate stream discharges when the TAR+ORO discharge on the same day was greater than 1,120,000 cubic feet per second. The effect of extrapolating the UPT2 discharge was that the originally reported discharges were revised upward for the high-flow events. The median upward revision for the 47 extrapolated discharges was 140,000 cubic feet per second (10th percentile=20,000 cubic feet per second, and 90th percentile=336,000 cubic feet per second). The regression model was also used to estimate discharges for UPT for three additional events where no original discharge data could be recovered. The modeled discharges are annotated as estimates in the reported data.

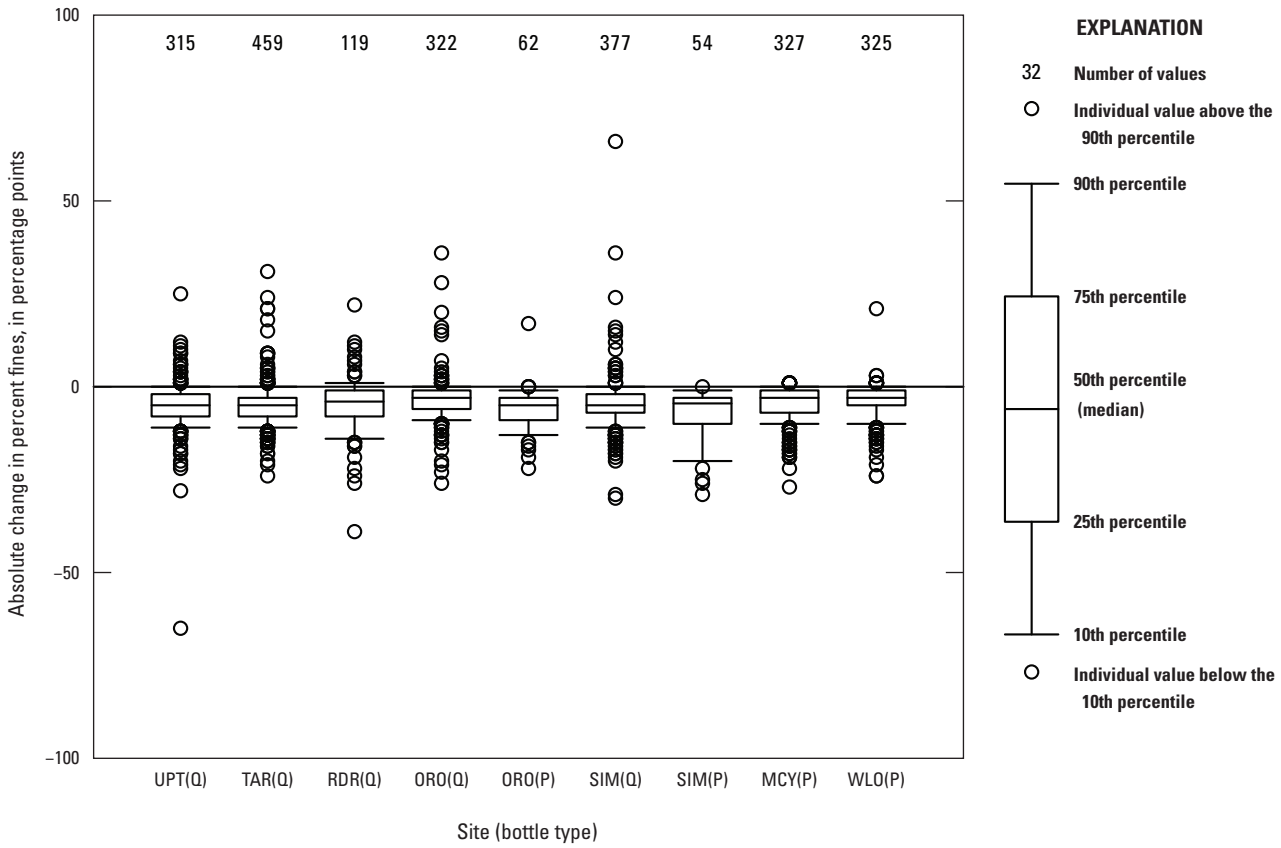


Figure 7. Absolute change in percent fines for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin. The absolute change is computed as described in equation 35, where the original units are percent. "Percent fines" refers to the percent by mass of the sediment that passes through a 0.063-millimeter sieve (US 230 sieve), which is reported on U.S. Geological Survey parameter 70331. For sites (fig. 1, table 1) where samples have been collected in pint (P) and quart (Q) bottles, separate boxes are shown for both bottle types. One sample that had an originally reported percent fines greater than 100 percent was excluded from the visualization.

Table 8. Summary statistics for the absolute change in reported percent fines by site and bottle type for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

["Percent fines" is percent by mass of the sediment that passes through a 0.063-millimeter (mm) sieve (US 230 sieve). Percentiles were computed by using the default quantile algorithm in R statistical computing software, version 3.2.1 (R Core Team, 2015). %, percent; Q, quart bottle; P, pint bottle]

Site code[1]	Bottle type	Count	10th%	25th%	50th%	75th%	90th%
Absolute change from original percent fines, percentage points (eq. 35)							
UPT	Q	316	−11	−8	−5	−2	0
TAR	Q	459	−11	−8	−5	−3	0
RDR	Q	119	−13	−8	−4	−1	1
ORO	Q	322	−9	−6	−3	−1	0
ORO	P	62	−13	−9	−5	−3	−1
SIM	Q	377	−11	−7	−5	−2	0
SIM	P	54	−19	−10	−5	−3	−1
MCY	P	327	−10	−7	−3	−1	0
WLO	P	325	−10	−5	−3	−1	0

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

Change in Reported Suspended-Sediment Discharge

The revised suspended-sediment discharge was lower than the originally reported suspended-sediment discharge for 92 percent of cross-sectional samples. The relative bias in the originally reported suspended-sediment discharge was similar to the relative bias in the originally reported SSC (tables 7 and 9) because there was not a clear pattern of upward or downward revision for most instantaneous stream discharge values. The sites on the main stem Mississippi River (UPT, TAR) had a smaller relative bias in the SSC (fig. 6, table 7), but a higher instantaneous stream discharge (fig. 8), than did the other sites. Consequently, the absolute change in suspended-sediment discharge was greater at these two sites than at the other sites (fig. 9, table 9). The revision resulted in a median change in the suspended-sediment discharge of −62,000 short tons per day at UPT, −49,700 short tons per day at TAR, −3,800 short tons per day at RDR, −17,500 short tons per day at ORO, −22,600 short tons per day at SIM, −24,000 short tons per day at MCY, and −15,900 short tons per day at WLO (fig. 9, table 9). Both the relative bias (eq. 34) and the relative change (eq. 36) are reported for suspended-sediment discharge for the convenience of data users (table 9).

Table 9. Summary statistics for the relative bias in suspended-sediment discharge, the absolute change in suspended-sediment discharge, and the relative change in suspended-sediment discharge by site for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Percentiles were computed by using the default quantile algorithm in R statistical computing software, version 3.2.1 (R Core Team, 2015). %, percent; Q, quart bottle; P, pint bottle]

Site code[1]	Bottle type	Count	10th%	25th%	50th%	75th%	90th%
Relative bias in original suspended-sediment discharge results, percent (eq. 34)							
UPT	Q	316	2.4	10.5	24.9	41.9	62.8
TAR	Q	459	−1.2	9.2	19.2	33.0	57.7
RDR	Q	119	−7.6	3.6	15.6	34.2	113.0
ORO	Q/P	384	8.6	18.4	33.1	58.4	106.6
SIM	Q/P	431	−4.1	9.1	23.4	48.0	104.1
MCY	P	327	16.0	30.0	58.3	133.9	254.1
WLO	P	325	16.7	26.8	53.8	119.3	229.3
Absolute change from original suspended-sediment discharge results, short tons per day (eq. 35)							
UPT	Q	316	−145,000	−101,000	−62,000	−33,900	−8,500
TAR	Q	459	−125,000	−82,000	−49,700	−22,000	3,200
RDR	Q	119	−36,000	−12,900	−3,800	−695	8,400
ORO	Q/P	384	−47,600	−29,000	−17,500	−9,590	−3,600
SIM	Q/P	431	−54,600	−35,900	−22,600	−10,800	10,000
MCY	P	327	−53,400	−34,100	−24,000	−15,400	−7,910
WLO	P	325	−37,000	−24,200	−15,900	−10,000	−5,000
Relative change from original suspended-sediment discharge results, percent (eq. 36)							
UPT	Q	316	−38.6	−29.5	−19.9	−9.5	−2.4
TAR	Q	459	−36.6	−24.8	−16.1	−8.4	1.2
RDR	Q	119	−53.0	−25.5	−13.5	−3.5	8.3
ORO	Q/P	384	−51.6	−36.9	−24.9	−15.6	−7.9
SIM	Q/P	431	−51.0	−32.5	−19.0	−8.4	4.3
MCY	P	327	−71.8	−57.2	−36.8	−23.1	−13.8
WLO	P	325	−69.6	−54.4	−35.0	−21.2	−14.3

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

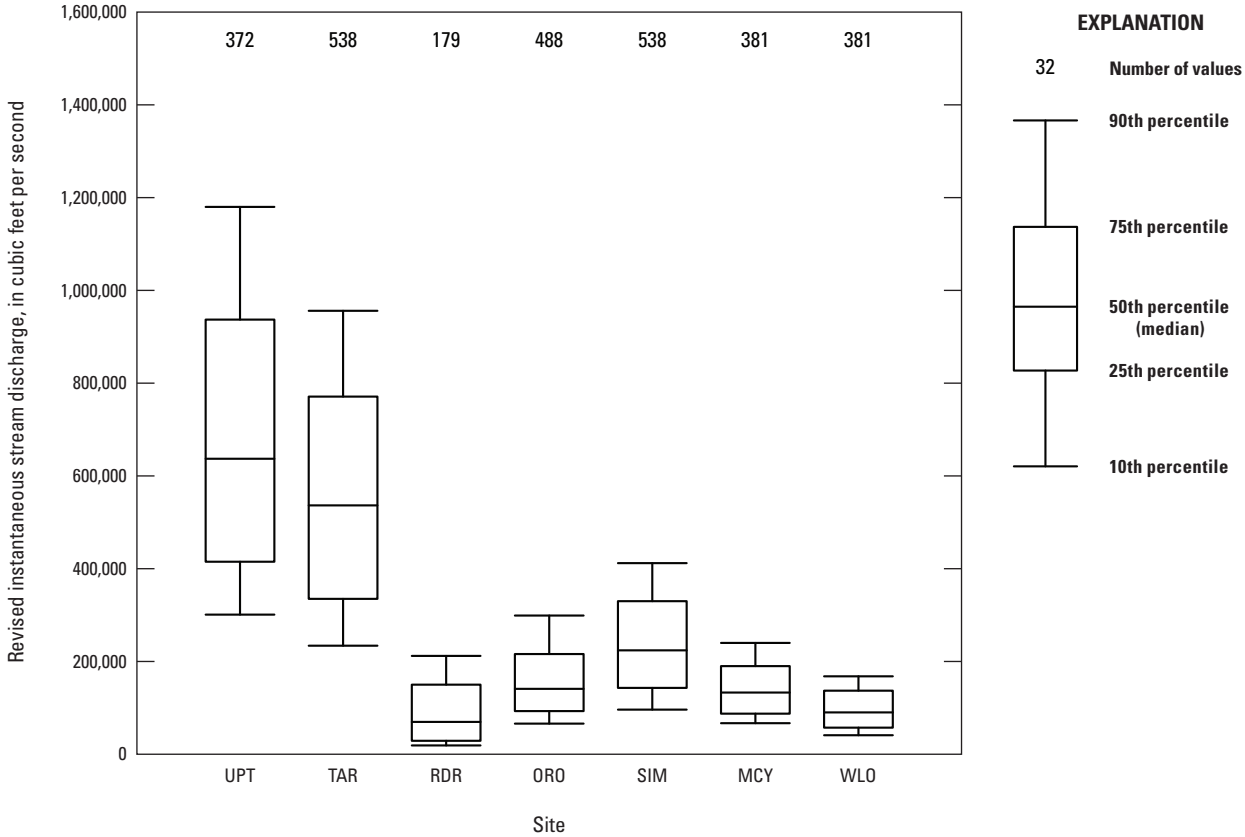


Figure 8. Revised instantaneous stream discharge from measurements that were made concurrently with cross-sectional suspended-sediment samples at each site in the lower Mississippi-Atchafalaya River Basin for the periods of revised record, October 1989 through February 2015. The plotted values are for individual instantaneous stream discharge measurements and should not be used to infer the total stream discharge through these sites (fig. 1, table 1), which requires more frequent time-series data.

Change in Suspended-Sand Discharge

The original suspended-sand discharge was compared to the revised suspended-sand discharge to assess the potential effect of the revision on models of sand transport in the system. The suspended-sand discharge in short tons per day was computed from the originally reported and the revised results by

$$Q_{sand} = C\left(1-\frac{pf_{0.063}}{100}\right)Q\left(0.0027\frac{\text{s L short tons}}{\text{day ft}^3\ \text{mg}}\right), \qquad (37)$$

where

Q_{sand} was the calculated suspended-sand discharge, in short tons per day;

C was either the revised cross-sectional SSC (eq. 30) or the originally reported cross-sectional SSC ($\overline{C_D}$ [eq. 17] or $\overline{C}$ [eq. 5]), in milligrams per liter;

$pf_{0.063}$ was either the revised or original percent fines in percent; and

Q was either the revised or original instantaneous stream discharge, in cubic feet per second.

Overreporting the amount of fines in the system caused a high bias in both the SSC and the percent fines. However, the percentage of suspended sand is computed as the inverse of the percent fines, so the percentage of suspended sand was biased low. Thus, the computation used to produce the suspended-sand discharge with the originally reported values was a product of values that were biased in opposite directions.

The overall change in the suspended-sand discharge as a result of the revision was weakly positive, with the revised values being similar to the original values for most samples. For 76 percent of events, the revised value for suspended-sand discharge was higher than the original value, with the median change ranging from 202 short tons per day at RDR to 1,860 short tons per day at TAR to (fig. 10, table 10). Within that general pattern, some events had large revisions to their sand discharge, usually as the result of major changes to the reported instantaneous stream discharge or to bottles being added or removed by the contextual review. Only the absolute change in suspended-sand discharge is shown in table 10 because the relative bias and relative change could not be computed when the revised suspended-sand discharge was zero short tons per day.

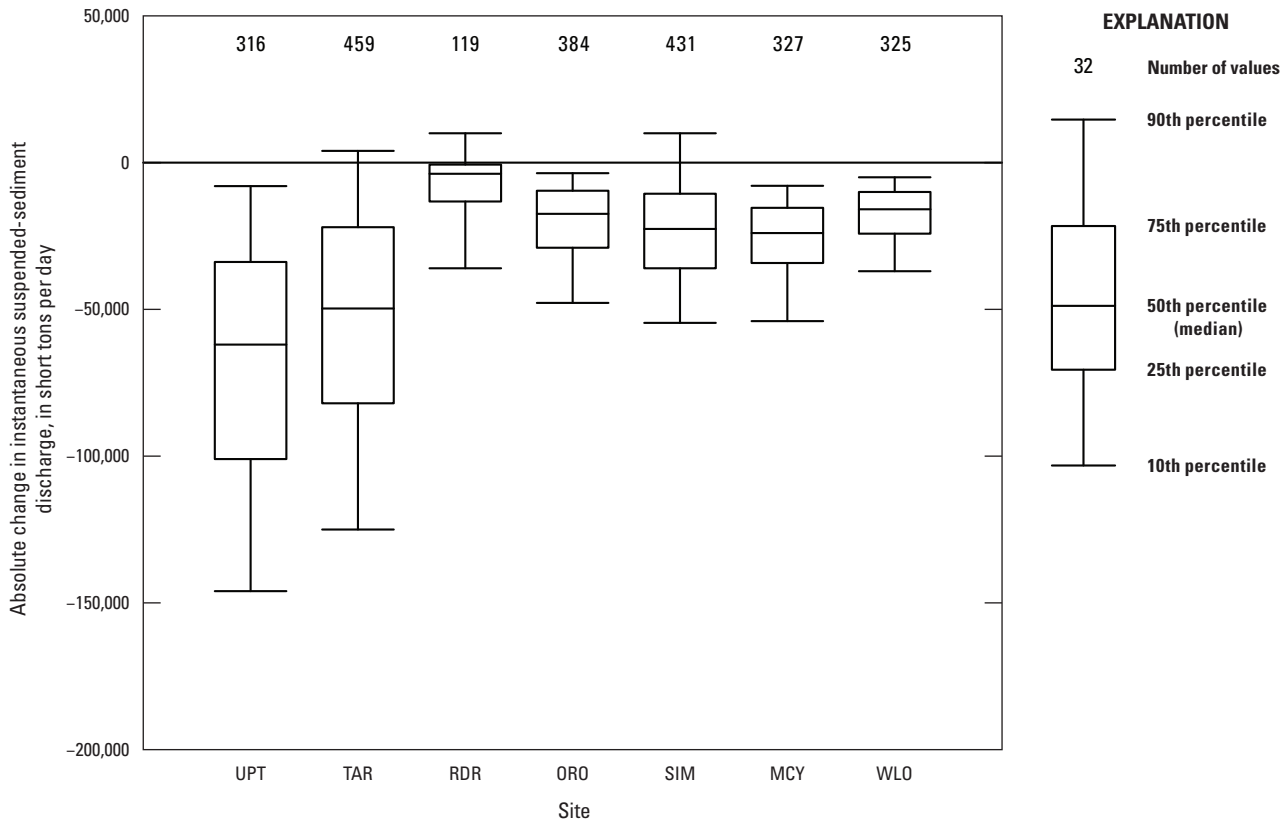


Figure 9. Absolute change between the revised values and the originally reported values of instantaneous suspended-sediment discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin. The absolute change is computed as described in equation 35. The boxplot is shown without the points below the 10th or above the 90th percentiles for visual clarity. The outlying points had a wide range because transcription errors, though relatively infrequent, could produce factor-of-10 errors in the reported values, which created wide tails in the absolute differences. The values shown are for instantaneous (discrete) measurements of suspended-sediment discharge only and should not be used to infer total suspended-sediment load in the system without additional analysis. See figure 1 and table 1 for site codes and locations.

Change in Population-Scale Summary Statistics

The change from the originally reported results to the revised results could be computed for only the 2,361 cross-sectional samples for which original and revised results existed. There were an additional 174 cross-sectional samples that were rejected during the review for which original results existed but not revised results. Conversely, there were an additional 336 cross-sectional samples that were added during the review for which revised results existed but not original results. To include these cross-sectional samples in the before-and-after comparison, population-scale statistics were computed for the original results and revised results without directly comparing them for each cross-sectional sample (tables 11 and 12). The remaining 24 cross-sectional samples had no originally reported results and no revised results because they were rejected by the review team.

The population-scale analysis supported the conclusions (1) that the outcome of the revision was to shift sediment parameters downward and (2) that the shift was likely of environmental significance. For example, at TAR, the median SSC was 227 milligrams per liter for the original results and 187 milligrams per liter for the revised results (table 11). This −40 milligram per liter change in the median SSC resulted in a change in the median suspended-sediment discharge of −63,000 short tons per day (original median=378,000 short tons per day; revised median=315,000 short tons per day) (table 12). On the Atchafalaya River at SIM, the median SSC was 226 milligrams per liter as originally reported and 162 milligrams per liter for the revised results (table 11). This −64 milligram per liter change in the median SSC resulted in a change in the median suspended-sediment discharge of −38,000 short tons per day (original median=143,000 short tons per day; revised median=105,000 short tons per day) (table 12). The TAR and SIM sites represent hydrologic nodes that provide information about the suspended-sediment available in the lower Mississippi and Atchafalaya Rivers (figs. 1 and 2), which helps inform management decisions in the region.

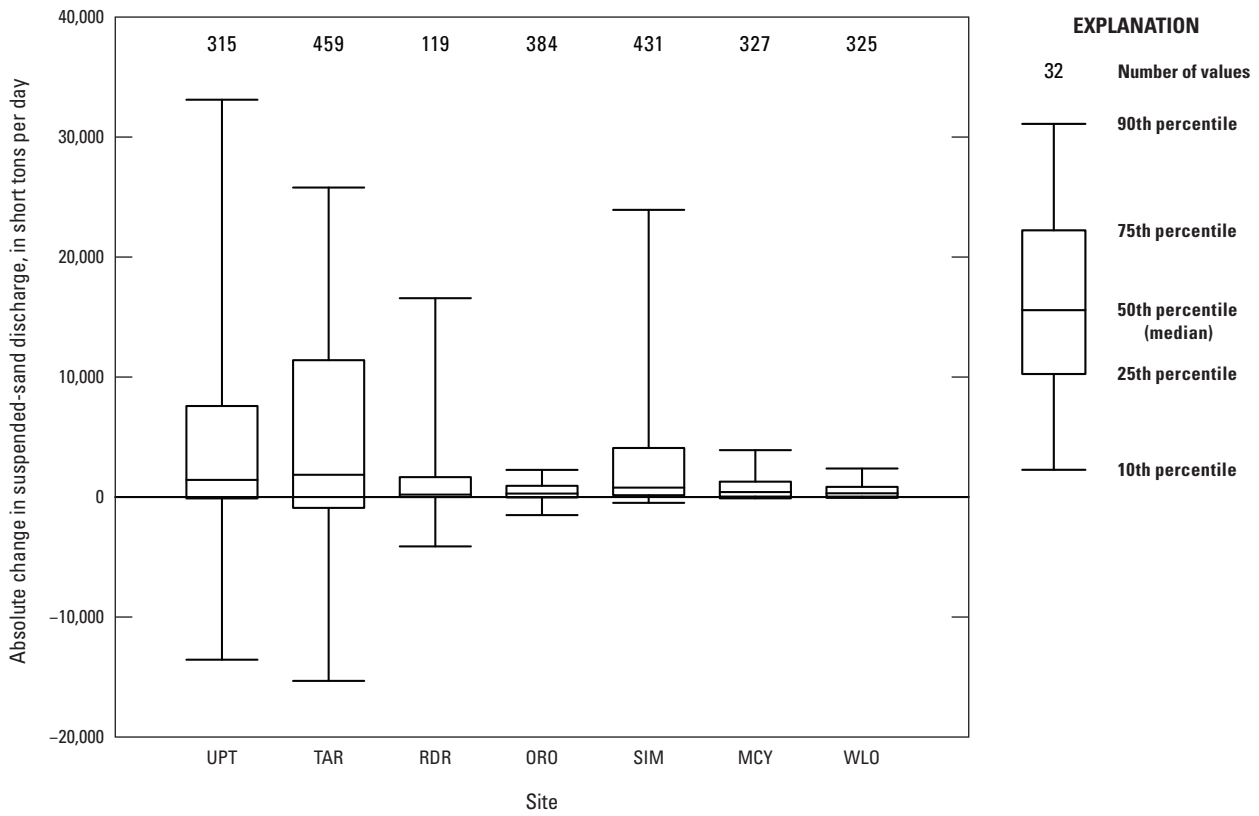


Figure 10. Absolute change in the computed instantaneous suspended-sand discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin. The original instantaneous suspended-sand discharge was computed from the reported parameters (eq. 37). The absolute change is computed as described in equation 35. The boxplot is shown without the points below the 10th or above the 90th percentiles for visual clarity. The outlying points had a wide range because transcription errors, though relatively infrequent, could produce factor-of-10 errors in the reported values, which created wide tails in the absolute differences. The absolute change in suspended-sand discharge as the result of the revision for most events was weakly positive. See figure 1 and table 1 for site codes and locations.

Table 10. Summary statistics for the absolute change in suspended-sand discharge by site for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Percentiles were computed by using the default quantile algorithm in R statistical software, version 3.2.1 (R Core Team, 2015). One sample was removed from this computation because its originally reported percent finer than 0.063 millimeter was greater than 100 percent. %, percent; Q, quart bottle; P, pint bottle]

Site code[1]	Bottle type	Count	10th%	25th%	50th%	75th%	90th%
Absolute change from original suspended-sand discharge results, short tons per day (eq. 35)							
UPT	Q	315	−13,100	−96	1,430	7,440	33,100
TAR	Q	459	−14,900	−882	1,860	11,400	25,600
RDR	Q	119	−2,760	2	202	1,580	14,100
ORO	Q/P	384	−1,490	−31	289	933	2,250
SIM	Q/P	431	−484	154	786	4,080	23,900
MCY	P	327	−108	39	416	1,280	3,780
WLO	P	325	−66	34	314	847	2,260

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

Table 11. Population-scale summary statistics for original and revised results for suspended-sediment concentration for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Percentiles were computed by using the default quantile algorithm in R statistical software, version 3.2.1 (R Core Team, 2015). %, percent]

Site code[1]	Bottle type	Result type	Count	10th%	25th%	50th%	75th%	90th%
Population-scale summary statistics for original and revised suspended-sediment concentrations, milligrams per liter								
UPT	Quart	Original	332	123	163	218	279	375
		Revised	354	76	118	166	242	325
TAR	Quart	Original	481	136	175	227	295	379
		Revised	515	94	135	187	255	343
RDR	Quart	Original	140	73	97	190	395	615
		Revised	171	39	65	142	314	610
ORO	Both	Original	412	116	144	187	238	316
		Revised	457	64	96	132	189	256
SIM	Both	Original	477	131	166	226	342	493
		Revised	488	61	102	162	273	413
MCY	Pint	Original	346	100	153	214	301	387
		Revised	357	35	61	124	202	305
WLO	Pint	Original	347	95	144	204	275	350
		Revised	355	35	62	121	190	274

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

Table 12. Population-scale summary statistics for original and revised results for suspended-sediment discharge for samples collected between October 1989 and February 2015 for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[Percentiles were computed by using the default quantile algorithm in R statistical software, version 3.2.1 (R Core Team, 2015). %, percent]

Site code[1]	Bottle type	Result type	Count	10th%	25th%	50th%	75th%	90th%
Population-scale summary statistics for original and revised suspended-sediment discharge, short tons per day								
UPT	Quart	Original	332	110,000	209,000	421,000	664,000	898,000
		Revised	354	65,400	135,000	326,000	580,000	816,000
TAR	Quart	Original	481	101,000	193,000	378,000	567,000	758,000
		Revised	515	62,500	135,000	315,000	489,000	667,000
RDR	Quart	Original	140	3,890	8,430	50,000	177,000	303,000
		Revised	156	2,340	5,990	26,200	121,000	296,000
ORO	Both	Original	412	23,100	41,100	80,000	129,000	202,000
		Revised	457	12,900	28,100	58,400	104,000	167,000
SIM	Both	Original	477	31,000	66,100	143,000	275,000	424,000
		Revised	488	16,700	42,900	105,000	237,000	386,000
MCY	Pint	Original	346	17,400	35,500	81,700	149,000	245,000
		Revised	356	5,830	14,200	45,500	100,000	184,000
WLO	Pint	Original	347	11,600	23,600	53,500	93,000	145,000
		Revised	355	4,190	10,200	34,600	67,600	110,000

[1]The three-letter site codes are a convention used only in this report (table 1, fig. 1).

Critical Evaluation of Revised Results

After the revised results were computed, the review team evaluated the revised results for bias and uncertainty, independent of their change relative to the originally reported results. Specifically, the review team evaluated available sources of information about the effect of the SSC computation method that was used to calculate the revised cross-sectional SSC from the point-sample bottle results, the effect of laboratory practices on the revised suspended-fines concentration, and the bias and uncertainty in the revised SSC.

Effect of SSC Computation Method

The revised SSC was the sum of the average suspended-sand concentration and the composite suspended-fines concentration (eq. 30). Neither value was technically discharge weighted. Discharge-weighted SSC should be used to compute suspended-sediment discharge (Edwards and Glysson, 1999). The review team assessed the potential impact of the computation method on the applicability of the revised SSC to computation of suspended-sediment discharge.

Suspended-Sand Concentration

The revised suspended-sand concentrations were computed by numerical average (eq. 30). For the originally reported results, prior investigation had shown that numerical averaging produced a positive bias in the suspended-sand concentration of 8–20 percent relative to the discharge-weighted average (table 4). The relation between the numerical average suspended-sand concentration and the discharge-weighted average suspended-sand concentration depended on site-specific and sample-specific factors such as the sampling design (number and arrangement of sampling verticals and depths) and the stream discharge during sampling. There were not enough data to quantify the effects of sampling design for every arrangement used at each site across the entire study period.

For cross-sectional samples collected in water year 2006 and thereafter, USACE crews documented a uniform sampling duration for every bottle in the cross section. Over the same period, USGS crews had been trained to use a uniform sampling duration. Further, the sampling effort and cross-sectional locations of the verticals had been stable over this period. When the sampling duration was uniform for all of the point-sample bottles in a cross-sectional sample, the composite suspended-sand concentration was expected to be close to the discharge-weighted suspended-sand concentration. For these 830 cross-sectional samples, the composite (approximately discharge-weighted average) suspended-sand concentration ranged from 89.7 percent to 99.5 percent of the straight numerical average suspended-sand concentration (table 13). The slopes less than 1 ($m<1$) indicated that the numerical average suspended-sand concentration was higher than the composite suspended-sand concentration. However, the difference between the composite suspended-sand concentration and the numerical average suspended-sand concentration was less than 10 milligrams per liter for 799 out of these 830 cross-sectional samples. Although the findings from the recent cross-sectional samples could not be applied with confidence across the entire study period, they suggested that the bias caused by using the numerical average suspended-sand concentration for the revised results was constrained and that the practice of numerical averaging produced suspended-sand concentrations that were useful for the purposes of estimating suspended-sand discharge.

Table 13. Linear regression models between composite suspended-sand concentration and average suspended-sand concentration for the 830 cross-sectional samples collected since October 1, 2005, for which revised suspended-sand concentration is reported for samples collected for the cooperative program in the lower Mississippi-Atchafalaya River Basin.

[The models are from a linear regression of the numerical average suspended-sand concentration and the composite suspended-sand concentration. All regressions were performed in R statistical software, version 3.2.1 (R Core Team, 2015). CSSC, composite suspended-sand concentration, in milligrams per liter; SASC, numerical average suspended-sand concentration, in milligrams per liter; r^2, coefficient of determination]

Sampling location[1]	Number of pairs	Composite suspended-sand concentration model CSSC=	r^2
UPT	117	0.995(SASC)−0.38	0.992
TAR	161	0.995(SASC)−0.82	0.989
ORO1	70	0.918(SASC)+0.63	0.993
ORO2	93	0.960(SASC)−0.25	0.996
SIM	154	0.935(SASC)+0.69	0.996
WLO	116	0.989(SASC)−0.03	0.998
MCY	119	0.897(SASC)+0.13	0.996

[1]The sampling location is described in table 1.

Suspended-Fines Concentration

The impact of the computation method on the SSC was predicted to be weaker for suspended fines than for suspended sand. In most systems, the suspended-fines are well mixed spatially through the cross section (Edwards and Glysson, 1999, p. 2; U.S. Subcommittee on Sedimentation, Interagency Committee on Water Resources, 1963, p. 28 and 33). Under this condition, almost any field sampling technique will produce a reasonable representation of the suspended-fines concentration. There was no direct way to quantify the effect of using the composite suspended-fines concentration for the revised results because it was not possible to compute the suspended-fines concentration by any method other than compositing (eq. 27). Indirect evidence from the originally reported results suggested that the discharge-weighted suspended-fines concentration was 93.8 percent to 100 percent of the numerical average suspended-fines concentration (table 4). The suspended-fines concentrations used in this comparison were computed prior to the correction for the presence of dissolved-solids contamination. Of the 913 pairs of originally reported discharge-weighted and numerical average suspended-fines concentrations, 844 had a difference of less than 10 milligrams per liter. These observations supported the use of the composite suspended-fines discharge for computing the revised SSC.

Effect of Laboratory Practices on Revised Suspended-Fines Concentrations

The revised suspended-fines concentrations depended on the applicability of the split multiplier, K_L, measured experimentally in 2015, to samples collected over the entire study period (eq. 27). No data were available to directly determine whether the details of the splitting procedure for environmental samples had been precisely consistent through time. Observations of the laboratory methods suggested that there could be effects associated with the splitter itself, such as the levelness of the splitter, the placement of the splitter on the laboratory bench, or the physical condition of the splitter. The review team also anticipated that there could be analyst-specific differences in the method of introducing the sediment-water suspension to the splitter, the thoroughness of the rinse, or the frequency of drips and spills. To characterize the applicability of using K_L values for the entire study period, an indirect estimate of the stability of the laboratory technique over time was computed by comparing the sum of the "half fines" masses to the fines mass recovered from the composite subsample for each sampling event. We defined the mass difference across the sides of the split for each sample as

$$m_{dif} = m_f - \Sigma_{i=1}^{n} m_{hf}, \tag{38}$$

where

m_{dif} was the difference in the masses recovered from the left and right sides of the splitter, in grams;

m_f was the fines mass recovered from the composite subsample (eq. 26), in grams;

n was the number of point-sample bottles in the cross-sectional sample; and

m_{hf} was the "half fines" mass in each point-sample bottle (table 3), in grams.

Under ideal conditions, the sum of the "half fines" and the composite subsample fines masses would be equal, and m_{dif} would be equal to zero.

The observed m_{dif} was affected by many factors, many of which depended on laboratory technique. Because m_{dif} compares the composite fines mass after the dissolved-solids correction to the composite fines mass before the dissolved-solids correction, it is influenced by the environmental dissolved-solids concentration, decanting technique, and the number of point-sample bottles collected for a cross-sectional sample. Further, m_{dif} is affected by the splitting technique. If a change in the evenness of the split occurs, m_{dif} changes because more sediment is recovered from one side of the split than was typical before the change. Changes to the evenness of the split could have occurred, for example, by the splitter being moved within the laboratory or when the laboratory was moved from one building to another in 1993. Similarly, if a change in the handling for either the "half fines" or BW tube steps occurs, the mass recovery rate for fines on one side of the split changes, and this causes m_{dif} to change.

The review team checked m_{dif} for changes over time to provide an indirect assessment of the stability of the laboratory technique (fig. 11). The purpose of the assessment was to look at the long-term, broad-scale trends in m_{dif}, not to evaluate the observed m_{dif} for any individual cross-sectional sample. Because m_{dif} incorporated environmental effects, sampling design effects, and laboratory handling effects, the review team knew that some individual samples could have an m_{dif} value that was unusually high or low. Based on a Loess visualization (smwrGraphs R package version 1.1.1, DeCicco, 2016, span=0.3), m_{dif} declined from 1990 to 1997 and then remained stable from 1997 to 2015 (fig. 11). Individual cross-sectional samples sometimes had an m_{dif} value that was far from the central tendency of the observed results, including 18 samples with m_{dif} greater than 0.5 gram or less than −0.5 gram that are not displayed on the figure so that the results from the remaining 2,679 samples can be displayed in detail (fig. 11). The visualization suggested that the methods used in the cooperative program had been stable since at least 1997. Revised suspended-fines concentration results from 1990 to 1997 may be affected by factors that caused more fines to be recovered from the BW tube analysis than was typical for samples that were collected after 1997.

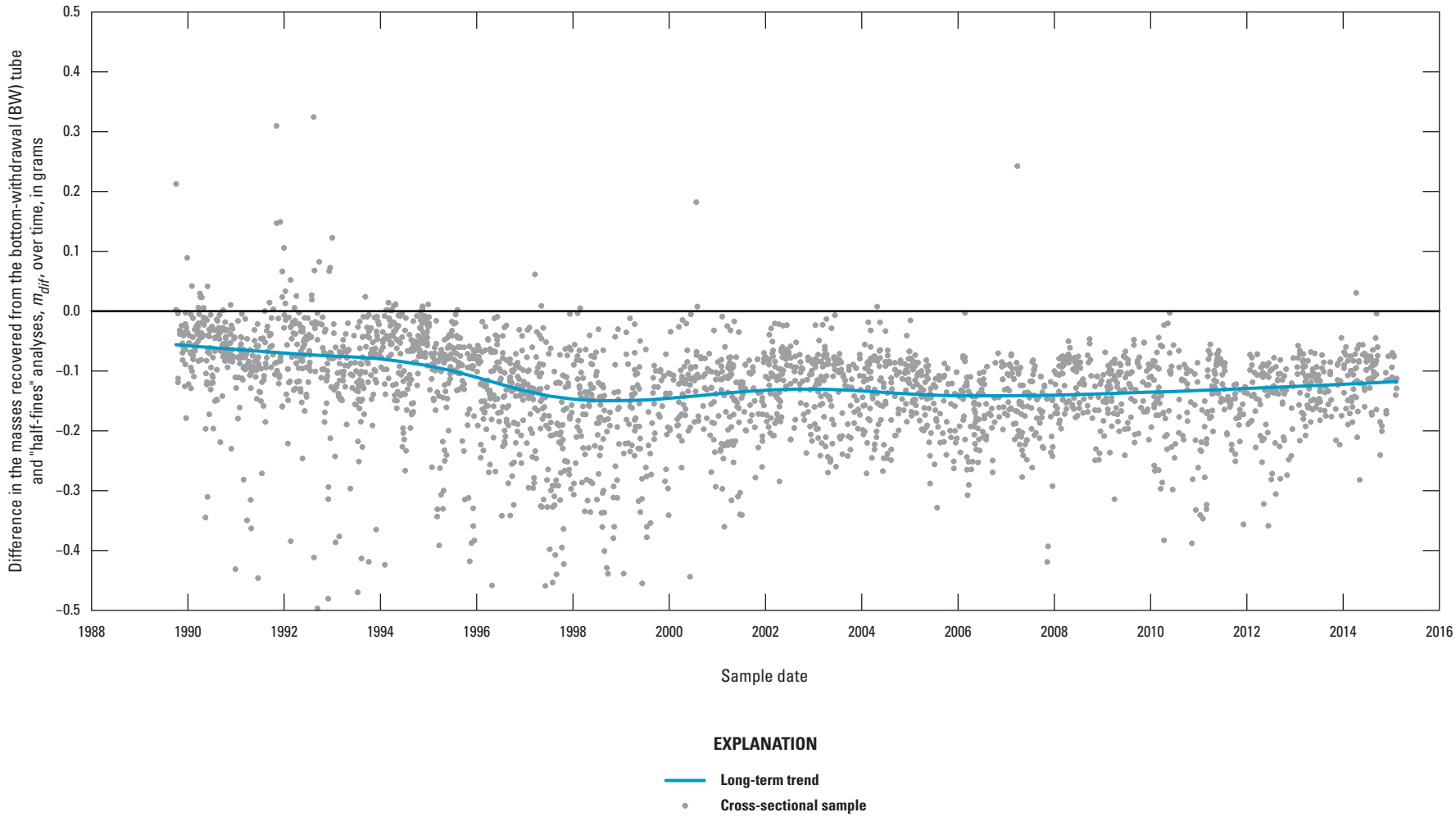


Figure 11. Difference in the masses recovered from the bottom-withdrawal (BW) tube and "half fines" analyses, m_{dif} (eq. 38), over time. The long-term trend line was produced by using Loess regression with a span of 0.3 in the smwrGraphs package version 1.1.1 (DeCicco, 2016) in R statistical software, version 3.2.1 (R Core Team, 2015). Eighteen points with m_{dif} less than –0.5 gram or greater than 0.5 gram were excluded from the visualization to ensure that the variation in m_{dif} for the remaining 2,679 cross-sectional samples could be displayed in detail.

Information About Bias and Uncertainty in Revised SSC

The physical testing as a part of the program review in 2015 was the first documented direct assessment of sediment recovery rates for the cooperative program laboratory method. The sediment laboratory protocols and resulting recovery rates can be affected by the decanting technique, dish handling technique, rinse effort, attentiveness of the analyst, oven maintenance, balance maintenance, and desiccator maintenance. Although the laboratory method was stable over time, as documented, it is possible that changes to the details of the method implementation occurred over the 1989–2015 period for which revised data are provided.

Method performance in terms of total sediment recovery observed during the physical testing conducted in August 2015 was found to be comparable to the method performance for analyses conducted for other USGS programs by the Baton Rouge Sediment Laboratory. The median mass recovery rate for the test samples processed with the cooperative program method was 94±7 percent (median ± interquartile range, n=31, table 5). The corresponding recovery rate for similar-mass single-blind SLQA samples processed by the laboratory from 2008 to 2017 with other methods was 96±3 percent (median ± interquartile range, n=60, U.S. Geological Survey, 2017). The three samples (externally prepared-wet, table 5) that were processed in the BW tube had recovery rates similar to the rest of the test samples, suggesting that the handling involved in the BW tube analysis likely did not cause significantly lower recovery rates than did the handling used for the other test samples.

Overall, the revised results from the cooperative program method are expected to be comparable to results produced by other USGS laboratory methods, but with higher uncertainty. All traditional laboratory methods for SSC consistently show a slight negative bias (American Society for Testing and Materials, 2013; Gordon and others, 2000; Gray and others, 2000; Guo, 2006; Nordqvist and others, 2014; U.S. Geological Survey, 2017). Results reported from sediment laboratories are not quantitatively adjusted for bias caused by sediment recovery rates lower than 100 percent. End users of any sediment data should consider whether the laboratory bias and uncertainty could affect the conclusions of the project and account for the bias and uncertainty, if necessary.

Conclusions

The revised results for SSC, percent fines, instantaneous stream discharge, and instantaneous suspended-sediment discharge are the outcome of a number of improvements to data quality. The stream discharge data have been thoroughly reviewed in hydrologic context and updated where necessary. The suspended-sand concentrations have been reviewed in cross-sectional, seasonal, and site-specific context with a consistent process. Transcription errors have been corrected. While these factors affect some individual samples very strongly, the most significant overall effect is caused by removing the dissolved-solids mass from the suspended-fines concentrations. The dissolved solids affected the suspended-fines concentration for every sample, with a stronger effect on samples that were collected in pint bottles than on those that were collected in quart bottles because of the lower suspended-sediment mass collected in pint sample bottles.

Most of the suspended-sediment results for samples collected from October 1989 through February 2015 were originally biased high and were revised downward (SSC [p80154], 2,182 samples; suspended-sediment discharge [p80155], 2,182 samples; percent fines [p70331], 2,010 samples). The median relative bias in the originally reported SSC was

- 26.2 percent for samples collected in quart bottles at UPT,
- 19.3 percent for samples collected in quart bottles at TAR,
- 15.3 percent for samples collected in quart bottles at RDR,
- 29.5 percent for samples collected in quart bottles at ORO,
- 66.7 percent for samples collected at pint bottles at ORO,
- 20.8 percent for samples collected in quart bottles at SIM,
- 87.3 percent for samples collected in pint bottles at SIM,
- 58.1 percent for samples collected in pint bottles at MCY, and
- 54.0 percent for samples collected in pint bottles at WLO.

The TAR and SIM sites represent hydrologic nodes that provide information about the suspended sediment available in the lower Mississippi and Atchafalaya Rivers, which helps inform management decisions in the region. The median revised suspended-sediment discharge for October 1989 through February 2015 at TAR was 315,000 short tons per day, compared to 378,000 short tons per day as originally reported. At SIM, the median revised suspended-sediment discharge for October 1989 through February 2015 was 105,000 short tons per day, compared to 143,000 short tons per day as originally reported. Most of the downward revision was due to a change in the suspended-fines concentration; the concentration and discharge of suspended sand in the system are similar to the previously reported values.

Overall, the revised results from the cooperative program method are expected to be comparable to results produced by other USGS laboratory methods, but with higher uncertainty than is typical for data associated with samples collected by using USGS methods. The results have been coded in long-term data repositories to reflect this fact by adding a comment that refers data users to this report. However, the review team believes that the improvement resulting from the removal of known problems outweighs the loss of precision in the reported results. End users of the data should take into account the sources of bias and uncertainty described in this report when developing models of sediment dynamics in the study region.

References Cited

Allison, M.A., Demas, C.R., Ebersole, B.A., Kleiss, B.A., Little, C.D., Meselhe, E.A., Powell, N.J., Pratt, T.C., and Vosburg, B.M., 2012, A water and sediment budget for the lower Mississippi-Atchafalaya River in flood years 2008–2010: Implications for sediment discharge to the oceans and coastal restoration in Louisiana: Journal of Hydrology, v. 432–433, p. 84–97, accessed July 19, 2016, at http://www.sciencedirect.com/science/article/pii/S0022169412001205.

American Society for Testing and Materials, 2013, D-3977 standard test for determining sediment concentration in water samples: West Conshohocken, Pa., ASTM International.

American Society for Testing and Materials, 2014, Test sieving methods: Guidelines for establishing sieve analysis procedures, 5th edition: West Conshohocken, Pa., ASTM International.

Brunner, G.W., 2016 HEC-RAS River Analysis System user's manual, version 5.0: Davis, Calif., U.S. Army Corps of Engineers Hydrologic Engineering Center, 960 p.

Buchanan, T.J., and Somers, W.P., 1969, Discharge measurements at gaging stations: Techniques of Water-Resources Investigations of the United States Geological Survey, book 3, chap. A8, 65 p.

Cohn, T.A., DeLong, L.L., Gilroy, E.J., Hirsch, R.M., and Wells, D.K., 1989, Estimating constituent loads: Water Resources Research, v. 25, no. 5, p. 937–942.

Davis, B.E., 2005, A guide to the proper selection and use of federally approved sediment and water-quality samplers: Vicksburg, Miss., U.S. Geological Survey Open File Report 2005–1087, 20 p.

DeCicco, L., 2016, smwrGraphs package version 1.1.1: Accessed June 2017 at https://owi.usgs.gov/R.

Edwards, T.K., and Glysson, G.D., 1999, Field methods for measurement of fluvial sediment: Techniques of Water-Resources Investigations of the United States Geological Survey, book 3, chap. C2, 89 p.

Federal Interagency Sedimentation Project, [n.d.], Operator's manual for the US P-61-A1 point-integrating suspended-sediment sampler: Accessed July 6, 2017, at https://water.usgs.gov/fisp/docs/Instructions_US_P-61-A1_030115.pdf.

Federal Interagency Sedimentation Project, 2011, Technical Committee Memorandum 2011.01, January 2011, US P-6 point integrating suspended-sediment sampler: Accessed December 2017 at https://water.usgs.gov/fisp/docs/FISP_Tech_Memo_US_P-6.pdf.

Gordon, J.D., Newland, C.A., and Gagliardi, S.T., 2000, Laboratory performance in the Sediment Laboratory Quality-Assurance Project, 1996–1998: U.S. Geological Survey Water Resources Investigations Report 99–4184, 39 p.

Gray, J.R., Glysson, G.D., Turcios, L.M., and Schwarz, G.E., 2000, Comparability of suspended-sediment concentration and total suspended solids data: U.S. Geological Survey Water Resources Investigations Report 00–4191, 14 p.

Gray, J.R., and Simões, F.J.M., 2008, Appendix D—Estimating sediment discharge, *in* Garcia, M., ed., Sedimentation engineering: Processes, measurements, modeling, and practice: Reston, Va., American Society of Civil Engineers Manual 110, p. 1067–1088, accessed July 19, 2016, at http://water.usgs.gov/osw/techniques/Gray_Simoes.pdf.

Guo, Q., 2006, Correlation of total suspended solids (TSS) and suspended sediment concentration (SSC) test methods: Report prepared for New Jersey Department of Environmental Protection, November 2006, accessed May 17, 2016, at http://www.state.nj.us/dep/dsr/soils/tss%20vs%20ssc%20test%20methods.pdf.

Guy, H.P., 1969, Laboratory theory and methods for sediment analysis: Techniques of Water-Resources Investigations of the United States Geological Survey, book 5, chap. C1, 58 p.

Heath, R.E., Brown, G.L., Little, C.D., Pratt, T.C., Ratcliff, J.J., Abraham, D.D., Perkey, E., Ganesh, N.B., Martin, K., and May, D.P., 2015, Old River Complex sedimentation investigation, Mississippi River Geomorphology and Potamology Program, Report 6: U.S. Army Engineer Research and Development Center Coastal and Hydraulics Laboratory, 149 p.

Joint Committee for Guides in Metrology, 2008, Evaluation of measurement data—Supplement 1 to the "Guide to the expression of uncertainty in measurement"—Propagation of distributions using a Monte Carlo method: Accessed July 7, 2107, at https://www.bipm.org/utils/common/documents/jcgm/JCGM_101_2008_E.pdf.

Keown, M.P., Dardeau, E.A., and Kennedy, J.G., 1977, Inventory of sediment sample collection stations in the Mississippi River Basin: Technical Report M–77–1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Miss., 49 p.

Koltun, G.F., Eberle, M., Gray, J.R., and Glysson, G.D., 2006, User's manual for the Graphical Constituent Loading Analysis System (GCLAS): U.S. Geological Survey Techniques and Methods, 4–C1, 51 p.

Mossa, Joann, 1989, Hysteresis and nonlinearity of discharge-sediment relationships in the Atchafalaya and lower Mississippi Rivers: Sediment and the Environment (Proceedings of the Baltimore Symposium, May 1989), International Association of Hydrological Sciences (IAHS) Publication no. 184, p. 105–112.

Mueller, D.S., and Wagner, C.R., 2009, Measuring discharge with acoustic Doppler current profilers from a moving boat: U.S. Geological Survey Techniques and Methods 3–A22, 72 p.

Nguyen, I.H., Cox, A.N., Brown, J.L., Davinroy, R.D., Floyd, J., and Rivera, R., 2011, Mississippi River and Old River Control Complex sedimentation investigation and hydraulic response model study: U.S. Army Corps of Engineers St. Louis District Technical Report M53, 101 p.

Nordqvist, K., Galfi, H., Oserlund, H., Marsalek, J., Westerlund, C., and Viklander, M., 2014, Measuring solids concentrations in urban stormwater and snowmelt—A new operational procedure: Environmental Science: Processes and Impacts, v. 16, p. 2172–2183.

Norton, K.K., Olsen, L.D., Baumann, T.E., Simmons, L.B., Clark, A.P., Demcheck, D.K., and Johnson, M., 2019, Revised data and supporting information for seven sites located on the lower Mississippi and Atchafalaya Rivers sampled as part of a cooperative sediment program with the U.S. Army Corps of Engineers, October 1989 through February 2015: U.S. Geological Survey data release, https://doi.org/10.5066/F7K936GW.

Porterfield, G., 1972, Computations of fluvial-sediment discharge: U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chap. C3, 66 p.

R Core Team, 2015, R: A language and environment for statistical computing: Vienna, Austria, https://R-project.org.

Thorne, C., Harmar, O., Watson, C., Clifford, N., Biedenharn, D., and Measures, M., 2008, Current and historical sediment loads in the lower Mississippi River: London, England, U.S. Army European Research Office, 146 p.

U.S. Army Corps of Engineers, 2017, Rivergages.com—Water levels of rivers and lakes: Accessed March 2017 at http://rivergages.mvr.usace.army.mil/WaterControl/new/layout.cfm#.

U.S. Geological Survey, 1993, Recommendations for use of retransformation methods in regression models used to estimate sediment loads ("the bias correction problem"): U.S. Geological Survey, Office of Surface Water Technical Memorandum 93.08, issued December 31, 1992, accessed July 19, 2016, at https://water.usgs.gov/admin/memo/SW/sw93.08.html.

U.S. Geological Survey, 2013, Guidelines for FISP bag sampler intake efficiency tests and operational velocities: U.S. Geological Survey, Office of Surface Water Technical Memorandum 2013.02, issued June 13, 2013, accessed July 7, 2017, at https://water.usgs.gov/admin/memo/SW/sw13.03.pdf.

U.S. Geological Survey, 2016, Water Mission Area policy on accepting furnished records: U.S. Geological Survey, Office of Surface Water Technical Memorandum 2016.04, issued July 7, 2016, accessed July 7, 2017, at https://water.usgs.gov/admin/memo/SW/sw16.04.pdf.

U.S. Geological Survey, 2017, Sediment Laboratory Quality Assurance Project study results: U.S. Geological Survey Quality Systems Branch, accessed July 7, 2017, at https://bqs.usgs.gov/slqa/frontpage_study_results.htm.

U.S. Geological Survey, 2018, USGS water data for the Nation: U.S. Geological Survey National Water Information System database, accessed November 2016 at https://doi.org/10.5066/F7P55KJN.

U.S. Subcommittee on Sedimentation, Inter-agency Committee on Water Resources, 1943, A study of new methods for size analysis of suspended sediment samples—A study of methods used in measurement and analysis of sediment loads in streams: Report 7, 100 p.

U.S. Subcommittee on Sedimentation, Inter-agency Committee on Water Resources, 1963, Determination of fluvial sediment discharge—A study of methods used in measurement and analysis of sediment loads in streams: Report 14, 151 p.

Appendix 1.

U.S. Army Corps of Engineers (USACE) FORTRAN source code for modules used to process laboratory results and compute suspended-sediment load for a cooperative program between the U.S. Geological Survey and the USACE in the lower Mississippi-Atchafalaya River Basin from 1973 to February 2015

```
      INCLUDE 'FMENUS.INC'
      INCLUDE  'FGRAPH.FI'

C     **** interface to call system services routine ****
      INTERFACE TO SUBROUTINE system[C](STRING)
      CHARACTER*1 STRING[REFERENCE]
      END
C=========================================================================
C
C     PROGRAM HH007
C     -------------
C
C     LABORATORY SUSPENDED SEDIMENT ANALYSIS PROGRAM
C     WRITTEN FOR H&H BRANCH

C   ************************************************************
C
C         WRITTEN BY J. P. CHIRIELEISON JR.
C         AUGUST, 1974
C
C     DOCUMANTATION ON FILE ADP, U.S. ARMY CORPS OF ENGINEERS,NOD.
C     WRITTEN FOR HONEYWELL 635 COMPUTER LOCATED AT WES, VICKSBURG,MISS.
C
C
C     REVISED JUNE, 1975  BY T. J. DUFRENE JR.
C     LINES 6128-6131 ADDED
C
C
C     REVIESED JUNE, 1976  BY T. J. DUFRENE JR.
C     PROGRAM CHANGED TO ACCOMADATE BW DATA NOT AVAILABLE
C
C
C     REVIESED JULY, 1976  BY T. J. DUFRENE JR.
C     PROGRAM CHANGED SO THAT OUTPUT CONTAINS SUSPENDED SEDIMENT % FINER
C     THAN, BED MATERIAL, LOAD AND CONCENTRATION IN 'HEIS' FORMAT.C
C
C     REVISED FEBRUARY 1978   BY T. J. DUFRENE JR.
C     PROGRAM CHANGED TO WRITE BED MATERIAL DATA IN THE
C     BED MATERIAL FORMAT.
C
C      OPTIONS FOR SELECTIVE PRINT OUT ADDED MAY 1978.
C   ************************************************************
C
C      CONVERTED TO HARRIS 800 BY V. J. LAW  JANUARY 1988
C        CHANGED LFN ASSIGNMENTS BY ADDING 10
C
C   ************************************************************
C
C     CONVERTED TO THE PC WITH MENUS BY:  DON RAWSON
C     SOURCE: HH007.FOR
C     ENGID:  HH007
C     COMPLETED: 2/19/91
C
```

```
C
C     FC 1 = FIELD DATA       FC 2 = CROSS SECTION DATA
C     FC 3 = OUTPUT           FC 4 = HEIS TAPE OUTPUT
C     FC 5 = BED MATERIAL OUTPUT      FC 10 = CHOICE FILE

C     FC 11 = FIELD DATA       FC 12 = CROSS SECTION DATA
C     FC 13 = OUTPUT           FC 14 = HEIS TAPE OUTPUT
C     FC 15 = BED MATERIAL OUTPUT      FC 20 = CHOICE FILE
C               FC 30 = CRT

C       TEST = '*'
C       RECT1 = 'N'  NO HEIS OR BED DATA WRITTEN
C       ADP = ' NO'  FC 3 PRINT OUT SURPRESSED
C       IPAGES(1)=1 PAGE 1 TURNED OFF
C       IPAGES(2)=1 PAGE 2 TURNED OFF
C       IPAGES(3)=1 PAGE 3 TURNED OFF
C       INPUT IN CHOICE FILE AS *A NO111
C   ***********************************************************
C
C
C     MAIN
C     ----
      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER TITLE*50, PNAME*50
      INTEGER*1 getmouse,dummy
      INTEGER*2 mice

      TITLE='LABORATORY SUSPENDED SEDIMENT ANALYSIS PROGRAM'C
      PNAME='ENG. ID: HH007 - Version 1.0 - 16 AUG 1990'C

      dummy=getmouse(-2,mice,mice)

      CALL PTITLE(TITLE,PNAME)
      CALL mvprint(22, 3, 15,'STATUS: 'C)
      CALL GETDEFAULTS('LOAD')
      CALL DPROJECT
      CALL DOPTIONS
      CALL MENU

      CALL clearscreen ( $GCLEARSCREEN )
      STOP '   PROGRAM HH007 TERMINATED NORMALLY'
      END

C=====================================================================

      SUBROUTINE START(ERROR,MSG)
C     -----------------------
C
C     SUBROUTINE STARTS COMPUTATIONS
C

      INCLUDE 'FMENUS.REC'
```

```
 DIMENSION NFS(10,8),DISRP(10),DESTA(10),DESAM(10,8),NPV(10)
 DIMENSION DISHV(10),DEPHH(10,8),HDIST(100),DEPXS(100)
 DIMENSION VEL(100)
 DIMENSION DEPHV(10),HLL(10),HLR(10),AREA(10,8),V(10,8)
&    ,PPMR(10,8),PPMT(10,8),PPMP(10,8),KB(119),I0(30),
&    TQSVR(8),TQSVP(8),TQSVT(8),MO(11),TQSHR(8),TQSHP(8),
&    TQSHT(8),BWW(10),BMP(18),PER(10),GSA(5,10,8),AGSA(5),WGSA(5)
&    ,NGS(20),PP120(10,8),TQ120(8)
 DIMENSION IBMP2(18), IPAGES(3)
 CHARACTER*5 IDATTY(36)
 CHARACTER*1 I0,KB
 CHARACTER*8 FILL, AIADP*5, AYR*2, AMO*2, ADA*2
 CHARACTER*3 FN0,FN1,FN2, IDOBS*5, IDESAM*5, ATC*7, AGAGE*6
 CHARACTER*6 TYSR,TPSS
 CHARACTER*74 TITLE, RECT*1, RECT1*1, ADP*3, TEST*1, AADP*5, EST*1
 CHARACTER*110 REC
 CHARACTER ATO*4
 CHARACTER AIID*7, ADESTA*5
 CHARACTER * 12 CDISH
 CHARACTER*30 MESS
 CHARACTER*60 FILE(25), PROJECT, DIRECTORY, MSG
 INTEGER XCORD,YCORD,JJJ
 INTEGER*4 IPDISH,ITQSR,ITQSP,ITQST,IWAPPMR,IWAPPMP,IWAPPMT
 LOGICAL ERROR

 COMMON /OPTIONS/ TEST,RECT1,ADP,IPAGES,RECT
 COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

  CALL FOPEN(ERROR,MSG)

  IF(ERROR)THEN
    RETURN
  ENDIF

  ERROR = .FALSE.
  JJJ=1
  IDATTY(1)='80217'
  IDATTY(2)='80216'
  IDATTY(3)='80215'
  IDATTY(4)='80214'
  IDATTY(5)='80213'
  IDATTY(6)='80179'
  IDATTY(7)='80169'
  IDATTY(8)='80177'
  IDATTY(9)='80168'
  IDATTY(10)='80167'
  IDATTY(11)='80239'
  IDATTY(12)='80166'
  IDATTY(13)='80218'
  IDATTY(14)='80165'
  IDATTY(15)='80219'
  IDATTY(16)='80224'
  IDATTY(17)='80164'
  IDATTY(18)='70335'
```

```
       IDATTY(19)='70334'
       IDATTY(20)='70333'
       IDATTY(21)='70332'
       IDATTY(22)='70331'
       IDATTY(23)='70341'
       IDATTY(24)='70340'
       IDATTY(25)='70339'
       IDATTY(26)='70338'
       IDATTY(27)='80154'
       IDATTY(28)='80155'
       IDATTY(29)='80220'
       IDATTY(30)='80221'
       IDATTY(31)='80222'
       IDATTY(32)='80223'
       IDATTY(33)='00055'
       IDATTY(34)='00061'
       IDATTY(35)='00010'
       IDATTY(36)='00065'

      DATA KB,I0/119*' ','A','B','C','D','E',
     &    'F','G','H','I','J','K','L','M','N','O','P','Q','R','S',
     &    'T','U','V','W','X','Y','Z','#','*','.','-'/


      XCORD = 10
      YCORD = 80

      NWRITE=0
      FN0='   '
      FN1='010'
      FN2='011'
      IDOBS='99995'
      FILL='        '
      CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22, 12, 15,'PROCESSING [ ]'C)
C
      WRITE(30,16)
   16 FORMAT('STATION    DATE      CONCENTRATION (P.P.M.)',16X,
     &    'LOAD (TONS/DAY)',12X,'DISCHARGE')

C      CALL PTEXT(10,80,REC)
C      YCORD=YCORD+15
C      IF(YCORD.GE.340)YCORD=110

      WRITE(30,811)
811   FORMAT('  CODE   MO/DA/YR',2(4X,'COARSE     FINE',4X,
     &'TOTAL',5X),'  PDISH.    QBA')

C      CALL PTEXT(10,95,REC)
C      YCORD=YCORD+30
C      IF(YCORD.GE.340)YCORD=110

   12 FORMAT('1')
   11 FORMAT(/)
```

```
C      IPAGES(1)=0
C      IPAGES(2)=0
C      IPAGES(3)=0
C
C      ****************************************
C      READING CHOICE FILE
C      ****************************************
C
       IF(TEST.EQ.'*')GO TO 29
   29  RECT=RECT1
       IF(ADP.EQ.' NO') NWRITE=1
C
C      *************************************
C      READING 'A' CARD
C      *************************************
C
   13  READ(11,2,END=999,ERR=800)AADP,TITLE
    2  FORMAT(A5,A74)
       READ(AADP,23)IADP
   23  FORMAT(I5)
C
       CALL INITAL (DISRP,DESTA,NPV,DISHV,HLL,HLR,BWW,PER,DEPHV,MO,NFS,
     &             DESAM,DEPHH,AREA,V,PPMR,PPMP,PPMT,TQSVR,TQSVP,
     &             TQSVT,TQSHR,TQSHP,TQSHT,GSA,WGSA,AGSA,HDIST,DEPXS,
     &             VEL,BMP)


       IF(NWRITE.GT.0)GO TO 40
       WRITE(13,3)TITLE
    3  FORMAT('1',46X,'U.S. ARMY ENGINEER DISTRICT'/45X,'NEW ORLEANS',
     &    ' CORPS OF ENGINEERS'//45X,'SUSPENDED SEDIMENT OBSERVATION',
     &    /23X,A74//25X,'GAGE',58X,'WATER'/2X,'ADPS       DATE',6X,
     &    'READING        TIME',9X,2('TYPE       '),' # OF',6X,
     &    'TEMPERATURE   DEPTH     DISCHARGE'/'  CODE     MO-DA-YR',6X,
     &    'FEET      FROM  TO      SAMPLER    SAMPLES     VERTICALS',
     &    5X,'(DEG C)      FEET       C.F.S.')
   40  CONTINUE
C
C     ***********************************************
C     READING 'B' CARD
C     ***********************************************
      READ(11,5,ERR=801)IDA,IMO,IYR,AGAGE,IFR,ITO,TYSR,TPSS,NVERT,ATC,
     &    EST,DTCF,CDISH
      DO 77705 IK = 1, 12
        IF (CDISH(IK:IK) .EQ. ' ') THEN
          CDISH(IK:IK) = '0'
        ENDIF
77705 CONTINUE
      READ(CDISH,'(F12.0)')PDISH
      CALL CODET(ITO,ATO)
    5 FORMAT(3I2,A6,I6,I4,1X,2A6,I6,5X,A7,A1,F6.1,A12)
      READ(ATC,33)ITC
   33 FORMAT(I7)
      TC=ITC
```

```
      TC=TC/10.
      ITC=ITC*1000
      READ(AGAGE,34)IGAGE
   34 FORMAT(I6)
      GAGE=IGAGE
      GAGE=GAGE/10.
      IGAGE=IGAGE*1000
      MDYF=IMO*10000+IDA*100+IYR
      IF(NWRITE.GT.0)GO TO 41
      WRITE(13,4)AADP,IMO,IDA,IYR,GAGE,IFR,ITO,TYSR,TPSS,NVERT,
     &    TC,DTCF,PDISH
    4 FORMAT(1X,A5,I7,2('/',I2),F10.1,I10,I5,1X,2(4X,A6),10X,
     &    I2,F14.1,F12.1,F14.0//)
   41 IBAD=0
      TOTBWW=0.
C
C     ***********************************************
C     READING 'C' CARD
C     ************************************************
C
      READ(11,6,ERR=802)(BWW(I),I=1,10)
    6 FORMAT(17X,10F6.0)
C DO LOOP 30 GETS THE TOTAL WT. OF BOT. WITHDRAWAL SAMPLES AND
C DETERMINES IF THEY ARE DECREASING VALUES, IF THEY ARE NOT
C 'IBAD' IS SET = 4 AND NOTED ON THE OUTPUT.
      DO 30 I=1,10
      IF(I-10)22,30,30
   22 IP=I+1
      IF(BWW(I)-BWW(IP))25,30,30
   25 IBAD=4
   30 TOTBWW=TOTBWW+BWW(I)
C   'IBAD' IS SET = -4 IF BOTTOM WITHDRAWAL ANALYSIS WAS NOT TAKEN.
      IF(BWW(10))81,81,82
   81 IBAD=-4
   82 CONTINUE
C
C
C      **********************************************
C      READING 'D' CARD
C      ***********************************************
C
      READ(11,7,ERR=803)WC,SSC,TOVO,TCL
    7 FORMAT(12X,F6.0,12X,2(11X,F6.0),F16.1)
C
C      ***********************************************
C      READING 'E' CARD
C      ************************************************
C
      READ(11,8,ERR=804)(BMP(I),I=1,18)
    8 FORMAT(7X,18F4.1)
      IF(IBAD)70,72,72
   70 DO 71 I=1,9
   71 PER(I)=0.
      GO TO 73
```

```
   72 CONTINUE
C --------------
      CALL ODEN(BWW,TOVO,WC,SSC,TCL,PER)
C --------------
   73 CONTINUE
      TOTWS=0.
      TOT230=0.
      TOTHF=0.
      NS=1
      NV=1
C
C      ***********************************************
C      READING 'F' CARD
C      ***********************************************
C
   80 READ(11,9,ERR=805)NFS(NV,NS),SANDW,US18,US35,US60,US120,US230,
     &    HFINE,TVOL,DISRP(NV),DESTA(NV),DESAM(NV,NS),KOD2,KOD3
    9 FORMAT(I4,13X,F5.0,4F4.0,F5.0,14X,F5.0,2F4.0,F3.0,F4.1,1X,2I1)
      N18=US18+.001
      UN18=N18
      IF(US18.GT.UN18)US18=US18*10000.
      N35=US35+.001
      UN35=N35
      IF(US35.GT.UN35)US35=US35*10000.
      N60=US60+.001
      UN60=N60
      IF(US60.GT.UN60)US60=US60*10000.
      N120=US120+.001
      UN120=N120
      IF(US120.GT.UN120)US120=US120*10000.
C FIND THE CONCENTRATION IN P.P.M.(RETAINED PASSED & TOTAL) OF
C EACH SAMPLE
      PPMR(NV,NS)=100.*US230/TVOL
      PP120(NV,NS)=100.*US120/TVOL
      PPMT(NV,NS)=100.*(SANDW+2.*HFINE)/TVOL
      PPMP(NV,NS)=PPMT(NV,NS)-PPMR(NV,NS)
C ACCUMULATE THE WT. OF WET SAND AND DRY SAND RETAINED ON THE
C U.S. 230 SIEVE AND THE ACCUMULATED WT. OF 1/2 FINES.
      TOTWS=TOTWS+SANDW
      TOT230=TOT230+US230
      TOTHF=TOTHF+HFINE
      T=SANDW+2.*HFINE
C FIND THE GRAIN SIZE % FINER OF EACH SAMPLE FOR THE
C 1.,.5,.25,.125 & .0625 M.M. SIZES
      GSA(1,NV,NS)=100.*(T-US18)/T
      GSA(2,NV,NS)=100.*(T-US35)/T
      GSA(3,NV,NS)=100.*(T-US60)/T
      GSA(4,NV,NS)=100.*(T-US120)/T
      GSA(5,NV,NS)=100.*(T-US230)/T
      IF(KOD3-1)100,130,100
  100 IF(KOD2-1)120,110,120
  110 NPV(NV)=NS
      NS=1
      NV=NV+1
```

```
      GO TO 80
  120 NS=NS+1
      GO TO 80
C FROM HERE TO STATEMENT 510 COMPUTES SUB-AREAS REPRESENTATIVE
C OF EACH SAMPLE TAKEN IN THE CROSS SECTION
  130 NVM=NV-1
      NVP=NV+1
      NPV(NV)=NS
C COMPUTE DISTANCES HALFWAY BETWEEN VERTICALS
      DO 150 I=1,NVM
      IP=I+1
  150 DISHV(I)=(DISRP(I)+DISRP(IP))/2.
C COMPUTE DEPTHS HALFWAY BETWEEN HORIZONTALS
      DO 160 I=1,NV
      NPVM=NPV(I)-1
      IF(NPVM)157,157,155
  155 DO 156 J=1,NPVM
      JP=J+1
  156 DEPHH(I,J)=(DESAM(I,JP)+DESAM(I,J))/2.
  157 CONTINUE
  160 CONTINUE
      NOXS=3
C READ IN HORIZ. DIST., X-SEC & 60% VERTICAL VELOCITIES
      NVV=0
  165 NVV=NVV+1
C
C      ***********************************************
C      READING 'G' CARD
C      ***********************************************
C
C IF ITYPE=3 THIS MEANS A REG. X-SEC CARD; IF ITYPE=4 THIS MEANS
C VEL. READ IN AS REV.(IN HUNDREDS)
  164 READ(12,167,ERR=807)ITYPE,LOC,MDYX,IFNL,ICNL,IFNG,ICNG,
     &    HDIST(NVV),IDEPP,REV,TIME,IVFA,IACO

      IF(JJJ.EQ.1)THEN
        JJJ=2
        call mvputch(22 ,24, 4, 179)
      ELSEIF(JJJ.EQ.2)THEN
        JJJ=3
        call mvputch(22 ,24, 4, 45)
      ELSEIF(JJJ.EQ.3)THEN
        JJJ=4
        call mvputch(22 ,24, 4, 92)
      ELSEIF(JJJ.EQ.4)THEN
        JJJ=1
        call mvputch(22 ,24, 4, 47)
      ENDIF

  167 FORMAT(I1,I5,I6,18X,4I4,6X,F4.0,I4,F4.0,F3.0,I3,I4)
      IF(ITYPE.EQ.9)NOXS=2
      IF(NVV.GT.1)GO TO 162
      IF(MDYX.NE.MDYF)GO TO 161
      IF(LOC.NE.IADP)GO TO 161
```

```
      GO TO 162
  161 WRITE(13,171)
  171 FORMAT('******* FIELD SEDIMENT DATA DOESN''T AGREE WITH THE',
     & ' CROSS SECTION & VEL. DATA IN DATE AND/OR LOCATION *******')
      WRITE(30,171)
      CALL mvprint(22 , 12, 14,'FIELD SEDIMENT DATA DOESN''T AGREE'C)

      RETURN

  162 DEPXS(NVV)=IDEPP
      DEPXS(NVV)=DEPXS(NVV)/10.
      FNL=IFNL
      FNL=FNL/1000.
      CNL=ICNL
      CNL=CNL/1000.
      FNG=IFNG
      FNG=FNG/1000.
      CNG=ICNG
      CNG=CNG/1000.
      VFA=IVFA
      VFA=VFA/100.
      ACO=IACO
      ACO=ACO/1000.
      IF(ITYPE-3)166,163,159
  159 VEL(NVV)=REV/100.
      GO TO 165
  163 RPS=REV/TIME
      IF(RPS-1.)168,168,169
  168 VEL(NVV)=VFA*ACO*(RPS*FNL+CNL)
      GO TO 165
  169 VEL(NVV)=VFA*ACO*(RPS*FNG+CNG)
      GO TO 165
  166 NVV=NVV-1
      KV=1
      DO 175 I=1,NVV
      IF(DISHV(KV)-HDIST(I))170,175,175
  170 IM=I-1
      DEPHV(KV)=(DEPXS(I)-DEPXS(IM))*(DISHV(KV)-HDIST(IM))
      DEPHV(KV)=DEPXS(IM)+DEPHV(KV)/(HDIST(I)-HDIST(IM))
      KV=KV+1
      IF(KV-NVM)175,175,176
  175 CONTINUE
C  ******************************
C  COMPUTE LENGTHS OF HORIZONTALS ON LEFT, THEN ON RIGHT
C  ******************************
  176 DO 183 I=1,NVV
      IF(HDIST(I)-DISHV(1))183,184,184
  183 CONTINUE
  184 NVVD=I-1
      NVVM=NVV-1
      NPVM=NPV(1)-1
      NXL=1
      IF(NPVM)210,210,177
  177 DO 200 I=1,NPVM
```

```
      DO 190 J=1,NVVD
      JP=J+1
      IF(DEPHH(1,I)-DEPXS(J))190,185,180
  180 IF(DEPHH(1,I)-DEPXS(JP))185,190,190
  185 HLL(I)=DISHV(1)-HDIST(J)-(HDIST(JP)-HDIST(J))*
     &    (DEPHH(1,I)-DEPXS(J))/(DEPXS(JP)-DEPXS(J))
      NXL=JP
  190 CONTINUE
  200 CONTINUE
  210 NPVM=NPV(NV)-1
      J=NVV+1
      DO 187 I=1,NVV
      J=J-1
      IF(HDIST(J)-DISHV(NVM))188,188,187
  187 CONTINUE
  188 NVVD=I-1
      NXR=NVV
      IF(NPVM)241,241,215
  215 DO 240 I=1,NPVM
      KD=NVV+1
      DO 230 J=1,NVVD
      KD=KD-1
      KDM=KD-1
      IF(DEPHH(NV,I)-DEPXS(KD))230,225,220
  220 IF(DEPHH(NV,I)-DEPXS(KDM))225,230,230
  225 HLR(I)=HDIST(KD)-DISHV(NVM)-(HDIST(KD)-HDIST(KDM))*
     &    (DEPHH(NV,I)-DEPXS(KD))/(DEPXS(KDM)-DEPXS(KD))
      NXR=KDM
  230 CONTINUE
  240 CONTINUE
C  ******************************
C  COMPUTE AREAS ON LEFT SIDE
C  ******************************
  241 TDP=0.
      HLT=HLL(1)
      THD=DISHV(1)-HDIST(1)
      NVVD=NVV/2
      SA=0.
      DO 260 I=2,NVVD
      IM=I-1
      IF(DEPXS(I)-DEPXS(IM))248,242,248
  242 DEPXS(I)=DEPXS(I)+.0000001
  248 IF(HDIST(I)-DISHV(1)+HLL(1))250,270,270
  250 SA=(DISHV(1)-HDIST(I)+THD)/2.*(DEPXS(I)-TDP)+SA
      TDP=DEPXS(I)
      THD=DISHV(1)-HDIST(I)
  260 CONTINUE
  270 IF(DISHV(1)-HDIST(2)-HLL(1))275,275,274
  274 HLT=DISHV(1)-HDIST(2)
  275 AREA(1,1)=(HLL(1)+THD)/2.*(DEPHH(1,1)-TDP)+SA+DEPXS(1)/2.*
     &    (DISHV(1)-HDIST(1)-HLT)
      TDP=DEPHH(1,1)
      THD=HLL(1)
      NPVM=NPV(1)-2
```

```
      IF(NPVM)360,360,277
  277 DO 350 I=1,NPVM
      IP=I+1
      SA=0.
      DO 320 J=2,NVVD
      JM=J-1
      IF(DEPXS(J)-DEPXS(JM))290,280,290
  280 DEPXS(J)=DEPXS(J)+.0000001
  290 IF(HDIST(J)-DISHV(1)+HLL(I))320,320,300
  300 IF(HDIST(J)-DISHV(1)+HLL(IP))310,330,330
  310 SA=SA+(DISHV(1)-HDIST(J)+THD)/2.*(DEPXS(J)-TDP)
      THD=DISHV(1)-HDIST(J)
      TDP=DEPXS(J)
  320 CONTINUE
  330 AREA(1,IP)=SA+(HLL(IP)+THD)/2.*(DEPHH(1,IP)-TDP)
      TDP=DEPHH(1,IP)
      THD=HLL(IP)
  350 CONTINUE
C  ******************************
C  COMPUTE AREAS ON RIGHT SIDE
C  ******************************
  360 TDP=0.
      HRT=HLR(1)
      THD=HDIST(NVV)-DISHV(NVM)
      SA=0.
      KD=NVV
      DO 390 I=2,NVVD
      KD=KD-1
      KDP=KD+1
      IF(DEPXS(KDP)-DEPXS(KD))378,372,378
  372 DEPXS(KD)=DEPXS(KD)+.0000001
  378 IF(HLR(1)+DISHV(NVM)-HDIST(KD))380,400,400
  380 SA=(HDIST(KD)-DISHV(NVM)+THD)/2.*(DEPXS(KD)-TDP)+SA
      TDP=DEPXS(KD)
      THD=HDIST(KD)-DISHV(NVM)
  390 CONTINUE
  400 IF(HDIST(NVVM)-DISHV(NVM)-HLR(1))395,395,394
  394 HRT=HDIST(NVVM)-DISHV(NVM)
  395 AREA(NV,1)=(HLR(1)+THD)/2.*(DEPHH(NV,1)-TDP)+SA+
     &    DEPXS(NVV)/2.*(HDIST(NVV)-DISHV(NVM)-HRT)
      TDP=DEPHH(NV,1)
      THD=HLR(1)
      NPVM=NPV(NV)-2
      DO 450 I=1,NPVM
      IP=I+1
      SA=0.
      KD=NVV
      DO 430 J=2,NVVD
      KD=KD-1
      KDP=KD+1
      IF(DEPXS(KDP)-DEPXS(KD))409,401,409
  401 DEPXS(KD)=DEPXS(KD)+.0000001
  409 IF(HLR(I)+DISHV(NVM)-HDIST(KD))430,430,410
  410 IF(HLR(IP)+DISHV(NVM)-HDIST(KD))420,440,440
```

```
  420 SA=SA+(HDIST(KD)-DISHV(NVM)+THD)/2.*(DEPXS(KD)-TDP)
      THD=HDIST(KD)-DISHV(NVM)
      TDP=DEPXS(KD)
  430 CONTINUE
  440 AREA(NV,IP)=SA+(HLR(IP)+THD)/2.*(DEPHH(NV,IP)-TDP)
      TDP=DEPHH(NV,IP)
      THD=HLR(IP)
  450 CONTINUE
      KNG=1
C  ***************************************************
C  COMPUTE AREAS ALONG BOTTOM, INCLUDING LEFT AND RIGHT
C  ***************************************************
      N=NPV(1)-1
      SA=.5*(HLL(N)-(DISHV(1)-HDIST(NXL)))*(DEPXS(NXL)-DEPHH(1,N))
      IF(DEPXS(NXL).GE.DEPHH(1,N))GO TO 455
      NNP=N+1
      NGS(KNG)=NFS(1,NNP)
      KNG=KNG+1
  455 K=1
      NXRM=NXR-1
      DO 500 I=NXL,NXRM
      IP=1+I
      IF(K-NV)460,470,470
  460 IF(DISHV(K)-HDIST(IP))480,480,470
  470 SA=SA+(HDIST(IP)-HDIST(I))*(DEPXS(IP)+DEPXS(I)-2.*DEPHH(K,N))/2.
      IF(DEPXS(I).GE.DEPHH(K,N))GO TO 500
      NNP=N+1
      NGS(KNG)=NFS(K,NNP)
      KNG=KNG+1
      GO TO 500
  480 NP=N+1
      AREA(K,NP)=SA+(DISHV(K)-HDIST(I))*(DEPXS(I)+DEPHV(K)-2.*
     &    DEPHH(K,N))/2.
      IF(DEPXS(I).GE.DEPHH(K,N))GO TO 485
      NNP=N+1
      NGS(KNG)=NFS(K,NNP)
      KNG=KNG+1
  485 KP=K+1
      N=NPV(KP)-1
      SA=(HDIST(IP)-DISHV(K))*(DEPXS(IP)+DEPHV(K)-2.*DEPHH(KP,N))/2.
      IF(DEPXS(IP).GE.DEPHH(KP,N))GO TO 490
      NNP=N+1
      NGS(KNG)=NFS(KP,NNP)
      KNG=KNG+1
  490 K=KP
  500 CONTINUE
      N=NPV(NV)-1
      NP=N+1
      AREA(NV,NP)=SA+.5*(HLR(N)-(HDIST(NXR)-DISHV(NVM)))*
     &    (DEPXS(NXR)-DEPHH(NV,N))
      IF(DEPXS(NXR).GE.DEPHH(NV,N))GO TO 501
      NNP=N+1
      NGS(KNG)=NFS(NV,NNP)
      KNG=KNG+1
```

```
  501 CONTINUE
C  **********************************
C  COMPUTE AREAS IN MIDDLE SECTION(S)
C  **********************************
      DO 510 I=2,NVM
      IM=I-1
      N=NPV(I)-1
      IF(N)510,510,502
  502 HD=DISHV(I)-DISHV(IM)
      AREA(I,1)=HD*DEPHH(I,1)
      IF(1-N)505,510,510
  505 DO 507 J=2,N
      JM=J-1
  507 AREA(I,J)=HD*(DEPHH(I,J)-DEPHH(I,JM))
  510 CONTINUE


      CALL CALVEL (NV,NVV,DISHV,HDIST,NPV,DEPHH,DEPXS,TC,V,VEL)

      IF(NWRITE.GT.0.OR.IPAGES(1).EQ.1)GO TO 42
      WRITE(13,615)
  615 FORMAT(1X,'FIELD   DISTANCE    TOTAL   DEPTH   PORTION OF',
     &    ' CROSS SECTION   US 120  SUSP. SED. CONCENTRATION',
     &    '  GRAIN SIZE ',
     &    'ANALYSIS OF TOT.SUS.'/' SAMPLE  FROM REF. STATION    OF',
     &    7X,'REPRESENTED BY SAMPLE     CONC    US 230 SEIVE 0.0625'
     &    ,' M.M.'
     &    ,3X,'MATERIAL - CUMULATIVE % FINER'/' NUMBER    POINT',5X,
     &    'DEPTH  SAMPLE  DISCHARGE VELOCITY   AREA    IN     RETAINED',
     &    ' PASSED   TOTAL      PARTICLE DIAMETER IN M.M.'/1X
     &    ,6X,2('     FEET'),4X,'FEET',5X,'C.F.S.   F.P.S.   SQ.'
     &    ,'FT.  P.P.M.  P.P.M.',2('   P.P.M.'),4X,'1.00  ',
     &    '.500  .250  .125 .0625'/1X,127('-'))
   42 TPPMT=0.
      TPPMR=0.
      TPPMP=0.
      TPP120=0.
      NSAM=0
      AT=0.
      QT=0.
      DO 620 I=1,NV
      N=NPV(I)
      DO 620 J=1,N
      Q=AREA(I,J)*V(I,J)
      QT=QT+Q
      NSAM=NSAM+1
      TPPMT=TPPMT+PPMT(I,J)
      TPPMP=TPPMP+PPMP(I,J)
      TPPMR=TPPMR+PPMR(I,J)
      TPP120=TPP120+PP120(I,J)
      AT=AT+AREA(I,J)
  620 CONTINUE
```

```
C  ************************************************
C  ADJUST ALL SUBVELOCITIES SO QT AGREES WITH PDISH
C  ************************************************
      QBA=QT
      QF=PDISH/QT
      QT=0.
      IF(NOXS.EQ.2)QF=0.
      DO 613 I=1,NV
      N=NPV(I)
      DO 613 J=1,N
      V(I,J)=QF*V(I,J)
      Q=AREA(I,J)*V(I,J)
  613 QT=QT+Q
  614 XN=NSAM
      VAVG=QT/AT
      APPMT=TPPMT/XN
      APPMR=TPPMR/XN
      APPMP=TPPMP/XN
      APP120=TPP120/XN
      DO 660 I=1,NV
      N=NPV(I)
      DO 660 J=1,N
      DO 660 K=1,5
      AGSA(K)=AGSA(K)+GSA(K,I,J)
  660 WGSA(K)=WGSA(K)+GSA(K,I,J)*AREA(I,J)*V(I,J)/QT
      DO 659 K=1,5
  659 AGSA(K)=AGSA(K)/XN
      TQSR=0.
      TQP120=0.
      TQSP=0.
      TQST=0.
      DO 657 I=1,NV
      N=NPV(I)
      DO 657 J=1,N
      VA27=V(I,J)*AREA(I,J)*.0027
      TQSVR(I)=TQSVR(I)+PPMR(I,J)*VA27
      TQSVP(I)=TQSVP(I)+PPMP(I,J)*VA27
      TQSVT(I)=TQSVT(I)+PPMT(I,J)*VA27
      TQSHR(J)=TQSHR(J)+PPMR(I,J)*VA27
      TQSHP(J)=TQSHP(J)+PPMP(I,J)*VA27
      TQ120(J)=TQ120(J)+PP120(I,J)*VA27
  657 TQSHT(J)=TQSHT(J)+PPMT(I,J)*VA27
      DO 658 I=1,NV
      TQSR=TQSR+TQSVR(I)
      TQP120=TQP120+TQ120(I)
      TQSP=TQSP+TQSVP(I)
  658 TQST=TQST+TQSVT(I)
      WAPP120=TQP120/(.0027*QT)
      WAPPMR=TQSR/(.0027*QT)
      WAPPMP=TQSP/(.0027*QT)
      WAPPMT=TQST/(.0027*QT)
C  ***************************************************************
C  FIND THE MAX # OF PTS IN ANY ONE VERT. & IF ALL VERT. HAVE SAME #
C  ***************************************************************
```

```
      MPV=NPV(1)
      NSAME=0
      DO 640 I=2,NV
      IF(MPV-NPV(I))630,640,635
  630 MPV=NPV(I)
  635 NSAME=1
  640 CONTINUE
      IQ=0
      IR=0
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
C --------------
      CALL CODE(IADP,IYR,IMO,IDA,AIADP,AYR,AMO,ADA)
C --------------
      IF(ATC.EQ.'       ')GO TO 31
      IF(EST.EQ.'E')GO TO 37
      IF(RECT.EQ.'N')GO TO 32
      CALL CODE2(DTCF,IDESAM)
      WRITE(14,791)RECT,AIADP,IDATTY(35),AYR,AMO,ADA,ATO,IDESAM,ITC,
     &     FN0,FN0,FILL
      GO TO 32
   31 WRITE(30,1)'  NO TEMPERATURE ON B CARD FOR FOLLOWING OBSERVATION'
C      CALL PTEXT(10,340,REC)

      GO TO 32
   37 WRITE(30,1)'   ESTIMATED TEMPERATURE ON B CARD FOR FOLLOWING OBSE
     $RVATION.'
C      CALL PTEXT(10,340,REC)

   32 IF(AGAGE.EQ.'      ')GO TO 35
      IF(RECT.EQ.'N')GO TO 36
      WRITE(14,791)RECT,AIADP,IDATTY(36),AYR,AMO,ADA,ATO,IDOBS,IGAGE,
     &     FN0,FN0,FILL

C      CALL PTEXT(XCORD,YCORD,REC)
C      YCORD=YCORD+15
C      IF(YCORD.GE.340)YCORD=110

      GO TO 36
   35 WRITE(30,1)' NO GAGE READING ON B CARD FOR FOLLOWING OBSERVATION'
C      CALL PTEXT(10,340,REC)

   36 CONTINUE
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
      DO 633 I=1,NV
      N=NPV(I)
      DO 633 J=1,N
      ID=INT(DISRP(I))
      IF(NOXS.EQ.2)GO TO 616
      IQ=INT(AREA(I,J)*V(I,J))
      IR=INT(AREA(I,J))
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
  616 CALL CODE2(DESAM(I,J),IDESAM)
      IF(RECT.EQ.'N')GO TO 627
      CALL ROUND2(PPMT(I,J),IPPMT)
```

```
      CALL ROUND2(PPMP(I,J),IPPMP)
      CALL ROUND2(PPMR(I,J),IPPMR)
      IID=ID*100
      CALL CODE7(IID,AIID)
      CALL CODE2(DESTA(I),ADESTA)
C
      WRITE(14,617)RECT,AIADP,IDATTY(27),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IPPMT,FN0,FN0,FILL
      WRITE(14,617)RECT,AIADP,IDATTY(31),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IPPMP,FN0,FN0,FILL
      WRITE(14,617)RECT,AIADP,IDATTY(29),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IPPMR,FN0,FN0,FILL
  617 FORMAT(A1,A5,3X,A6,3A2,A4,1X,A5,1X,A7,1X,A5,2X,I11,2A3,A8)
      DO 618 K=1,5
      CALL ROUND1(GSA(K,I,J),IGSA)
      KK=K+17
  618 WRITE(14,617)RECT,AIADP,IDATTY(KK),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IGSA,FN0,FN0,FILL
      IF(NOXS.EQ.2)GO TO 627
      IIQ=IQ*10000
      CALL ROUND2(V(I,J),IV)
      WRITE(14,617)RECT,AIADP,IDATTY(33),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IV,FN1,FN0,FILL
      WRITE(14,617)RECT,AIADP,IDATTY(34),AYR,AMO,ADA,ATO,IDESAM,AIID,
     &             ADESTA,IIQ,FN1,FN0,FILL
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
C
  627 IF(NWRITE.GT.0.OR.IPAGES(1).EQ.1)GO TO 633
      WRITE(13,628)NFS(I,J),ID,DESTA(I),DESAM(I,J),IQ,V(I,J),
     &    IR,PP120(I,J),PPMR(I,J),PPMP(I,J),PPMT(I,J),
     &    (GSA(K,I,J),K=1,5)
  628 FORMAT(1X,I5,I10,F9.1,F8.1,I10,F9.2,I9,2F8.2,2F9.2,F9.1,4F6.1)
  633 CONTINUE
  619 IF(NOXS.EQ.2)GO TO 651
      IF(NWRITE.GT.0.OR.IPAGES(1).EQ.1)GO TO 43
      WRITE(13,429)APP120,APPMR,APPMP,APPMT,(AGSA(I),I=1,5),QT,AT,VAVG,
     &    WAPP120,WAPPMR,WAPPMP,WAPPMT,(WGSA(J),J=1,5)
  429 FORMAT(1X,127('-')/3X,'STRAIGHT NUMERICAL AVERAGES',30X,F9.2,
     &F8.2,2F9.2,F9.1,4F6.1/3X,'TOTALS',21X,F14.0,F18.0/3X,'DISCHARGE',
     &    ' WEIGHTED AVERAGES',F22.2,F17.2,F8.2,2F9.2,F9.1,4F6.1,/)
   43 IF(KNG.LE.1)GO TO 625
      GO TO 653
  651 IF(NWRITE.GT.0.OR.IPAGES(1).EQ.1)GO TO 432
      WRITE(13,428)APPMR,APPMP,APPMT,(AGSA(I),I=1,5)
  428 FORMAT(1X,119('-')/3X'STRAIGHT NUMERICAL AVERAGES ',29X,
     &    3F9.2,F9.1,4F6.1/////'  AVERAGES HAVE NOT BEEN DISCHARGE',
     &    ' WEIGHTED BECAUSE VELOCITY AND CROSS SECTION DATA WAS ',
     &    'NOT AVAILABLE.')
      IF(NV.GT.2)GO TO 432
      WRITE(13,431)
  431 FORMAT(/'  OR LESS THAN THREE VERTICALS WERE TAKEN.')
  432 DO 427 I=1,5
  427 WGSA(I)=AGSA(I)
      TQSR=APPMR*PDISH*.0027
```

```
      TQSP=APPMP*PDISH*.0027
      TQST=APPMT*PDISH*.0027
      WAPPMT=APPMT
      WAPPMR=APPMR
      WAPPMP=APPMP
      GO TO 701
  653 IF(NWRITE.GT.0.OR.IPAGES(1).EQ.1)WRITE(13,24)AIADP,IMO,IDA,IYR
      WRITE(13,624)
  624 FORMAT(////'******* THE FOLLOWING FIELD SAMPLE(S) SHOULD',
     &    ' BE ELIMINATED AND THIS DATE RERUN. *******'//)
      KNG=KNG-1
      DO 623 I=1,KNG
      IF(I.EQ.1)GO TO 622
      IM=I-1
      IF(NGS(IM)-NGS(I))622,623,622
  622 WRITE(13,632)NGS(I)
  632 FORMAT(15X,I6)
  623 CONTINUE
      WRITE(13,621)
  621 FORMAT(/'******* THE PRESENCE OF THESE FIELD SAMPLE(S)',
     &   ' HAS CAUSED A SMALL ERROR IN THE RESULTS DUE TO THE LOCATION',
     &   '. *******')
  625 CONTINUE
      N=(NV*8-24)/2
      IF(N.LT.1)N=1
C
C   ************************************************
C   WRITING OUTPUT FOR PAGE 2
C   ************************************************
      IF(NWRITE.GT.0.OR.IPAGES(2).EQ.1)GO TO 666
      IF(IPAGES(1).EQ.1)GO TO 634
   18 FORMAT(1H1)
      WRITE(13,18)
      WRITE(13,24)AIADP,IMO,IDA,IYR
   24 FORMAT(A5,I6,2('/',I2),96X,'PAGE 2')
  634 WRITE(13,629)(KB(I),I=1,N),I0(28),
     &    I0(28),I0(28),I0(28),KB(1),
     &    I0(3),I0(18),I0(15),I0(19),I0(19),KB(1),I0(19),I0(5),I0(3),
     &    I0(20),I0(9),I0(15),I0(14),KB(1),I0(16),I0(18),I0(15),I0(6),
     &    I0(9),I0(12),I0(5),KB(1),I0(28),I0(28),I0(28),I0(28)
  629 FORMAT(///119A1///)
      WRITE(13,626)
  626 FORMAT(//' CROSS SECTION LAYOUT OF FIELD SAMPLE NUMBERS'//
     &    )
      WRITE(13,650)(KB(I),KB(I),KB(I),I0(22),I0(5),I0(18),
     &             I0(20),I0(29),I=1,NV)
  650 FORMAT(1X,119A1)
      WRITE(13,631)(I0(27),I,I=1,NV)
  631 FORMAT(9(5X,A1,I2))
      N=NV*8
      WRITE(13,650)(I0(30),I=1,N)
      DO 652 I=1,MPV
      WRITE(13,655)(NFS(J,I),J=1,NV)
  655 FORMAT(10I8)
```

```
  652 CONTINUE
      WRITE(13,650)(I0(30),I=1,N)
      WRITE(13,650)(KB(I),KB(I),KB(I),I0(20),I0(15),I0(20),I0(1),
     &    I0(12),I=1,NV),KB(1),KB(1),I0(7),I0(18),I0(1),I0(14),I0(4),
     &    KB(1),I0(20),I0(15),I0(20),I0(1),I0(12)
  666 DO 702 N=1,3
      IF(NWRITE.GT.0.OR.IPAGES(2).EQ.1)GO TO 670
      IF(N-2)661,662,663
  661 WRITE(13,674)
  674 FORMAT(///' LOADS IN THE FOLLOWING TABLES CORRESPOND'/
     &    ' TO FIELD SAMPLE NUMBERS IN THE ABOVE TABLE'////
     &    ' SAND FRACTION (MATERIAL COARSER THAN 0.0625 M.M) IN TONS',
     &    '/DAY'//)
      GO TO 670
  662 WRITE(13,664)
  664 FORMAT(////' SILT-CLAY FRACTION (MATERIAL FINER THAN 0.0625',
     &    ' M.M.) IN TONS/DAY'//)
      GO TO 670
  663 WRITE(13,665)
  665 FORMAT(////' TOTAL SUSPENDED SEDIMENT LOADS IN TONS/DAY'//)
C
  670 DO 689 I=1,MPV
      DO 675 J=1,NV
      IF(N-2)671,672,673
  671 X=PPMR(J,I)
      GO TO 675
  672 X=PPMP(J,I)
      GO TO 675
  673 X=PPMT(J,I)
  675 MO(J)=X*V(J,I)*AREA(J,I)*.0027
      IF(N-2)681,682,683
  681 MO(NVP)=TQSHR(I)
      GO TO 680
  682 MO(NVP)=TQSHP(I)
      GO TO 680
  683 MO(NVP)=TQSHT(I)
  680 IF(NSAME)685,684,685
  684 NSPN=NVP
      GO TO 690
  685 NSPN=NV
  690 IF(NWRITE.GT.0.OR.IPAGES(2).EQ.1)GO TO 689
      WRITE(13,655)(MO(K),K=1,NSPN)
  689 CONTINUE
      NV8=NV*8
      IF(NWRITE.GT.0.OR.IPAGES(2).EQ.1)GO TO 44
      WRITE(13,650)(I0(30),II=1,NV8)
   44 MO(NVP)=0
      DO 694 I=1,NV
      IF(N-2)691,692,693
  691 MO(I)=TQSVR(I)
      GO TO 694
  692 MO(I)=TQSVP(I)
      GO TO 694
  693 MO(I)=TQSVT(I)
```

```
  694 CONTINUE
      IF(N-2)695,696,697
  695 MO(NVP)=TQSR
      GO TO 700
  696 MO(NVP)=TQSP
      GO TO 700
  697 MO(NVP)=TQST
  700 IF(NWRITE.GT.0.OR.IPAGES(2).EQ.1)GO TO 702
      WRITE(13,655)(MO(K),K=1,NVP)
  702 CONTINUE
  701 SDC=1.-(TOT230)/(TOTWS+TOTHF+TOTBWW+WC+SSC*TOVO/50.)
      DO 720 I=1,9
  720 PER(I)=PER(I)*SDC
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
      IF(RECT.EQ.'N')GO TO 721
      J=0
      DO 722 I=18,22
      J=J+1
      CALL ROUND1(WGSA(J),IWGSA)
  722 WRITE(14,791)RECT,AIADP,IDATTY(I),AYR,AMO,ADA,ATO,IDOBS,IWGSA,FN1,
     &    FN2,FILL
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
C
C  ****************************************************
C  WRITING OUTPUT FOR PAGE 3
C  ****************************************************
  721 IF(NWRITE.GT.0.OR.IPAGES(3).EQ.1)GO TO 739
      IF(IPAGES(1).EQ.1.AND.IPAGES(2).EQ.1)GO TO 723
      WRITE(13,18)
      WRITE(13,26)AIADP,IMO,IDA,IYR,NOXS
   26 FORMAT(A5,I6,2('/',I2),96X,'PAGE',I2)
  723 WRITE(13,740)(WGSA(I),I=1,5),(PER(J),J=2,9)
  740 FORMAT(//////3X,
     &    17('* '),'COMBINED SUSPENDED',
     &    ' SEDIMENT GRAIN SIZE ANALYSIS',17(' *')///6X,'DIAMETER ',
     &    'IN M.M.   1.00   .500   .250   .125  .0625',6X,
     &    '.0442  .0312  .0221  .0156  .0110  .0075  .0055  .0039',
     &    /8X,'PERCENT FINER ',5F7.1,F11.1,7F7.1/23X,'.',33X,'.',
     &    '     .',53X,'.'/24X,'.',31X,'.       .',51X,'.'/25X,
     &    '...MECHANICAL SIEVE ANALYSIS...',9X,12('.'),
     &    'BOTTOM WITHDRAWAL ANALYSIS',13('.')///)
  739 IF(IBAD)741,747,742
  741 IF(NWRITE.GT.0.OR.IPAGES(3).EQ.1)GO TO 745
      WRITE(13,744)
  744 FORMAT(1X,'  NOTE:  BOTTOM WITHDRAWAL DATA WAS NOT AVAILABLE',
     &   ', THEREFORE THE ABOVE ANALYSIS'/9X,'FOR DIAMETERS FINER THAN',
     &   ' 0.0625 MM SHOULD NOT BE TAKEN AS 0% FINER THAN'///)
      GO TO 745
  742 IF(NWRITE.GT.0.OR.IPAGES(3).EQ.1)GO TO 745
      WRITE(13,743)
  743 FORMAT(1X,'  NOTE: DUE TO BAD LAB RESULTS FROM THE BOTTOM',
     &    ' WITHDRAWAL METHOD, THE ABOVE ANALYSIS'/9X,'FOR DIAMETERS',
     &    ' FINER THAN 0.0625 M.M. SHOULD NOT BE TAKEN TO BE VERY ',
     &    'ACCURATE'///)
```

```
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
      GO TO 745
  747 J=1
      IF(RECT.EQ.'N')GO TO 745
      DO 746 I=23,26
      J=J+2
      CALL ROUND1(PER(J),IPER)
  746 WRITE(14,791)RECT,AIADP,IDATTY(I),AYR,AMO,ADA,ATO,IDOBS,IPER,FN0,
     &    FN2,FILL
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
  745 IBED=0
      IF(BMP(1))770,770,750
  750 IF(NWRITE.GT.0.OR.IPAGES(3).EQ.1)GO TO 761
      WRITE(13,760)(BMP(I),I=1,18)
  760 FORMAT(///2X,21('* '),'BED MATERIAL GRAIN SIZE ANALYSIS',
     &    21(' *')///' DIA. IN M.M. 25.4  19.1  12.7  9.52  4.76  ',
     &    '3.36  2.00  1.41  1.00  .500  .350  .250  .177  .125  ',
     &    '.088  .074  .062   PAN'/'   % FINER  ',18F6.1///)
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
  761 J=0
      IF(RECT.EQ.'N')GO TO 771
      DO 766 I=1,17
      J=J+1
      CALL ROUND1(BMP(J),IBMP)
  766 IBMP2(I)=IBMP/1000
      WRITE(15,792)I0(1),AIADP,AYR,AMO,ADA,(IBMP2(I),I=2,13)
      WRITE(15,792)I0(2),AIADP,AYR,AMO,ADA,(IBMP2(I),I=14,18)
  792 FORMAT(A1,'1',A5,9X,3A2,10X,12I4)
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
      GO TO 771
  770 IBED=10
  771 CONTINUE
      WRITE(30,772) IADP,IMO,IDA,IYR,WAPPMR,WAPPMP,WAPPMT,TQSR,
     &    TQSP,TQST,PDISH,QBA

C      CALL PTEXT(XCORD,YCORD,REC)
C      YCORD=YCORD+15
C      IF(YCORD.GE.340)YCORD=110

  772 FORMAT(I6,I5,2('/',I2),F10.2,2F9.2,6X,5F10.0)
      IF(NWRITE.GT.0.OR.IPAGES(3).EQ.1)GO TO 762
      WRITE(13,730)I0(3),I0(15),I0(1),I0(18),I0(19),I0(5),TQSR,
     &    WAPPMR,KB(1),I0(6),I0(9),I0(14),I0(5),KB(1),TQSP,WAPPMP,
     &    KB(1),I0(20),I0(15),I0(20),I0(1),I0(12),TQST,WAPPMT
  730 FORMAT(/////1X,23('* '),'SUSPENDED SEDIMENT SUMMARY',
     &    23(' *'),////38X,43('*')/38X,'*',10X,2(':',14X),' *'/
     &    38X,'* MATERIAL :     LOAD     : CONCENTRATION *'/38X,
     &    '*   TYPE   :  (TONS/DAY)  :    (P.P.M.)   *'/38X,'*',
     &    10('-'),2(':',14('-')),'-*',3(/38X,'*  ',6A1,2X,':',
     &    F11.0,'   :',F11.2,'    *'/38X,'*',10X,2(':',14X),' *')/
     &    38X,43('*')//)
C \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/ \/
  762 CALL ROUND0(TQSR,ITQSR)
      CALL ROUND0(TQSP,ITQSP)
```

```
      CALL ROUND0(TQST,ITQST)
      CALL ROUND2(WAPPMR,IWAPPMR)
      CALL ROUND2(WAPPMP,IWAPPMP)
      CALL ROUND2(WAPPMT,IWAPPMT)
      IBAD=ABS(IBAD)
      J=17-IBAD+IBED
      IF(RECT.EQ.'N')GO TO 13
      IF(PDISH)788,788,786
  786 CALL ROUND0(PDISH,IPDISH)
      WRITE(14,971)RECT,AIADP,IDATTY(34),AYR,AMO,ADA,ATO,IDOBS,IPDISH,
     &             FN0,FN2,FILL
      WRITE(14,971)RECT,AIADP,IDATTY(30),AYR,AMO,ADA,ATO,IDOBS,ITQSR,
     &             FN1,FN2,FILL
      WRITE(14,971)RECT,AIADP,IDATTY(32),AYR,AMO,ADA,ATO,IDOBS,ITQSP,
     &             FN1,FN2,FILL
      WRITE(14,971)RECT,AIADP,IDATTY(28),AYR,AMO,ADA,ATO,IDOBS,ITQST,
     &             FN1,FN2,FILL
  788 WRITE(14,791)RECT,AIADP,IDATTY(29),AYR,AMO,ADA,ATO,IDOBS,IWAPPMR,
     &             FN1,FN2,FILL
      WRITE(14,791)RECT,AIADP,IDATTY(31),AYR,AMO,ADA,ATO,IDOBS,IWAPPMP,
     &             FN1,FN2,FILL
      WRITE(14,791)RECT,AIADP,IDATTY(27),AYR,AMO,ADA,ATO,IDOBS,IWAPPMT,
     &             FN1,FN2,FILL
  791 FORMAT(A1,A5,3X,A6,3A2,A4,1X,A5,16X,I11,2A3,A8)
C
C    MODIFIED FOR PC VERSION BY DON RAWSON 27 SEP 90
C    IPDISH, ITQSR, ITQSP, ITQST RETURNS A VALUE OUT FO ROUNDO LARGER THEN
C    INTEGER*4 WILL SUPPORT.
C
  971 FORMAT(A1,A5,3X,A6,3A2,A4,1X,A5,16X,I7,'0000',2A3,A8)
C /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\ /\
      GO TO 13
C
C ____________________________________________________________________
C
  999 WRITE(30,1)'           E N D   O F   J O B'
1     FORMAT(A110)
      CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22 , 12, 14,'END OF JOB'C)

      GO TO 998
  800 WRITE(30,1)'ERROR ON TITLE CARD(CARD # 1) OF FIELD DATA'
      WRITE(30,1)REC
      MSG = 'ERROR ON TITLE CARD(CARD # 1) OF FIELD DATA'C
      ERROR = .TRUE.
      GO TO 998
  801 WRITE(30,1)'ERROR ON DATE DISCHARGE CARD (CARD #2) OF FIELD DATA'
      MSG = 'ERROR ON DATE DISCHARGE CARD (CARD #2) OF FIELD DATA'C
      ERROR = .TRUE.
      GO TO 998
  802 WRITE(30,1)'ERROR ON BOT.WITH. CARD (CARD # 3) OF FIELD DATA'
      MSG = 'ERROR ON BOT.WITH. CARD (CARD # 3) OF FIELD DATA'C
      ERROR = .TRUE.
      GO TO 998
```

```
  803 WRITE(30,1)'ERROR ON CARD # 4 OF FIELD DATA'
      MSG = 'ERROR ON CARD # 4 OF FIELD DATA'C
      ERROR = .TRUE.
      GO TO 998
  804 WRITE(30,1)'ERROR ON BED MAT. CARD (CARD # 5) OF FIELD DATA'
      MSG='ERROR ON BED MAT. CARD (CARD # 5) OF FIELD DATA'C
      ERROR = .TRUE.
      GO TO 998
  805 WRITE(30,806) NV,NS
  806 FORMAT('ERROR ON SED CARD OF FIELD DATA-NV=',I2,'NS=',I2)
      MSG='ERROR ON SED CARD'C
      ERROR = .TRUE.
      GO TO 998
  807 WRITE(REC,808) NVV
  808 FORMAT('ERROR ON X-SECTION CARD #',I4)
      WRITE(30,1)REC
      MSG=REC//CHAR(0)
      ERROR = .TRUE.
  998 CONTINUE
      CLOSE(UNIT=11)
      CLOSE(UNIT=12)
      CLOSE(UNIT=20)
      CLOSE(UNIT=13)
      CLOSE(UNIT=14)
      CLOSE(UNIT=15)

      IF(.NOT.ERROR)THEN
        CALL clean(0, 22, 12, 22, 27)
        CALL mvprint(22, 12, -14,'SORTING...'C)
        WRITE(REC,444)FILE(5)
444     FORMAT('COPY ',A12,' SORT.HES > nul')
        CALL SYSTEM(REC//CHAR(0))
        CALL SYSTEM('\\SEDIMENT\\HEIS'C)
        WRITE(REC,445)FILE(5)(1:12)
445     FORMAT('COPY SORTED.SDF ',A12,' > nul')
        CALL SYSTEM(REC//CHAR(0))
        CALL SYSTEM('DEL  SORTED.SDF 'C)
        CALL SYSTEM('DEL  SORT.HES 'C)
        CALL clean(0, 22, 12, 22, 70)
      ENDIF

      RETURN
      END

C
C==============================================================================
C
      SUBROUTINE ODEN(BWW,TOVO,WC,SSC,TCL,PER)
C     ----------------------------------------
C ABSOLUTE VISCOSITY OF WATER FOR TEMP. 1 THRU 35 DEGREES CENT.
      DIMENSION BWW(10),PER(9),AV(35),PD(9),SETT(10)
      AV(1)=.00001765
      AV(2)=.00001706
      AV(3)=.00001652
```

```
      AV(4)=.00001598
      AV(5)=.00001549
      AV(6)=.00001502
      AV(7)=.00001457
      AV(8)=.00001413
      AV(9)=.00001373
      AV(10)=.00001333
      AV(11)=.00001296
      AV(12)=.00001261
      AV(13)=.00001226
      AV(14)=.00001194
      AV(15)=.00001163
      AV(16)=.00001133
      AV(17)=.00001104
      AV(18)=.00001077
      AV(19)=.00001050
      AV(20)=.00001025
      AV(21)=.00001000
      AV(22)=.00000977
      AV(23)=.00000954
      AV(24)=.00000932
      AV(25)=.00000911
      AV(26)=.00000891
      AV(27)=.00000871
      AV(28)=.00000853
      AV(29)=.00000834
      AV(30)=.00000816
      AV(31)=.00000799
      AV(32)=.00000783
      AV(33)=.00000767
      AV(34)=.00000752
      AV(35)=.00000737
C PARTICLE DIAMETER(IN MM) OF GRAIN SIZES TO BE ANALIZED
      PD(1)=.0625
      PD(2)=.0442
      PD(3)=.0312
      PD(4)=.0221
      PD(5)=.0156
      PD(6)=.0110
      PD(7)=.0078
      PD(8)=.0055
      PD(9)=.0039
C SETTLEING TIMES(IN MIN.) USED IN PLOTTING ODEN CURVE
      SETT(1)=.001
      SETT(2)=40./9.
      SETT(3)=80./8.
      SETT(4)=135./7.
      SETT(5)=250./6.
      SETT(6)=500./5.
      SETT(7)=660./4.
      SETT(8)=880./3.
      SETT(9)=1000./2.
      SETT(10)=1200.
C ADD SUSPENDED SOLIDS AND WASH CORRECTIONS TO B.W. SAMPLES
```

```
      DO 30 I=1,10
   30 BWW(I)=BWW(I)+SSC*TOVO/500.+WC/10.
C GET CUMULATIVE WTS. IN REVERSE ORDER OF CORRECTED B.W. SAMPLES
      K=10
      DO 40 I=1,9
      K=K-1
      KP=K+1
   40 BWW(K)=BWW(K)+BWW(KP)
C GET SEDIMENT IN SUSPENSION BY MULT. BY DEPTH FACTOR
      XI=10.
      DO 50 I=2,10
      XI=XI-1.
   50 BWW(I)=BWW(I)*(10./XI)
C GET % IN SUSPENSION
      DO 60 I=2,10
   60 BWW(I)=100.*BWW(I)/BWW(1)
      BWW(1)=100.
C FIND ABSOLUTE VISCOSITY OF WATER FOR THE LAB TEMP.
      LTC=TCL+.01
      TTC=LTC
      LTCP=LTC+1
      ABVIS=AV(LTC)+(AV(LTCP)-AV(LTC))*(TCL-TTC)
      DO 200 I=1,9
      IP=I+1
C COMPUTE SETTLING VELOCITY OF PARTICLE DIA. 'I' BY STOKES LAW
      SETV=2./9.*(1.65/ABVIS)*(PD(I)/(2.*10.))**2
C COMPUTE SETTELING TIME TO SETTLE 100 CM. - IN MINUTES
      SETIME=100./(60.*SETV)
C TO APPROX. ODEN CURVE USE A PARABOLA FOR THE FIRST
C 3 POINTS AND A HYPERBOLA FOR THE REMAINING POINTS
      IF(I-3)135,135,65
   65 CONTINUE
C FIND THE 2 POINTS ON THE ODEN CURVE CLOSEST TO SETT(J)
      DO 70 J=2,10
      JM=J-1
      JP=J+1
      IF(SETIME-SETT(J))75,85,70
   70 CONTINUE
      GO TO 120
   75 IF(J-2)80,80,85
   80 T1=SETT(2)
      T2=SETT(3)
      P1=BWW(2)
      P2=BWW(3)
      GO TO 130
   85 T2=SETT(J)
      T1=SETT(JM)
      P2=BWW(J)
      P1=BWW(JM)
      GO TO 130
  120 T1=SETT(9)
      T2=SETT(10)
      P1=BWW(9)
      P2=BWW(10)
```

```
  130 CONTINUE
C SOLVE 2 EQ. & 2 UNKNOWNS TO GET A HYPERBOLIC EQ. FOR THE 2 POINTS
      YO=(T1*P1-T2*P2)/(T1-T2)
      C=T1*P1-T1*YO
      Y=C/SETIME+YO
C TAKE DERIVITIVE AND GET SLOPE AT POINT SETIME
      DXDY=-C/(Y-YO)**2
      GO TO 195
  135 D1=ABS(SETIME-SETT(2))
      D2=ABS(SETIME-SETT(3))
      IF(D1-D2)136,137,137
  136 M=2
      GO TO 138
  137 M=3
  138 MM=M-1
      MP=M+1
      P1=BWW(MM)
      P2=BWW(M)
      P3=BWW(MP)
      T1=SETT(MM)
      T2=SETT(M)
      T3=SETT(MP)
C SOLVE 3 EQ. AND 3 UNKNOWNS FOR A PARABOLIC FIT FOR FIRST FEW PTS.
      A=((P2-P3)*(T1-T2)-(P1-P2)*(T2-T3))/
     &    ((P2-P3)*(P1**2-P2**2)-(P1-P2)*(P2**2-P3**2))
      B=((T1-T2)-A*(P1**2-P2**2))/(P1-P2)
      C=T3-A*P3**2-B*P3
      YH=(-B+SQRT(B**2-4.*A*(C-SETIME)))/(2.*A)
      YL=(-B-SQRT(B**2-4.*A*(C-SETIME)))/(2.*A)
      D1=ABS(YH-BWW(M))
      D2=ABS(YL-BWW(M))
      IF(D1-D2)140,140,150
  140 Y=YH
      GO TO 160
  150 Y=YL
  160 CONTINUE
C TAKE DERIVITIVE AND GET SLOPE AT POINT SETIME
      DXDY=2.*A*Y+B
  195 PER(I)=Y-SETIME/DXDY
  200 CONTINUE
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE ROUND1(A,I)
C     ----------------------
C
C
      INTEGER*4 I,II
      AA=A*10.+.5
      II=AA
```

```
      I=II*1000.
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE ROUND0(A,I)
C     ----------------------
C
C

      INTEGER*4 I,II,INT4
      AA=A+.5
      II=INT4(AA)
      I=II
C      I=II*10000.
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE ROUND2(A,I)
C     ----------------------
C
C
      INTEGER*4 I,II,INT4

      AA=A*100.+.5
      II=INT4(AA)
      I=II*100.
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE CODE(IADP,T1,T2,T3,AIADP,AT1,AT2,AT3)
C     ------------------------------------------------

C      THIS SUBROUTINE CHANGES INTERGERS TO ALPHNUMERIC CHARACTERS.
C      IT CHECKS FOR BLANK SPACES AND REPLACES THEM WITH '0'.
C
C
      CHARACTER AIADP*5, A(5)*1, B(2)*1
      CHARACTER AT(3)*2
      CHARACTER*2 AT1,AT2,AT3
      INTEGER T1, T2, T3, T(3)
      T(1)=T1
      T(2)=T2
```

```
      T(3)=T3
C
      WRITE(AIADP,10)IADP
   10 FORMAT(I5)
      READ(AIADP,15)A
   15 FORMAT(5A1)
      DO 20 I=1,5
   20 IF(A(I).EQ.' ')A(I)='0'
      WRITE(AIADP,15)A
C
C
      DO 100 J=1,3
      WRITE(AT(J),40)T(J)
   40 FORMAT(I2)
      READ(AT(J),50)B
   50 FORMAT(2A1)
      DO 70 I=1,2
   70 IF(B(I).EQ.' ')B(I)='0'
      WRITE(AT(J),50)B
  100 CONTINUE
C
      AT1=AT(1)
      AT2=AT(2)
      AT3=AT(3)
C
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE CODE2(DE,IDESAM)
C     ---------------------------
C
C     SUBROUTINE CODE2 SETS DEPTH OF OBS. AND DEP OF STA TO ALPH.
C     AND CHECKS FOR BLANKS WHICH IT SETS TO '0'.
C
C

      CHARACTER IDESAM*5, A(5)*1
C
      ID=INT(DE*100.)
      WRITE(IDESAM,10)ID
   10 FORMAT(I5)
      READ(IDESAM,15)A
   15 FORMAT(5A1)
      DO 220 I=1,5
  220 IF(A(I).EQ.' ')A(I)='0'
      WRITE(IDESAM,15)A
C
      RETURN
      END
```

```
C
C==============================================================================
C

      SUBROUTINE CODET(I,A)
C     ---------------------
C
C     THIS SUBROUTINE ZERO FILLS TIME
C

      CHARACTER A*4, EA(4)*1
C
      WRITE(A,10)I
   10 FORMAT(I4)
      READ(A,11)EA
   11 FORMAT(4A1)
      DO 20 J=1,4
   20 IF(EA(J).EQ.' ')EA(J)='0'
      WRITE(A,11)EA
      RETURN
      END

C
C==============================================================================
C

      SUBROUTINE CODE7(I,A)
C     ---------------------
C
C      THIS SUBROUTINE CHANGES INTERGERS TO CHARACTERS AND ZERO FILLS.
C      WRITTEN TO BE USED ON DIST. FROM REF. POINT
C

      CHARACTER A*7, EA(7)*1
C
      WRITE(A,10)I
   10 FORMAT(I7)
      READ(A,11)EA
   11 FORMAT(7A1)
      DO 20 J=1,7
   20 IF(EA(J).EQ.' ')EA(J)='0'
      WRITE(A,11)EA
      RETURN
      END
C
C==============================================================================
C

      SUBROUTINE INITAL (DISRP,DESTA,NPV,DISHV,HLL,HLR,BWW,PER,DEPHV,MO,
     &             NFS,
     &             DESAM,DEPHH,AREA,V,PPMR,PPMP,PPMT,TQSVR,TQSVP,
     &             TQSVT,TQSHR,TQSHP,TQSHT,GSA,WGSA,AGSA,HDIST,DEPXS,
     &             VEL,BMP)
C     ------------------------------------------------------------------
```

```
      DIMENSION NFS(10,8),DISRP(10),DESTA(10),DESAM(10,8),NPV(10)
      DIMENSION DISHV(10),DEPHH(10,8),HDIST(100),DEPXS(100)
      DIMENSION VEL(100)
      DIMENSION DEPHV(10),HLL(10),HLR(10),AREA(10,8),V(10,8)
     &    ,PPMR(10,8),PPMT(10,8),PPMP(10,8),
     &    TQSVR(8),TQSVP(8),TQSVT(8),MO(11),TQSHR(8),TQSHP(8),
     &    TQSHT(8),BWW(10),BMP(18),PER(10),GSA(5,10,8),AGSA(5),WGSA(5)

C     INITIALIZING
      DO 15 I=1,10
      DISRP(I)=0.
      DESTA(I)=0.
      NPV(I)=0.
      DISHV(I)=0.
      HLL(I)=0.
      HLR(I)=0.
      BWW(I)=0.
      PER(I)=0.
      DEPHV(I)=0.
      MO(I)=0.
      DO 15 J=1,8
      NFS(I,J)=0
      DESAM(I,J)=0.
      DEPHH(I,J)=0.
      AREA(I,J)=0.
      V(I,J)=0.
      PPMR(I,J)=0.
      PPMP(I,J)=0.
      PPMT(I,J)=0.
      IF(I.GT.1)GO TO 14
      TQSVR(J)=0.
      TQSVP(J)=0.
      TQSVT(J)=0.
      TQSHR(J)=0.
      TQSHP(J)=0.
      TQSHT(J)=0.
   14 CONTINUE
      DO 15 K=1,5
      GSA(K,I,J)=0.
      IF(I.GT.1.OR.J.GT.1)GO TO 15
      WGSA(K)=0.
      AGSA(K)=0.
   15 CONTINUE
      DO 17 I=1,100
      HDIST(I)=0.
      DEPXS(I)=0.
      VEL(I)=0.
      IF(I.GT.18)GO TO 17
      BMP(I)=0.
   17 CONTINUE

      RETURN
      END
```

```
C
C==============================================================================
C

      SUBROUTINE CALVEL (NV,NVV,DISHV,HDIST,NPV,DEPHH,DEPXS,TC,V,VEL)
C     ---------------------------------------------------------------

      DIMENSION NPV(10)
      DIMENSION DISHV(10),DEPHH(10,8),HDIST(100),DEPXS(100)
      DIMENSION V(10,8),VEL(100)

C  ***************************************************************
C DO LOOP 610 CALCULATES AVG. VELOCITIES IN EACH SUB-AREA. THIS IS
C DONE BY CALCULATHNG VELOCITIES AT EACH FOOT IN ELEVATION WITHIN
C THE SUB-AREA WHERE A MEASURED VELOCITY VERTICAL WAS TAKEN. THESE
C VELOCITIES ARE THEN AVERAGED OVER EACH SUB AREA.
C  ***************************************************************
      IS=1
      DO 610 I=1,NV
      IF(I-NV)518,535,535
  518 DO 525 K=IS,NVV
      IF(DISHV(I)-HDIST(K))520,522,525
  520 IE=K-1
      GO TO 530
  522 IE=K
      GO TO 530
  525 CONTINUE
  530 NIS=K
      GO TO 540
  535 IE=NVV
  540 N=NPV(I)
      DO 590 J=1,N
      JM=J-1
      CT=0.
      DO 580 K=IS,IE
      IF(J-1)545,545,550
  545 DC=0.
      GO TO 554
  550 DC=DEPHH(I,JM)
  554 IF(DC-DEPXS(K))557,580,580
  557 DA=DEPXS(K)-DC+1.
      ZV=.1198+.00048*(TC*1.8+32.)
      DO 570 ID=1,1000
      DA=DA-1.
      IF(DA)575,575,560
  560 IF(J-N)562,565,562
  562 IF(DEPXS(K)-DEPHH(I,J)-DA)565,565,575
  565 V(I,J)=V(I,J)+VEL(K)*(1.+ZV)*(DA/DEPXS(K))**ZV
  570 CT=CT+1
  575 CONTINUE
  580 CONTINUE
      V(I,J)=V(I,J)/CT
```

```
  590 CONTINUE
      IS=NIS
  610 CONTINUE

      RETURN
      END
C
C=====================================================================
C
      SUBROUTINE GETDEFAULTS(LOPTION)
C     ------------------------------
C
C     OPEN INPUT AND OUTPUT FILES
C
      INCLUDE 'FMENUS.REC'
      CHARACTER REC*80, LOPTION*4
      CHARACTER*60 FILE(25),PROJECT,DIRECTORY,PRJDIR
      CHARACTER TEST*1,RECT1*1,ADP*3,RECT*1
      CHARACTER*9 OPTMAX(5,7)
      INTEGER IPAGES(3)
      LOGICAL EXIST
      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
      COMMON /OPTIONS/ TEST,RECT1,ADP,IPAGES,RECT
      COMMON /MAXOPT/ OPTMAX
      INQUIRE(FILE='\SEDIMENT\DEFAULT',EXIST=EXIST)

      IF(EXIST)THEN

        IF(LOPTION.EQ.'LOAD')THEN
          OPEN(10,FILE='\SEDIMENT\DEFAULT',STATUS='OLD')
          READ(10,10,ERR=110)PROJECT
10        FORMAT(//29X,A60)
          CLOSE (10)
        ENDIF

        PRJDIR='\SEDIMENT\PROJECT\'//PROJECT(1:12)

        INQUIRE(FILE=PRJDIR,EXIST=EXIST)

        IF(EXIST)THEN
          OPEN(10,FILE=PRJDIR,STATUS='OLD')
          READ(10,11)DIRECTORY
11        FORMAT(//29X,A60)

          READ(10,30,ERR=100)OPTMAX(1,1),OPTMAX(1,2),OPTMAX(1,3),
     &    OPTMAX(1,4),OPTMAX(1,5),OPTMAX(1,6),
     &    FILE(1),FILE(2),FILE(4),FILE(5),FILE(6),FILE(7)
30        FORMAT(///29X,2A1,A3,3A1,6(/29X,A60))

          READ(10,31,ERR=100)OPTMAX(2,1),OPTMAX(2,2),OPTMAX(2,3),
     &    OPTMAX(2,4),OPTMAX(2,5),OPTMAX(2,6),OPTMAX(2,7),
     &    FILE(8),FILE(9)
31        FORMAT(///,29X,A2,1X,2(A5,1X),A6,1X,A6,2A2,
     &    2(/29X,A60))
```

```
          READ(10,32,ERR=100)OPTMAX(3,1),OPTMAX(3,2),OPTMAX(3,3),
     &    OPTMAX(3,4),OPTMAX(3,5),FILE(10),FILE(11)
32        FORMAT(///,30X,A1,1X,A5,1X,A6,1X,A6,A2,2(/29X,A60))

          READ(10,33,ERR=100)FILE(12),FILE(13),FILE(14)
33        FORMAT(//,3(/29X,A60))

          READ(10,34,ERR=100)FILE(15)
34        FORMAT(///,29X,A60)

          READ(10,35,ERR=100)FILE(16),FILE(17)
35        FORMAT(//,2(/29X,A60))

          READ(10,36,ERR=100)FILE(18),FILE(19)
36        FORMAT(//,2(/29X,A60))

          READ(10,37,ERR=100)OPTMAX(4,1),OPTMAX(4,2),OPTMAX(4,3),
     &    OPTMAX(4,4),OPTMAX(4,5),OPTMAX(4,6),FILE(20),FILE(21)
37        FORMAT(///,30X,A1,1X,A1,2(1X,A5),2(1X,A6),2(/29X,A60))

          READ(10,38,ERR=100)OPTMAX(5,1),OPTMAX(5,2),OPTMAX(5,3),
     &    OPTMAX(5,4),FILE(22),FILE(23)
38        FORMAT(///,30X,A5,1X,A5,1X,A6,1X,A6,2(/29X,A60))

          READ(10,39,ERR=100)FILE(24),FILE(25)
39        FORMAT(//,2(/29X,A60))

          TEST=OPTMAX(1,1)(1:1)
          RECT1=OPTMAX(1,2)(1:1)
          ADP=OPTMAX(1,3)(1:3)
          READ(OPTMAX(1,4),'(I1)')IPAGES(1)
          READ(OPTMAX(1,5),'(I1)')IPAGES(2)
          READ(OPTMAX(1,6),'(I1)')IPAGES(3)


          CLOSE (10)
          CALL CHDIRECTORY

        ELSE
         CALL clean(0, 22, 12, 22, 78)
         CALL mvprint(22 , 12, 14,'PROJECT FILE DOES NOT EXIST..'C)
        ENDIF
      ELSE
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'DEFAULT FILE DOES NOT EXIST..'C)
      ENDIF

      RETURN
100   CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22 , 12, 14,'ERROR READING PROJECT FILE..'C)
      RETURN
110   CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22 , 12, 14,'ERROR READING DEFAULT FILE..'C)
```

```
      RETURN
      END
C
C==============================================================================
C

      SUBROUTINE MENU
C     ---------------
C
C     LOAD SETUP FOR GRAPHICS AND LOAD FONT LIBRARY
C

      INCLUDE 'FMENUS.REC'
      CHARACTER*60 MSG
      INTEGER*2   OP,OPTION
      LOGICAL MORDAT /.TRUE./
      LOGICAL ERROR
      RECORD /MENUS/ MAINMEN
      RECORD /OPTS/ MAINOPT(9)


      MAINOPT(1).PLACE = 3
      MAINOPT(1).KEY = 76
      MAINOPT(1).CMD   = ' Load 'C
      MAINOPT(2).PLACE = 10
      MAINOPT(2).KEY = 82
      MAINOPT(2).CMD   = ' cReate 'C
      MAINOPT(3).PLACE = 19
      MAINOPT(3).KEY = 83
      MAINOPT(3).CMD   = ' Save 'C
      MAINOPT(4).PLACE = 26
      MAINOPT(4).KEY = 67
      MAINOPT(4).CMD   = ' Change 'C
      MAINOPT(5).PLACE = 34
      MAINOPT(5).KEY = 84
      MAINOPT(5).CMD   = ' sTart 'C
      MAINOPT(6).PLACE = 41
      MAINOPT(6).KEY = 68
      MAINOPT(6).CMD   = ' Directory 'C
      MAINOPT(7).PLACE = 52
      MAINOPT(7).KEY = 79
      MAINOPT(7).CMD   = ' Options 'C
      MAINOPT(8).PLACE = 61
      MAINOPT(8).KEY = 77
      MAINOPT(8).CMD   = ' Mkdir 'C
      MAINOPT(9).PLACE = 72
      MAINOPT(9).KEY = 81
      MAINOPT(9).CMD   = ' Quit 'C

      MAINMEN.HIGH = 78
      MAINMEN.NORM = 23
      MAINMEN.FRAM = 0
      MAINMEN.ALIGN = 24
      MAINMEN.TITLE = ''C
```

```
      CALL SLAPMENU( MAINMEN, MAINOPT)
      CALL SETMENU( MAINMEN, 9, 0, 1)
10    IF( MORDAT ) THEN
        OP = OPTION( MAINMEN, 9, 1)
        SELECT CASE ( OP )
        CASE ( 0 )
             CALL clean(0, 22, 12, 22, 78)
             CALL LPROJECT
             CALL DOPTIONS
        CASE ( 1 )
             CALL clean(0, 22, 12, 22, 78)
             CALL CPROJECT
        CASE ( 2 )
             CALL clean(0, 22, 12, 22, 78)
             CALL SAVEDP
        CASE ( 3 )
             CALL clean(0, 22, 12, 22, 78)
             CALL CFILES
        CASE ( 4 )
            CALL clean(0, 22, 12, 22, 78)
            CALL START(ERROR,MSG)
            IF(.NOT.ERROR)THEN
               CALL clean(0, 22, 12, 22, 78)
            ELSE
               CALL clean(0, 22, 12, 22, 78)
               CALL mvprint(22, 12, 14, MSG)
            ENDIF
        CASE ( 5 )
            CALL clean(0, 22, 12, 22, 78)
            CALL CDIRECTORY
        CASE ( 6 )
            CALL clean(0, 22, 12, 22, 78)
            CALL COPTIONS
        CASE ( 7 )
            CALL clean(0, 22, 12, 22, 78)
            CALL MKDIRECTORY
        CASE ( 8 )
             CALL clean(0, 22, 12, 22, 78)
             MORDAT=.FALSE.
        END SELECT
        GOTO 10
      ENDIF

      RETURN
      END

C=======================================================================

      SUBROUTINE DPROJECT
C     -------------------

C      DISPLAY CURRENT PROJECT FILES
```

```
CHARACTER*60 FILE(25), TEMP, PROJECT, DIRECTORY
INTEGER*2 DYNLEN,I
COMMON /FILENAME/ FILE, PROJECT, DIRECTORY


 CALL mvprint(7, 10, 31,'PROJECT INFORMATION'C)
 CALL clean(0, 8, 35, 8,46)
 CALL mvprint(8, 10, 30,'CURRENT PROJECT        : 'C)
 I=DYNLEN(PROJECT)
 TEMP=PROJECT
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL clean(0, 9, 35, 9,46)
 CALL mvprint(9, 10, 30,'PROJECT DIRECTORY      : 'C)
 I=DYNLEN(DIRECTORY)
 TEMP=DIRECTORY
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL mvprint(10, 10, 31,'PROJECT FILES'C)
 CALL clean(0, 11, 35, 11, 46)
 CALL mvprint(11, 10, 30,'SEDIMENT INPUT DATA    : 'C)
 I=DYNLEN(FILE(1))
 TEMP=FILE(1)
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL clean(0, 12, 35, 12, 46)
 CALL mvprint(12, 10, 30,'DISCHARGE INPUT DATA   : 'C)
 I=DYNLEN(FILE(2))
 TEMP=FILE(2)
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL clean(0, 13, 35, 13, 46)
 CALL mvprint(13, 10, 30,'3 PAGE OUTPUT FILE     : 'C)
 I=DYNLEN(FILE(4))
 TEMP=FILE(4)
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL clean(0, 14, 35, 14, 46)
 CALL mvprint(14, 10, 30,'HEIS OUTPUT FILE       : 'C)
 I=DYNLEN(FILE(5))
 TEMP=FILE(5)
 TEMP(I+1:I+1)=CHAR(0)
 CALL mvprint(0, 0, 14, TEMP)

 CALL clean(0, 15, 35, 15, 46)
 CALL mvprint(15, 10, 30,'BED OUTPUT FILE        : 'C)
 I=DYNLEN(FILE(6))
 TEMP=FILE(6)
 TEMP(I+1:I+1)=CHAR(0)
```

```
       CALL mvprint(0, 0, 14, TEMP)

       CALL clean(0, 16, 35, 16, 46)
       CALL mvprint(16, 10, 30,'SUMMARY DATA FILE      : 'C)
       I=DYNLEN(FILE(7))
       TEMP=FILE(7)
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

      RETURN
      END

C==============================================================================

      SUBROUTINE FOPEN(ERROR,MSG)
C     --------------------------------
C
C     OPEN INPUT AND OUTPUT FILES
C
       CHARACTER*60 FILE(25), PROJECT, DIRECTORY, MSG
       LOGICAL ERROR,EXIST
       COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      ERROR = .FALSE.

      CALL FOPCHK(FILE(1),EXIST,MSG)
      IF(EXIST)THEN
        ERROR=.TRUE.
      ENDIF

      CALL FOPCHK(FILE(2),EXIST,MSG)
      IF(EXIST)THEN
        ERROR=.TRUE.
      ENDIF

      IF(.NOT.ERROR)THEN
        OPEN(11,FILE=FILE(1),STATUS='UNKNOWN')
        OPEN(12,FILE=FILE(2),STATUS='UNKNOWN')
        OPEN(13,FILE=FILE(4),STATUS='UNKNOWN')
        OPEN(14,FILE=FILE(5),STATUS='UNKNOWN')
        OPEN(15,FILE=FILE(6),STATUS='UNKNOWN')
        OPEN(30,FILE=FILE(7),STATUS='UNKNOWN')
      ENDIF

      RETURN
      END

C=============================================================================

      SUBROUTINE LPROJECT
C     -------------------

C     LOAD PROJECT
```

```
      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      CALL settextposition(8, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 8, 35, 8, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(8, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
         PROJECT=REC
      ENDIF
      call clean(0, 8, 35, 8, 46)
      I=DYNLEN(PROJECT)
      IF(INDEX(PROJECT,'PRJ').EQ.0.AND.
     &                              INDEX(PROJECT,'.').EQ.0)THEN
         PROJECT(I+1:I+5)='.PRJ'
         I=I+5
      ENDIF
      TEMP=PROJECT
      TEMP(I+1:I+1)=CHAR(0)
      CALL mvprint(0, 0, 14, TEMP)
      CALL GETDEFAULTS('SKIP')
      CALL DPROJECT

      RETURN
      END


C=========================================================================

      SUBROUTINE SAVEDP
C     -----------------

C     CHANGE CURRENT PROJECT

       CHARACTER*60 FILE(25), PROJECT, DIRECTORY, REC*80
       CHARACTER TEST*1, RECT1*1, ADP*3, RECT*1, DIR*60, CD*60
       CHARACTER MKDIR*60, PRJDIR*60
       INTEGER*2 I, J, DYNLEN
       CHARACTER*9 OPTMAX(5,7)
       INTEGER IPAGES(3)
       LOGICAL MORDAT, EXIST

       COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
       COMMON /OPTIONS/ TEST,RECT1,ADP,IPAGES,RECT
       COMMON /MAXOPT/ OPTMAX
```

```
      MORDAT=.TRUE.

      OPEN(10,FILE='\SEDIMENT\DEFAULT',STATUS='UNKNOWN')
      I=DYNLEN(PROJECT)
      J=DYNLEN(DIRECTORY)
      DO 5 K=1,J
        IF(DIRECTORY(K:K).NE.' ')THEN
          L=J-K+1
          GO TO 6
        ENDIF
5     CONTINUE
6     DIRECTORY(1:L)=DIRECTORY(K:J)
      DO 7 M=L+1,12
         DIRECTORY(M:M)=' '
7     CONTINUE

      WRITE(10,10)PROJECT(1:12)
10    FORMAT('C  DEFAULT FILES FOR SEDIMENT SYSTEM',/,
     &        'C--------1---------2---------3---------4',/,
     &        'F CURRENT PROJECT FILE   :   ',A12)
      CLOSE(10)
     DIR='\SEDIMENT\'//DIRECTORY(1:I)
     INQUIRE(FILE=DIR,EXIST=EXIST)

     IF(EXIST)THEN
       CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
       CALL SYSTEM(CD)
     ELSE
       MKDIR='MKDIR \SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
       CALL SYSTEM(MKDIR)
       CALL clean(0, 22, 12, 22, 78)
       CALL mvprint(22 , 12, 14,'CREATING DIRECTORY..'C)
       CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
       CALL SYSTEM(CD)
       CALL clean(0, 22, 12, 22, 78)
       CALL mvprint(22 , 12, 14,'CHANGING DIRECTORY..'C)
     ENDIF

     PRJDIR='\SEDIMENT\PROJECT\'//PROJECT(1:12)
     OPEN(10,FILE=PRJDIR,STATUS='UNKNOWN')

         OPTMAX(1,1)(1:1)=TEST
         OPTMAX(1,2)(1:1)=RECT1
         OPTMAX(1,3)(1:3)=ADP
         WRITE(OPTMAX(1,4),'(I1)')IPAGES(1)
         WRITE(OPTMAX(1,5),'(I1)')IPAGES(2)
         WRITE(OPTMAX(1,6),'(I1)')IPAGES(3)

         FILE(9)=FILE(2)
         FILE(10)=FILE(5)
         FILE(20)=FILE(6)
         FILE(22)=FILE(6)
         FILE(13)=FILE(11)
         FILE(15)=FILE(11)
```

```
      FILE(16)=FILE(11)
      FILE(18)=FILE(11)
      FILE(24)=FILE(21)


      WRITE(10,20)DIRECTORY
20    FORMAT('C',21X,'DEFAULT FILES FOR SEDIMENT SYSTEM',/,
     &'C--------1---------2---------3---------4',/,
     &'D PROJECT DIRECTORY      :   ',A60)

      WRITE(10,30)OPTMAX(1,1),OPTMAX(1,2),OPTMAX(1,3),
     &OPTMAX(1,4),OPTMAX(1,5),OPTMAX(1,6),
     &FILE(1),FILE(2),FILE(4),FILE(5),FILE(6),FILE(7)
30    FORMAT('C',12X,'DEFAULT FILES FOR SUSPENDED SEDIMENT'
     &' ANALYSIS PROGRAM',/,
     &'P HH007',/,
     &'C--------1---------2---------3---------4',/,
     &'O OPTIONS                :   ',
     &2A1,A3,3A1,/,
     &'F SEDIMENT  INPUT DATA   :   ',A60,/,
     &'F DISCHARGE INPUT DATA   :   ',A60,/,
     &'F 3 PAGE OUTPUT FILE     :   ',A60,/,
     &'F HEIS OUTPUT FILE       :   ',A60,/,
     &'F BED OUTPUT FILE        :   ',A60,/,
     &'F SUMMARY DATA FILE      :   ',A60)

      WRITE(10,31)
     &OPTMAX(2,1),OPTMAX(2,2),OPTMAX(2,3),OPTMAX(2,4),
     &OPTMAX(2,5),OPTMAX(2,6),OPTMAX(2,7),FILE(8),FILE(9)
31    FORMAT('C',14X,'DEFAULT FILES FOR SEDIMENT',
     &' RETRIEVAL PROGRAM',/,
     &'P HH080',/,
     &'C--------1---------2---------3---------4',/,
     &'O OPTIONS                :   ',
     &A2,1X,2(A5,1X),A6,1X,A6,2A2,/,
     &'F DISCHARGE MASTER       :   ',A60,/,
     &'F DISCHARGE OUTPUT DATA  :   ',A60)

      WRITE(10,32)
     &OPTMAX(3,1),OPTMAX(3,2),OPTMAX(3,3),OPTMAX(3,4),
     &OPTMAX(3,5),FILE(10),FILE(11)
32    FORMAT('C',23X,'HEIS DATA RETRIVAL PROGRAM',/,
     &'P HH008',/,
     &'C--------1---------2---------3---------4',/,
     &'O OPTIONS                :    '
     &  A1,1X,A5,1X,A6,1X,A6,A2,/,
     &'F HEIS INPUT FILE        :   ',A60,/,
     &'F SEDIMENT OUTPUT FILE   :   ',A60)

      WRITE(10,33)FILE(12),FILE(13),FILE(14)
33    FORMAT('C',23X,'SEDIMENT CURVE FIT PROGRAM',/,
     &'P HH048',/,
     &'C--------1---------2---------3---------4',/,
     &'F DSS DISCHARGE INPUT    :   ',A60,/,
```

```
     &    'F SEDIMENT INPUT FILE    :   ',A60,/,
     &    'F DAILY LOAD DATA OUTPUT :   ',A60)

          WRITE(10,34)FILE(15)
34        FORMAT('C',15X,'REGRESSION ANALYSIS FOR SEDIMENT',
     &    ' RATING CURVE PROGRAM',/,
     &    'P HH049',/,
     &    'C--------1---------2---------3---------4',/,
     &    'F SEDIMENT INPUT FILE    :   ',A60)

          WRITE(10,35)FILE(16),FILE(17)
35        FORMAT('C',14X,'REGESSION ANALYSIS FOR VARIOUS ',
     &    ' GRAIN SIZES PROGRAM',/,
     &    'P HH079',/,
     &    'C--------1---------2---------3---------4',/,
     &    'F SEDIMENT DATA FILE     :   ',A60,/,
     &    'F GRAIN SIZE OUTPUT FILE :   ',A60)

          WRITE(10,36)FILE(18),FILE(19)
36         FORMAT('C',14X,'MEDIAN OF VARIOUS GRAIN SIZES PROGRAM',/,
     &    'P HH050',/,
     &    'C--------1---------2---------3---------4',/,
     &    'F SEDIMENT DATA FILE     :   ',A60,/,
     &    'F MEDIAN OF VARIOUS GRAIN:   ',A60)

          WRITE(10,37)OPTMAX(4,1),OPTMAX(4,2),OPTMAX(4,3),
     &    OPTMAX(4,4),OPTMAX(4,5),OPTMAX(4,6),FILE(20),FILE(21)
37        FORMAT('C',14X,'BED DATA RETRIVAL PROGRAM',/,
     &    'P HH082',/,
     &    'C--------1---------2---------3---------4',/,
     &    'O OPTIONS                :    ',
     &    A1,1X,A1,2(1X,A5),2(1X,A6),/,
     &    'F HEIS INPUT FILE        :   ',A60,/
     &    'F EXTRACTED BED DATA     :   ',A60)

          WRITE(10,38)OPTMAX(5,1),OPTMAX(5,2),OPTMAX(5,3),
     &     OPTMAX(5,4),FILE(22),FILE(23)
38        FORMAT('C',13X,'BED DATA TABULAR LISTING PROGRAM',/,
     &    'P HH081',/,
     &    'C--------1---------2---------3---------4',/,
     &    'OPTION                   :    '
     &    A5,1X,A5,1X,A6,1X,A6,/,
     &    'F HEIS FILE              :   ',A60,/
     &    'F TABULAR BED DATA LIST  :   ',A60)

          WRITE(10,39)FILE(24),FILE(25)
39        FORMAT('C',14X,'BED MATERIAL PLOT PROGRAM',/,
     &    'P HH051',/,
     &    'C--------1---------2---------3---------4',/,
     &    'F EXTRACTED BED DATE     :   ',A60,/
     &    'F MASTER TITLE FILE      :   ',A60)

        CLOSE (10)
```

```
      RETURN
      END

C=========================================================================

      SUBROUTINE CPROJECT
C     -------------------

C     CREATE PROJECT

      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      CHARACTER*9 OPTMAX(5,7)
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
      COMMON /MAXOPT/ OPTMAX


      CALL settextposition(8, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 8, 35, 8, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(8, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
           PROJECT=REC
      ENDIF
      call clean(0, 8, 35, 8, 46)
      I=DYNLEN(PROJECT)
      IF(INDEX(PROJECT,'PRJ').EQ.0)THEN
         PROJECT(I+1:I+5)='.PRJ'
         I=I+5
      ENDIF
      TEMP=PROJECT
      TEMP(I+1:I+1)=CHAR(0)
      CALL mvprint(0, 0, 14, TEMP)

      I=INDEX(PROJECT,'.')
      FILE(1)=PROJECT(1:I)//'SED'
      FILE(2)=PROJECT(1:I)//'DIS'
      FILE(4)=PROJECT(1:I)//'3PG'
      FILE(5)=PROJECT(1:I)//'HES'
      FILE(6)=PROJECT(1:I)//'BED'
      FILE(7)=PROJECT(1:I)//'SUM'
      FILE(8)='\SEDIMENT\MASTER\DISCHARG.MAS'
      FILE(9)=PROJECT(1:I)//'DIS'
      FILE(10)=PROJECT(1:I)//'HES'
      FILE(11)=PROJECT(1:I)//'SS1'
      FILE(12)=PROJECT(1:I)//'DSS'
      FILE(13)=PROJECT(1:I)//'SS1'
```

```
      FILE(14)=PROJECT(1:I)//'DLD'
      FILE(15)=PROJECT(1:I)//'SS1'
      FILE(16)=PROJECT(1:I)//'SS2'
      FILE(17)=PROJECT(1:I)//'SIZ'
      FILE(18)=PROJECT(1:I)//'SS2'
      FILE(19)=PROJECT(1:I)//'MED'
      FILE(20)=PROJECT(1:I)//'BED'
      FILE(21)=PROJECT(1:I)//'EBD'
      FILE(22)=PROJECT(1:I)//'BED'
      FILE(23)=PROJECT(1:I)//'LST'
      FILE(24)=PROJECT(1:I)//'EBD'
      FILE(25)='\SEDIMENT\MASTER\TITLE.MAS'
      OPTMAX(1,1)='*'
      OPTMAX(1,2)='N'
      OPTMAX(1,3)='YES'
      OPTMAX(1,4)='0'
      OPTMAX(1,5)='0'
      OPTMAX(1,6)='0'
      OPTMAX(2,1)='-4'
      OPTMAX(2,2)='03045'
      OPTMAX(2,3)='03045'
      OPTMAX(2,4)='900101'
      OPTMAX(2,5)='900430'
      OPTMAX(2,6)=' 0'
      OPTMAX(2,7)=' 0'
      OPTMAX(3,1)='1'
      OPTMAX(3,2)='03045'
      OPTMAX(3,3)='900101'
      OPTMAX(3,4)='900430'
      OPTMAX(3,5)='12'
      OPTMAX(4,1)='2'
      OPTMAX(4,2)='2'
      OPTMAX(4,3)='03045'
      OPTMAX(4,4)='03045'
      OPTMAX(4,5)='900101'
      OPTMAX(4,6)='900430'
      OPTMAX(5,1)='03045'
      OPTMAX(5,2)='03045'
      OPTMAX(5,3)='900101'
      OPTMAX(5,4)='900430'

      CALL DPROJECT

      RETURN
      END


C=========================================================================

      SUBROUTINE CDIRECTORY
C     -------------------

C     CHANGE DIRECTORY'S NAME
```

```
      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      CALL settextposition(9, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 9, 35, 9, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(9, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
         DIRECTORY=REC
      ENDIF
      call clean(0, 9, 35, 9, 46)
      I=DYNLEN(DIRECTORY)
      TEMP=DIRECTORY
      TEMP(I+1:I+1)=CHAR(0)
      CALL mvprint(0, 0, 14, TEMP)
      CALL CHDIRECTORY

      RETURN
      END

C=========================================================================

      SUBROUTINE CHDIRECTORY
C     ----------------------

C     CHANGE DIRECTORY

      INCLUDE 'FMENUS.REC'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY
      CHARACTER    CD*60, DIR*60
      INTEGER*2    DYNLEN,I
      INTEGER*4 dummy4
      LOGICAL EXIST

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      I=DYNLEN(DIRECTORY)
      DIR='\SEDIMENT\'//DIRECTORY(1:I)
      INQUIRE(FILE=DIR,EXIST=EXIST)

      IF(EXIST)THEN
        CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
        CALL SYSTEM(CD)
      ELSE
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'DIRECTORY DOES NOT EXIST..'C)
```

```
      ENDIF

      RETURN
      END

C=========================================================================

      SUBROUTINE MKDIRECTORY
C     ----------------------

C     MAKE DIRECTORY

      INCLUDE 'FMENUS.REC'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY
      CHARACTER    MKDIR*60, MD*60
      INTEGER*2    DYNLEN,I
      INTEGER*4 dummy4
      LOGICAL EXIST

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      I=DYNLEN(DIRECTORY)
      MKDIR='MKDIR \SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
      MD='\SEDIMENT\'//DIRECTORY(1:I)

      INQUIRE(FILE=MD,EXIST=EXIST)

      IF(EXIST)THEN
         CALL clean(0, 22, 12, 22, 78)
         CALL mvprint(22 , 12, 14,'DIRECTORY ALREADY EXIST..'C)
      ELSE
        CALL SYSTEM(MKDIR)
      ENDIF

      RETURN
      END

C=========================================================================

       SUBROUTINE DOPTIONS
C      -------------------

C      DISPLAY CURRENT OPTIONS

      CHARACTER TEST*1,RECT1*1,ADP*3,RECT*1,CPAGES*3
      INTEGER IPAGES(3)
      LOGICAL MORDAT, EXIST

      COMMON /OPTIONS/ TEST,RECT1,ADP,IPAGES,RECT

       CALL mvprint(17, 10, 31,'OPTIONS'C)
       CALL clean(0, 18, 35, 18, 46)
       CALL mvprint(18, 10, 30,'TYPE OF HEIS RECORD    : 'C)
       CALL mvprint(0, 0, 14, RECT1//CHAR(0))
```

```
      CALL clean(0, 19, 35, 19, 46)
      CALL mvprint(19, 10, 30,'CREATE A PRINTOUT      : 'C)
      CALL mvprint(0, 0, 14, ADP//CHAR(0))

      IF(ADP.EQ.'YES')THEN
        IF(IPAGES(1).EQ.1)THEN
           CPAGES(1:1)='1'
        ELSE
           IF(IPAGES(2).EQ.1)THEN
              CPAGES(2:2)='2'
               IF(IPAGES(3).EQ.1)THEN
                  CPAGES(3:3)='3'
               ELSE
                  CPAGES='ALL'
               ENDIF
            ENDIF
        ENDIF
      ELSE
        CPAGES='000'
      ENDIF

      CALL clean(0, 20, 35, 20, 46)
      CALL mvprint(20, 10, 30,'EXCLUDE PAGES          : 'C)
      CALL mvprint(0, 0, 14, CPAGES//CHAR(0))

     RETURN
     END

C=========================================================================

      SUBROUTINE COPTIONS
C     -------------------

C     CHANGE OPTIONS

     CHARACTER TEST*1,RECT1*1,ADP*3,RECT*1,CPAGES*3,REC*3
     INTEGER IPAGES(3)
     LOGICAL MORDAT, EXIST

     COMMON /OPTIONS/ TEST,RECT1,ADP,IPAGES,RECT

      CALL mvprint(17, 10, 31,'OPTIONS'C)
      CALL clean(142, 18, 35, 18, 35)
      CALL mvprint(18, 10, 30,'TYPE OF HEIS RECORD    : 'C)
      READ(*,'(A1)')REC
      IF(REC.NE.' ')THEN
         RECT1=REC(1:1)
      ENDIF
      IF(RECT1.EQ.'n')THEN
        RECT1='N'
      ELSEIF(RECT1.EQ.'a'.OR.RECT1.EQ.'A')THEN
        RECT1='A'
      ELSEIF(RECT1.EQ.'c'.OR.RECT1.EQ.'C')THEN
```

```
  RECT1='C'
ELSEIF(RECT1.EQ.'d'.OR.RECT1.EQ.'D')THEN
  RECT1='D'
ELSE
  RECT1='N'
ENDIF
CALL mvprint(0, 0, 14, RECT1//CHAR(0))

CALL clean(142, 19, 35, 19, 37)
CALL mvprint(19, 10, 30,'CREATE A PRINTOUT      : 'C)
READ(*,'(A3)')REC
IF(REC.NE.' ')THEN
   ADP=REC(1:3)
ENDIF
IF(INDEX(REC,'NO').GT.0)THEN
  ADP=' NO'
ELSEIF(INDEX(REC,'no').GT.0)THEN
  ADP=' NO'
ELSE
  ADP='YES'
ENDIF
CALL mvprint(0, 0, 14, ADP//CHAR(0))

IF(ADP.EQ.'YES')THEN
  IF(IPAGES(1).EQ.1)THEN
     CPAGES(1:1)='1'
  ELSE
     IF(IPAGES(2).EQ.1)THEN
        CPAGES(2:2)='2'
         IF(IPAGES(3).EQ.1)THEN
            CPAGES(3:3)='3'
         ELSE
            CPAGES='ALL'
         ENDIF
      ENDIF
  ENDIF
ELSE
  CPAGES='000'
ENDIF

CALL clean(0, 20, 35, 20, 46)
CALL mvprint(20, 10, 30,'EXCLUDE PAGES          : 'C)
READ(*,'(A3)')REC
IF(REC.NE.' ')THEN
  CPAGES='   '
  IF(INDEX(REC,'all').GT.0.OR.INDEX(REC,'ALL').GT.0.)THEN
      CPAGES='ALL'
  ENDIF
  IF(REC(1:1).EQ.'1')THEN
      CPAGES(1:1)='1'
      IPAGES(1)=1
  ENDIF
  IF(REC(2:2).EQ.'1')THEN
      CPAGES(2:2)='2'
```

```
            IPAGES(2)=1
          ENDIF
          IF(REC(3:3).EQ.'1')THEN
            CPAGES(3:3)='3'
            IPAGES(3)=1
          ENDIF
        ENDIF
        CALL mvprint(0, 0, 14, CPAGES//CHAR(0))
      RETURN
      END

C=========================================================================

        SUBROUTINE CFILES
C       -----------------

C       CHANGE PROJECT FILES

        CHARACTER*60 FILE(25), TEMP, PROJECT, DIRECTORY, REC
        INTEGER*2 DYNLEN,I
        COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

        CALL clean(142, 11, 35, 11, 46)
        CALL mvprint(11, 10, 30,'SEDIMENT INPUT DATA    : 'C)
        READ(*,'(A60)')REC
        IF(REC.NE.' ')THEN
          FILE(1)=REC
        ENDIF
        I=DYNLEN(FILE(1))
        TEMP=FILE(1)
        TEMP(I+1:I+1)=CHAR(0)
        CALL clean(0, 11, 35, 11, 46)
        CALL mvprint(11, 35, 14, TEMP)

        CALL clean(142, 12, 35, 12, 46)
        CALL mvprint(12, 10, 30,'DISCHARGE INPUT DATA   : 'C)
        READ(*,'(A60)')REC
        IF(REC.NE.' ')THEN
          FILE(2)=REC
        ENDIF
        I=DYNLEN(FILE(2))
        TEMP=FILE(2)
        TEMP(I+1:I+1)=CHAR(0)
        CALL clean(0, 12, 35, 12, 46)
        CALL mvprint(12, 35, 14, TEMP)

        CALL clean(142, 13, 35, 13, 46)
        CALL mvprint(13, 10, 30,'3 PAGE OUTPUT FILE     : 'C)
        READ(*,'(A60)')REC
        IF(REC.NE.' ')THEN
          FILE(4)=REC
        ENDIF
        I=DYNLEN(FILE(4))
        TEMP=FILE(4)
```

```
 TEMP(I+1:I+1)=CHAR(0)
 CALL clean(0, 13, 35, 13, 46)
 CALL mvprint(13, 35, 14, TEMP)

 CALL clean(142, 14, 35, 14, 46)
 CALL mvprint(14, 10, 30,'HEIS OUTPUT FILE       : 'C)
 READ(*,'(A60)')REC
 IF(REC.NE.' ')THEN
   FILE(5)=REC
 ENDIF
 I=DYNLEN(FILE(5))
 TEMP=FILE(5)
 TEMP(I+1:I+1)=CHAR(0)
 CALL clean(0, 14, 35, 14, 46)
 CALL mvprint(14, 35, 14, TEMP)

 CALL clean(142, 15, 35, 15, 46)
 CALL mvprint(15, 10, 30,'BED OUTPUT FILE        : 'C)
 READ(*,'(A60)')REC
 IF(REC.NE.' ')THEN
   FILE(6)=REC
 ENDIF
 I=DYNLEN(FILE(6))
 TEMP=FILE(6)
 TEMP(I+1:I+1)=CHAR(0)
 CALL clean(0, 15, 35, 15, 46)
 CALL mvprint(15, 35, 14, TEMP)

 CALL clean(142, 16, 35, 16, 46)
 CALL mvprint(16, 10, 30,'SUMMARY DATA FILE      : 'C)
 READ(*,'(A60)')REC
 IF(REC.NE.' ')THEN
   FILE(7)=REC
 ENDIF
 I=DYNLEN(FILE(7))
 TEMP=FILE(7)
 TEMP(I+1:I+1)=CHAR(0)
 CALL clean(0, 16, 35, 16, 46)
 CALL mvprint(16, 35, 14, TEMP)


RETURN
END
```

```
$debug
      INCLUDE 'FMENUS.INC'
      INCLUDE  'FGRAPH.FI'

C     **** interface to call system services routine ****
      INTERFACE TO SUBROUTINE system[C](STRING)
      CHARACTER*1 STRING[REFERENCE]
      END
C
C     PROGRAM HH048
C     -------------
C
C     SEDIMENT CURVE FIT PROGRAM
C     WRITTEN FOR H&H BRANCH
C


**********************************************************************
C     WRITTEN BY J.P. CHIRISELEISON & T.J. DUFRENE - DEC 74
C     CONVERTED TO HARRIS 800 BY R.E. JOLISSAINT - JAN 90
C     CONVERTED TO MS-DOS BY R.E. JOLISSAINT - JULY 90
**********************************************************************
C     THIS PROGRAM CALCULATES UNRECORDED SUSPENDED SEDIMENT LOADS AS
C     RELATED TO DISCHARGE HYDROGRAPHS BY USING A STATISTICAL MODEL.
C     DATA FILES:  1) CONTAINS OBSERVED DISCHARGES AND SEDIMENT LOADS
C                  2) DAILY DISCHARGES FOR THE WHOLE YEAR
C     THE OUTPUT IS SAVED TO A DISK FILE
C     SUBROUTINES: REGRESS, LINEFIT, REORD, SSEDCF
**********************************************************************
C     CONVERTED TO THE PC WITH MENU ROUTINES BY:  DON RAWSON
C     SOURCE: HH048.FOR
C     ENGID:  HH048
C     COMPLETED: 2/19/91
C

C     MAIN
C     ----
      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER TITLE*50, PNAME*50
      INTEGER*1 getmouse,dummy
      INTEGER*2 mice

      TITLE='SEDIMENT CURVE FIT PROGRAM'C
      PNAME='ENG. ID: HH048 - Version 1.0 - 16 OCT 1990'C

      dummy=getmouse(-2,mice,mice)

      CALL PTITLE(TITLE,PNAME)
      CALL mvprint(22, 3, 15,'STATUS: 'C)
      CALL GETDEFAULTS('LOAD')
      CALL DPROJECT
      CALL MENU
```

```
      CALL clearscreen ( $GCLEARSCREEN )
      STOP '   PROGRAM HH048 TERMINATED NORMALLY'
      END

C=======================================================================

      SUBROUTINE START(ERROR,MSG)
C     ---------------------------
C
C     SUBROUTINE STARTS COMPUTATIONS
C

      IMPLICIT DOUBLE PRECISION (A-H,O-Z)
      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      DIMENSION ID(100),M(100),IY(100),Q(100),SED(3,100)
      DIMENSION SEDT(4,100),XJ(4),P(4),NSD(400)
      DIMENSION DQ(400),DATE(100),QT(100)
      DIMENSION SEDTT(3,100)
      LOGICAL ERT,ERROR
      CHARACTER AA*8
      CHARACTER BB*8
      CHARACTER TITLE*66,TEMP*66, MSG*60
      INTEGER*2 DYNLEN

       CALL clean(142, 18, 26, 18, 78)
       CALL mvprint(18, 10, 30,'ENTER TITLE  :  'C)
       READ(*,'(A66)')TITLE
       I=DYNLEN(TITLE)
       TEMP=TITLE
       TEMP(I+1:I+1)=CHAR(0)
       CALL clean(0, 18, 26, 18, 78)
       CALL mvprint(18, 26, 30, TEMP)

      CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22, 12, 15,'PROCESSING [ ]'C)

  10  FORMAT(2A8)

      CALL FOPEN(ERROR,MSG)
      IF(ERROR)RETURN

      ERT = .FALSE.
      ERROR = .FALSE.

      KP=0
      J=0
      I=0
      KOUNT=0

C     *** READ: LINE NUM, DATE, DISCHARGE, SEDIMENT LOADS ***
  30  I=I+1
      READ(11,*,ERR=909)DLN,DATE(I),Q(I),T,SI
```

```
C  31 FORMAT(V)
      IF(DATE(I))35,40,33
  33  KOUNT=KOUNT+1
C     --- CUT DATE TO DAY, MONTH, YEAR ---
      ID(I)=DATE(I)/10000.
      DA=ID(I)
      YN=(DATE(I)/10000.-DA)*100.
      M(I)=YN
      XM=M(I)
      Y=(YN-XM)*100.
      IY(I)=Y+.01
C     --- TOTAL SEDIMENT LOAD ---
      SED(1,I)=T
C     --- SILT-CLAY FRACTION LOAD ---
      SED(3,I)=SI
      GO TO 30
  35  WRITE (*,*)'DATE BEING READ AS MINUS'
      GO TO 30
  40  CONTINUE

C     *** CALCULATE AMOUNT OF SAND = TOTAL - SILT ***
      DO 45 I=1,KOUNT
         SED(2,I)=SED(1,I)-SED(3,I)
  45  CONTINUE

C     *** CONVERT OBSERVED Q TO CFS ***
      DO 110 I=1,KOUNT
         QT(I)=Q(I)*1000.
 110  CONTINUE

C     *** CONVERT SEDIMENT Q TO 1000 TONS/DAY ***
      DO 60 J=1,3
         DO 60 I=1,KOUNT
            SEDT(J,I)=Q(I)*SED(J,I)*.00269663
            SEDTT(J,I)=SEDT(J,I)*1000.
  60  CONTINUE

C     *** PRINT OUT SEDIMENT TABLE ***
C     --- CALCULATE TOP OF PAGE SPACING ---
      KOUTEM=KOUNT
      IF(KP.EQ.1)GO TO 100
      KBGIN=1
      KEND=KOUNT
  59  NSPACT=(46-KOUNT)/2
      NSPACB=46-KOUNT-NSPACT
      IF(46-KOUNT)63,64,75
  63  KEND=40
      NSPACT=3
      NSPACB=3
  75  CONTINUE
      DO 61 ISPA=1,NSPACT
  61  WRITE(12,62)
  62  FORMAT(/)
```

```
   64  WRITE(12,65)TITLE
   65  FORMAT(A72)

C      --- PRINT HEADER ---
       WRITE(12,70)
   70  FORMAT(14X,'Q',12X,'SUSPENDED SEDIMENT OBSERVATIONS',/,3X,
      &    'DATE',5X,'1000',9X,'P.P.M.',14X,'1000 TONS/DAY',/,
      &     'MO DA YR    CFS',6X,'TOT  SAND  SILT    TOTAL     ',
      &     'SAND     SILT',/,64('-'))

C      --- PRINT TABLE ---
       DO 90 I=KBGIN,KEND
       WRITE(12,80)M(I),ID(I),IY(I),Q(I),(SED(J,I),J=1,3),
      &    (SEDT(JJ,I),JJ=1,3)
   80  FORMAT(I3,2('/',I2),F9.3,F7.0,2F6.0,F10.3,2F9.3)
   90  CONTINUE

C      --- CALCULATE BOTTOM OF PAGE SPACING ---
       IF(NSPACB.LT.1)GO TO 95
       DO 91 ISPA=1,NSPACB
   91  WRITE(12,62)
   95  IF(KOUNT.LE.46)GO TO 100
       KBGIN=41
       KEND=KOUNT
       KOUNT=KOUNT-40
       GO TO 59
  100  CONTINUE
       KOUNT=KOUTEM

       CALL REGRESS(KOUNT,QT,SEDTT,XJ,P)

       XJ(4)=1.0
       P(4)=1.0

       CALL REORD(NSD,DQ,M5,ERROR)
       IF(ERROR)GOTO 909

       NDY=M5+338
       L=0
       SEDT(4,1)=100.
       SEDT(4,2)=DQ(2)
       SEDT(4,3)=DQ(NDY)
       SEDT(4,4)=100.
       SEDT(4,5)=0.0

       DO 200 L=1,4
          NDYP1=NDY+1
          LIM=L
          IF(LIM.LT.4)GO TO 150
          DATE(2)=NSD(2)
          DATE(3)=NSD(NDY)
          DATE(4)=NSD(NDYP1)
          DATE(5)=0.0
          DATE(2)=NSD(2)
```

```
 150     CONTINUE

         CALL SSEDCF(NDY,NSD,DQ,DATE,SEDT,LIM,XJ,P,TITLE)

 200  CONTINUE

      CLOSE(11)
      CLOSE(12)
      CALL clean(0, 22, 12, 22, 78)

      RETURN
555   CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22, 15, 30,'....ERROR PROCESSING DATA....'C)
      ERROR = .TRUE.
      RETURN
909   CONTINUE
      CALL mvprint(22, 15, 30,'ERROR READING DATA FILE.'C)
      ERROR = .TRUE.
      RETURN
      END

C=====================================================================

      SUBROUTINE REGRESS (NP, X, Y, SLOPE, YCUT)

C    THIS ROUTINE CALCULATES A STRAIGHT LINE EQUATION FOR UP TO
C    400 PAIRS OF POINTS ON A LOG-LOG BASIS.
C    CALLED BY:  MAIN        CALLS:  LINEFIT

      IMPLICIT DOUBLE PRECISION (A-H,O-Z)

      DIMENSION X(100),Y(3,100),SLOPE(4),YCUT(4)

      I=0
      DO 25 I=1,NP
         DO 24 J=1,3
            Y(J,I)=ALOG10(Y(J,I))
  24     CONTINUE
         X(I)=ALOG10(X(I))
  25  CONTINUE

      CALL LINEFIT(1,NP,X,Y,SLOPE,YCUT)

      DO 30 M=1,3
         YCUT(M)=10.**YCUT(M)
  30  CONTINUE

      RETURN
      END
```

```
C=====================================================================

      SUBROUTINE LINEFIT (IN, LAST, X, Y, S, YI)

C     CALLED BY: REGRESS

      IMPLICIT DOUBLE PRECISION (A-H,O-Z)

      DIMENSION X(LAST), Y(3,LAST), S(4), YI(4)

      N=LAST-IN+1
      DO 20 J=1,3
         S1=0
         S2=0
         S3=0
         S4=0
         DO 10 I=IN,LAST
            S1=S1+X(I)
            S2=S2+Y(J,I)
            S3=S3+X(I)*Y(J,I)
            S4=S4+X(I)*X(I)
 10      CONTINUE
         S(J)=(N*S3-S1*S2)/(N*S4-S1*S1)
         YI(J)=(S2*S4-S1*S3)/(N*S4-S1*S1)
 20   CONTINUE

      RETURN
      END

C=======================================================================

      SUBROUTINE REORD(NSD, DQ, M5, ERROR)

C     ROUTINE READS THE DAILY DISCHARGES AND PUTS THEM IN DATE ORDER.
C     CALLED BY:  MAIN

      IMPLICIT DOUBLE PRECISION (A-H,O-Z)
      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      DIMENSION M(12),NSD(400),DQ(400)
      CHARACTER AA*8
      LOGICAL ERROR

      ERROR = .FALSE.

   5  FORMAT(A8)
      JJJ=1
C     *** READ: LINE NUM, START & END DATE & DISCHARGE ***
      READ(13,*)DMY,NSD1,DQ1,NSD2,DQ2

      IF(JJJ.EQ.1)THEN
        JJJ=2
        call mvputch(22 ,24, 4, 179)
      ELSEIF(JJJ.EQ.2)THEN
```

```
        JJJ=3
        call mvputch(22 ,24, 4, 45)
      ELSEIF(JJJ.EQ.3)THEN
        JJJ=4
        call mvputch(22 ,24, 4, 92)
      ELSEIF(JJJ.EQ.4)THEN
        JJJ=1
        call mvputch(22 ,24, 4, 47)
      ENDIF

C     *** CHEACK FOR LEAP YEAR ***
      SD=NSD1+1
      SD10=SD/100.
      N10=SD10
      SDF=N10
      IY=(SD10-SDF)*100.+.01
      Y=IY
      Y=Y/4.
      IY4=IY/4
      YI=IY4

C     *** SET NUMBER OF DAYS IN MONTHS ***
      DO 10 I=1,12
         M(I)=31
  10  CONTINUE
      IF(Y-YI)28,29,28
  28  M(5)=28
      GO TO 30
  29  M(5)=29
  30  KT=1
      M5=M(5)
      M(2)=30
      M(7)=30
      M(9)=30
      M(12)=30

C     *** SET MONTH = OCTOBER ***
      MO=10
      J=1
      IN=IY-1
      IYER=IN
      KOUNT=1

C     *** READ DAILY DISCHARGES, FIRST MONTH = OCT ***
      DO 100 I=2,362,10
         JJ=I+9
         READ(13,*,ERR=909)DMY,(DQ(JH),JH=I,JJ)

         IF(JJJ.EQ.1)THEN
           JJJ=2
           call mvputch(22 ,24, 4, 179)
         ELSEIF(JJJ.EQ.2)THEN
           JJJ=3
           call mvputch(22 ,24, 4, 45)
```

```
         ELSEIF(JJJ.EQ.3)THEN
           JJJ=4
           call mvputch(22 ,24, 4, 92)
         ELSEIF(JJJ.EQ.4)THEN
           JJJ=1
           call mvputch(22 ,24, 4, 47)
         ENDIF

 100  CONTINUE

      DO 200 N=1,366
         IF(N.EQ.1) GO TO 35
         KT=KT+1
         IF(DQ(N).EQ.0.)GO TO 201
         IF(KT.LE.M(J))GO TO 35
         KT=1
         J=J+1
         MO=J-3
         IF(J.EQ.1)MO=10
         IF(J.EQ.2)MO=11
         IF(J.EQ.3)MO=12
         IYER=IY
         IF(J.LT.4)IYER=IN
  35     KOUNT=KOUNT+1
         NSD(KOUNT)=IYER+100*MO+10000*KT
 200  CONTINUE

C     *** COPY START & END DATE & DISCHARGE TO ARRAYS ***
 201  KOUNT=KOUNT+1
      NSD(1)=NSD1
      DQ(1)=DQ1
      NSD(KOUNT)=NSD2
      DQ(KOUNT)=DQ2
      KOUNT=KOUNT+1
      NSD(KOUNT)=0
      DQ(KOUNT)=0

      CLOSE(13)

      RETURN
909   ERROR = .TRUE.
      RETURN
      END

C=====================================================================

      SUBROUTINE SSEDCF(NDY,KDATE,BDISCH,DATE,SEDT,LYT,XJD,PD,TITLE)


C     THIS ROUTINE FITS A CURVE THROUGH THERODICAL SUSPENDED SEDIMENT
C     LOADS AND ADJUSTES IT TO OBSERVED SUSPENDED SEDIMENT LOADS.
C     CALLED BY:  MAIN

      IMPLICIT DOUBLE PRECISION (A-H,O-Z)
```

```
      DIMENSION Q(425),ST(425),SA(425),SO(425),NDM(12)
      DIMENSION XJD(4),PD(4)
      DIMENSION KDATE(400),BDISCH(400),DATE(100),SEDT(4,100)
      DIMENSION SP(12,35),MP(12,35),XM(3)
      DIMENSION XSP(12,35)

      CHARACTER ND(367)*1
      CHARACTER MT(3)*3
      CHARACTER IN(12,31)*1
      CHARACTER TITLE*66
      CHARACTER TSS(3)*31

C     *** INITILIZATIONS ***
      DO 100 I=1,425
         Q(I)=0.
         ST(I)=0.
         SA(I)=0.
         SO(I)=0.
         IF(I.GT.367)GO TO 100
         ND(I)=1H
 100  CONTINUE
      MT(1)=3HAVG
      MT(2)=3HMAX
      MT(3)=3HMIN
      DO 101 I=1,12
      DO 102 J=1,35
 102  SP(I,J)=0.
      SP(I,34)=9999999.
 101  NDM(I)=31
      NDM(2)=30
      NDM(7)=30
      NDM(9)=30
      NDM(12)=30
      LSR=0
      KD=0
      KJ=0
      TSS(1)=18H             TOTAL
      TSS(2)=31HSAND (COARSER THAN 0.0625 M.M.)
      TSS(3)=30H SILT (FINER THAN 0.0625 M.M.)
      BQ=BDISCH(1)
      KB=KDATE(1)
      IC=0
C     --- END INITILIZATIONS ---

      DO 110 I=1,NDY
         IC=IC+1
         IP=I+1
         Q(I)=BDISCH(IP)
         K=KDATE(IP)
         IF(K.LE.0)GO TO 111
         KA=K
         IF(I.NE.152)GO TO 110
         LY=28
```

```
         PYK=K
         IYP=(PYK/100.-103.)*100.+1900.0001
         K=K/10000
         IF(K.NE.29)GO TO 110
         LY=K
         IYP=(PYK/100.-2902.)*100.+1900.0001
110   CONTINUE

111   NDM(5)=LY
      IYPM=IYP-1
      AQ=Q(IC-1)
      BSO=SEDT(LYT,1)

      DO 120 I=1,367
         IP=I+1
         SOT=SEDT(LYT,IP)
         K=DATE(IP)
         K100=K/100
         IF(K.EQ.0)GO TO 121
         ID=K100/100
         XK=K100
         XK=XK/100.
         DI=ID
         M=(XK-DI)*100.+.01
         IF(M.EQ.9)LSR=9
         IF(LSR.EQ.9.AND.M.EQ.10)GO TO 120
         N=0
         DO 118 J=1,12
            KM=J-3
            IF(J.LT.4)KM=J+9
            IF(KM.EQ.M)GO TO 119
118      N=N+NDM(J)
119      N=N+ID
         SO(N)=SOT
         ND(N)=1H#
120   ASO=SOT

121   CONTINUE
      KB=31-KB/10000
      KA=KA/10000
      L=LY+337

      DO 122 II=1,L
         I=L+1-II
         IKB=I+KB
         Q(IKB)=Q(I)
122   SO(IKB)=SO(I)

      IF(KB.EQ.0)GO TO 124

      DO 123 I=1,KB
123   Q(I)=BQ

      SO(1)=BSO
```

```
 124  N=L+1+KB
      NN=L+KA+KB
      IF(NN.LT.N)GO TO 126

      DO 125 I=N,NN
 125  Q(I)=AQ

      SO(NN)=ASO
 126  NNM=NN-1
      XJ=XJD(LYT)
      P=PD(LYT)

      DO 140 I=1,NN
         ST(I)=P*(Q(I)*1000.)**XJ
 140  ST(I)=ST(I)/1000.

 400  CONTINUE

      DO 450 I=1,NN
         KD=KD+1
         IF(KD-1)420,420,410
 410     IF(SO(KD))450,450,460
 420     LD=1
 450  CONTINUE

 460  DADIF=KD-LD
      IF(DADIF.LE.1.)GO TO 790

C     *** PROGRAM BOMBS AT ALONG10 IF SO(LD) = 0
C     *** CHANGED TO SO(LD) TO .0001
      IF(SO(LD).NE.0)THEN
        VDL=ALOG10(ST(LD))-ALOG10(SO(LD))
      ELSE
        VDL=ALOG10(ST(LD))-ALOG10(.0001)
      ENDIF

      VDR=ALOG10(ST(KD))-ALOG10(SO(KD))
      M=DADIF-1.
      VDIF=VDL-VDR

C     *** CHECK ADDED DURING CONVERSION TO HARRIS ***
C     *** PROGRAM BOMBS AT 700 - DIVISION BY ZERO ***
      IF (LYT.EQ.4 .AND. VDL.EQ.VDR) VDIF=.00001

      IF(VDL)470,700,480
 470  IF(VDR)490,700,700
 480  IF(VDR)700,700,495
 490  IF(VDIF)498,498,499
 495  IF(VDIF)497,496,496
 496  LU=1
      VDIS=VDR
 501  MPP=-1
      GO TO 505
 497  LU=0
```

```
      VDIS=VDL
      GO TO 501
498   LU=1
      VDIS=VDR
      GO TO 502
499   LU=0
      VDIS=VDL
502   MPP=1
505   IF(LU)506,506,507
506   MD=KD
      GO TO 508
507   MD=LD
508   T=DADIF

      DO 600 I=1,M
         T=T-1.
         IF(LU)606,606,605
605      MD=MD+1
         GO TO 607
606      MD=MD-1
607      ANTL=T/DADIF*ABS(VDIF)+ABS(VDIS)
         IF(MPP)610,610,611
610      SA(MD)=ALOG10(ST(MD))-ANTL
         GO TO 612
611      SA(MD)=ALOG10(ST(MD))+ANTL
612      SA(MD)=10.**(SA(MD))
600   CONTINUE

      GO TO 780

700   FRL=ABS(VDL/VDIF*DADIF)
      FRR=ABS(VDR/VDIF*DADIF)
      ITL=FRL
      ITR=FRR
      IF(ITR.EQ.0.AND.ITL.EQ.0)GO TO 770
      MD=KD
      T=FRR
      IF(ITR.EQ.0)GO TO 740

      DO 730 I=1,ITR
         MD=MD-1
         T=T-1.
         SA(MD)=ALOG10(ST(MD))-T/FRR*VDR
         SA(MD)=10.**(SA(MD))
730   CONTINUE

740   MD=LD
      T=FRL
      IF(ITL.EQ.0)GO TO 780

      DO 760 I=1,ITL
         MD=MD+1
         T=T-1.
         SA(MD)=ALOG10(ST(MD))-T/FRL*VDL
```

```
         SA(MD)=10.**(SA(MD))
760   CONTINUE

      GO TO 780
770   ITL=LD+1
      ITR=KD-1

      DO 775 I=ITL,ITR
775   SA(I)=ST(I)

780   CONTINUE
790   LD=KD
      IF(KD-NNM)400,800,800

800   DO 830 I=1,NN
         IF(SO(I))830,830,810
810      SA(I)=SO(I)
830   CONTINUE

      DO 860 I=1,L
         IKB=I+KB
860   SA(I)=SA(IKB)
      KD=0

      DO 861 I=1,12
         L=I-3
         IF(I.LT.4)L=I+9
         J=NDM(I)
         DO 861 K=1,J
            KD=KD+1
            SP(L,K)=SA(KD)
            IF(SP(L,K).GT.SP(L,33))SP(L,33)=SP(L,K)
            IF(SP(L,K).LT.SP(L,34))SP(L,34)=SP(L,K)
            SP(L,35)=SP(L,35)+SP(L,K)
            IN(L,K)=ND(KD)
861   CONTINUE

      GT=0.
      XM(2)=0.
      XM(3)=99999999.

      DO 864 I=1,12
         IF(SP(I,33).GT.XM(2))XM(2)=SP(I,33)
         IF(SP(I,34).LT.XM(3))XM(3)=SP(I,34)
         J=I+3
         IF(I.GT.9)J=I-9
         XNDM=NDM(J)
         SP(I,32)=SP(I,35)/XNDM
         SP(I,35)=SP(I,35)/1000.
864   GT=GT+SP(I,35)

      D=LY+337
      XM(1)=(GT*1000.)/D
```

```
      DO 865 I=1,12
         DO 865 J=1,35
            XSP(I,J)=SP(I,J)+0.5
865   MP(I,J)=INT(XSP(I,J))

      IF(LYT.LT.4)GO TO 869
      WRITE(12,866)TITLE,IYPM,IYP
866   FORMAT(//,20X,'DAILY DISCHARGE IN 1000 CFS FOR',/,
     &    A72,/,22X,'--- WATER YEAR',I5,'-',I4,' ---',//,5X,
     &    'OCT  NOV  DEC  JAN  FEB  MAR  APR  MAY  JUN  JUL  ',
     &    'AUG  SEP',/)

      GO TO 876

869   WRITE(12,870)TITLE,TSS(LYT),IYPM,IYP
870   FORMAT(//,13X,'SUSPENDED SEDIMENT LOADS IN 1000 TONS/DAY',
     &    ' FOR',/,A72,/,16X,A32,/,22X,'--- WATER YEAR',I5,
     &    '-',I4,' ---',//,5X,
     &    'OCT  NOV  DEC  JAN  FEB  MAR  APR  MAY  JUN  JUL  ',
     &    'AUG  SEP',/)

876   DO 880 I=1,LY
880   WRITE(12,862)I,(MP(J,I),IN(J,I),J=10,12),(MP(K,I),
     &    IN(K,I),K=1,9),I
862   FORMAT(I3,I5,11(A1,I4),A1,I3)

      LYP=LY+1

      DO 890 I=LYP,30
890   WRITE(12,930)I,(MP(J,I),IN(J,I),J=10,12),MP(1,I),IN(1,I),
     &    (MP(K,I),IN(K,I),K=3,9),I
930   FORMAT(I3,I5,3(A1,I4),A1,I9,6(A1,I4),A1,I3)

      I=31
      WRITE(12,931)I,(MP(J,I),IN(J,I),J=10,12,2),(MP(K,I),IN(K,I),
     &    K=1,7,2),MP(8,I),IN(8,I),I
931   FORMAT(I3,I5,A1,I9,A1,I4,3(A1,I9),A1,I4,A1,I8,/,4X,60(1H-))

      DO 940 I=32,34
      N=I-31
      DO 939 J=1,12
      IF(SP(J,I).GT.99.9)GO TO 950
939   CONTINUE
      WRITE(12,938)MT(N),(SP(J,I),J=10,12),(SP(K,I),K=1,9),XM(N)
938   FORMAT(A3,12F5.1,F9.3)
      GO TO 940
950   WRITE(12,941)MT(N),(MP(J,I),J=10,12),(MP(K,I),K=1,9),XM(N)
941   FORMAT(A3,12I5,F9.3)
940   CONTINUE

      I=35

      WRITE(12,942)(SP(J,I),J=10,12),(SP(K,I),K=1,9),GT
942   FORMAT('TOT',12F5.1,F9.3,///)
```

```
      IF(LYT.LT.4)GO TO 961

      WRITE(12,960)
 960  FORMAT(/,'NOTE:',/,4X,'TOTALS ARE IN 1,000,000 CFS')

      GO TO 999

 961  WRITE(12,943)
 943  FORMAT(/,'NOTES:',/,4X,'1) TOTALS ARE IN 1,000,000 TONS',29X,
     &    'XJ',/,4X,'2) THEORETICAL SEDIMENT VALUES ARE COMPUTED ',
     &    'FROM Q(SED)=P(Q)',/,7X,'USING DAILY DISCHARGES(Q) AND ',
     &    'THEN ARE ADJUSTED TO ACCOMMODATE',/,7X,'OBSERVED VALUES ',
     &    'WHICH ARE NOTED WITH A #.')

      WRITE(12,944)XJ,P
 944  FORMAT(10X,'XJ=',E14.6,'  & P=',E14.6,////)

 999  CONTINUE

      RETURN
      END

C
C=========================================================================
C

      SUBROUTINE GETDEFAULTS(LOPTION)
C     ------------------------------
C
C     OPEN INPUT AND OUTPUT FILES
C
      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER REC*80, LOPTION*4
      CHARACTER*60 FILE(25),PROJECT,DIRECTORY,PRJDIR
      CHARACTER*9 OPTMAX(5,7)
      LOGICAL EXIST
      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
      COMMON /MAXOPT/ OPTMAX
      INQUIRE(FILE='\SEDIMENT\DEFAULT',EXIST=EXIST)

      IF(EXIST)THEN

        IF(LOPTION.EQ.'LOAD')THEN
          OPEN(10,FILE='\SEDIMENT\DEFAULT',STATUS='OLD')
          READ(10,10,ERR=110)PROJECT
10        FORMAT(//29X,A60)
          CLOSE (10)
        ENDIF

        PRJDIR='\SEDIMENT\PROJECT\'//PROJECT(1:12)

        INQUIRE(FILE=PRJDIR,EXIST=EXIST)
```

```
        IF(EXIST)THEN
          OPEN(10,FILE=PRJDIR,STATUS='OLD')
          READ(10,11)DIRECTORY
11        FORMAT(//29X,A60)

          READ(10,30,ERR=100)OPTMAX(1,1),OPTMAX(1,2),OPTMAX(1,3),
     &    OPTMAX(1,4),OPTMAX(1,5),OPTMAX(1,6),
     &    FILE(1),FILE(2),FILE(4),FILE(5),FILE(6),FILE(7)
30        FORMAT(///29X,2A1,A3,3A1,6(/29X,A60))

          READ(10,31,ERR=100)OPTMAX(2,1),OPTMAX(2,2),OPTMAX(2,3),
     &    OPTMAX(2,4),OPTMAX(2,5),OPTMAX(2,6),OPTMAX(2,7),
     &    FILE(8),FILE(9)
31        FORMAT(///,29X,A2,1X,2(A5,1X),A6,1X,A6,2A2,
     &    2(/29X,A60))

          READ(10,32,ERR=100)OPTMAX(3,1),OPTMAX(3,2),OPTMAX(3,3),
     &    OPTMAX(3,4),OPTMAX(3,5),FILE(10),FILE(11)
32        FORMAT(///,30X,A1,1X,A5,1X,A6,1X,A6,A2,2(/29X,A60))

          READ(10,33,ERR=100)FILE(12),FILE(13),FILE(14)
33        FORMAT(//,3(/29X,A60))

          READ(10,34,ERR=100)FILE(15)
34        FORMAT(///,29X,A60)

          READ(10,35,ERR=100)FILE(16),FILE(17)
35        FORMAT(//,2(/29X,A60))

          READ(10,36,ERR=100)FILE(18),FILE(19)
36        FORMAT(//,2(/29X,A60))

          READ(10,37,ERR=100)OPTMAX(4,1),OPTMAX(4,2),OPTMAX(4,3),
     &    OPTMAX(4,4),OPTMAX(4,5),OPTMAX(4,6),FILE(20),FILE(21)
37        FORMAT(///,30X,A1,1X,A1,2(1X,A5),2(1X,A6),2(/29X,A60))

          READ(10,38,ERR=100)OPTMAX(5,1),OPTMAX(5,2),OPTMAX(5,3),
     &    OPTMAX(5,4),FILE(22),FILE(23)
38        FORMAT(///,30X,A5,1X,A5,1X,A6,1X,A6,2(/29X,A60))

          READ(10,39,ERR=100)FILE(24),FILE(25)
39        FORMAT(//,2(/29X,A60))

          CLOSE (10)
          CALL CHDIRECTORY

        ELSE
         CALL clean(0, 22, 12, 22, 78)
         CALL mvprint(22 , 12, 14,'PROJECT FILE DOES NOT EXIST..'C)
        ENDIF
      ELSE
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'DEFAULT FILE DOES NOT EXIST..'C)
```

```
      ENDIF

      RETURN
100   CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22 , 12, 14,'ERROR READING PROJECT FILE..'C)
      RETURN
110   CALL clean(0, 22, 12, 22, 78)
      CALL mvprint(22 , 12, 14,'ERROR READING DEFAULT FILE..'C)
      RETURN
      END
C
C==============================================================================
C

      SUBROUTINE MENU
C     ---------------
C
C     LOAD SETUP FOR GRAPHICS AND LOAD FONT LIBRARY
C

      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER MSG*60
      INTEGER*2   OP,OPTION
      LOGICAL MORDAT /.TRUE./
      LOGICAL ERROR
      RECORD /MENUS/ MAINMEN
      RECORD /OPTS/ MAINOPT(9)


      MAINOPT(1).PLACE = 3
      MAINOPT(1).KEY = 76
      MAINOPT(1).CMD   = ' Load 'C
      MAINOPT(2).PLACE = 10
      MAINOPT(2).KEY = 82
      MAINOPT(2).CMD   = ' cReate 'C
      MAINOPT(3).PLACE = 19
      MAINOPT(3).KEY = 83
      MAINOPT(3).CMD   = ' Save 'C
      MAINOPT(4).PLACE = 26
      MAINOPT(4).KEY = 67
      MAINOPT(4).CMD   = ' Change 'C
      MAINOPT(5).PLACE = 34
      MAINOPT(5).KEY = 84
      MAINOPT(5).CMD   = ' sTart 'C
      MAINOPT(6).PLACE = 41
      MAINOPT(6).KEY = 68
      MAINOPT(6).CMD   = ' Directory 'C
      MAINOPT(7).PLACE = 52
      MAINOPT(7).KEY = 79
      MAINOPT(7).CMD   = ' Options 'C
      MAINOPT(8).PLACE = 61
      MAINOPT(8).KEY = 77
      MAINOPT(8).CMD   = ' Mkdir 'C
```

```
      MAINOPT(9).PLACE = 72
      MAINOPT(9).KEY = 81
      MAINOPT(9).CMD   = ' Quit 'C

      MAINMEN.HIGH = 78
      MAINMEN.NORM = 23
      MAINMEN.FRAM = 0
      MAINMEN.ALIGN = 24
      MAINMEN.TITLE = ''C

      CALL SLAPMENU( MAINMEN, MAINOPT)
      CALL SETMENU( MAINMEN, 9, 0, 1)
10    IF( MORDAT ) THEN
        OP = OPTION( MAINMEN, 9, 1)
        SELECT CASE ( OP )
        CASE ( 0 )
             CALL clean(0, 22, 12, 22, 78)
             CALL LPROJECT
        CASE ( 1 )
             CALL clean(0, 22, 12, 22, 78)
             CALL CPROJECT
        CASE ( 2 )
             CALL clean(0, 22, 12, 22, 78)
             CALL SAVEDP
        CASE ( 3 )
             CALL clean(0, 22, 12, 22, 78)
             CALL CFILES
        CASE ( 4 )
            CALL clean(0, 22, 12, 22, 78)
            CALL START(ERROR,MSG)
            IF(.NOT.ERROR)THEN
               CALL clean(0, 22, 12, 22, 78)
            ELSE
               CALL clean(0, 22, 12, 22, 78)
               CALL mvprint(22,12,14,MSG)
            ENDIF
        CASE ( 5 )
            CALL clean(0, 22, 12, 22, 78)
            CALL CDIRECTORY
        CASE ( 6 )
            CALL clean(0, 22, 12, 22, 78)
        CASE ( 7 )
            CALL clean(0, 22, 12, 22, 78)
            CALL MKDIRECTORY
        CASE ( 8 )
             CALL clean(0, 22, 12, 22, 78)
             MORDAT=.FALSE.
        END SELECT
        GOTO 10
      ENDIF

      RETURN
      END
```

```
C=========================================================================

      SUBROUTINE DPROJECT
C     -------------------

C      DISPLAY CURRENT PROJECT FILES

      CHARACTER*60 FILE(25), TEMP, PROJECT, DIRECTORY
      INTEGER*2 DYNLEN,I
      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY


       CALL mvprint(7, 10, 31,'PROJECT INFORMATION'C)
       CALL clean(0, 8, 35, 8,46)
       CALL mvprint(8, 10, 30,'CURRENT PROJECT        : 'C)
       I=DYNLEN(PROJECT)
       TEMP=PROJECT
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

       CALL clean(0, 9, 35, 9,46)
       CALL mvprint(9, 10, 30,'PROJECT DIRECTORY      : 'C)
       I=DYNLEN(DIRECTORY)
       TEMP=DIRECTORY
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

       CALL mvprint(10, 10, 31,'PROJECT FILES'C)
       CALL clean(0, 11, 35, 11, 46)
       CALL mvprint(11, 10, 30,'DSS DISCHARGE FILE     : 'C)
       I=DYNLEN(FILE(12))
       TEMP=FILE(12)
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

       CALL clean(0, 12, 35, 12, 46)
       CALL mvprint(12, 10, 30,'SEDIMENT INPUT FILE    : 'C)
       I=DYNLEN(FILE(13))
       TEMP=FILE(13)
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

       CALL clean(0, 13, 35, 13, 46)
       CALL mvprint(13, 10, 30,'DAILY LOAD OUTPUT FILE : 'C)
       I=DYNLEN(FILE(14))
       TEMP=FILE(14)
       TEMP(I+1:I+1)=CHAR(0)
       CALL mvprint(0, 0, 14, TEMP)

      RETURN
      END

C=========================================================================
```

```
      SUBROUTINE FOPEN(ERROR,MSG)
C     ----------------
C
C     OPEN INPUT AND OUTPUT FILES
C
      CHARACTER*60 FILE(25),PROJECT,DIRECTORY,MSG
      LOGICAL EXIST,ERROR

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      ERROR=.FALSE.
      CALL FOPCHK(FILE(12),EXIST,MSG)
      IF(EXIST)THEN
          ERROR=.TRUE.
      ENDIF

      CALL FOPCHK(FILE(13),EXIST,MSG)
      IF(EXIST)THEN
          ERROR=.TRUE.
      ENDIF

      OPEN(11,FILE=FILE(13),STATUS='UNKNOWN')
      OPEN(12,FILE=FILE(14),STATUS='UNKNOWN')
      OPEN(13,FILE=FILE(12),STATUS='UNKNOWN')

      RETURN
      END

C=========================================================================

      SUBROUTINE LPROJECT
C     -------------------

C     LOAD PROJECT

      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      CALL settextposition(8, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 8, 35, 8, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(8, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
         PROJECT=REC
      ENDIF
      call clean(0, 8, 35, 8, 46)
```

```
      I=DYNLEN(PROJECT)
      IF(INDEX(PROJECT,'PRJ').EQ.0.AND.
     &                              INDEX(PROJECT,'.').EQ.0)THEN
         PROJECT(I+1:I+5)='.PRJ'
         I=I+5
      ENDIF
      TEMP=PROJECT
      TEMP(I+1:I+1)=CHAR(0)
      CALL mvprint(0, 0, 14, TEMP)
      CALL GETDEFAULTS('SKIP')
      CALL DPROJECT

      RETURN
      END


C=========================================================================

      SUBROUTINE SAVEDP
C     -----------------

C     CHANGE CURRENT PROJECT

       CHARACTER*60 FILE(25), PROJECT, DIRECTORY, REC*80
       CHARACTER DIR*60, CD*60
       CHARACTER MKDIR*60, PRJDIR*60
       INTEGER*2 I, J, DYNLEN
       CHARACTER*9 OPTMAX(5,7)
       LOGICAL MORDAT, EXIST

       COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
       COMMON /MAXOPT/ OPTMAX

       MORDAT=.TRUE.

       OPEN(10,FILE='\SEDIMENT\DEFAULT',STATUS='UNKNOWN')
       I=DYNLEN(PROJECT)
       J=DYNLEN(DIRECTORY)
       DO 5 K=1,J
         IF(DIRECTORY(K:K).NE.' ')THEN
           L=J-K+1
           GO TO 6
         ENDIF
5      CONTINUE
6      DIRECTORY(1:L)=DIRECTORY(K:J)
       DO 7 M=L+1,12
          DIRECTORY(M:M)=' '
7      CONTINUE

       WRITE(10,10)PROJECT(1:12)
10     FORMAT('C  DEFAULT FILES FOR SEDIMENT SYSTEM',/,
     &        'C--------1---------2---------3---------4',/,
     &        'F CURRENT PROJECT FILE   :   ',A12)
       CLOSE(10)
```

```
      DIR='\SEDIMENT\'//DIRECTORY(1:I)
      INQUIRE(FILE=DIR,EXIST=EXIST)

      IF(EXIST)THEN
        CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
        CALL SYSTEM(CD)
      ELSE
        MKDIR='MKDIR \SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
        CALL SYSTEM(MKDIR)
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'CREATING DIRECTORY..'C)
        CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
        CALL SYSTEM(CD)
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'CHANGING DIRECTORY..'C)
      ENDIF

      PRJDIR='\SEDIMENT\PROJECT\'//PROJECT(1:12)
      OPEN(10,FILE=PRJDIR,STATUS='UNKNOWN')


          WRITE(10,20)DIRECTORY
20        FORMAT('C',21X,'DEFAULT FILES FOR SEDIMENT SYSTEM',/,
     &    'C--------1---------2---------3---------4',/,
     &    'D PROJECT DIRECTORY      :   ',A60)

          WRITE(10,30)OPTMAX(1,1),OPTMAX(1,2),OPTMAX(1,3),
     &    OPTMAX(1,4),OPTMAX(1,5),OPTMAX(1,6),
     &    FILE(1),FILE(2),FILE(4),FILE(5),FILE(6),FILE(7)
30        FORMAT('C',12X,'DEFAULT FILES FOR SUSPENDED SEDIMENT'
     &    ' ANALYSIS PROGRAM',/,
     &    'P HH007',/,
     &    'C--------1---------2---------3---------4',/,
     &    'O OPTIONS                :   ',
     &    2A1,A3,3A1,/,
     &    'F SEDIMENT  INPUT DATA   :   ',A60,/,
     &    'F DISCHARGE INPUT DATA   :   ',A60,/,
     &    'F 3 PAGE OUTPUT FILE     :   ',A60,/,
     &    'F HEIS OUTPUT FILE       :   ',A60,/,
     &    'F BED OUTPUT FILE        :   ',A60,/,
     &    'F SUMMARY DATA FILE      :   ',A60)

          WRITE(10,31)
     &    OPTMAX(2,1),OPTMAX(2,2),OPTMAX(2,3),OPTMAX(2,4),
     &    OPTMAX(2,5),OPTMAX(2,6),OPTMAX(2,7),FILE(8),FILE(9)
31        FORMAT('C',14X,'DEFAULT FILES FOR SEDIMENT',
     &    ' RETRIEVAL PROGRAM',/,
     &    'P HH080',/,
     &    'C--------1---------2---------3---------4',/,
     &    'O OPTIONS                :   ',
     &    A2,1X,2(A5,1X),A6,1X,A6,2A2,/,
     &    'F DISCHARGE MASTER       :   ',A60,/,
     &    'F DISCHARGE OUTPUT DATA  :   ',A60)
```

```
      WRITE(10,32)
     &OPTMAX(3,1),OPTMAX(3,2),OPTMAX(3,3),OPTMAX(3,4),
     &OPTMAX(3,5),FILE(10),FILE(11)
32    FORMAT('C',23X,'HEIS DATA RETRIVAL PROGRAM',/,
     &'P HH008',/,
     &'C--------1---------2---------3---------4',/,
     &'O OPTIONS                 :    '
     &A1,1X,A5,1X,A6,1X,A6,A2,/,
     &'F HEIS INPUT FILE         :   ',A60,/,
     &'F SEDIMENT OUTPUT FILE    :   ',A60)

      WRITE(10,33)FILE(12),FILE(13),FILE(14)
33    FORMAT('C',23X,'SEDIMENT CURVE FIT PROGRAM',/,
     &'P HH048',/,
     &'C--------1---------2---------3---------4',/,
     &'F DSS DISCHARGE INPUT     :   ',A60,/,
     &'F SEDIMENT INPUT FILE     :   ',A60,/,
     &'F DAILY LOAD DATA OUTPUT  :   ',A60)

      WRITE(10,34)FILE(15)
34    FORMAT('C',15X,'REGRESSION ANALYSIS FOR SEDIMENT',
     &' RATING CURVE PROGRAM',/,
     &'P HH049',/,
     &'C--------1---------2---------3---------4',/,
     &'F SEDIMENT INPUT FILE     :   ',A60)

      WRITE(10,35)FILE(16),FILE(17)
35    FORMAT('C',14X,'REGESSION ANALYSIS FOR VARIOUS ',
     &' GRAIN SIZES PROGRAM',/,
     &'P HH079',/,
     &'C--------1---------2---------3---------4',/,
     &'F SEDIMENT DATA FILE      :   ',A60,/,
     &'F GRAIN SIZE OUTPUT FILE  :   ',A60)

      WRITE(10,36)FILE(18),FILE(19)
36     FORMAT('C',14X,'MEDIAN OF VARIOUS GRAIN SIZES PROGRAM',/,
     &'P HH050',/,
     &'C--------1---------2---------3---------4',/,
     &'F SEDIMENT DATA FILE      :   ',A60,/,
     &'F MEDIAN OF VARIOUS GRAIN:    ',A60)

      WRITE(10,37)OPTMAX(4,1),OPTMAX(4,2),OPTMAX(4,3),
     &OPTMAX(4,4),OPTMAX(4,5),OPTMAX(4,6),FILE(20),FILE(21)
37    FORMAT('C',14X,'BED DATA RETRIVAL PROGRAM',/,
     &'P HH082',/,
     &'C--------1---------2---------3---------4',/,
     &'O OPTIONS                 :    ',
     &A1,1X,A1,2(1X,A5),2(1X,A6),/,
     &'F HEIS INPUT FILE         :   ',A60,/
     &'F EXTRACTED BED DATA      :   ',A60)

      WRITE(10,38)OPTMAX(5,1),OPTMAX(5,2),OPTMAX(5,3),
     &OPTMAX(5,4),FILE(22),FILE(23)
38    FORMAT('C',13X,'BED DATA TABULAR LISTING PROGRAM',/,
```

```
     &    'P HH081',/,
     &    'C--------1---------2---------3---------4',/,
     &    'OPTION                    :    '
     &    A5,1X,A5,1X,A6,1X,A6,/,
     &    'F HEIS FILE               :   ',A60,/
     &    'F TABULAR BED DATA LIST   :   ',A60)

          WRITE(10,39)FILE(24),FILE(25)
39        FORMAT('C',14X,'BED MATERIAL PLOT PROGRAM',/,
     &    'P HH051',/,
     &    'C--------1---------2---------3---------4',/,
     &    'F EXTRACTED BED DATE      :   ',A60,/
     &    'F MASTER TITLE FILE       :   ',A60)

       CLOSE (10)

       RETURN
       END

C==========================================================================

      SUBROUTINE CPROJECT
C     -------------------

C     CREATE PROJECT

      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      CHARACTER*9 OPTMAX(5,7)
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY
      COMMON /MAXOPT/ OPTMAX


      CALL settextposition(8, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 8, 35, 8, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(8, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
           PROJECT=REC
      ENDIF
      call clean(0, 8, 35, 8, 46)
      I=DYNLEN(PROJECT)
      IF(INDEX(PROJECT,'PRJ').EQ.0)THEN
         PROJECT(I+1:I+5)='.PRJ'
         I=I+5
      ENDIF
      TEMP=PROJECT
```

```
TEMP(I+1:I+1)=CHAR(0)
CALL mvprint(0, 0, 14, TEMP)

I=INDEX(PROJECT,'.')
FILE(1)=PROJECT(1:I)//'SED'
FILE(2)=PROJECT(1:I)//'DIS'
FILE(4)=PROJECT(1:I)//'3PG'
FILE(5)=PROJECT(1:I)//'HES'
FILE(6)=PROJECT(1:I)//'BED'
FILE(7)=PROJECT(1:I)//'SUM'
FILE(8)='\SEDIMENT\MASTER\DISCHARG.MAS'
FILE(9)=PROJECT(1:I)//'DIS'
FILE(10)=PROJECT(1:I)//'HES'
FILE(11)=PROJECT(1:I)//'SS1'
FILE(12)=PROJECT(1:I)//'DSS'
FILE(13)=PROJECT(1:I)//'SS1'
FILE(14)=PROJECT(1:I)//'DLD'
FILE(15)=PROJECT(1:I)//'SS1'
FILE(16)=PROJECT(1:I)//'SS2'
FILE(17)=PROJECT(1:I)//'SIZ'
FILE(18)=PROJECT(1:I)//'SS2'
FILE(19)=PROJECT(1:I)//'MED'
FILE(20)=PROJECT(1:I)//'BED'
FILE(21)=PROJECT(1:I)//'EBD'
FILE(22)=PROJECT(1:I)//'BED'
FILE(23)=PROJECT(1:I)//'LST'
FILE(24)=PROJECT(1:I)//'EBD'
FILE(25)='\SEDIMENT\MASTER\TITLE.MAS'
OPTMAX(1,1)='*'
OPTMAX(1,2)='N'
OPTMAX(1,3)='YES'
OPTMAX(1,4)='0'
OPTMAX(1,5)='0'
OPTMAX(1,6)='0'
OPTMAX(2,1)='-4'
OPTMAX(2,2)='03045'
OPTMAX(2,3)='03045'
OPTMAX(2,4)='900101'
OPTMAX(2,5)='900430'
OPTMAX(2,6)=' 0'
OPTMAX(2,7)=' 0'
OPTMAX(3,1)='1'
OPTMAX(3,2)='03045'
OPTMAX(3,3)='900101'
OPTMAX(3,4)='900430'
OPTMAX(3,5)='12'
OPTMAX(4,1)='2'
OPTMAX(4,2)='2'
OPTMAX(4,3)='03045'
OPTMAX(4,4)='03045'
OPTMAX(4,5)='900101'
OPTMAX(4,6)='900430'
OPTMAX(5,1)='03045'
OPTMAX(5,2)='03045'
```

```
      OPTMAX(5,3)='900101'
      OPTMAX(5,4)='900430'

      CALL DPROJECT

      RETURN
      END


C=========================================================================

      SUBROUTINE CDIRECTORY
C     -------------------

C     CHANGE DIRECTORY'S NAME

      INCLUDE 'FMENUS.REC'
      INCLUDE 'FGRAPH.FD'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY, REC
      INTEGER*2 DYNLEN,I
      INTEGER*4 dummy4
      RECORD /rccoord/ curpos

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      CALL settextposition(9, 35, curpos)
      dummy4 = setbkcolor( 0 )
      call clean(0, 9, 35, 9, 46)
      dummy4 = setbkcolor( 1 )
      CALL settextposition(9, 35, curpos)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
         DIRECTORY=REC
      ENDIF
      call clean(0, 9, 35, 9, 46)
      I=DYNLEN(DIRECTORY)
      TEMP=DIRECTORY
      TEMP(I+1:I+1)=CHAR(0)
      CALL mvprint(0, 0, 14, TEMP)
      CALL CHDIRECTORY

      RETURN
      END

C=========================================================================

      SUBROUTINE CHDIRECTORY
C     ----------------------

C     CHANGE DIRECTORY

      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY
```

```
      CHARACTER    CD*60, DIR*60
      INTEGER*2    DYNLEN,I
      INTEGER*4 dummy4
      LOGICAL EXIST

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      I=DYNLEN(DIRECTORY)
      DIR='\SEDIMENT\'//DIRECTORY(1:I)
      INQUIRE(FILE=DIR,EXIST=EXIST)

      IF(EXIST)THEN
        CD='CD\SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
        CALL SYSTEM(CD)
      ELSE
        CALL clean(0, 22, 12, 22, 78)
        CALL mvprint(22 , 12, 14,'DIRECTORY DOES NOT EXIST..'C)
      ENDIF

      RETURN
      END

C=========================================================================

      SUBROUTINE MKDIRECTORY
C     ----------------------

C     MAKE DIRECTORY

      INCLUDE 'FGRAPH.FD'
      INCLUDE 'FMENUS.REC'
      CHARACTER*60 FILE(25), PROJECT, TEMP, DIRECTORY
      CHARACTER    MKDIR*60, MD*60
      INTEGER*2    DYNLEN,I
      INTEGER*4 dummy4
      LOGICAL EXIST

      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      I=DYNLEN(DIRECTORY)
      MKDIR='MKDIR \SEDIMENT\'//DIRECTORY(1:I)//CHAR(0)
      MD='\SEDIMENT\'//DIRECTORY(1:I)

      INQUIRE(FILE=MD,EXIST=EXIST)

      IF(EXIST)THEN
         CALL clean(0, 22, 12, 22, 78)
         CALL mvprint(22 , 12, 14,'DIRECTORY ALREADY EXIST..'C)
      ELSE
        CALL SYSTEM(MKDIR)
      ENDIF

      RETURN
      END
```

```
C=========================================================================

      SUBROUTINE CFILES
C     -----------------

C     CHANGE PROJECT FILES

      CHARACTER*60 FILE(25), TEMP, PROJECT, DIRECTORY, REC
      INTEGER*2 DYNLEN,I
      COMMON /FILENAME/ FILE, PROJECT, DIRECTORY

      CALL clean(142, 11, 35, 11, 46)
      CALL mvprint(11, 10, 30,'DSS DISCHARGE FILE     : 'C)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
        FILE(12)=REC
      ENDIF
      I=DYNLEN(FILE(12))
      TEMP=FILE(12)
      TEMP(I+1:I+1)=CHAR(0)
      CALL clean(0, 11, 35, 11, 46)
      CALL mvprint(11, 35, 14, TEMP)

      CALL clean(142, 12, 35, 12, 46)
      CALL mvprint(12, 10, 30,'SEDIMENT INPUT FILE    : 'C)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
        FILE(13)=REC
      ENDIF
      I=DYNLEN(FILE(13))
      TEMP=FILE(13)
      TEMP(I+1:I+1)=CHAR(0)
      CALL clean(0, 12, 35, 12, 46)
      CALL mvprint(12, 35, 14, TEMP)

      CALL clean(142, 13, 35, 13, 46)
      CALL mvprint(13, 10, 30,'DAILY LOAD OUTPUT FILE : 'C)
      READ(*,'(A60)')REC
      IF(REC.NE.' ')THEN
        FILE(14)=REC
      ENDIF
      I=DYNLEN(FILE(14))
      TEMP=FILE(14)
      TEMP(I+1:I+1)=CHAR(0)
      CALL clean(0, 13, 35, 13, 46)
      CALL mvprint(13, 35, 14, TEMP)

     RETURN
     END
```

Appendix 2.

Example laboratory data sheet used for recording laboratory results for a cooperative program between the U.S. Geological Survey and the U.S. Army Corps of Engineers in the lower Mississippi-Atchafalaya River Basin from 1973 to 2001, which also served as the basis for the Excel spreadsheet that was used from 2001 to February 2015

SEDIMENT ANALYSIS

BY SIEVE AND BOTTOM WITHDRAWAL METHODS

11-6-98

ADPS CODE: 03045 | LOCATION NAME: ATCH RIVER @ SIMMESPORT

DATE	TIME	GAGE RDG (FT)	FROM TIME	TO TIME	TYPE SAMPLER	TYPE SAMPLES	NO. VERT.	PTS/VERT.	WATER TEMP (°C)	DEPTH (FT)	DISCHARGE	1000 CFS
12 08 98		.152	1100	1200	P-63	A-P	3	3	.290	1.00	18.8	012

| | | |

Appendix 3.

Example 80-column text file (SED file) used as input to the U.S. Army Corps of Engineers (USACE) FORTRAN modules that computed suspended-sediment concentration, particle-size distribution, and suspended-sediment discharge for a cooperative program between the U.S. Geological Survey and the USACE in the lower Mississippi-Atchafalaya River Basin from 1973 to February 2015

| | | |

Appendix 4.

Corrected and original results for instantaneous stream discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from selected sites in the lower Mississippi-Atchafalaya River Basin. Data in this appendix are publicly available in a data release by Norton and others (2019)

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/02/1989 13:00	CDT	136,000	233	83	85,600	136,000	225	86	82,600
10/18/1989 12:00	CDT	111,000	—	—	—	111,000	164	59	49,200
11/17/1989 09:45	CST	88,000	117	87	27,900	88,000	149	94	35,400
11/30/1989 10:00	CST	150,000	236	50	95,600	—	—	—	—
12/13/1989 10:00	CST	97,000	102	70	26,800	97,000	103	72	27,000
12/20/1989 11:00	CST	91,000	76	77	18,600	91,000	94	87	23,100
01/11/1990 13:00	CST	103,000	290	89	80,500	103,000	326	92	90,800
01/31/1990 10:00	CST	60,300	192	99	31,300	60,000	150	100	24,200
02/08/1990 12:30	CST	101,000	244	99	66,500	101,000	244	100	66,600
02/23/1990 12:00	CST	253,000	150	56	103,000	253,000	197	68	134,000
03/13/1990 14:30	CST	213,000	115	86	66,000	213,000	137	90	78,600
03/27/1990 11:30	CST	190,000	243	94	125,000	190,000	242	95	124,000
04/12/1990 12:00	CDT	111,000	111	83	33,200	111,000	134	90	40,000
04/25/1990 12:00	CDT	121,000	118	96	38,400	121,000	146	98	47,500
05/09/1990 12:00	CDT	141,000	—	—	—	141,000	215	94	81,700
05/25/1990 11:30	CDT	177,000	198	85	94,400	177,000	250	84	120,000
06/12/1990 11:30	CDT	278,000	107	89	80,200	278,000	127	94	95,100
06/22/1990 11:30	CDT	226,000	203	99	124,000	226,000	238	99	145,000
07/12/1990 11:30	CDT	144,000	299	94	116,000	144,000	354	95	138,000
07/25/1990 12:00	CDT	163,000	184	75	81,000	125,000	218	84	73,600
08/10/1990 12:00	CDT	117,000	194	75	61,200	117,000	236	82	74,500
08/28/1990 12:35	CDT	102,000	130	64	35,700	102,000	145	67	40,000
09/12/1990 09:30	CDT	107,000	152	69	43,900	107,000	204	65	59,000
09/24/1990 09:45	CDT	93,200	129	67	32,400	93,000	151	77	38,000
10/10/1990 10:15	CDT	76,700	173	83	35,800	77,000	179	85	37,300
10/24/1990 12:00	CDT	90,100	98	85	23,900	90,000	114	91	27,600
11/19/1990 11:50	CST	76,800	73	86	15,100	77,000	88	90	18,300
12/05/1990 10:10	CST	83,400	246	94	55,400	—	—	—	—
12/21/1990 09:10	CST	124,000	144	87	48,200	113,000	161	84	49,300

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/14/1991 11:30	CST	334,000	186	67	168,000	334,000	208	73	188,000
01/25/1991 11:25	CST	360,000	93	74	90,200	360,000	119	81	116,000
01/30/1991 11:45	CST	340,000	96	71	88,500	340,000	117	77	108,000
02/07/1991 10:50	CST	207,000	124	86	69,300	207,000	141	89	79,000
02/14/1991 10:40	CST	140,000	115	88	43,300	140,000	151	92	57,000
02/21/1991 10:35	CST	196,000	155	73	82,000	196,000	218	72	115,000
02/28/1991 10:20	CST	221,000	147	78	87,600	221,000	167	82	99,000
03/07/1991 10:05	CST	234,000	103	70	65,000	234,000	132	79	84,000
03/14/1991 10:35	CST	258,000	107	66	74,300	258,000	125	74	87,000
03/21/1991 09:50	CST	194,000	135	81	70,500	194,000	158	86	83,000
03/29/1991 10:15	CST	206,000	187	75	104,000	206,000	209	81	116,000
04/04/1991 10:13	CST	223,000	184	78	111,000	223,000	209	83	126,000
04/11/1991 10:50	CDT	281,000	171	67	130,000	281,000	192	74	146,000
04/18/1991 11:00	CDT	201,000	146	88	79,100	201,000	159	91	86,000
04/25/1991 12:30	CDT	188,000	87	95	44,000	188,000	118	98	60,000
05/03/1991 12:45	CDT	220,000	135	94	80,400	220,000	169	95	100,000
05/09/1991 12:25	CDT	144,000	112	94	43,600	144,000	145	95	56,000
05/30/1991 13:20	CDT	129,000	131	95	45,500	129,000	169	97	59,000
06/06/1991 11:15	CDT	138,000	177	95	66,100	—	—	—	—
06/13/1991 11:45	CDT	142,000	185	96	70,900	142,000	189	97	73,000
06/18/1991 12:10	CDT	96,000	232	98	60,200	—	—	—	—
06/27/1991 11:10	CDT	78,600	248	99	52,500	—	—	—	—
07/03/1991 11:30	CDT	91,400	302	99	74,600	—	—	—	—
07/11/1991 11:50	CDT	89,700	176	91	42,500	—	—	—	—
07/25/1991 10:20	CDT	112,000	191	70	57,800	—	—	—	—
08/09/1991 12:35	CDT	68,100	56	80	10,400	68,000	75	90	14,000
08/22/1991 10:55	CDT	62,400	—	—	—	—	—	—	—
09/13/1991 10:35	CDT	45,500	50	92	6,120	45,000	70	94	8,500
09/27/1991 11:55	CDT	43,600	41	92	4,830	42,000	49	96	5,500

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/11/1991 10:30	CDT	42,600	43	93	4,900	43,000	40	92	4,600
10/24/1991 10:55	CDT	44,600	—	—	—	45,000	72	89	8,700
11/08/1991 11:00	CST	38,200	109	96	11,300	38,000	151	98	16,000
11/21/1991 11:40	CST	60,000	314	98	50,900	60,000	99	99	59,000
12/05/1991 10:45	CST	84,600	—	—	—	85,000	284	97	65,000
12/19/1991 11:00	CST	185,000	—	—	—	185,000	266	84	133,000
01/02/1992 12:50	CST	118,000	106	93	33,800	118,000	110	96	35,100
01/10/1992 10:10	CST	111,000	108	93	32,300	111,000	102	94	30,400
01/16/1992 11:25	CST	110,000	—	—	—	110,000	121	93	35,900
01/23/1992 10:15	CST	80,600	82	96	17,800	81,000	104	98	22,600
01/30/1992 13:15	CST	42,000	56	98	6,380	42,000	99	99	11,200
02/06/1992 09:45	CST	88,500	327	97	78,000	89,000	371	98	89,100
02/14/1992 12:15	CST	37,600	141	97	14,300	38,000	190	98	19,500
02/20/1992 10:05	CST	12,200	25	71	811	12,000	41	91	1,330
02/27/1992 10:30	CST	64,800	128	95	22,400	65,000	151	97	26,500
03/06/1992 11:05	CST	94,200	250	95	63,600	94,000	252	96	63,900
03/12/1992 11:20	CST	87,200	120	89	28,100	87,000	127	92	29,800
03/20/1992 09:55	CST	138,000	194	86	72,300	138,000	188	88	70,100
03/26/1992 10:40	CST	162,000	209	82	91,300	162,000	217	85	95,100
04/03/1992 10:30	CST	191,000	—	—	—	191,000	253	86	130,000
04/09/1992 10:40	CDT	166,000	177	74	79,500	166,000	198	78	88,500
04/23/1992 10:30	CDT	99,600	99	85	26,500	100,000	100	90	27,000
05/01/1992 10:40	CDT	182,000	—	—	—	182,000	254	80	125,000
05/06/1992 10:25	CDT	205,000	373	85	207,000	205,000	365	88	202,000
05/15/1992 10:55	CDT	167,000	178	70	80,100	167,000	209	75	94,200
05/21/1992 10:40	CDT	133,000	107	70	38,500	133,000	120	76	42,900
05/28/1992 12:50	CDT	96,200	78	85	20,200	96,000	93	90	24,000
06/04/1992 10:40	CDT	72,200	61	95	12,000	72,000	87	95	16,800
06/11/1992 11:20	CDT	81,200	176	98	38,500	81,000	188	100	41,100

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
06/17/1992 10:20	CDT	76,300	139	96	28,600	76,000	158	97	32,400
06/26/1992 10:30	CDT	79,000	85	95	18,200	79,000	107	97	22,700
07/10/1992 10:30	CDT	61,600	88	99	14,600	61,000	117	100	19,200
07/23/1992 10:00	CDT	103,000	93	91	25,900	103,000	108	94	29,900
08/21/1992 10:45	CDT	161,000	204	93	88,500	161,000	211	93	91,600
10/27/1992 08:00	CST	88,800	—	—	—	89,000	125	78	30,000
11/10/1992 11:30	CST	83,400	139	75	31,300	83,000	134	86	30,100
11/24/1992 11:30	CST	172,000	210	82	97,400	172,000	238	85	111,000
12/08/1992 12:00	CST	286,000	474	56	366,000	286,000	404	58	312,000
12/31/1992 10:45	CST	215,000	286	83	166,000	215,000	316	85	183,000
01/12/1993 14:30	CST	209,000	211	71	119,000	209,000	214	73	121,000
01/26/1993 10:00	CST	221,000	133	81	79,400	221,000	160	76	96,000
02/17/1993 11:00	CST	162,000	164	65	71,900	162,000	208	76	91,000
03/11/1993 13:00	CST	185,000	177	83	88,300	185,000	196	87	98,000
03/23/1993 13:30	CST	281,000	258	65	196,000	—	—	—	—
04/06/1993 09:30	CDT	270,000	192	67	140,000	—	—	—	—
04/20/1993 10:30	CDT	331,000	137	58	122,000	—	—	—	—
05/04/1993 10:30	CDT	314,000	102	68	86,200	314,000	128	75	109,000
06/02/1993 14:00	CDT	297,000	—	—	—	297,000	168	91	134,000
06/22/1993 13:00	CDT	214,000	—	—	—	214,000	340	91	196,000
06/29/1993 09:00	CDT	166,000	139	92	62,100	—	—	—	—
07/14/1993 15:00	CDT	233,000	386	79	243,000	233,000	448	83	282,000
07/27/1993 15:30	CDT	325,000	247	76	217,000	325,000	303	78	266,000
08/10/1993 10:30	CDT	322,000	316	63	275,000	322,000	354	66	308,000
08/24/1993 11:00	CDT	315,000	220	55	187,000	314,000	239	56	203,000
09/08/1993 11:30	CDT	190,000	246	80	126,000	190,000	237	78	121,000
09/21/1993 13:30	CDT	194,000	184	83	96,200	194,000	197	83	103,000
10/05/1993 14:30	CDT	265,000	289	76	207,000	265,000	371	62	266,000
10/19/1993 12:00	CDT	211,000	137	77	78,100	211,000	171	85	97,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/16/1993 11:30	CST	104,000	417	98	117,000	104,000	464	98	130,000
11/30/1993 14:00	CST	281,000	288	62	219,000	281,000	339	68	257,000
12/06/1993 11:30	CST	250,000	162	72	110,000	250,000	177	75	120,000
12/20/1993 15:00	CST	247,000	—	—	—	247,000	171	78	114,000
01/31/1994 13:00	CST	83,000	275	92	61,700	83,000	294	93	66,000
02/14/1994 11:00	CST	235,000	235	79	149,000	235,000	242	76	153,000
03/14/1994 08:00	CST	277,000	132	69	99,000	277,000	141	69	105,000
03/28/1994 14:00	CST	307,000	122	54	101,000	307,000	152	64	126,000
04/11/1994 14:30	CDT	288,000	86	65	66,500	288,000	93	70	72,000
04/25/1994 14:00	CDT	370,000	193	52	193,000	370,000	186	54	186,000
05/03/1994 11:30	CDT	414,000	189	29	211,000	414,000	207	33	231,000
05/17/1994 13:30	CDT	339,000	76	78	69,300	339,000	88	80	80,000
06/01/1994 13:30	CDT	211,000	160	89	90,900	211,000	196	90	112,000
06/14/1994 13:30	CDT	122,000	109	96	36,000	122,000	129	97	42,000
06/28/1994 11:30	CDT	133,000	122	87	43,800	122,000	173	91	57,000
07/12/1994 12:00	CDT	154,000	—	—	—	154,000	386	95	161,000
07/26/1994 13:30	CDT	104,000	140	92	39,300	104,000	214	94	60,000
08/09/1994 11:30	CDT	116,000	113	67	35,200	116,000	176	81	55,000
08/23/1994 12:00	CDT	80,000	63	84	13,500	—	—	—	—
09/07/1994 14:00	CDT	92,000	50	82	12,400	77,000	78	86	16,000
10/04/1994 13:00	CDT	68,000	43	78	7,800	—	—	—	—
10/18/1994 14:00	CDT	44,000	35	97	4,150	44,000	78	99	9,300
11/01/1994 12:00	CST	50,000	67	92	9,000	—	—	—	—
11/16/1994 14:00	CST	72,000	211	95	41,100	72,000	213	96	41,000
11/29/1994 10:00	CST	73,000	199	97	39,300	—	—	—	—
12/13/1994 13:00	CST	141,000	147	80	56,000	141,000	171	82	65,000
01/31/1995 12:00	CST	155,000	—	—	—	—	—	—	—
02/14/1995 13:45	CST	134,000	113	80	40,900	134,000	163	88	59,000
02/28/1995 12:00	CST	175,000	225	66	106,000	—	—	—	—

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/14/1995 13:30	CST	110,000	—	—	—	110,000	237	98	70,300
04/04/1995 13:30	CDT	109,000	—	—	—	109,000	200	88	58,700
04/18/1995 13:00	CDT	64,000	119	97	20,600	64,000	258	97	44,700
05/02/1995 11:00	CDT	107,000	170	91	49,100	—	—	—	—
05/23/1995 13:00	CDT	185,000	225	91	112,000	185,000	293	95	146,000
06/13/1995 13:00	CDT	462,000	173	46	215,000	—	—	—	—
06/27/1995 13:00	CDT	376,000	107	62	109,000	—	—	—	—
07/25/1995 13:00	CDT	159,000	256	82	110,000	—	—	—	—
08/08/1995 14:00	CDT	116,000	123	82	38,400	116,000	146	84	45,700
08/29/1995 12:00	CDT	129,000	115	76	39,900	—	—	—	—
09/27/1995 14:00	CDT	71,000	60	82	11,500	71,000	127	95	24,300
10/24/1995 12:00	CDT	93,000	94	72	23,500	—	—	—	—
11/07/1995 12:00	CST	88,000	74	87	17,600	—	—	—	—
12/12/1995 11:30	CST	105,000	61	64	17,100	—	—	—	—
01/09/1996 11:00	CST	90,000	160	81	38,800	—	—	—	—
02/13/1996 13:00	CST	271,000	254	54	186,000	—	—	—	—
03/06/1996 11:00	CST	172,000	131	74	60,900	—	—	—	—
03/27/1996 11:00	CST	207,000	—	—	—	—	—	—	—
04/09/1996 10:45	CDT	277,000	170	61	127,000	277,000	207	67	155,000
04/12/1996 10:00	CDT	278,000	185	63	139,000	278,000	222	68	167,000
04/19/1996 10:00	CDT	189,000	156	91	79,500	189,000	176	93	89,900
05/14/1996 10:00	CDT	321,000	205	73	177,000	—	—	—	—
06/05/1996 09:00	CDT	395,000	118	55	126,000	—	—	—	—
07/16/1996 09:00	CDT	149,000	103	99	41,400	—	—	—	—
07/30/1996 11:30	CDT	149,000	118	85	47,500	—	—	—	—
08/13/1996 11:00	CDT	137,000	111	92	41,100	—	—	—	—
09/10/1996 12:00	CDT	83,000	76	95	17,100	—	—	—	—
10/01/1996 11:00	CDT	79,000	113	96	24,100	—	—	—	—
10/24/1996 09:00	CDT	68,000	58	94	10,600	—	—	—	—

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/19/1996 12:30	CST	168,000	187	91	84,700	—	—	—	—
12/10/1996 12:00	CST	224,000	239	82	145,000	—	—	—	—
01/22/1997 12:00	CST	143,000	115	84	44,300	—	—	—	—
02/04/1997 12:00	CST	190,000	294	79	151,000	—	—	—	—
02/25/1997 10:00	CST	134,000	141	79	51,000	—	—	—	—
04/01/1997 10:15	CST	411,000	96	54	107,000	411,000	218	58	242,000
04/22/1997 11:00	CDT	228,000	97	94	59,500	228,000	185	98	114,000
05/06/1997 10:00	CDT	141,000	120	96	45,500	141,000	226	81	86,000
05/20/1997 12:00	CDT	165,000	155	97	68,900	165,000	211	99	94,000
06/10/1997 11:00	CDT	235,000	256	85	162,000	235,000	399	92	253,000
07/01/1997 12:00	CDT	285,000	146	76	113,000	—	—	—	—
07/15/1997 12:00	CDT	190,000	216	78	111,000	—	—	—	—
08/12/1997 12:00	CDT	93,000	46	95	11,600	—	—	—	—
08/26/1997 11:30	CDT	114,000	68	87	20,900	—	—	—	—
09/23/1997 11:00	CDT	80,900	49	85	10,700	—	—	—	—
10/16/1997 12:00	CDT	71,000	67	91	12,900	—	—	—	—
11/04/1997 11:00	CST	82,000	81	95	17,800	73,000	133	98	26,200
12/09/1997 11:00	CST	76,400	45	99	9,230	77,000	122	100	25,300
01/13/1998 13:30	CST	56,000	—	—	—	56,000	273	100	41,000
02/05/1998 09:30	CST	81,700	110	98	24,300	82,000	170	100	38,000
02/24/1998 09:00	CST	181,000	247	85	121,000	181,000	318	86	155,000
03/17/1998 12:00	CST	171,000	143	87	66,000	171,000	212	92	98,000
04/07/1998 09:00	CDT	254,000	158	73	108,000	254,000	223	82	153,000
05/19/1998 11:00	CDT	413,000	156	38	174,000	413,000	192	49	214,000
06/24/1998 12:00	CDT	267,000	265	82	191,000	268,000	304	85	220,000
08/18/1998 11:00	CDT	155,000	160	85	66,900	1,550,000	251	91	105,000
11/17/1998 12:00	CST	136,000	297	96	109,000	136,000	354	97	130,000
12/08/1998 08:00	CST	106,000	131	89	37,600	106,000	324	61	93,000
12/22/1998 10:30	CST	83,400	—	—	—	83,000	461	99	103,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/13/1999 12:00	CST	70,200	—	—	—	70,000	543	100	103,000
01/26/1999 10:30	CST	169,000	—	—	—	169,000	599	94	273,000
02/09/1999 12:00	CST	259,000	206	85	144,000	259,000	227	88	159,000
02/23/1999 10:00	CST	317,000	179	71	153,000	317,000	293	55	251,000
03/09/1999 10:30	CST	177,000	127	86	60,600	177,000	203	93	97,000
03/30/1999 10:30	CST	284,000	129	65	98,900	[1]2,840,000	181	73	[1]1,390,000
04/14/1999 12:00	CDT	120,000	118	100	38,100	120,000	171	100	55,500
04/21/1999 11:00	CDT	160,000	135	74	58,400	160,000	185	74	79,800
05/19/1999 14:00	CDT	328,000	197	77	174,000	328,000	263	83	233,000
05/25/1999 12:00	CDT	293,000	161	77	127,000	293,000	247	85	195,000
07/07/1999 11:30	CDT	204,000	188	91	103,000	204,000	312	95	172,000
07/27/1999 11:15	CDT	160,000	195	90	84,000	160,000	271	92	117,000
08/10/1999 09:30	CDT	126,000	94	87	31,900	126,000	189	94	64,300
09/21/1999 11:00	CDT	50,700	53	92	7,190	50,700	93	97	13,000
10/07/1999 11:00	CDT	45,000	42	95	5,130	44,955	95	99	11,500
11/02/1999 11:00	CST	49,600	57	100	7,590	49,600	138	100	18,500
12/07/1999 11:00	CST	61,300	55	88	9,170	61,300	101	94	16,700
12/28/1999 10:00	CST	122,000	91	71	30,000	122,000	124	78	40,600
01/11/2000 11:00	CST	80,400	81	88	17,700	80,400	122	92	26,500
01/25/2000 11:30	CST	83,400	—	—	—	83,400	348	97	78,300
02/08/2000 12:00	CST	59,100	—	—	—	59,100	201	95	32,000
02/29/2000 11:00	CST	205,000	569	79	315,000	205,000	686	76	379,000
03/14/2000 12:00	CST	195,000	208	69	110,000	195,000	246	74	130,000
03/28/2000 11:00	CST	167,000	175	75	79,000	167,000	216	81	97,000
04/11/2000 12:00	CDT	95,500	132	99	34,000	95,500	206	100	53,000
04/25/2000 12:00	CDT	174,000	139	83	65,200	174,000	180	87	84,700
05/09/2000 11:30	CDT	132,000	86	94	30,700	132,000	134	96	47,800
05/23/2000 11:00	CDT	75,200	159	99	32,400	75,200	217	99	44,000
06/13/2000 12:00	CDT	119,000	96	94	30,800	119,000	143	96	46,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/18/2000 11:00	CDT	152,000	153	88	62,800	152,000	184	90	75,200
08/01/2000 12:30	CDT	122,000	119	85	39,200	122,000	151	88	49,700
09/26/2000 10:00	CDT	64,400	311	98	54,100	64,400	390	99	67,800
10/17/2000 11:00	CDT	79,500	61	88	13,100	79,500	96	93	20,600
11/14/2000 10:30	CST	27,800	58	99	4,350	27,800	128	100	9,610
12/05/2000 11:30	CST	36,400	75	91	7,340	36,400	164	98	16,100
12/19/2000 11:00	CST	23,500	46	97	2,930	23,500	90	97	5,700
01/04/2001 12:00	CST	18,300	66	100	3,280	18,300	101	98	5,000
01/23/2001 11:00	CST	7,020	71	99	1,340	7,020	137	99	2,600
02/06/2001 11:00	CST	51,900	105	97	14,700	51,900	177	99	24,800
02/27/2001 11:00	CST	166,000	270	88	121,000	166,000	304	88	136,000
03/16/2001 12:00	CST	132,000	151	97	53,800	132,000	202	98	71,800
03/27/2001 11:00	CST	65,600	64	100	11,200	65,600	118	100	20,800
04/10/2001 11:00	CDT	87,800	112	100	26,400	87,800	141	98	33,500
04/24/2001 10:00	CDT	151,000	302	95	123,000	151,000	341	97	139,000
05/08/2001 11:30	CDT	162,000	161	94	70,500	162,000	249	98	109,000
05/22/2001 11:00	CDT	137,000	240	92	88,900	137,000	310	95	115,000
06/12/2001 11:00	CDT	164,000	135	94	59,900	164,000	199	96	87,800
07/10/2001 11:30	CDT	132,000	216	94	77,100	132,000	270	96	96,500
08/21/2001 09:30	CDT	91,100	—	—	—	91,100	128	95	31,400
09/11/2001 10:00	CDT	64,600	120	97	20,900	64,600	159	98	27,800
10/02/2001 10:00	CDT	69,900	68	91	12,900	69,900	116	95	21,900
11/27/2001 11:00	CST	65,200	75	99	13,300	65,200	132	99	23,200
12/07/2001 12:00	CST	165,000	411	97	183,000	165,000	488	97	217,000
12/18/2001 12:00	CST	114,000	169	96	52,100	114,000	218	97	67,200
01/15/2002 11:30	CST	36,500	57	99	5,570	36,500	88	99	8,660
01/29/2002 15:00	CST	62,600	141	100	23,800	62,600	198	100	33,400
02/12/2002 12:00	CST	245,000	216	83	143,000	245,000	253	86	168,000
02/27/2002 11:00	CST	109,000	103	98	30,400	109,000	145	99	42,500

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/12/2002 11:00	CST	108,000	—	—	—	108,000	116	96	33,800
03/26/2002 10:00	CST	182,000	304	96	150,000	182,000	357	94	175,000
04/12/2002 11:30	CDT	272,000	99	80	73,000	272,000	125	84	91,900
04/30/2002 10:00	CDT	147,000	112	97	44,400	147,000	138	98	54,900
05/14/2002 11:00	CDT	288,000	175	83	136,000	288,000	206	86	160,000
05/21/2002 09:30	CDT	336,000	196	75	178,000	336,000	216	78	196,000
06/11/2002 11:15	CDT	333,000	93	58	83,900	333,000	102	84	91,800
07/09/2002 15:30	CDT	129,000	—	—	—	129,000	183	88	56,100
07/10/2002 11:30	CDT	120,000	309	95	100,000	—	—	—	—
08/14/2002 11:00	CDT	82,000	154	85	34,200	92,800	187	88	46,800
09/17/2002 11:00	CDT	66,000	67	88	11,900	78,500	176	96	37,400
10/08/2002 10:30	CDT	122,000	149	89	49,100	122,000	182	91	60,100
11/13/2002 09:30	CST	67,000	93	97	16,800	73,900	264	100	52,700
12/03/2002 09:30	CST	117,000	105	54	33,300	133,000	194	75	69,600
12/17/2002 10:00	CST	63,000	57	91	9,660	77,900	155	98	32,500
01/14/2003 11:45	CST	162,000	121	87	52,700	162,000	179	90	78,500
01/28/2003 10:30	CST	79,000	98	90	20,800	79,000	153	94	32,700
02/11/2003 11:30	CST	63,300	144	97	24,500	63,300	281	100	48,000
02/25/2003 10:00	CST	160,000	271	91	117,000	160,000	345	91	149,000
03/10/2003 12:15	CST	305,000	233	69	191,000	305,000	273	74	225,000
03/25/2003 11:00	CST	160,000	101	85	43,700	160,000	170	91	73,300
04/08/2003 11:30	CST	141,000	129	89	49,200	141,000	212	94	81,000
04/22/2003 09:30	CST	192,000	196	65	102,000	192,000	258	74	133,000
05/16/2003 10:45	CST	270,000	271	83	197,000	270,000	325	86	237,000
05/28/2003 10:00	CST	398,000	187	48	201,000	398,000	253	49	272,000
06/10/2003 09:30	CST	285,000	124	71	95,000	285,000	187	76	144,000
07/15/2003 10:00	CST	91,900	70	92	17,300	91,900	155	98	38,400
08/12/2003 10:00	CST	144,000	82	81	32,100	144,000	155	91	60,300
09/30/2003 10:00	CDT	99,800	71	81	19,000	99,800	129	89	34,700

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/28/2003 09:30	CST	93,300	78	68	19,600	93,300	146	83	36,800
11/25/2003 11:00	CST	153,000	132	84	54,400	153,000	183	88	75,700
12/09/2003 10:00	CST	240,000	—	—	—	240,000	345	62	223,000
12/23/2003 11:30	CST	189,000	166	53	84,700	189,000	212	63	108,000
01/24/2004 10:00	CST	258,000	211	62	147,000	258,000	278	71	194,000
01/27/2004 10:00	CST	179,000	120	91	57,800	179,000	158	93	76,400
02/20/2004 10:00	CST	211,000	160	89	91,200	211,000	204	91	116,000
02/27/2004 10:00	CST	174,000	106	95	49,700	174,000	173	98	81,100
03/09/2004 09:45	CST	102,000	115	97	31,700	102,000	173	99	47,900
03/23/2004 09:30	CST	314,000	252	68	214,000	314,000	306	74	260,000
04/27/2004 10:00	CST	197,000	152	78	80,700	197,000	231	86	123,000
05/18/2004 10:00	CST	172,000	146	96	67,900	172,000	200	97	92,900
06/29/2004 10:00	CST	190,000	224	98	115,000	190,000	294	99	151,000
08/17/2004 11:00	CST	127,000	70	76	24,000	127,000	144	89	49,400
09/21/2004 12:00	CST	123,000	117	84	38,900	123,000	175	89	57,800
10/13/2004 11:00	CST	84,600	125	99	28,600	84,600	181	100	41,400
11/30/2004 11:00	CST	113,000	151	98	45,900	113,000	199	99	60,600
12/07/2004 11:00	CST	163,000	181	90	79,800	163,000	235	90	103,000
12/21/2004 09:45	CST	292,000	150	67	118,000	292,000	194	75	153,000
01/04/2005 10:00	CST	175,000	87	80	41,100	175,000	126	86	59,500
01/25/2005 10:00	CST	396,000	184	53	197,000	396,000	242	59	259,000
02/09/2005 10:30	CST	347,000	80	69	75,200	347,000	132	82	123,000
02/23/2005 13:00	CST	195,000	108	84	56,800	195,000	171	90	90,000
03/08/2005 11:00	CST	261,000	105	69	74,100	261,000	154	79	108,000
03/22/2005 11:00	CST	198,000	120	50	64,400	198,000	191	67	102,000
04/12/2005 11:00	CST	230,000	186	84	115,000	205,000	247	88	137,000
05/04/2005 11:30	CST	175,000	146	61	68,800	175,000	195	71	92,500
05/17/2005 11:00	CDT	171,000	130	69	60,200	171,000	192	79	88,700
06/07/2005 11:30	CDT	126,000	142	96	48,300	126,000	206	97	69,700

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/12/2005 11:00	CDT	111,000	99	85	29,700	111,000	179	92	53,700
08/09/2005 11:00	CDT	75,600	74	93	15,100	75,600	131	97	26,600
09/13/2005 11:00	CDT	118,000	95	86	30,200	118,000	151	91	48,300
10/18/2005 11:00	CDT	76,600	74	94	15,300	76,600	126	97	26,100
11/15/2005 11:00	CST	57,100	47	99	7,160	57,100	87	99	13,500
12/06/2005 11:30	CST	69,600	65	89	12,200	69,600	114	95	21,400
12/20/2005 11:00	CST	86,100	119	93	27,600	86,098	145	95	33,600
01/10/2006 11:00	CST	92,800	50	81	12,600	92,793	91	90	22,900
01/24/2006 11:00	CST	116,000	158	93	49,300	115,638	214	95	66,800
02/07/2006 11:00	CST	218,000	235	87	138,000	218,485	278	89	164,000
02/22/2006 15:00	CST	127,000	224	83	76,800	127,123	221	83	76,000
03/07/2006 11:00	CST	89,400	166	81	39,900	89,385	215	85	51,900
03/21/2006 11:00	CST	148,000	347	96	139,000	147,941	391	96	156,000
04/04/2006 10:00	CST	123,000	129	89	43,000	123,323	187	93	62,200
04/18/2006 11:00	CST	148,000	191	63	76,200	147,563	229	78	91,400
05/02/2006 11:00	CST	161,000	153	89	66,500	160,724	207	92	90,000
05/16/2006 11:00	CST	165,000	149	93	66,300	164,656	207	95	92,100
06/06/2006 11:00	CDT	136,000	92	73	33,800	136,000	144	83	53,100
07/19/2006 11:00	CDT	88,600	70	82	16,700	88,600	120	90	28,600
08/08/2006 11:00	CDT	72,500	68	96	13,300	72,500	102	98	20,000
09/12/2006 11:00	CDT	78,100	—	—	—	78,100	123	93	25,900
10/11/2006 11:00	CDT	116,000	131	66	41,000	116,000	185	75	57,900
12/05/2006 11:00	CST	180,000	149	56	72,300	180,000	189	65	91,700
12/19/2006 11:00	CST	120,000	79	78	25,700	120,000	121	86	39,200
01/09/2007 11:00	CST	129,000	136	95	47,300	129,000	189	97	65,700
01/23/2007 11:00	CST	223,000	184	87	111,000	223,000	230	90	138,000
02/13/2007 11:00	CST	110,000	89	91	26,500	110,000	130	95	38,600
02/28/2007 11:00	CST	95,000	86	86	22,100	95,000	150	93	38,500
03/13/2007 11:00	CST	253,000	253	50	173,000	253,000	457	73	313,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/27/2007 11:00	CST	193,000	330	77	172,000	193,000	246	70	128,000
04/10/2007 11:00	CST	285,000	187	74	144,000	285,000	238	80	183,000
04/24/2007 11:00	CST	218,000	155	78	91,000	218,000	210	84	124,000
05/08/2007 11:00	CDT	184,000	99	92	49,100	184,000	151	95	75,100
05/22/2007 11:00	CDT	214,000	406	97	234,000	214,000	454	97	262,000
06/12/2007 11:00	CDT	126,000	269	99	91,500	126,000	344	99	117,000
07/03/2007 11:00	CDT	85,500	169	100	39,000	85,500	241	100	55,800
08/07/2007 11:00	CDT	54,700	125	100	18,500	54,700	180	99	26,600
09/05/2007 11:00	CDT	95,000	123	95	31,600	95,000	188	97	48,300
10/02/2007 11:00	CDT	58,500	84	99	13,200	58,500	159	100	25,100
11/06/2007 11:00	CST	128,000	181	80	62,500	128,000	485	44	167,000
12/04/2007 11:00	CST	82,100	69	92	15,300	82,100	125	96	27,700
12/18/2007 11:00	CST	134,000	127	69	46,000	134,331	221	66	80,000
01/02/2008 11:00	CST	233,000	229	70	144,000	233,000	267	74	168,000
01/15/2008 11:00	CST	157,000	130	71	55,100	157,000	172	78	73,100
02/05/2008 11:00	CST	121,000	125	94	40,700	121,000	179	95	58,400
02/26/2008 11:00	CST	276,000	230	81	172,000	276,000	269	84	200,000
03/11/2008 11:00	CDT	210,000	188	92	106,000	210,000	224	93	127,000
03/26/2008 11:00	CDT	299,000	201	82	162,000	299,000	227	84	183,000
04/17/2008 11:00	CDT	477,000	140	48	180,000	477,000	167	57	215,000
05/06/2008 15:30	CDT	346,000	81	84	75,400	346,000	168	64	156,000
05/24/2008 11:00	CDT	302,000	100	85	81,500	302,000	146	90	119,000
06/03/2008 11:00	CDT	309,000	116	67	96,400	309,000	157	80	131,000
06/17/2008 11:00	CST	302,000	371	90	303,000	302,129	411	91	335,000
07/01/2008 11:00	CST	338,000	180	82	164,000	337,749	223	84	204,000
08/05/2008 11:00	CST	159,000	120	82	51,700	158,708	169	87	72,600
09/16/2008 11:00	CST	36,700	40	98	3,960	36,685	112	100	11,100
10/07/2008 11:00	CDT	109,000	112	97	32,900	109,000	171	99	50,500
11/04/2008 11:00	CST	85,800	100	88	23,000	85,800	158	92	36,700

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/02/2008 11:00	CST	61,100	87	99	14,400	61,100	185	100	30,600
12/23/2008 11:00	CST	118,000	234	95	74,500	118,000	298	96	94,800
01/06/2009 11:00	CST	227,000	366	91	224,000	118,000	405	92	129,000
01/21/2009 11:00	CST	215,000	190	84	110,000	215,000	219	86	127,000
02/04/2009 11:00	CST	115,000	118	90	36,600	115,000	165	93	51,200
02/18/2009 11:00	CST	171,000	147	82	68,000	171,000	186	86	85,900
03/03/2009 11:00	CST	225,000	210	74	128,000	225,000	252	79	153,000
03/17/2009 11:00	CST	141,000	195	99	74,200	141,000	231	99	87,900
04/07/2009 11:00	CDT	203,000	205	93	112,000	203,000	254	95	140,000
04/21/2009 11:00	CDT	254,000	124	89	84,900	254,000	182	93	125,000
05/05/2009 11:00	CDT	257,000	115	85	80,000	257,000	157	88	109,000
05/19/2009 11:00	CDT	308,000	91	83	75,700	308,000	143	82	119,000
06/23/2009 11:00	CDT	160,000	166	99	71,700	160,000	208	100	90,000
07/21/2009 11:00	CDT	140,000	120	74	45,400	140,000	162	81	61,600
08/11/2009 11:00	CDT	158,000	109	91	46,300	158,000	145	93	61,600
09/09/2009 11:00	CDT	112,000	97	88	29,300	112,000	146	93	44,100
10/06/2009 11:00	CDT	113,000	106	97	32,300	113,000	145	99	44,100
11/03/2009 11:00	CST	95,300	91	99	23,500	95,000	165	100	43,000
12/01/2009 11:00	CST	173,000	146	88	68,000	173,000	203	89	95,000
12/16/2009 11:00	CST	140,000	212	97	80,000	140,000	255	98	96,000
01/12/2010 11:00	CST	192,000	134	76	69,400	192,000	166	81	86,000
01/26/2010 11:00	CST	94,700	169	99	43,100	95,000	233	100	60,000
02/02/2010 12:00	CST	222,000	207	79	124,000	222,000	281	85	169,000
02/17/2010 11:30	CST	256,000	122	67	84,400	256,000	175	80	121,000
03/03/2010 11:30	CST	127,000	83	90	28,600	127,000	134	97	46,000
03/18/2010 11:30	CST	112,000	81	91	24,500	—	—	—	—
03/30/2010 11:30	CST	267,000	216	82	156,000	267,000	266	85	192,000
04/13/2010 11:30	CST	331,000	133	64	119,000	331,000	150	74	134,000
04/28/2010 11:45	CST	168,000	—	—	—	168,000	119	99	54,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/11/2010 11:30	CST	311,000	300	69	252,000	311,000	310	72	260,000
05/26/2010 11:30	CST	357,000	208	62	201,000	357,000	208	62	200,000
06/09/2010 12:15	CST	295,000	176	56	140,000	295,000	240	73	191,000
06/23/2010 11:45	CST	236,000	408	79	260,000	236,000	436	87	278,000
08/03/2010 11:45	CST	204,000	266	87	147,000	204,000	305	92	168,000
11/01/2010 14:00	CDT	101,000	92	84	25,200	101,000	154	93	42,000
12/01/2010 14:30	CST	106,000	119	63	34,000	106,000	204	79	58,400
12/22/2010 13:45	CST	121,000	103	86	33,500	121,000	160	93	52,400
01/20/2011 12:15	CST	106,000	115	88	32,900	106,000	271	97	77,500
02/15/2011 14:15	CST	140,000	110	71	41,500	140,000	214	86	80,700
03/02/2011 11:30	CST	201,000	370	77	201,000	201,000	495	83	269,000
03/16/2011 12:15	CDT	358,000	286	65	276,000	358,000	341	71	329,000
03/29/2011 11:10	CDT	411,000	170	44	189,000	411,000	204	56	227,000
04/12/2011 12:30	CDT	350,000	138	59	131,000	350,000	245	78	232,000
04/28/2011 11:45	CDT	302,000	105	73	85,800	302,000	174	84	142,000
05/13/2011 12:45	CDT	641,000	259	35	449,000	641,000	308	45	533,000
05/18/2011 13:30	CDT	606,000	185	45	303,000	606,000	234	57	382,000
06/03/2011 12:30	CDT	456,000	53	66	64,700	456,000	109	88	135,000
06/17/2011 12:30	CDT	324,000	77	83	67,600	324,000	140	92	122,000
07/18/2011 13:00	CDT	244,000	126	95	82,800	244,000	192	97	126,000
08/10/2011 13:00	CDT	152,000	111	93	45,600	161,000	228	97	99,200
08/31/2011 12:00	CDT	124,000	59	96	19,600	124,000	157	99	52,500
09/27/2011 11:45	CDT	106,000	56	97	16,100	106,000	143	100	41,100
10/12/2011 12:45	CDT	105,000	50	89	14,200	105,000	138	72	39,000
11/08/2011 12:30	CST	105,000	50	93	14,300	105,000	159	100	45,000
12/06/2011 13:10	CST	234,000	301	84	190,000	234,000	547	92	345,000
12/19/2011 12:45	CST	328,000	187	57	166,000	328,000	278	72	246,000
02/13/2012 11:45	CST	259,000	111	78	77,400	259,000	188	89	131,000
03/12/2012 13:15	CST	142,000	126	90	48,100	142,000	266	96	102,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
04/03/2012 12:45	CST	163,000	120	96	52,600	163,000	250	100	110,000
04/17/2012 14:15	CST	73,000	—	—	—	73,000	278	100	55,000
05/01/2012 13:00	CST	96,000	88	98	22,900	96,000	201	100	52,000
05/17/2012 12:30	CST	220,000	231	84	137,000	220,000	314	84	186,000
05/31/2012 13:00	CST	121,000	82	98	26,900	121,000	152	100	50,000
06/26/2012 13:00	CST	80,000	58	99	12,600	80,000	136	100	29,000
07/10/2012 12:45	CST	79,000	56	95	11,900	79,000	131	98	28,000
07/25/2012 12:45	CST	56,000	60	99	9,030	57,000	134	100	21,000
08/08/2012 13:30	CST	79,000	69	97	14,600	78,000	140	100	29,000
08/27/2012 12:00	CST	50,000	43	95	5,740	50,000	111	100	15,000
09/11/2012 11:45	CST	58,000	41	100	6,440	58,000	101	100	16,000
09/25/2012 12:00	CST	45,000	48	100	5,850	45,000	128	100	15,000
10/25/2012 11:56	CDT	59,000	78	96	12,400	59,000	158	100	25,000
12/05/2012 12:00	CST	61,000	30	98	4,900	61,000	126	100	21,000
12/18/2012 12:15	CST	68,400	108	95	19,800	68,400	151	98	28,000
01/23/2013 12:15	CST	172,000	347	93	161,000	17,200	389	94	18,000
02/06/2013 13:45	CST	209,000	188	77	106,000	209,000	228	81	129,000
02/28/2013 13:30	CST	144,000	146	87	56,900	144,000	210	92	82,000
03/04/2013 12:30	CST	134,000	137	90	49,700	134,000	197	94	71,000
03/19/2013 13:15	CDT	176,000	158	77	75,100	137,000	222	84	82,000
04/08/2013 13:45	CDT	205,000	127	77	70,200	205,000	181	85	100,000
05/01/2013 12:15	CDT	281,000	272	90	206,000	—	—	—	—
05/15/2013 12:45	CDT	368,000	139	48	138,000	—	—	—	—
05/30/2013 12:15	CDT	335,000	80	82	72,100	335,000	130	90	117,000
06/13/2013 12:20	CDT	265,000	215	97	154,000	265,000	286	99	205,000
06/26/2013 13:15	CDT	276,000	91	92	67,600	276,000	184	97	137,000
07/10/2013 12:45	CDT	287,000	264	77	204,000	287,000	349	83	271,000
07/24/2013 12:00	CDT	274,000	106	84	78,200	274,000	176	90	130,000
08/07/2013 12:45	CDT	137,000	64	92	23,800	137,000	130	97	48,000

Table 4–1. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Old River Outflow Channel below hydropower channel (U.S. Geological Survey station 07381482).—Continued

[Sites U.S. Geological Survey (USGS) 07381482 and USGS 310355091411500 (Old River Outflow Channel near Knox Landing) are considered equivalent with respect to measurements of discharge and water-quality parameters. The location of the suspended-sediment sampling site was changed on October 1, 2009, when the USGS assumed responsibility for maintaining the streamgage at the new location. Discharge data were supplied by the U.S. Army Corps of Engineers and the USGS. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
09/25/2013 13:15	CDT	57,800	49	98	7,600	57,800	123	100	19,000
11/21/2013 13:00	CST	81,500	65	97	14,200	81,500	139	100	31,000
12/11/2013 13:15	CST	78,000	145	78	30,600	—	—	—	—
01/22/2014 13:13	CST	194,000	153	66	79,900	—	—	—	—
02/05/2014 12:45	CST	105,000	96	94	27,100	—	—	—	—
02/27/2014 12:45	CST	137,000	98	83	36,100	—	—	—	—
03/19/2014 12:30	CDT	156,000	120	85	50,600	—	—	—	—
04/02/2014 12:00	CDT	107,000	166	99	47,800	—	—	—	—
04/17/2014 12:00	CDT	237,000	276	93	177,000	—	—	—	—
05/01/2014 12:15	CDT	166,000	120	96	53,600	—	—	—	—
05/29/2014 12:15	CDT	221,000	206	89	123,000	—	—	—	—
06/12/2014 12:30	CDT	155,000	89	95	37,200	—	—	—	—
06/24/2014 12:00	CDT	217,000	343	98	201,000	—	—	—	—
07/10/2014 12:15	CDT	217,000	256	91	150,000	—	—	—	—
07/24/2014 13:00	CDT	178,000	184	97	88,200	—	—	—	—
08/06/2014 12:00	CDT	105,000	73	94	20,700	—	—	—	—
08/19/2014 13:15	CDT	87,600	50	98	11,800	—	—	—	—
09/04/2014 12:40	CDT	107,000	129	98	37,200	—	—	—	—
09/19/2014 11:00	CDT	121,000	200	96	65,300	—	—	—	—
11/20/2014 12:00	CST	108,000	71	90	20,800	—	—	—	—
12/09/2014 11:00	CST	126,000	58	92	19,900	—	—	—	—
01/08/2015 10:45	CST	107,000	140	95	40,500	—	—	—	—
01/20/2015 11:00	CST	119,000	99	89	31,800	—	—	—	—
02/03/2015 14:00	CST	89,300	48	95	11,600	—	—	—	—

[1]Original result for discharge on 03/30/1999 was misrecorded and should have been 284,000 cubic feet per second, and the resulting sediment discharge for that day should have been 139,000 short tons per day.

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/03/1989 12:45	CDT	25,900	359	98	25,100	25,900	95	98	6,640
10/20/1989 12:00	CDT	18,600	—	—	—	18,600	80	100	4,040
11/17/1989 12:30	CST	26,200	—	—	—	26,200	73	100	5,180
12/13/1989 13:00	CST	26,200	—	—	—	26,200	97	99	6,830
01/31/1990 14:00	CST	239,000	945	44	610,000	—	—	—	—
02/08/1990 14:30	CST	231,000	1,160	43	721,000	—	—	—	—
03/15/1990 11:30	CST	219,000	848	67	501,000	219,000	969	64	573,000
04/06/1990 11:30	CDT	247,000	701	58	468,000	247,000	803	50	535,000
05/16/1990 11:30	CDT	270,000	1,190	77	871,000	270,000	1,490	66	1,090,000
05/25/1990 14:30	CDT	303,000	828	57	677,000	303,000	909	53	744,000
06/12/1990 14:30	CDT	259,000	415	65	290,000	259,000	522	62	365,000
06/22/1990 14:30	CDT	245,000	527	61	349,000	245,000	668	51	442,000
07/12/1990 14:30	CDT	105,000	182	89	51,600	105,000	206	91	58,400
07/25/1990 15:00	CDT	38,300	114	72	11,800	38,300	161	91	16,500
08/13/1990 10:55	CDT	43,500	226	91	26,500	43,500	373	91	43,900
08/29/1990 10:15	CDT	28,900	44	97	3,450	28,900	52	100	4,020
09/18/1990 12:30	CDT	29,100	—	—	—	29,100	37	97	2,890
10/11/1990 09:30	CDT	29,000	84	90	6,540	29,000	85	100	6,670
10/25/1990 11:00	CDT	59,000	133	94	21,200	59,000	154	97	24,500
11/21/1990 10:45	CST	31,000	95	98	7,950	31,000	80	97	6,700
12/05/1990 12:45	CST	47,000	105	90	13,300	47,000	128	95	16,200
12/27/1990 08:30	CST	124,000	—	—	—	124,000	605	61	203,000
01/18/1991 11:15	CST	193,000	318	77	166,000	193,000	422	83	220,000
01/30/1991 13:40	CST	203,000	283	86	155,000	203,000	348	89	191,000
02/07/1991 13:40	CST	212,000	248	52	142,000	212,000	263	68	151,000
02/26/1991 12:10	CST	198,000	552	47	295,000	198,000	564	54	302,000
03/12/1991 10:50	CST	189,000	168	57	85,900	189,000	186	56	95,000
04/24/1991 11:30	CDT	250,000	655	53	442,000	250,000	697	58	471,000
05/21/1991 12:30	CDT	302,000	—	—	—	302,000	701	48	572,000
06/04/1991 11:15	CDT	235,000	—	—	—	235,000	318	57	202,000
06/19/1991 12:30	CDT	181,000	454	57	222,000	181,000	398	71	195,000

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/08/1991 11:30	CDT	96,700	287	65	74,900	97,000	287	77	75,100
07/25/1991 11:55	CDT	17,000	—	—	—	17,000	72	92	3,300
08/22/1991 12:33	CDT	19,800	66	87	3,530	20,000	127	94	6,900
09/13/1991 12:30	CDT	24,000	—	—	—	24,000	75	91	4,900
10/11/1991 12:15	CDT	21,100	—	—	—	21,000	42	98	2,400
11/08/1991 12:30	CST	134,000	807	57	292,000	134,000	754	70	273,000
12/05/1991 13:00	CST	157,000	617	48	262,000	157,000	590	62	250,000
01/10/1992 11:45	CST	151,000	764	51	312,000	151,000	577	60	235,000
02/06/1992 11:15	CST	134,000	568	39	206,000	134,000	489	54	177,000
02/20/1992 11:55	CST	181,000	—	—	—	181,000	639	48	312,000
03/06/1992 12:35	CST	167,000	—	—	—	167,000	518	54	234,000
03/20/1992 11:20	CST	167,000	353	62	159,000	167,000	394	56	178,000
04/03/1992 11:55	CST	117,000	185	68	58,600	117,000	169	64	53,300
04/23/1992 12:25	CDT	76,000	183	67	37,600	76,000	163	76	33,400
05/06/1992 11:50	CDT	65,000	131	94	23,000	65,000	148	97	26,000
05/21/1992 12:10	CDT	23,000	82	99	5,090	23,000	105	99	6,500
06/04/1992 12:10	CDT	64,000	346	83	59,700	64,000	358	90	61,900
06/17/1992 12:00	CDT	118,000	368	63	117,000	118,000	433	78	138,000
07/10/1992 12:00	CDT	85,000	289	75	66,300	85,000	306	84	70,100
07/23/1992 11:25	CDT	66,000	177	91	31,600	66,000	196	97	35,000
08/21/1992 12:20	CDT	35,000	61	100	5,720	35,000	82	100	7,750
11/05/1992 15:00	CST	29,000	89	98	6,990	29,000	109	100	8,510
12/08/1992 09:30	CST	51,700	140	91	19,500	—	—	—	—
01/12/1993 12:00	CST	132,000	610	48	218,000	132,000	551	59	196,000
02/25/1993 10:30	CST	122,000	622	52	205,000	122,000	670	56	221,000
03/23/1993 11:00	CST	—	451	68	—	—	—	—	—
04/20/1993 08:30	CDT	—	151	63	—	—	—	—	—
06/22/1993 10:00	CDT	76,400	352	97	72,500	76,400	406	97	84,000
07/14/1993 12:00	CDT	32,700	75	40	6,640	32,700	92	66	8,130
07/27/1993 12:20	CDT	19,400	55	95	2,850	19,400	74	100	3,900
08/17/1993 11:00	CDT	18,000	19	93	927	18,000	53	100	2,600

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
09/21/1993 10:00	CDT	17,000	23	95	1,050	17,000	35	97	1,600
10/05/1993 09:30	CDT	16,000	36	95	1,540	16,000	47	99	2,000
10/21/1993 11:00	CDT	29,000	67	61	5,270	29,000	120	73	[1] 94,000
11/16/1993 14:30	CST	57,000	265	90	40,800	57,000	262	92	40,300
11/30/1993 10:00	CST	47,000	67	90	8,460	47,000	77	95	9,800
12/06/1993 10:30	CST	69,000	87	62	16,200	69,000	87	71	16,300
12/20/1993 10:30	CST	124,000	271	81	90,700	124,000	296	83	99,000
01/31/1994 10:00	CST	174,000	1,000	50	471,000	174,000	981	50	461,000
02/14/1994 14:00	CST	142,000	—	—	—	142,000	357	55	137,000
03/14/1994 13:00	CST	191,000	490	61	253,000	191,000	463	62	239,000
03/28/1994 10:30	CST	128,000	194	42	67,000	128,000	216	35	75,000
04/11/1994 11:30	CDT	112,000	148	50	44,700	112,000	164	38	50,000
04/25/1994 10:30	CDT	56,000	81	57	12,300	56,000	79	35	12,000
05/03/1994 10:30	CDT	42,000	—	—	—	42,000	51	68	5,800
05/17/1994 10:00	CDT	111,000	187	97	56,000	111,000	193	96	58,000
06/01/1994 10:30	CDT	77,000	235	94	48,900	77,000	239	94	50,000
06/14/1994 10:30	CDT	48,000	167	96	21,700	48,000	172	95	22,300
06/28/1994 09:30	CDT	27,000	—	—	—	27,000	121	97	8,900
07/12/1994 10:00	CDT	19,000	85	91	4,380	19,000	99	91	5,100
07/26/1994 09:15	CDT	50,000	189	75	25,500	50,000	289	82	39,000
08/09/1994 14:30	CDT	31,000	59	81	4,960	31,000	129	91	10,800
08/23/1994 14:30	CDT	—	71	76	—	—	—	—	—
09/07/1994 10:30	CDT	11,000	31	91	908	—	—	—	—
10/04/1994 10:30	CDT	—	40	98	—	—	—	—	—
10/18/1994 10:15	CDT	69,000	—	—	—	—	—	—	—
11/01/1994 10:00	CST	—	104	73	—	—	—	—	—
11/16/1994 10:30	CST	79,000	407	60	86,700	—	—	—	—
11/29/1994 12:00	CST	—	481	50	—	—	—	—	—
12/13/1994 10:30	CST	72,000	78	86	15,100	—	—	—	—
01/31/1995 10:00	CST	147,000	—	—	—	—	—	—	—
02/14/1995 10:00	CST	100,000	—	—	—	100,000	90	96	24,200

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/28/1995 10:30	CST	54,000	57	73	8,370	—	—	—	—
03/14/1995 10:15	CST	162,000	—	—	—	162,000	485	51	212,000
04/04/1995 10:00	CDT	120,000	—	—	—	—	—	—	—
04/18/1995 09:30	CDT	114,000	—	—	—	114,000	374	61	115,000
05/02/1995 09:30	CDT	139,000	602	40	226,000	—	—	—	—
05/23/1995 11:00	CDT	155,000	398	66	167,000	155,000	462	68	193,000
06/13/1995 10:00	CDT	59,000	176	85	28,100	—	—	—	—
06/27/1995 10:00	CDT	—	219	75	—	—	—	—	—
07/25/1995 10:00	CDT	—	85	88	—	—	—	—	—
08/08/1995 11:00	CDT	19,000	65	91	3,340	19,000	61	94	3,140
08/29/1995 10:00	CDT	—	21	75	—	—	—	—	—
09/27/1995 10:30	CDT	24,000	41	91	2,630	24,000	126	99	8,180
10/24/1995 11:00	CDT	—	39	96	—	—	—	—	—
11/07/1995 10:00	CST	—	44	99	—	—	—	—	—
12/12/1995 10:30	CST	—	48	84	—	—	—	—	—
01/09/1996 13:00	CST	—	104	93	—	—	—	—	—
02/13/1996 14:00	CST	22,000	153	98	9,070	—	—	—	—
03/06/1996 13:00	CST	8,000	65	97	1,400	—	—	—	—
03/27/1996 10:00	CST	24,000	39	100	2,500	—	—	—	—
04/09/1996 13:00	CDT	31,200	132	100	11,200	—	—	—	—
04/12/1996 11:30	CDT	34,000	66	97	6,050	—	—	—	—
04/19/1996 12:15	CDT	74,100	218	98	43,600	—	—	—	—
05/14/1996 12:00	CDT	35,900	60	100	5,810	—	—	—	—
06/05/1996 11:00	CDT	32,900	121	98	10,700	—	—	—	—
07/16/1996 11:00	CDT	26,800	175	93	12,700	—	—	—	—
07/30/1996 09:30	CDT	19,900	39	97	2,070	—	—	—	—
08/13/1996 09:00	CDT	38,500	60	91	6,180	—	—	—	—
09/10/1996 09:30	CDT	28,200	54	94	4,100	—	—	—	—
10/01/1996 09:00	CDT	74,500	338	65	68,000	—	—	—	—
10/24/1996 11:00	CDT	23,400	24	100	1,500	—	—	—	—
11/19/1996 12:00	CST	—	251	86	—	—	—	—	—

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/10/1996 12:00	CST	—	518	65	—	—	—	—	—
01/21/1997 11:00	CST	80,000	207	65	44,700	—	—	—	—
02/04/1997 10:00	CST	112,000	272	59	82,300	—	—	—	—
02/25/1997 11:00	CST	230,000	622	41	386,000	230,000	733	51	455,000
04/01/1997 12:00	CST	163,000	87	58	38,400	163,000	149	80	65,000
04/22/1997 13:30	CDT	192,000	464	50	240,000	192,000	512	60	265,000
05/06/1997 11:15	CDT	246,000	445	54	296,000	246,000	405	55	269,000
05/20/1997 10:00	CDT	165,000	421	35	188,000	—	—	—	—
06/10/1997 10:00	CDT	101,000	249	75	67,900	—	—	—	—
07/01/1997 12:00	CDT	58,000	46	84	7,230	—	—	—	—
07/15/1997 12:00	CDT	27,500	72	70	5,360	—	—	—	—
08/12/1997 10:00	CDT	19,900	49	100	2,640	—	—	—	—
08/25/1997 12:00	CDT	15,400	17	87	702	—	—	—	—
09/23/1997 12:00	CDT	3,280	30	100	262	—	—	—	—
10/16/1997 10:15	CDT	5,850	26	100	411	6,000	210	100	3,400
11/04/1997 09:00	CST	14,400	26	98	1,020	14,000	101	100	3,810
12/09/1997 09:00	CST	45,500	129	86	15,800	46,000	137	88	17,000
01/13/1998 12:30	CST	260,000	1,200	46	846,000	260,000	1,200	49	838,000
02/05/1998 12:00	CST	238,000	661	44	425,000	240,000	612	48	394,000
02/24/1998 11:30	CST	172,000	300	53	139,000	171,000	294	54	136,000
03/17/1998 09:30	CST	166,000	444	35	199,000	166,000	554	48	248,000
04/07/1998 11:00	CDT	145,000	233	73	91,100	145,000	312	81	122,000
05/07/1998 09:00	CDT	26,300	89	54	6,300	—	—	—	—
05/19/1998 09:00	CDT	24,500	72	48	4,760	25,000	267	87	18,000
06/24/1998 09:30	CDT	10,600	21	69	608	11,000	87	93	2,580
07/13/1998 09:30	CDT	11,200	32	92	957	11,000	76	99	2,250
08/18/1998 09:30	CDT	14,200	57	77	2,170	140,000	174	93	65,800
11/17/1998 10:00	CST	68,800	135	80	25,100	69,000	179	86	33,300
12/08/1998 11:00	CST	26,100	46	85	3,270	26,000	85	93	5,980
01/13/1999 10:00	CST	134,000	—	—	—	134,000	440	59	159,000
02/09/1999 09:00	CST	204,000	247	29	136,000	204,000	313	44	172,000

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/09/1999 09:00	CST	102,000	198	63	54,600	102,000	215	68	59,100
04/14/1999 10:00	CDT	170,000	240	57	110,000	170,000	258	60	118,000
05/25/1999 09:45	CDT	52,800	91	70	13,000	52,800	158	83	22,600
07/07/1999 10:00	CDT	55,500	47	94	7,030	55,000	137	99	20,400
12/07/1999 09:30	CST	49,400	21	100	2,750	—	—	—	—
01/11/2000 13:00	CST	7,830	38	97	803	7,830	80	100	1,690
02/08/2000 10:00	CST	16,300	—	—	—	16,300	327	100	14,400
03/14/2000 10:00	CST	25,900	41	91	2,880	25,900	87	99	6,100
04/11/2000 10:30	CDT	143,000	344	52	133,000	143,000	356	55	138,000
05/09/2000 10:00	CDT	89,100	148	79	35,700	89,100	170	83	40,800
06/13/2000 10:00	CDT	42,200	58	100	6,560	42,200	63	100	7,230
07/18/2000 09:30	CDT	28,200	—	—	—	28,200	46	95	3,480
08/01/2000 10:30	CDT	13,900	50	100	1,860	13,900	39	99	1,470
12/05/2000 10:00	CST	105,000	288	64	81,600	105,000	312	67	88,100
01/04/2001 10:00	CST	190,000	883	56	453,000	190,000	932	59	477,000
02/06/2001 09:30	CST	153,000	343	40	142,000	153,000	347	41	144,000
03/16/2001 11:00	CST	299,000	309	45	249,000	299,000	328	49	265,000
04/10/2001 09:30	CDT	186,000	683	44	343,000	186,000	573	55	288,000
05/08/2001 09:30	CDT	62,000	70	97	11,600	62,000	88	99	14,700
06/12/2001 09:30	CDT	88,900	108	90	25,900	88,900	145	94	34,900
01/29/2002 13:30	CST	146,000	227	54	89,300	146,000	251	59	99,000
02/12/2002 10:00	CST	144,000	142	71	55,200	144,000	169	75	65,600
03/12/2002 10:00	CST	59,200	50	89	7,990	59,200	66	92	10,600
04/12/2002 09:30	CDT	204,000	209	69	115,000	204,000	221	71	122,000
05/14/2002 09:15	CDT	92,400	98	75	24,400	92,400	118	80	29,400
06/11/2002 09:30	CDT	66,300	30	82	5,430	66,300	52	91	9,390
01/14/2003 10:00	CST	99,400	96	78	25,800	99,400	122	83	32,800
02/11/2003 10:30	CST	45,900	92	90	11,300	45,900	227	96	28,100
03/10/2003 11:00	CST	150,000	93	74	37,700	150,000	121	80	48,900
04/08/2003 09:30	CST	69,700	78	75	14,700	69,700	108	83	20,300
05/16/2003 13:00	CST	40,400	48	94	5,280	40,400	79	97	8,630

Table 4–2. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Red River above Old River Outflow Channel above Simmesport, Louisiana (U.S. Geological Survey station 310408091424500).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
06/11/2003 11:30	CST	22,500	78	92	4,760	22,500	112	99	6,760
01/24/2004 11:00	CST	37,400	53	99	5,310	—	—	—	—
02/20/2004 11:30	CST	133,000	108	88	38,800	133,000	143	91	51,300
03/09/2004 11:30	CST	135,000	178	54	64,800	135,000	224	64	81,900
04/27/2004 11:30	CDT	29,700	103	99	8,260	29,700	88	100	7,020
05/18/2004 12:00	CST	110,000	153	95	45,400	110,000	178	96	53,100
06/29/2004 11:30	CDT	147,000	143	83	56,900	147,000	193	88	76,500
12/07/2004 13:00	CST	163,000	265	66	117,000	—	—	—	—
01/04/2005 11:45	CST	110,000	65	86	19,400	—	—	—	—

[1]Original result for suspended-sediment discharge on 10/21/1993 was miscalculated as 94,000 short tons per day and should have been reported as 9,400 short tons per day.

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/04/1989 11:15	EDT	135,000	—	—	—	—	—	—	—
10/17/1989 11:15	EDT	132,000	81	90	28,800	132,000	87	97	31,200
10/31/1989 11:15	EST	136,000	90	86	33,100	136,000	123	99	45,300
11/14/1989 11:15	EST	99,000	87	95	23,200	99,000	110	97	29,400
11/28/1989 11:15	EST	140,000	96	94	36,200	140,000	129	98	48,900
12/12/1989 11:15	EST	108,000	59	96	17,300	108,000	81	100	23,600
12/27/1989 11:15	EST	76,000	59	82	12,100	76,000	108	91	22,100
01/10/1990 11:15	EST	128,000	202	91	69,700	128,000	242	94	83,500
01/23/1990 11:15	EST	217,000	637	79	373,000	217,000	641	79	[1]76,000
02/09/1990 11:15	EST	304,000	581	83	477,000	304,000	630	73	[1]30,000
02/23/1990 11:15	EST	423,000	227	66	259,000	—	—	—	—
03/06/1990 11:15	EST	459,000	102	76	127,000	459,000	132	84	[1]64,000
03/20/1990 11:15	EST	364,000	487	81	478,000	364,000	494	84	[1]86,000
04/03/1990 11:15	EDT	416,000	445	72	500,000	416,000	469	81	[1]26,000
04/17/1990 11:15	EDT	339,000	517	74	474,000	339,000	537	79	[1]92,000
05/01/1990 11:15	EDT	322,000	477	69	414,000	322,000	435	74	[1]78,000
05/15/1990 13:15	EDT	402,000	750	73	814,000	402,000	860	78	[1]33,000
05/18/1990 11:15	EDT	407,000	682	76	750,000	407,000	657	84	[1]22,000
05/22/1990 11:15	EDT	401,000	589	72	638,000	401,000	586	79	[1]34,000
05/25/1990 11:15	EDT	412,000	373	83	414,000	412,000	493	90	[1]49,000
06/01/1990 11:15	EDT	476,000	413	60	531,000	476,000	425	67	[1]46,000
06/05/1990 11:15	EDT	515,000	348	63	483,000	515,000	370	70	[1]14,000
06/12/1990 11:15	EDT	521,000	281	70	395,000	521,000	292	76	[1]10,000
06/26/1990 11:15	EDT	398,000	385	69	413,000	398,000	448	75	[1]81,000
07/10/1990 11:15	EDT	271,000	382	74	280,000	271,000	429	81	[1]14,000
07/24/1990 11:15	EDT	203,000	202	72	111,000	203,000	244	80	[1]34,000
08/07/1990 11:15	EDT	163,000	196	89	86,100	163,000	203	91	89,500
08/21/1990 11:00	EDT	152,000	158	78	64,700	152,000	175	84	71,900
09/05/1990 11:00	EDT	153,000	101	83	41,600	153,000	123	89	50,700
09/18/1990 12:00	EDT	137,000	142	56	52,500	137,000	195	50	72,100
10/02/1990 10:30	EDT	114,000	304	30	93,400	114,000	190	60	58,500
10/18/1990 10:30	EDT	143,000	374	54	144,000	143,000	322	68	124,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/30/1990 11:00	EST	140,000	136	58	51,300	140,000	138	72	52,300
11/20/1990 12:00	EST	121,000	86	65	28,200	121,000	93	77	30,400
11/27/1990 12:00	EST	118,000	72	68	22,900	118,000	80	78	25,400
12/11/1990 08:00	EST	159,000	352	33	151,000	159,000	306	46	131,000
01/02/1991 12:00	EST	367,000	484	48	479,000	367,000	505	55	501,000
01/15/1991 12:30	EST	575,000	223	91	346,000	—	—	—	—
01/29/1991 12:30	EST	543,000	339	35	497,000	543,000	324	45	476,000
02/12/1991 13:00	EST	287,000	281	50	217,000	287,000	296	58	229,000
02/26/1991 13:00	EST	387,000	343	59	359,000	387,000	354	65	370,000
03/12/1991 12:30	EST	431,000	226	26	263,000	431,000	234	41	272,000
03/26/1991 12:30	EST	309,000	241	48	201,000	309,000	240	54	200,000
04/09/1991 12:30	EDT	361,000	231	50	225,000	361,000	230	61	224,000
04/23/1991 12:30	EDT	435,000	723	50	849,000	435,000	688	59	808,000
05/07/1991 12:30	EDT	488,000	664	41	874,000	488,000	636	49	838,000
05/21/1991 12:30	EDT	432,000	643	44	750,000	432,000	490	60	572,000
06/04/1991 12:30	EDT	388,000	381	52	399,000	388,000	377	60	395,000
06/18/1991 12:30	EDT	299,000	550	53	444,000	—	—	—	—
07/02/1991 12:30	EDT	232,000	—	—	—	232,000	322	77	202,000
07/16/1991 12:30	EDT	141,000	135	83	51,300	141,000	156	86	59,000
07/30/1991 12:30	EDT	110,000	—	—	—	110,000	157	95	47,000
08/13/1991 12:30	EDT	99,000	70	55	18,800	99,000	216	31	58,000
08/27/1991 12:30	EDT	88,000	44	96	10,300	88,000	53	98	12,000
09/10/1991 12:30	EDT	84,000	—	—	—	84,000	70	92	16,000
09/23/1991 12:30	EDT	71,000	33	100	6,240	71,000	53	100	10,000
10/08/1991 12:30	EDT	72,000	70	70	13,600	72,000	119	56	23,100
10/22/1991 12:30	EDT	68,000	—	—	—	68,000	76	82	14,000
11/05/1991 12:30	EST	173,000	—	—	—	173,000	1,030	91	482,000
11/19/1991 12:30	EST	144,000	—	—	—	144,000	209	79	81,000
12/03/1991 12:30	EST	236,000	441	54	281,000	236,000	438	59	279,000
12/17/1991 12:30	EST	378,000	575	54	587,000	378,000	507	57	517,000
12/31/1991 12:30	EST	324,000	623	53	545,000	324,000	655	53	573,000
01/14/1992 12:30	EST	278,000	—	—	—	278,000	527	61	395,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/30/1992 12:30	EST	206,000	—	—	—	206,000	523	63	291,000
02/11/1992 12:30	EST	166,000	—	—	—	166,000	274	62	123,000
02/19/1992 12:30	EST	196,000	556	68	294,000	196,000	563	70	298,000
03/10/1992 12:30	EST	270,000	—	—	—	270,000	411	62	299,000
03/24/1992 12:30	EST	315,000	—	—	—	315,000	401	62	341,000
04/07/1992 12:30	EDT	286,000	274	57	212,000	286,000	286	68	221,000
04/22/1992 12:30	EDT	183,000	151	70	74,700	183,000	167	77	82,300
05/05/1992 12:30	EDT	263,000	419	77	298,000	263,000	432	83	307,000
05/18/1992 12:30	EDT	179,000	158	67	76,200	179,000	171	79	82,500
06/02/1992 12:00	EDT	131,000	158	80	55,800	131,000	165	89	58,500
06/16/1992 12:30	EDT	205,000	574	87	318,000	205,000	549	92	304,000
06/30/1992 12:30	EDT	169,000	—	—	—	169,000	193	92	88,000
07/14/1992 12:30	EDT	151,000	167	90	68,300	151,000	168	95	68,500
07/28/1992 12:30	EDT	214,000	—	—	—	214,000	309	82	179,000
08/18/1992 12:30	EDT	230,000	325	85	202,000	230,000	288	88	179,000
08/25/1992 11:30	EDT	170,000	171	81	78,300	700,000	155	89	293,000
09/09/1992 12:30	EDT	117,000	279	65	88,100	117,000	266	65	84,000
09/24/1992 12:30	EDT	123,000	154	87	51,100	123,000	192	86	63,900
10/08/1992 12:30	EDT	158,000	177	77	75,500	158,000	242	88	103,000
10/20/1992 12:30	EDT	83,700	146	93	32,900	83,700	157	94	35,500
11/03/1992 12:30	EST	96,200	80	95	20,700	96,200	92	96	23,800
11/17/1992 12:30	EST	146,000	141	70	55,400	146,000	167	81	65,900
12/01/1992 12:30	EST	271,000	439	42	321,000	271,000	495	56	362,000
12/15/1992 11:00	EST	229,000	281	63	174,000	229,000	231	65	143,000
12/31/1992 12:30	EST	348,000	711	55	668,000	348,000	613	56	576,000
01/14/1993 10:00	EST	363,000	577	37	565,000	363,000	545	45	535,000
01/28/1993 12:30	EST	364,000	352	37	346,000	364,000	355	46	349,000
02/11/1993 11:30	EST	297,000	—	—	—	297,000	247	53	198,000
02/25/1993 14:00	EST	260,000	364	58	255,000	260,000	379	65	266,000
03/09/1993 10:00	EST	343,000	516	64	477,000	356,000	508	70	488,000
03/25/1993 12:30	EST	435,000	420	54	493,000	435,000	425	61	499,000
04/08/1993 11:30	EDT	411,000	274	48	303,000	411,000	345	60	383,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/04/1993 15:00	EDT	465,000	—	—	—	465,000	220	48	276,000
05/20/1993 10:30	EDT	492,000	221	59	294,000	492,000	237	66	315,000
06/03/1993 13:30	EDT	421,000	259	65	295,000	421,000	283	73	321,000
06/14/1993 10:30	EDT	260,000	300	80	210,000	260,000	292	79	205,000
07/15/1993 12:00	EDT	279,000	376	88	283,000	279,000	409	88	308,000
07/29/1993 12:45	EDT	330,000	272	77	242,000	330,000	302	81	267,000
08/10/1993 14:00	EDT	342,000	291	60	269,000	342,000	323	64	298,000
08/26/1993 12:30	EDT	336,000	165	66	149,000	336,000	205	75	186,000
09/08/1993 15:00	EDT	233,000	195	88	122,000	233,000	226	91	142,000
09/23/1993 11:30	EDT	212,000	174	83	99,400	212,000	204	78	117,000
10/07/1993 11:00	EDT	286,000	259	73	200,000	286,000	270	75	209,000
10/21/1993 15:00	EDT	217,000	173	80	101,000	217,000	208	87	122,000
11/04/1993 11:30	EST	183,000	118	84	58,500	183,000	134	88	66,100
11/18/1993 11:00	EST	177,000	422	93	202,000	177,000	420	93	201,000
12/02/1993 11:30	EST	329,000	297	54	264,000	329,000	298	57	265,000
12/08/1993 10:00	EST	316,000	269	60	230,000	316,000	267	66	228,000
12/22/1993 12:00	EST	377,000	248	52	252,000	377,000	336	46	342,000
01/05/1994 11:00	EST	210,000	137	78	77,400	210,000	150	83	[2]848,000
01/19/1994 15:00	EST	252,000	285	80	194,000	252,000	295	81	201,000
02/02/1994 11:00	EST	290,000	557	57	436,000	290,000	566	62	443,000
02/16/1994 11:30	EST	387,000	352	37	367,000	387,000	339	42	354,000
03/02/1994 13:30	EST	415,000	339	53	380,000	415,000	289	61	324,000
03/16/1994 12:00	EST	478,000	398	43	514,000	478,000	360	49	464,000
03/30/1994 10:30	EST	462,000	—	—	—	462,000	161	47	201,000
04/13/1994 11:30	EDT	396,000	120	49	128,000	396,000	589	13	629,000
05/02/1994 07:00	EDT	467,000	215	31	271,000	467,000	201	40	253,000
05/18/1994 10:30	EDT	451,000	164	50	199,000	451,000	205	64	250,000
05/31/1994 12:30	EDT	333,000	131	74	117,000	333,000	148	79	133,000
06/15/1994 10:30	EDT	169,000	—	—	—	169,000	152	96	69,000
06/27/1994 15:00	EDT	157,000	133	95	56,200	157,000	162	95	69,000
07/13/1994 12:30	EDT	149,000	—	—	—	149,000	221	98	89,000
07/28/1994 12:00	EDT	159,000	—	—	—	159,000	343	93	147,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/17/1994 12:00	EDT	126,000	55	92	18,700	126,000	78	95	26,000
08/24/1994 10:00	EDT	83,000	52	92	11,600	—	—	—	—
09/06/1994 14:00	EDT	117,000	39	73	12,300	—	—	—	—
10/05/1994 12:00	EDT	88,000	39	94	9,340	88,000	55	96	13,000
10/19/1994 10:30	EDT	108,000	—	—	—	—	—	—	—
11/09/1994 12:00	EST	102,000	89	86	24,400	102,000	103	89	28,000
11/15/1994 12:00	EST	153,000	295	86	122,000	—	—	—	—
11/30/1994 10:00	EST	153,000	202	87	83,400	—	—	—	—
12/21/1994 12:00	EST	262,000	508	75	359,000	—	—	—	—
12/28/1994 12:00	EST	224,000	255	65	154,000	224,000	272	62	165,000
01/04/1995 08:00	EST	163,000	182	65	80,200	163,000	187	64	82,500
01/25/1995 11:30	EST	300,000	543	63	440,000	300,000	555	66	449,000
02/08/1995 12:00	EST	280,000	275	51	208,000	280,000	334	58	253,000
02/22/1995 12:30	EST	181,000	153	79	74,700	181,000	188	84	92,000
03/08/1995 12:30	EST	258,000	468	67	326,000	258,000	516	71	360,000
03/21/1995 14:00	EST	340,000	319	56	293,000	340,000	374	60	343,000
04/05/1995 11:00	EDT	189,000	155	78	79,200	189,000	188	82	95,800
04/19/1995 12:00	EDT	179,000	195	75	94,200	179,000	251	80	121,000
05/03/1995 11:30	EDT	335,000	321	67	290,000	335,000	358	72	323,000
05/16/1995 12:00	EDT	335,000	443	76	401,000	335,000	505	77	457,000
05/31/1995 12:30	EDT	448,000	349	56	422,000	448,000	374	62	452,000
06/14/1995 12:00	EDT	555,000	250	34	374,000	555,000	277	44	415,000
06/28/1995 09:00	EDT	487,000	173	57	228,000	487,000	175	62	230,000
07/11/1995 12:00	EDT	292,000	222	94	175,000	292,000	230	93	181,000
08/02/1995 12:00	EDT	153,000	106	95	43,700	153,000	119	96	49,200
08/16/1995 12:00	EDT	191,000	150	90	77,400	191,000	178	93	91,500
08/30/1995 12:00	EDT	140,000	110	87	41,500	140,000	134	92	50,700
09/13/1995 12:00	EDT	91,000	65	96	16,000	91,000	95	99	23,200
09/28/1995 12:00	EDT	88,000	41	94	9,800	88,000	90	99	21,500
10/11/1995 12:00	EDT	85,000	—	—	—	85,000	121	99	27,800
10/25/1995 12:00	EDT	109,000	65	90	19,000	109,000	126	97	37,200
11/08/1995 12:00	EST	104,000	—	—	—	104,000	118	98	33,100

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/21/1995 13:00	EST	169,000	142	81	65,000	169,000	175	85	79,900
12/06/1995 14:00	EST	120,000	54	91	17,600	—	—	—	—
12/13/1995 09:30	EST	111,000	39	89	11,800	111,000	63	94	18,800
01/03/1996 12:00	EST	161,000	151	87	65,500	161,000	178	89	77,300
01/17/1996 11:00	EST	148,000	101	80	40,300	—	—	—	—
01/31/1996 10:00	EST	272,000	567	63	416,000	272,000	608	74	446,000
02/14/1996 11:00	EST	288,000	291	46	227,000	288,000	306	65	238,000
02/29/1996 10:00	EST	185,000	145	76	72,300	—	—	—	—
03/13/1996 11:00	EST	251,000	229	61	155,000	251,000	262	74	178,000
03/26/1996 11:00	EST	244,000	185	57	122,000	244,000	239	73	157,000
04/10/1996 14:04	EDT	311,000	226	50	189,000	311,000	257	65	215,000
04/28/1996 11:00	EDT	241,000	—	—	—	—	—	—	—
05/08/1996 11:00	EDT	335,000	292	75	264,000	335,000	319	82	288,000
05/23/1996 15:00	EDT	411,000	259	60	287,000	411,000	235	71	260,000
06/04/1996 11:00	EDT	422,000	172	43	195,000	422,000	164	56	187,000
06/20/1996 10:00	EDT	404,000	191	66	208,000	404,000	210	74	229,000
07/02/1996 10:30	EDT	324,000	157	83	137,000	324,000	185	88	162,000
07/17/1996 11:00	EDT	173,000	144	89	67,400	—	—	—	—
07/31/1996 11:00	EDT	184,000	104	89	51,700	184,000	134	93	66,700
08/15/1996 11:00	EDT	179,000	90	86	43,600	—	—	—	—
08/28/1996 11:00	EDT	126,000	103	93	35,000	—	—	—	—
09/11/1996 11:00	EDT	109,000	81	93	23,900	—	—	—	—
09/25/1996 11:00	EDT	107,000	55	88	15,800	—	—	—	—
10/09/1996 10:00	EDT	180,000	161	80	78,300	180,000	202	88	98,300
10/22/1996 11:00	EDT	99,000	64	95	17,100	—	—	—	—
11/06/1996 11:00	EST	174,000	136	75	63,900	—	—	—	—
11/20/1996 11:00	EST	283,000	250	70	191,000	283,000	294	76	225,000
12/04/1996 11:30	EST	345,000	544	73	507,000	345,000	581	78	541,000
12/18/1996 11:00	EST	397,000	285	58	306,000	397,000	310	71	333,000
01/16/1997 11:00	EST	283,000	153	67	117,000	283,000	187	77	143,000
01/30/1997 11:00	EST	278,000	378	67	284,000	290,000	422	72	331,000
02/13/1997 11:00	EST	400,000	274	51	296,000	400,000	301	69	325,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/26/1997 11:00	EST	359,000	630	57	611,000	359,000	681	66	660,000
03/11/1997 11:00	EST	504,000	417	42	567,000	—	—	—	—
03/18/1997 11:30	EST	583,000	333	59	524,000	583,000	292	58	460,000
03/27/1997 16:00	EST	616,000	173	43	287,000	616,000	209	52	348,000
04/09/1997 11:00	EDT	593,000	166	39	265,000	593,000	180	59	288,000
04/23/1997 11:00	EDT	407,000	180	57	198,000	421,000	146	68	166,000
05/07/1997 11:00	EDT	368,000	360	58	358,000	368,000	351	64	349,000
05/21/1997 11:00	EDT	314,000	—	—	—	314,000	241	74	204,000
06/04/1997 11:00	EDT	273,000	215	75	159,000	273,000	270	84	199,000
06/18/1997 10:30	EDT	383,000	144	67	149,000	383,000	209	78	216,000
07/02/1997 11:00	EDT	365,000	118	68	116,000	365,000	185	86	182,000
07/16/1997 10:00	EDT	205,000	154	83	85,300	—	—	—	—
07/31/1997 10:00	EDT	143,000	76	87	29,400	—	—	—	—
08/13/1997 12:00	EDT	124,000	—	—	—	—	—	—	—
08/27/1997 12:00	EDT	131,000	78	91	27,400	—	—	—	—
09/10/1997 12:00	EDT	100,000	39	100	10,500	—	—	—	—
09/24/1997 12:00	EDT	87,300	40	95	9,410	—	—	—	—
10/08/1997 10:00	EDT	96,000	47	100	12,200	—	—	—	—
10/22/1997 11:00	EDT	76,000	48	100	9,750	—	—	—	—
11/05/1997 11:00	EST	101,000	62	95	16,900	—	—	—	—
11/18/1997 11:30	EST	115,000	59	93	18,200	—	—	—	—
12/03/1997 09:30	EST	107,000	101	97	29,200	—	—	—	—
12/16/1997 11:00	EST	157,000	113	88	48,000	—	—	—	—
01/07/1998 11:30	EST	223,000	394	58	237,000	223,000	412	64	248,000
01/28/1998 11:00	EST	422,000	548	43	624,000	422,000	524	53	597,000
02/04/1998 10:30	EST	306,000	545	46	450,000	306,000	533	53	440,000
02/18/1998 09:30	EST	310,000	457	43	382,000	310,000	847	28	709,000
03/03/1998 10:00	EST	359,000	393	39	381,000	359,000	439	46	425,000
03/18/1998 11:00	EST	348,000	311	47	292,000	348,000	364	55	342,000
04/01/1998 11:00	EST	397,000	403	51	432,000	39,700	480	59	51,400
04/14/1998 11:00	EDT	380,000	413	60	424,000	38,000	480	66	49,200
05/05/1998 11:00	EDT	408,000	268	34	295,000	408,000	354	51	390,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/13/1998 11:00	EDT	436,000	207	38	244,000	436,000	265	53	312,000
05/27/1998 09:30	EDT	407,000	174	36	191,000	407,000	222	51	243,000
06/11/1998 11:00	EDT	208,000	203	81	114,000	208,000	255	86	143,000
06/30/1998 11:30	EDT	322,000	470	84	409,000	322,000	516	87	449,000
07/13/1998 11:30	EDT	311,000	278	80	233,000	311,000	342	84	287,000
07/22/1998 09:00	EDT	274,000	265	75	196,000	274,000	345	81	255,000
07/28/1998 13:00	EDT	215,000	249	91	145,000	215,000	325	93	188,000
08/05/1998 14:30	EDT	188,000	163	85	82,800	188,000	231	90	117,000
08/12/1998 11:00	EDT	188,000	182	84	92,400	188,000	237	89	121,000
08/19/1998 11:00	EDT	182,000	139	85	68,300	182,000	206	90	101,000
08/26/1998 10:00	EDT	148,000	155	86	61,800	148,000	230	91	92,000
09/09/1998 10:00	EDT	99,500	—	—	—	99,000	165	97	44,000
09/15/1998 12:00	EDT	101,000	79	97	21,700	101,000	185	100	50,000
09/24/1998 10:00	EDT	76,000	52	93	10,700	76,000	132	98	27,000
11/04/1998 10:30	EST	140,000	153	95	57,600	140,000	253	98	96,000
11/18/1998 11:30	EST	213,000	300	80	172,000	213,000	360	86	207,000
12/02/1998 11:00	EST	128,000	119	90	41,000	128,000	193	95	68,000
12/15/1998 11:00	EST	200,000	472	74	255,000	200,000	506	77	273,000
01/06/1999 10:00	EST	204,000	—	—	—	204,000	423	74	233,000
01/20/1999 12:00	EST	243,000	282	60	185,000	243,000	411	73	269,000
02/03/1999 10:30	EST	—	—	—	—	[3]432,000	[3]477	[3]66	[3]557,000
02/03/1999 10:31	EST	432,000	277	34	323,000	432,000	495	63	577,000
02/17/1999 11:30	EST	—	—	—	—	[3]509,000	[3]265	[3]52	[3]364,000
02/17/1999 11:31	EST	509,000	411	67	565,000	509,000	272	51	374,000
03/11/1999 11:00	EST	—	—	—	—	[3]269,000	[3]230	[3]74	[3]167,000
03/11/1999 11:01	EST	269,000	184	64	134,000	269,000	237	73	172,000
03/23/1999 11:30	EST	—	—	—	—	[3]4,090,000	[3]322	[3]51	[3]3,550,000
03/23/1999 11:31	EST	409,000	284	43	314,000	[2]4,090,000	324	51	[2]3,580,000
04/14/1999 14:00	EST	280,000	189	68	143,000	280,000	239	75	181,000
04/21/1999 09:30	EST	273,000	125	80	91,800	273,000	172	86	126,000
05/11/1999 11:30	EST	—	—	—	—	[3]386,000	[3]347	[3]78	[3]362,000
05/11/1999 11:31	EST	386,000	295	72	308,000	386,000	355	77	370,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/26/1999 10:00	EDT	301,000	157	77	128,000	301,000	224	84	182,000
06/09/1999 09:30	EDT	270,000	284	88	207,000	270,000	369	91	269,000
07/13/1999 10:00	EDT	256,000	290	88	200,000	256,000	369	91	255,000
08/17/1999 10:00	EDT	128,000	92	93	31,700	—	—	—	—
09/08/1999 11:00	EDT	87,300	100	96	23,700	87,000	471	30	111,000
10/13/1999 10:00	EDT	72,900	53	92	10,400	72,900	169	96	33,300
11/09/1999 10:00	EST	60,200	44	99	7,200	60,200	94	100	15,300
12/06/1999 12:45	EST	77,600	54	97	11,300	77,600	95	99	19,900
12/21/1999 09:30	EST	140,000	176	93	66,700	140,000	227	95	85,900
01/05/2000 10:00	EST	66,600	46	100	8,260	66,600	107	100	19,200
01/19/2000 10:00	EST	132,000	—	—	—	132,000	359	98	128,000
02/02/2000 10:00	EST	77,600	—	—	—	77,600	401	100	83,900
02/15/2000 11:15	EST	62,100	—	—	—	62,100	191	100	32,000
03/02/2000 11:30	EST	273,000	489	78	360,000	273,000	528	81	390,000
03/15/2000 11:00	EST	204,000	173	73	95,100	204,000	232	80	128,000
04/05/2000 10:30	EDT	283,000	414	81	316,000	283,000	461	84	352,000
04/19/2000 11:00	EDT	323,000	200	63	175,000	323,000	229	69	200,000
05/04/2000 14:30	EDT	191,000	110	80	56,700	191,000	142	86	73,500
05/24/2000 10:00	EDT	118,000	96	99	30,700	118,000	127	99	40,500
06/07/2000 10:00	EDT	201,000	141	80	76,700	201,000	183	85	99,300
07/19/2000 10:00	EDT	173,000	115	93	53,900	173,000	156	96	72,900
08/09/2000 10:30	EDT	108,000	72	98	21,000	108,000	109	99	31,500
09/13/2000 10:00	EDT	73,400	61	100	12,100	73,400	135	100	26,900
10/11/2000 10:00	EDT	91,900	59	97	14,600	91,900	98	99	24,200
11/15/2000 09:30	EST	91,500	151	96	37,400	91,500	230	93	56,700
12/06/2000 11:00	EST	143,000	161	82	62,100	143,000	207	86	80,000
12/20/2000 10:00	EST	102,000	71	87	19,500	102,000	107	92	30,000
01/24/2001 11:00	EST	208,000	483	65	271,000	20,800	527	69	29,700
01/30/2001 11:00	EST	182,000	274	70	135,000	182,000	301	73	147,000
02/05/2001 14:00	EST	214,000	214	56	123,000	214,000	243	63	140,000
02/21/2001 12:00	EST	315,000	615	72	523,000	315,000	670	74	571,000
03/06/2001 12:00	EST	463,000	481	57	602,000	463,000	504	62	630,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/21/2001 10:30	EST	372,000	454	63	456,000	372,000	493	67	496,000
04/04/2001 11:30	EDT	337,000	275	55	250,000	337,000	374	50	340,000
04/18/2001 10:00	EDT	249,000	201	55	135,000	249,000	247	65	166,000
05/03/2001 10:00	EDT	249,000	210	67	141,000	249,000	271	76	182,000
05/16/2001 10:00	EDT	208,000	121	69	67,900	208,000	160	79	89,500
06/13/2001 10:00	EDT	275,000	173	67	128,000	275,000	213	74	158,000
07/03/2001 11:00	EDT	215,000	273	89	159,000	215,000	306	91	177,000
08/01/2001 09:30	EDT	109,000	113	95	33,200	109,000	152	97	44,600
09/05/2001 10:00	EDT	128,000	147	98	50,700	128,000	210	99	72,400
10/10/2001 10:00	EDT	72,700	93	99	18,200	72,700	141	100	27,700
11/07/2001 09:30	EST	140,000	91	85	34,500	140,000	134	90	50,800
12/04/2001 11:00	EST	183,000	312	71	154,000	183,000	351	75	173,000
12/07/2001 09:30	EST	291,000	506	73	397,000	291,000	540	75	424,000
01/02/2002 10:30	EST	406,000	281	50	308,000	406,000	306	54	335,000
01/09/2002 11:00	EST	271,000	194	55	142,000	271,000	221	61	161,000
01/23/2002 10:00	EST	155,000	144	64	60,300	155,000	172	70	72,000
02/06/2002 11:00	EST	354,000	266	65	254,000	354,000	299	69	286,000
02/20/2002 10:00	EST	267,000	168	71	121,000	267,000	259	59	187,000
03/13/2002 10:00	EST	171,000	72	78	33,400	171,000	107	85	49,500
03/28/2002 11:00	EST	372,000	347	87	348,000	372,000	394	88	395,000
04/13/2002 10:00	EDT	458,000	199	53	246,000	458,000	222	58	275,000
04/23/2002 10:30	EDT	357,000	261	60	251,000	357,000	273	71	263,000
05/01/2002 10:00	EDT	319,000	175	71	151,000	319,000	197	74	169,000
05/15/2002 09:30	EDT	368,000	176	69	175,000	368,000	203	73	202,000
06/05/2002 10:30	EDT	451,000	153	45	186,000	451,000	175	52	213,000
07/10/2002 10:00	EDT	146,000	87	92	34,100	146,000	127	95	50,100
08/13/2002 11:00	EDT	95,300	52	95	13,300	95,300	143	99	36,800
09/18/2002 11:00	EDT	81,600	62	100	13,600	81,600	166	100	36,600
10/09/2002 10:00	EDT	156,000	145	88	61,100	156,000	193	83	81,300
11/05/2002 11:00	CST	145,000	258	90	101,000	145,000	313	92	122,000
12/04/2002 10:00	CST	131,000	62	79	22,000	131,000	166	92	59,000
12/18/2002 10:00	CST	120,000	63	93	20,300	120,000	127	98	41,200
01/08/2003 10:00	CST	292,000	198	54	156,000	292,000	236	61	186,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/22/2003 09:45	CST	185,000	118	80	59,100	185,000	199	88	99,500
02/05/2003 10:30	CST	100,000	74	97	20,000	100,000	182	99	49,200
02/19/2003 10:00	CST	180,000	134	73	64,900	180,000	194	81	94,400
03/04/2003 10:15	CST	413,000	365	44	407,000	413,000	420	51	469,000
03/18/2003 10:00	CST	391,000	186	39	196,000	391,000	220	49	232,000
04/02/2003 10:00	CST	247,000	114	69	76,200	247,000	164	78	109,000
04/30/2003 09:30	CDT	189,000	113	83	57,400	189,000	202	91	104,000
05/06/2003 10:30	CDT	200,000	115	82	62,300	200,000	157	87	85,000
05/20/2003 12:45	CDT	361,000	259	68	252,000	—	—	—	—
06/11/2003 09:00	CDT	289,000	103	77	80,300	289,000	172	87	134,000
07/08/2003 10:30	CDT	198,000	109	89	58,300	198,000	143	92	76,400
08/06/2003 11:00	CDT	177,000	82	86	39,000	177,000	130	82	62,200
09/16/2003 10:30	CDT	196,000	155	87	82,200	196,000	212	91	112,000
10/08/2003 09:30	CDT	125,000	52	93	17,500	125,000	102	97	34,500
11/05/2003 10:00	CST	88,400	49	97	11,700	88,400	91	99	21,600
12/03/2003 10:00	CST	271,000	265	76	194,000	271,000	308	79	225,000
12/16/2003 10:00	CST	204,000	128	78	70,500	204,000	188	85	103,000
01/07/2004 10:00	CST	220,000	137	70	81,300	220,000	179	77	107,000
01/13/2004 10:00	CST	242,000	150	64	98,000	242,000	214	75	140,000
02/10/2004 09:30	CST	233,000	262	80	165,000	233,000	322	84	202,000
02/18/2004 10:00	CST	347,000	269	50	252,000	347,000	323	58	302,000
03/10/2004 09:30	CST	243,000	158	73	104,000	243,000	201	79	132,000
03/24/2004 09:00	CST	375,000	225	61	227,000	375,000	277	68	281,000
04/07/2004 10:00	CST	239,000	123	73	79,600	239,000	170	81	110,000
04/28/2004 11:00	CST	247,000	177	80	118,000	247,000	227	85	151,000
05/26/2004 10:00	CST	215,000	101	82	58,700	215,000	152	89	88,100
06/08/2004 10:00	CST	309,000	266	87	222,000	309,000	322	89	268,000
06/30/2004 12:00	CST	368,000	222	75	221,000	368,000	274	79	272,000
07/13/2004 11:00	CST	317,000	113	77	96,800	317,000	173	85	148,000
08/11/2004 09:30	CST	161,000	89	89	38,700	161,000	167	95	72,600
09/08/2004 11:00	CST	158,000	113	94	48,400	158,000	177	97	75,200
10/06/2004 11:00	CST	186,000	216	93	108,000	186,000	269	94	135,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/03/2004 12:00	CST	191,000	130	87	66,900	191,000	172	90	88,400
12/01/2004 11:00	CST	280,000	231	74	175,000	280,000	281	79	213,000
12/21/2004 11:30	CST	419,000	210	42	237,000	419,000	247	51	279,000
01/04/2005 14:00	CST	308,000	106	60	88,000	308,000	137	70	114,000
01/25/2005 13:00	CST	509,000	236	41	324,000	509,000	279	50	383,000
02/09/2005 16:00	CST	473,000	149	37	190,000	473,000	195	52	248,000
02/23/2005 10:30	CST	323,000	117	64	102,000	323,000	164	75	143,000
03/09/2005 15:15	CST	322,000	112	56	97,400	322,000	179	73	155,000
03/29/2005 10:30	CST	204,000	98	82	53,900	204,000	151	89	83,300
04/13/2005 11:00	CST	316,000	176	68	150,000	316,000	223	75	190,000
04/26/2005 10:00	CST	294,000	117	76	92,700	294,000	169	83	135,000
05/10/2005 12:00	CDT	231,000	170	86	106,000	231,000	231	90	144,000
05/24/2005 11:30	CDT	139,000	69	89	26,000	139,000	138	95	51,500
06/08/2005 11:15	CDT	135,000	85	99	30,900	135,000	147	100	53,500
07/19/2005 11:00	CDT	129,000	71	97	24,500	129,000	144	99	50,000
08/17/2005 11:00	CDT	75,100	53	95	10,800	75,100	153	90	31,000
09/14/2005 11:00	CDT	117,000	76	95	24,100	117,000	149	98	47,200
10/05/2005 11:00	CDT	82,500	79	100	17,500	82,500	140	100	31,100
11/08/2005 14:30	CST	76,700	42	100	8,590	76,700	85	100	17,500
12/07/2005 11:30	CST	74,500	51	98	10,200	74,500	103	100	20,800
12/21/2005 10:30	CST	92,800	98	99	24,500	92,800	134	100	33,500
01/11/2006 12:00	CST	101,000	50	95	13,500	101,000	94	98	25,700
01/25/2006 15:00	CST	150,000	—	—	—	150,000	284	96	114,000
02/08/2006 11:00	CST	250,000	228	85	154,000	249,000	259	87	175,000
02/22/2006 11:00	CST	165,000	118	89	52,400	165,000	152	92	67,800
03/08/2006 11:00	CST	133,000	121	97	43,300	133,000	157	98	56,200
03/22/2006 11:00	CST	247,000	395	88	263,000	247,000	470	89	313,000
04/05/2006 11:00	CST	194,000	126	86	66,200	194,000	166	90	87,100
04/19/2006 10:30	CST	184,000	—	—	—	184,000	234	92	116,000
05/03/2006 11:00	CST	218,000	150	88	88,300	218,000	198	91	116,000
05/17/2006 11:00	CST	216,000	140	87	81,400	216,000	190	91	111,000
06/07/2006 11:00	CDT	146,000	71	90	27,900	146,000	122	95	47,800

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/05/2006 11:00	CDT	94,400	63	99	16,100	94,400	115	100	29,300
08/02/2006 11:00	CDT	81,900	51	99	11,300	81,900	107	100	23,700
09/13/2006 11:00	CDT	70,700	46	99	8,800	70,700	118	100	22,500
10/04/2006 11:00	CDT	162,000	208	92	91,100	162,000	257	94	112,000
11/06/2006 15:00	CST	178,000	142	84	68,300	178,000	187	88	89,800
12/06/2006 11:00	CST	196,000	134	78	70,900	196,000	168	83	88,900
12/20/2006 11:00	CST	150,000	67	89	26,900	150,000	112	94	45,400
01/10/2007 11:00	CST	289,000	226	72	176,000	289,000	260	76	203,000
01/24/2007 11:00	CST	429,000	376	55	436,000	429,000	407	58	471,000
02/14/2007 11:00	CST	224,000	136	70	82,100	224,000	167	75	101,000
02/27/2007 11:00	CST	165,000	99	67	44,100	165,000	168	63	74,900
03/14/2007 11:00	CST	288,000	270	81	210,000	288,000	320	84	248,000
03/28/2007 11:00	CST	223,000	152	85	91,600	223,000	202	89	122,000
04/11/2007 11:00	CST	292,000	168	72	132,000	292,000	206	78	162,000
04/26/2007 11:00	CST	280,000	146	79	110,000	280,000	188	84	143,000
05/09/2007 11:00	CDT	254,000	108	85	73,800	254,000	152	89	104,000
05/23/2007 11:00	CDT	273,000	324	94	239,000	273,000	367	95	270,000
06/06/2007 11:00	CDT	164,000	92	96	40,900	164,000	174	98	76,800
07/11/2007 11:00	CDT	205,000	375	85	207,000	205,000	430	87	238,000
08/01/2007 11:00	CDT	176,000	162	80	77,100	176,000	212	85	100,000
09/12/2007 11:00	CDT	143,000	170	94	65,500	143,000	227	96	87,700
10/03/2007 11:00	CDT	67,000	60	100	10,900	67,000	155	100	28,000
11/07/2007 11:00	CST	131,000	152	92	53,700	131,000	203	94	71,900
12/05/2007 11:00	CST	92,500	54	96	13,400	92,500	132	99	32,900
12/19/2007 11:00	CST	181,000	208	58	102,000	181,000	263	67	128,000
01/09/2008 12:00	CST	188,000	119	78	60,400	188,000	156	83	79,100
01/23/2008 12:00	CST	240,000	292	72	189,000	240,000	344	76	223,000
02/06/2008 12:00	CST	154,000	132	93	54,900	154,000	180	95	74,600
02/20/2008 11:00	CST	328,000	367	72	325,000	328,000	393	74	348,000
03/05/2008 11:00	CST	326,000	183	71	161,000	326,000	211	75	186,000
03/18/2008 11:00	CDT	364,000	304	74	299,000	364,000	333	77	328,000
04/03/2008 11:00	CDT	479,000	229	51	297,000	479,000	244	55	316,000
04/19/2008 15:30	CDT	625,000	185	36	312,000	625,000	202	42	341,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/24/2008 13:00	CDT	435,000	139	58	163,000	435,000	168	66	198,000
06/13/2008 11:00	CST	315,000	165	84	140,000	315,000	211	88	180,000
06/24/2008 11:00	CST	343,000	242	83	224,000	343,000	300	83	278,000
07/10/2008 11:00	CST	329,000	194	83	173,000	329,000	236	87	210,000
08/06/2008 11:00	CST	181,000	131	92	63,900	181,000	169	94	83,000
09/10/2008 11:00	CST	189,000	276	86	141,000	189,000	300	88	153,000
10/01/2008 11:00	CDT	257,000	256	74	178,000	257,000	281	77	195,000
11/05/2008 11:00	CST	97,700	88	97	23,200	97,700	165	99	43,500
12/03/2008 11:00	CST	83,800	102	100	23,100	83,800	173	100	39,200
12/15/2008 11:00	CST	154,000	286	91	119,000	154,000	318	92	132,000
01/07/2009 11:00	CST	300,000	443	75	359,000	300,000	487	78	395,000
01/28/2009 11:00	CST	181,000	130	89	63,700	181,000	180	92	88,100
02/11/2009 11:00	CST	195,000	146	84	77,000	195,000	186	88	97,900
02/25/2009 11:00	CST	273,000	252	79	186,000	273,000	284	81	209,000
03/11/2009 11:00	CST	219,000	124	80	73,200	219,000	162	85	95,600
03/25/2009 11:00	CST	273,000	483	92	356,000	273,000	511	93	377,000
04/02/2009 11:00	CDT	303,000	181	76	148,000	303,000	211	79	173,000
04/22/2009 11:00	CDT	351,000	153	70	145,000	351,000	188	76	179,000
05/06/2009 09:00	CDT	351,000	132	76	125,000	351,000	160	80	152,000
05/21/2009 09:00	CDT	509,000	226	55	311,000	509,000	250	59	344,000
06/17/2009 14:00	CDT	357,000	133	60	128,000	357,000	193	62	186,000
07/08/2009 11:15	CDT	251,000	185	88	125,000	251,000	209	90	142,000
08/05/2009 11:00	CDT	181,000	114	94	55,600	181,000	152	96	74,200
09/02/2009 11:00	CDT	135,000	89	96	32,400	135,000	132	98	48,200
10/07/2009 11:00	CDT	208,000	133	83	74,500	135,000	156	86	56,800
11/04/2009 11:00	CDT	370,000	—	—	—	370,000	392	59	392,000
12/02/2009 11:00	CST	314,000	208	62	176,000	314,000	229	66	194,000
12/17/2009 11:00	CST	307,000	212	51	176,000	307,000	241	57	200,000
01/05/2010 11:00	CST	390,000	261	51	275,000	390,000	299	54	315,000
01/19/2010 11:00	CST	255,000	208	53	143,000	255,000	229	58	158,000
02/02/2010 09:30	CST	341,000	203	64	186,000	341,000	375	84	346,000
02/17/2010 10:00	CST	463,000	273	43	341,000	463,000	451	68	564,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/03/2010 09:30	CST	314,000	269	51	228,000	314,000	464	73	393,000
03/18/2010 09:30	CST	245,000	124	66	82,000	245,000	343	92	227,000
03/30/2010 09:45	CST	365,000	215	69	212,000	365,000	405	87	399,000
04/13/2010 09:45	CST	389,000	143	59	151,000	389,000	438	88	461,000
04/28/2010 09:30	CST	237,000	—	—	—	237,000	408	96	261,000
05/11/2010 09:30	CDT	314,000	—	—	—	314,000	486	94	412,000
05/26/2010 09:30	CDT	390,000	—	—	—	390,000	483	89	509,000
06/09/2010 09:30	CDT	320,000	—	—	—	320,000	353	95	305,000
06/23/2010 09:45	CDT	268,000	—	—	—	268,000	714	99	516,000
08/03/2010 09:45	CDT	228,000	—	—	—	228,000	527	99	325,000
11/01/2010 12:00	CDT	103,000	66	99	18,400	103,000	189	100	52,500
12/01/2010 11:00	CST	127,000	94	99	32,200	127,000	205	100	70,500
12/22/2010 10:30	CST	131,000	108	95	38,200	131,000	212	98	74,900
01/20/2011 10:30	CST	130,000	74	90	25,900	130,000	251	99	88,300
02/15/2011 11:45	CST	156,000	91	86	38,300	156,000	293	97	123,000
03/02/2011 09:15	CST	211,000	266	89	151,000	211,000	392	93	223,000
03/16/2011 09:30	CST	388,000	290	66	303,000	388,000	335	72	351,000
03/29/2011 09:15	CST	413,000	160	52	178,000	413,000	203	63	226,000
04/12/2011 10:15	CST	359,000	127	70	123,000	359,000	200	81	194,000
04/28/2011 09:30	CST	362,000	152	54	149,000	362,000	215	68	210,000
05/13/2011 10:15	CST	617,000	251	41	419,000	617,000	295	50	491,000
05/18/2011 10:30	CST	661,000	210	38	374,000	661,000	248	48	443,000
06/03/2011 10:10	CST	570,000	92	40	142,000	570,000	134	60	206,000
06/17/2011 10:30	CST	390,000	79	68	83,400	390,000	131	82	138,000
07/18/2011 10:30	CST	273,000	125	90	92,100	273,000	186	95	137,000
08/10/2011 10:45	CDT	169,000	112	96	51,200	169,000	217	100	99,100
08/31/2011 09:45	CDT	134,000	54	96	19,500	134,000	162	99	59,000
09/27/2011 09:45	CDT	115,000	52	95	16,100	115,000	158	99	49,000
10/12/2011 10:15	CDT	105,000	49	97	13,700	105,000	178	100	50,500
11/08/2011 10:15	CST	102,000	48	99	13,300	102,000	173	100	47,800
12/06/2011 10:45	CST	256,000	—	—	—	256,000	1,540	97	1,070,000
12/19/2011 10:15	CST	377,000	—	—	—	377,000	999	91	1,020,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/09/2012 10:45	CST	319,000	—	—	—	319,000	752	93	648,000
02/28/2012 10:30	CST	207,000	150	84	83,600	—	—	—	—
03/12/2012 10:45	CST	217,000	—	—	—	217,000	849	98	497,000
04/03/2012 10:30	CST	340,000	—	—	—	340,000	651	93	597,000
04/17/2012 10:35	CDT	211,000	145	87	82,800	211,000	216	93	123,000
05/01/2012 10:36	CDT	151,000	78	92	31,600	151,000	151	97	61,600
05/17/2012 10:05	CDT	225,000	240	85	146,000	225,000	318	89	193,000
05/31/2012 10:05	CDT	126,000	82	99	27,700	126,000	158	100	53,800
06/26/2012 10:33	CDT	84,400	54	97	12,300	84,400	149	100	34,000
07/10/2012 10:30	CDT	85,500	53	97	12,100	85,500	138	100	31,800
07/25/2012 10:11	CDT	60,900	54	99	8,870	60,900	166	100	27,300
08/08/2012 10:19	CDT	82,600	58	99	12,900	82,600	153	100	34,000
08/27/2012 10:00	CDT	56,600	77	98	11,800	56,600	173	100	26,400
09/11/2012 09:40	CDT	68,600	34	99	6,230	68,600	95	100	17,600
09/25/2012 10:15	CDT	53,700	41	98	5,960	53,700	136	100	19,700
10/25/2012 09:45	CDT	60,800	48	99	7,860	60,800	152	100	24,900
12/05/2012 09:45	CST	62,700	27	96	4,640	62,700	142	100	24,000
12/18/2012 09:45	CST	93,900	94	97	23,900	93,900	175	100	44,000
01/23/2013 10:15	CST	286,000	368	73	284,000	286,000	407	76	314,000
02/06/2013 10:20	CST	295,000	223	70	178,000	295,000	263	75	209,000
02/28/2013 10:30	CST	243,000	150	84	98,100	243,000	199	89	131,000
03/04/2013 10:00	CST	206,000	151	89	84,100	206,000	206	94	115,000
03/19/2013 10:30	CDT	244,000	136	72	89,300	244,000	198	82	130,000
04/08/2013 10:45	CDT	277,000	132	73	98,900	277,000	187	82	140,000
05/01/2013 10:00	CDT	331,000	241	76	215,000	—	—	—	—
05/15/2013 10:00	CDT	394,000	125	58	133,000	—	—	—	—
05/30/2013 09:50	CDT	421,000	80	68	90,800	421,000	127	80	144,000
06/13/2013 09:30	CDT	330,000	191	93	170,000	330,000	248	95	221,000
06/26/2013 10:30	CDT	339,000	99	79	90,600	339,000	177	89	162,000
07/10/2013 10:30	CDT	247,000	126	91	84,000	247,000	217	95	145,000
07/24/2013 09:45	CDT	289,000	114	81	89,000	289,000	153	87	120,000
08/07/2013 09:45	CDT	150,000	69	97	28,100	150,000	141	100	57,000

Table 4–3. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Atchafalaya River at Simmesport, Louisiana (U.S. Geological Survey station 07381490).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers and the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
09/25/2013 10:15	CDT	86,800	54	100	12,600	86,800	131	100	31,000
11/21/2013 10:45	CST	93,600	61	99	15,400	93,600	181	100	46,000
12/11/2013 12:00	CST	139,000	102	98	38,300	—	—	—	—
01/22/2014 10:15	CST	246,000	131	71	86,800	—	—	—	—
02/05/2014 09:45	CST	161,000	95	96	41,400	—	—	—	—
02/27/2014 10:30	CST	178,000	86	93	41,300	—	—	—	—
03/19/2014 10:00	CST	231,000	106	83	66,200	—	—	—	—
04/02/2014 10:00	CST	223,000	191	90	115,000	—	—	—	—
04/17/2014 09:45	CDT	356,000	172	71	166,000	—	—	—	—
05/01/2014 10:15	CDT	268,000	121	82	87,400	—	—	—	—
05/29/2014 10:00	CDT	279,000	148	87	111,000	—	—	—	—
06/12/2014 09:45	CDT	217,000	103	87	60,500	—	—	—	—
06/24/2014 10:00	CDT	261,000	291	96	205,000	—	—	—	—
07/10/2014 10:00	CDT	228,000	249	95	153,000	—	—	—	—
07/24/2014 10:15	CDT	225,000	181	97	110,000	—	—	—	—
08/06/2014 12:00	CDT	151,000	134	99	54,600	—	—	—	—
08/19/2014 10:00	CDT	116,000	47	100	14,600	—	—	—	—
09/04/2014 10:15	CDT	136,000	100	99	36,500	—	—	—	—
09/19/2014 08:15	CDT	138,000	187	99	69,600	—	—	—	—
11/20/2014 09:00	CST	126,000	62	93	21,100	—	—	—	—
12/09/2014 08:30	CST	133,000	51	95	18,200	—	—	—	—
01/06/2015 10:30	CST	212,000	271	88	155,000	—	—	—	—
01/20/2015 08:30	CST	195,000	97	89	51,100	—	—	—	—
02/03/2015 11:00	CST	120,000	66	100	21,300	—	—	—	—

[1]Original results for suspended-sediment discharge for 01/23/1990 through 07/24/1990 were misreported and should have been as follows: 01/23/1990, 376,000; 02/09/1990, 517,000; 03/06/1990, 164,000; 03/20/1990, 486,000; 04/03/1990, 526,000; 04/17/1990, 492,000; 05/01/1990, 378,000; 05/15/1990, 933,000; 05/18/1990, 722,000; 05/22/1990, 634,000; 05/25/1990, 634,000; 06/01/1990, 546,000; 06/05/1990, 514,000; 06/12/1990, 410,000; 06/26/1990, 481,000; 07/10/1990, 314,000; and 07/24/1990, 134,000 short tons per day.

[2]Due to data-entry errors, the original result for suspended-sediment discharge on 01/05/1994 should have been reported as 84,800 short tons per day; the original results for stream discharge and suspended-sediment discharge on 03/23/1999 11:30 should have been reported as 409,000 cubic feet per second and 355,000 short tons per day; and the original results for stream discharge and suspended-sediment discharge on 03/23/1999 11:31 should have been reported as 409,000 cubic feet per second and 358,000 short tons per day.

[3]Two methods were used for the samples collected on 02/03/1999, 02/17/1999, 03/11/1999, 03/23/1999, and 05/11/1999. The results for the second sample in each pair are considered more reliable than are the results for the first sample.

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/05/1989 11:15	CST	375,000	—	—	—	—	—	—	—
10/16/1989 11:15	CST	356,000	95	91	91,300	348,000	92	96	86,400
10/30/1989 11:15	CST	324,000	144	71	126,000	330,000	170	81	151,000
11/13/1989 11:15	CST	261,000	130	88	91,400	259,000	167	94	117,000
11/27/1989 11:15	CST	350,000	108	93	102,000	366,000	130	96	128,000
12/11/1989 11:15	CST	280,000	76	96	57,700	280,000	104	98	78,600
12/26/1989 11:15	CST	203,000	165	97	90,300	189,000	83	96	42,400
01/09/1990 11:15	CST	290,000	364	91	285,000	301,000	407	93	331,000
01/22/1990 11:15	CST	504,000	381	89	518,000	523,000	421	92	594,000
02/08/1990 11:15	CST	764,000	401	75	827,000	825,000	420	78	937,000
02/22/1990 11:15	CST	1,020,000	179	76	492,000	1,020,000	207	76	573,000
03/05/1990 11:15	CST	1,110,000	107	75	318,000	1,040,000	126	80	354,000
03/19/1990 11:15	CST	909,000	106	90	259,000	886,000	126	93	300,000
04/02/1990 11:15	CDT	985,000	174	90	463,000	978,000	150	89	396,000
04/16/1990 11:15	CDT	745,000	183	85	367,000	798,000	174	80	375,000
04/30/1990 11:15	CDT	745,000	198	83	398,000	—	—	—	—
05/14/1990 11:15	CDT	900,000	328	88	798,000	930,000	378	90	948,000
05/29/1990 11:15	CDT	1,060,000	187	86	537,000	952,000	331	55	850,000
06/11/1990 11:15	CDT	1,220,000	99	89	325,000	1,080,000	121	92	354,000
06/25/1990 11:15	CDT	965,000	232	76	604,000	884,000	258	85	615,000
07/09/1990 11:15	CDT	651,000	490	90	862,000	636,000	496	92	852,000
07/23/1990 11:15	CDT	450,000	201	80	244,000	471,000	195	87	247,000
08/06/1990 11:15	CDT	410,000	181	88	200,000	412,000	197	91	219,000
08/22/1990 11:00	CDT	320,000	163	89	141,000	330,000	174	93	155,000
09/04/1990 11:00	CDT	329,000	135	86	120,000	341,000	163	90	150,000
09/17/1990 11:00	CDT	315,000	111	85	94,600	325,000	118	90	103,000
10/03/1990 11:00	CDT	265,000	331	24	237,000	276,000	258	34	192,000
10/15/1990 11:00	CDT	290,000	205	68	161,000	299,000	308	44	249,000
10/29/1990 11:00	CST	355,000	298	65	286,000	349,000	273	76	257,000
11/13/1990 10:30	CST	283,000	121	65	92,200	277,000	152	67	114,000
11/26/1990 11:00	CST	288,000	119	49	92,700	273,000	155	49	114,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/10/1990 12:30	CST	360,000	209	70	203,000	358,000	167	65	161,000
12/27/1990 12:00	CST	665,000	474	83	850,000	—	—	—	—
01/16/1991 12:00	CST	1,260,000	176	76	596,000	1,230,000	171	78	567,000
01/28/1991 12:30	CST	1,270,000	152	42	521,000	1,200,000	155	49	503,000
02/11/1991 13:00	CST	725,000	221	53	433,000	745,000	211	61	424,000
02/27/1991 12:30	CST	899,000	205	62	498,000	916,000	218	68	540,000
03/11/1991 12:30	CST	1,000,000	229	30	618,000	1,020,000	209	42	575,000
03/25/1991 12:30	CST	749,000	186	54	377,000	775,000	187	69	391,000
04/08/1991 12:30	CDT	850,000	256	50	586,000	876,000	222	70	526,000
04/22/1991 12:30	CDT	1,000,000	228	58	618,000	950,000	259	68	665,000
05/08/1991 12:00	CDT	1,160,000	268	47	837,000	1,110,000	274	55	822,000
05/20/1991 12:30	CDT	1,050,000	255	72	727,000	1,040,000	282	82	793,000
06/03/1991 12:30	CDT	869,000	277	66	649,000	823,000	284	67	631,000
06/17/1991 12:30	CDT	724,000	287	78	562,000	622,000	287	77	481,000
07/01/1991 12:30	CDT	514,000	293	82	407,000	528,000	295	87	420,000
07/17/1991 12:30	CDT	335,000	136	87	123,000	340,000	149	89	137,000
07/29/1991 12:30	CDT	285,000	164	90	126,000	266,000	195	94	140,000
08/12/1991 12:30	CDT	241,000	100	85	65,000	236,000	124	83	79,000
08/26/1991 12:30	CDT	222,000	75	97	45,000	216,000	92	99	54,000
09/11/1991 12:00	CDT	222,000	—	—	—	209,000	78	98	44,000
09/24/1991 12:30	CDT	213,000	72	96	41,400	201,000	124	99	67,000
10/07/1991 12:30	CDT	219,000	—	—	—	214,000	81	93	47,000
10/23/1991 12:30	CDT	186,000	—	—	—	180,000	92	95	45,000
11/04/1991 12:30	CST	329,000	295	94	262,000	347,000	276	93	258,000
11/18/1991 12:30	CST	330,000	158	73	141,000	311,000	140	79	117,000
12/02/1991 12:00	CST	440,000	264	77	313,000	456,000	238	79	292,000
12/16/1991 12:30	CST	826,000	—	—	—	911,000	464	61	1,140,000
12/30/1991 12:00	CST	756,000	211	52	431,000	—	—	—	—
01/13/1992 12:30	CST	653,000	230	42	406,000	667,000	219	47	395,000
01/29/1992 13:30	CST	505,000	134	61	183,000	483,000	142	69	185,000
02/10/1992 12:30	CST	428,000	—	—	—	423,000	121	77	139,000
02/20/1992 12:30	CST	415,000	176	81	198,000	394,000	195	90	207,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/11/1992 12:30	CST	620,000	222	63	371,000	585,000	211	71	334,000
03/23/1992 12:30	CST	745,000	318	68	640,000	766,000	295	72	610,000
04/06/1992 12:30	CDT	685,000	—	—	—	661,000	285	77	508,000
04/20/1992 12:30	CDT	415,000	124	86	138,000	428,000	129	89	149,000
05/04/1992 12:30	CDT	624,000	498	85	839,000	588,000	514	87	815,000
05/19/1992 12:30	CDT	386,000	106	83	110,000	391,000	128	81	135,000
06/01/1992 12:30	CDT	321,000	84	82	73,100	301,000	82	91	66,400
06/15/1992 12:30	CDT	440,000	150	88	178,000	420,000	188	92	213,000
06/29/1992 12:30	CDT	417,000	122	81	137,000	401,000	96	89	104,000
07/13/1992 12:30	CDT	357,000	155	94	149,000	354,000	157	95	150,000
07/27/1992 12:30	CDT	488,000	231	90	304,000	495,000	190	93	254,000
08/12/1992 12:30	CDT	590,000	461	93	734,000	574,000	427	93	661,000
08/24/1992 12:30	CDT	392,000	178	93	188,000	387,000	208	94	217,000
09/10/1992 12:30	CDT	291,000	130	93	102,000	296,000	164	93	131,000
09/23/1992 12:30	CDT	299,000	193	89	156,000	296,000	186	89	149,000
10/13/1992 12:30	CDT	266,000	163	75	117,000	260,000	173	80	121,000
10/19/1992 12:30	CDT	203,000	132	79	72,500	209,000	141	82	[1]795,000
11/02/1992 12:30	CST	229,000	88	91	54,500	255,000	108	89	74,300
11/16/1992 12:30	CST	304,000	152	67	125,000	343,000	159	81	147,000
11/30/1992 12:30	CST	631,000	391	57	665,000	714,000	400	63	771,000
12/14/1992 12:30	CST	648,000	287	50	503,000	569,000	274	58	421,000
12/30/1992 10:00	CST	816,000	327	80	721,000	891,000	367	84	882,000
01/11/1993 12:30	CST	809,000	428	48	935,000	853,000	396	52	913,000
01/25/1993 12:30	CST	888,000	239	45	573,000	938,000	253	53	642,000
02/08/1993 11:30	CST	796,000	—	—	—	866,000	216	52	505,000
02/22/1993 11:00	CST	597,000	197	60	317,000	628,000	221	63	375,000
03/08/1993 10:00	CST	803,000	357	64	773,000	800,000	374	67	808,000
03/22/1993 11:00	CST	958,000	—	—	—	932,000	273	71	686,000
04/05/1993 11:30	CDT	973,000	287	49	754,000	914,000	268	60	662,000
04/19/1993 11:00	CDT	1,150,000	212	58	658,000	1,050,000	209	62	592,000
05/03/1993 12:30	CDT	1,150,000	187	38	580,000	1,040,000	183	49	514,000
05/17/1993 12:30	CDT	1,190,000	128	49	410,000	1,030,000	160	52	445,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
06/01/1993 12:45	CDT	1,010,000	177	68	484,000	851,000	267	60	615,000
06/15/1993 10:30	CDT	665,000	208	73	374,000	653,000	237	80	417,000
06/28/1993 12:30	CDT	701,000	197	71	373,000	657,000	249	70	441,000
07/12/1993 12:30	CDT	629,000	264	83	448,000	631,000	293	87	498,000
07/21/1993 12:00	CDT	704,000	257	79	488,000	732,000	322	85	636,000
07/26/1993 13:00	CDT	730,000	291	73	573,000	723,000	311	81	607,000
07/28/1993 11:45	CDT	740,000	294	74	588,000	731,000	287	81	567,000
08/02/1993 14:00	CDT	772,000	229	63	478,000	702,000	231	74	439,000
08/04/1993 14:45	CDT	785,000	228	58	484,000	771,000	252	64	525,000
08/09/1993 12:00	CDT	810,000	231	65	505,000	757,000	265	69	541,000
08/12/1993 12:30	CDT	830,000	421	63	944,000	794,000	378	72	811,000
08/16/1993 11:00	CDT	829,000	343	58	768,000	—	—	—	—
08/18/1993 11:30	CDT	822,000	243	59	539,000	782,000	224	70	474,000
08/23/1993 12:30	CDT	798,000	200	56	432,000	779,000	199	65	419,000
09/07/1993 10:30	CDT	593,000	194	83	310,000	585,000	222	87	351,000
09/20/1993 11:30	CDT	485,000	214	78	280,000	496,000	367	57	492,000
10/04/1993 11:30	CDT	625,000	267	76	451,000	645,000	296	81	515,000
10/18/1993 13:00	CDT	616,000	208	54	346,000	594,000	198	67	318,000
11/01/1993 12:00	CST	454,000	157	64	192,000	454,000	164	71	201,000
11/15/1993 11:30	CST	352,000	255	83	243,000	352,000	270	87	256,000
11/29/1993 12:00	CST	815,000	305	58	671,000	796,000	323	64	693,000
12/23/1993 10:30	CST	804,000	270	37	586,000	790,000	260	48	555,000
01/06/1994 12:00	CST	409,000	140	53	154,000	458,000	138	59	171,000
01/20/1994 12:00	CST	572,000	343	47	529,000	657,000	285	55	506,000
02/03/1994 11:00	CST	679,000	359	61	658,000	835,000	389	63	876,000
02/17/1994 12:00	CST	872,000	342	30	806,000	955,000	291	44	751,000
03/03/1994 11:00	CST	944,000	220	41	560,000	1,060,000	208	47	595,000
03/17/1994 12:00	CST	1,030,000	260	25	722,000	1,100,000	290	28	860,000
04/14/1994 08:00	CDT	911,000	161	33	396,000	980,000	156	39	412,000
04/21/1994 14:30	CDT	980,000	165	38	437,000	992,000	175	39	468,000
04/28/1994 15:30	CDT	1,060,000	191	32	548,000	1,100,000	190	43	564,000
05/04/1994 12:30	CDT	1,120,000	166	28	502,000	1,060,000	237	26	680,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/12/1994 11:00	CDT	1,150,000	—	—	—	1,070,000	79	81	238,000
05/19/1994 11:00	CDT	1,050,000	160	32	455,000	—	—	—	—
05/25/1994 12:00	CDT	956,000	131	48	337,000	903,000	142	55	345,000
06/02/1994 12:00	CDT	627,000	125	82	211,000	569,000	135	89	208,000
06/16/1994 10:30	CDT	408,000	156	85	172,000	425,000	183	89	210,000
06/23/1994 12:00	CDT	364,000	109	91	107,000	339,000	138	94	127,000
06/29/1994 12:00	CDT	353,000	124	91	119,000	333,000	158	93	142,000
07/14/1994 11:00	CDT	395,000	192	94	204,000	356,000	251	96	241,000
07/27/1994 13:00	CDT	393,000	—	—	—	379,000	423	93	433,000
08/10/1994 12:00	CDT	321,000	79	88	68,800	305,000	109	91	90,000
08/25/1994 09:00	CDT	238,000	92	92	59,000	—	—	—	—
09/08/1994 10:00	CDT	252,000	65	91	44,100	—	—	—	—
10/06/1994 12:00	CDT	205,000	51	95	28,200	225,000	68	98	41,000
10/27/1994 10:00	CDT	268,000	160	91	115,000	—	—	—	—
11/10/1994 12:00	CST	282,000	161	91	123,000	311,000	171	91	143,000
11/17/1994 11:00	CST	374,000	300	89	303,000	—	—	—	—
12/01/1994 10:00	CST	374,000	175	85	177,000	—	—	—	—
12/22/1994 11:30	CST	630,000	209	77	356,000	720,000	216	76	420,000
12/29/1994 12:00	CST	497,000	148	79	198,000	524,000	155	74	219,000
01/11/1995 12:00	CST	320,000	137	87	118,000	340,000	153	91	141,000
01/26/1995 11:30	CST	698,000	400	67	754,000	836,000	427	71	964,000
02/09/1995 12:00	CST	623,000	152	70	255,000	651,000	170	76	299,000
02/23/1995 12:00	CST	410,000	161	85	178,000	465,000	191	84	240,000
03/09/1995 12:30	CST	566,000	339	86	517,000	580,000	379	88	593,000
03/22/1995 12:00	CST	808,000	250	66	546,000	877,000	306	75	725,000
04/06/1995 13:00	CDT	462,000	119	84	148,000	494,000	162	89	216,000
04/20/1995 11:30	CDT	428,000	110	84	127,000	—	—	—	—
05/04/1995 12:00	CDT	723,000	224	84	437,000	786,000	258	87	547,000
05/17/1995 12:30	CDT	761,000	186	80	383,000	853,000	230	83	529,000
06/01/1995 12:30	CDT	982,000	195	64	516,000	999,000	215	70	579,000
06/15/1995 12:00	CDT	1,170,000	67	83	210,000	1,180,000	79	86	251,000
06/29/1995 11:00	CDT	1,020,000	116	66	320,000	926,000	129	71	323,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/12/1995 14:00	CDT	689,000	170	95	317,000	708,000	175	96	335,000
08/03/1995 12:00	CDT	361,000	110	92	107,000	356,000	128	94	123,000
08/17/1995 12:00	CDT	485,000	227	92	297,000	445,000	241	94	290,000
08/31/1995 12:00	CDT	332,000	100	91	89,400	340,000	116	95	106,000
09/14/1995 12:00	CDT	220,000	75	95	44,500	223,000	108	97	65,000
09/26/1995 12:00	CDT	221,000	64	94	38,100	242,000	98	98	64,300
10/12/1995 12:00	CDT	209,000	—	—	—	220,000	119	99	71,000
10/26/1995 12:00	CDT	244,000	—	—	—	244,000	123	95	81,200
11/09/1995 12:00	CST	237,000	69	93	44,100	237,000	136	97	86,900
11/22/1995 11:00	CST	377,000	132	78	135,000	—	—	—	—
12/06/1995 11:00	CST	286,000	64	79	49,100	—	—	—	—
12/14/1995 11:00	CST	248,000	58	73	39,100	—	—	—	—
01/18/1996 11:00	CST	344,000	141	75	131,000	—	—	—	—
02/01/1996 11:00	CST	660,000	517	68	921,000	—	—	—	—
02/15/1996 12:00	CST	640,000	191	62	330,000	640,000	205	68	345,000
02/28/1996 11:00	CST	442,000	157	73	187,000	—	—	—	—
03/14/1996 11:00	CST	551,000	259	67	386,000	554,000	274	74	410,000
03/28/1996 11:00	CST	564,000	259	76	394,000	563,000	255	80	388,000
04/11/1996 11:30	CDT	630,000	180	61	306,000	604,000	208	72	340,000
04/25/1996 13:00	CDT	488,000	365	90	481,000	488,000	420	93	554,000
05/09/1996 12:00	CDT	782,000	372	80	784,000	—	—	—	—
05/22/1996 11:00	CDT	929,000	219	59	550,000	926,000	261	64	652,000
06/06/1996 11:00	CDT	1,030,000	144	54	400,000	1,020,000	155	63	429,000
06/19/1996 12:00	CDT	984,000	189	64	502,000	935,000	210	69	531,000
07/10/1996 11:00	CDT	526,000	444	95	631,000	—	—	—	—
07/18/1996 11:00	CDT	403,000	139	92	152,000	388,000	163	95	171,000
08/01/1996 08:15	CDT	441,000	184	81	219,000	462,000	204	88	254,000
08/14/1996 11:00	CDT	424,000	118	82	135,000	—	—	—	—
08/29/1996 11:00	CDT	300,000	114	94	92,300	289,000	139	96	108,000
09/12/1996 10:30	CDT	242,000	100	98	65,000	—	—	—	—
09/26/1996 10:30	CDT	261,000	59	94	41,300	—	—	—	—

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/10/1996 11:30	CDT	403,000	142	84	155,000	414,000	200	91	223,000
10/23/1996 11:00	CDT	230,000	81	91	50,200	—	—	—	—
11/07/1996 11:00	CST	422,000	134	75	152,000	—	—	—	—
11/21/1996 11:00	CST	637,000	254	73	437,000	610,000	287	80	473,000
12/05/1996 11:15	CST	777,000	345	77	723,000	811,000	393	79	860,000
12/19/1996 12:00	CST	865,000	196	65	458,000	933,000	228	74	573,000
12/30/1996 12:00	CST	824,000	201	56	446,000	829,000	217	67	486,000
01/15/1997 11:00	CST	636,000	132	76	226,000	596,000	199	76	320,000
01/29/1997 12:00	CST	584,000	359	86	566,000	625,000	415	88	700,000
02/12/1997 11:00	CST	835,000	254	63	572,000	912,000	297	67	730,000
02/27/1997 11:00	CST	824,000	258	74	574,000	838,000	298	79	675,000
03/12/1997 15:00	CST	1,200,000	209	71	676,000	1,180,000	291	71	927,000
03/20/1997 15:00	CST	1,410,000	167	57	637,000	1,470,000	223	63	884,000
03/28/1997 10:30	CST	1,470,000	99	58	391,000	1,450,000	145	73	569,000
04/10/1997 11:30	CDT	1,300,000	—	—	—	1,220,000	123	61	406,000
05/01/1997 12:00	CDT	910,000	259	73	637,000	969,000	310	80	812,000
05/08/1997 11:00	CDT	863,000	186	76	433,000	846,000	241	83	549,000
05/22/1997 11:30	CDT	734,000	162	81	321,000	739,000	233	86	464,000
06/05/1997 12:30	CDT	625,000	213	81	360,000	630,000	309	89	525,000
06/19/1997 10:30	CDT	817,000	142	70	314,000	773,000	194	82	406,000
07/17/1997 11:30	CDT	475,000	—	—	—	449,000	242	94	294,000
07/30/1997 11:00	CDT	322,000	107	83	92,700	—	—	—	—
08/14/1997 11:00	CDT	274,000	74	90	54,500	—	—	—	—
08/28/1997 10:00	CDT	318,000	105	85	90,400	—	—	—	—
09/11/1997 09:30	CDT	234,000	87	92	54,700	—	—	—	—
09/25/1997 10:00	CDT	199,000	73	96	39,100	—	—	—	—
10/09/1997 10:00	CDT	234,000	72	95	45,600	—	—	—	—
10/23/1997 10:30	CDT	202,000	70	95	38,200	—	—	—	—
11/06/1997 10:30	CST	227,000	93	85	57,200	—	—	—	—
11/19/1997 11:30	CST	271,000	80	72	58,700	—	—	—	—
12/04/1997 10:30	CST	264,000	112	76	79,800	—	—	—	—

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/17/1997 13:00	CST	315,000	81	63	69,100	—	—	—	—
01/08/1998 09:00	CST	526,000	709	89	1,010,000	—	—	—	—
01/21/1998 11:00	CST	969,000	391	64	1,020,000	984,000	431	66	1,140,000
02/03/1998 09:30	CST	765,000	192	69	397,000	732,000	259	69	512,000
02/19/1998 11:00	CST	760,000	233	55	478,000	784,000	271	63	574,000
03/04/1998 11:30	CST	831,000	228	52	511,000	881,000	277	63	658,000
03/19/1998 12:00	CST	843,000	215	64	489,000	855,000	252	73	583,000
04/02/1998 11:00	CST	965,000	265	63	690,000	948,000	308	69	789,000
04/15/1998 12:00	CDT	914,000	365	81	901,000	880,000	416	85	987,000
04/29/1998 12:30	CDT	915,000	191	56	472,000	907,000	231	68	567,000
05/14/1998 10:30	CDT	1,070,000	139	42	402,000	1,010,000	203	63	551,000
05/28/1998 11:00	CDT	885,000	152	46	362,000	818,000	213	70	470,000
06/15/1998 11:00	CDT	549,000	258	69	383,000	574,000	300	78	465,000
07/01/1998 11:00	CDT	741,000	414	86	828,000	727,000	477	90	937,000
07/14/1998 10:30	CDT	740,000	328	79	656,000	732,000	384	84	758,000
07/21/1998 09:00	CDT	654,000	—	—	—	561,000	374	72	566,000
07/23/1998 11:30	CDT	621,000	288	86	483,000	612,000	354	86	585,000
07/29/1998 11:30	CDT	476,000	255	90	328,000	484,000	322	89	421,000
08/05/1998 10:00	CDT	405,000	160	82	175,000	381,000	262	81	270,000
08/13/1998 12:00	CDT	421,000	167	89	189,000	397,000	251	89	270,000
08/20/1998 11:00	CDT	—	—	—	—	[2]437,000	[2]210	[2]89	[2]248,000
08/20/1998 11:01	CDT	405,000	146	80	159,000	437,000	215	87	253,000
08/27/1998 11:00	CDT	320,000	124	85	107,000	306,000	220	92	181,000
09/10/1998 10:00	CDT	224,000	82	92	49,500	267,000	231	83	166,000
09/14/1998 12:00	CDT	218,000	101	92	59,400	333,000	182	97	164,000
09/23/1998 09:30	CDT	197,000	95	99	50,400	254,000	180	95	124,000
11/05/1998 10:00	CST	302,000	194	86	158,000	354,000	267	91	256,000
11/10/1998 11:00	CST	298,000	187	80	150,000	366,000	258	87	255,000
12/03/1998 11:00	CST	305,000	153	75	126,000	350,000	213	85	201,000
12/16/1998 12:00	CST	450,000	380	83	462,000	502,000	429	85	581,000
01/07/1999 11:30	CST	450,000	—	—	—	469,000	422	82	534,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/21/1999 12:00	CST	550,000	421	65	626,000	569,000	440	72	675,000
02/11/1999 11:00	CST	1,160,000	283	47	884,000	1,190,000	306	55	982,000
02/24/1999 11:00	CST	1,020,000	237	51	649,000	979,000	305	63	805,000
03/10/1999 11:30	CST	595,000	300	79	482,000	650,000	348	82	611,000
03/24/1999 11:00	CST	921,000	245	44	609,000	927,000	294	53	736,000
04/15/1999 11:30	CDT	658,000	166	76	294,000	629,000	212	77	360,000
04/22/1999 11:30	CDT	625,000	167	71	281,000	618,000	201	79	336,000
05/13/1999 11:30	CDT	890,000	275	75	661,000	828,000	339	80	758,000
05/27/1999 11:30	CDT	737,000	198	78	393,000	648,000	262	86	458,000
06/10/1999 11:00	CDT	580,000	263	88	411,000	618,000	374	83	623,000
07/15/1999 11:00	CDT	590,000	396	90	630,000	571,000	487	88	750,000
08/12/1999 12:00	CDT	306,000	140	84	116,000	285,000	230	91	177,000
09/09/1999 13:00	CDT	198,000	99	87	53,000	206,000	163	94	90,500
10/21/1999 11:00	CDT	175,000	90	82	42,700	174,000	124	88	58,000
11/10/1999 11:00	CST	155,000	—	—	—	162,000	97	93	42,600
12/08/1999 10:30	CST	200,000	87	82	47,100	202,000	148	87	80,500
12/22/1999 10:00	CST	314,000	227	81	192,000	322,000	314	84	273,000
01/06/2000 11:00	CST	156,000	83	83	35,000	161,000	131	89	57,000
01/20/2000 10:00	CST	281,000	—	—	—	290,000	349	89	273,000
02/03/2000 11:00	CST	177,000	—	—	—	187,000	206	92	104,000
02/16/2000 13:00	CST	163,000	—	—	—	165,000	242	94	108,000
03/08/2000 11:00	CST	621,000	341	69	571,000	612,000	372	73	615,000
03/16/2000 11:00	CST	391,000	178	64	188,000	386,000	222	71	231,000
04/06/2000 11:00	CDT	625,000	379	81	640,000	583,000	433	81	681,000
04/20/2000 11:00	CDT	673,000	219	70	399,000	649,000	244	75	428,000
05/04/2000 10:00	CDT	436,000	152	58	179,000	435,000	174	71	204,000
05/25/2000 10:00	CDT	297,000	156	83	125,000	297,000	198	87	159,000
06/08/2000 11:00	CDT	470,000	200	69	254,000	469,000	237	79	300,000
07/24/2000 11:30	CDT	384,000	213	87	221,000	371,000	174	84	174,000
08/10/2000 11:00	CDT	250,000	102	80	68,700	266,000	140	86	101,000
09/14/2000 11:00	CDT	169,000	138	95	62,900	165,000	180	97	80,200

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/12/2000 11:00	CDT	196,000	79	85	41,700	192,000	117	88	60,800
11/16/2000 11:00	CST	230,000	146	87	90,600	235,000	176	86	111,000
12/04/2000 10:30	CST	337,000	190	81	173,000	339,000	230	85	211,000
12/18/2000 08:30	CST	224,000	90	71	54,300	227,000	185	71	113,000
01/25/2001 11:00	CST	337,000	398	85	362,000	346,000	442	87	413,000
02/01/2001 11:00	CST	486,000	342	56	449,000	504,000	388	62	528,000
02/07/2001 10:30	CST	474,000	219	63	280,000	472,000	269	72	343,000
02/22/2001 12:30	CST	802,000	629	81	1,360,000	804,000	677	84	1,470,000
03/07/2001 12:00	CST	1,110,000	322	70	965,000	1,110,000	352	75	1,050,000
03/22/2001 12:30	CST	880,000	193	70	458,000	859,000	228	75	530,000
03/22/2001 12:31	CST	880,000	217	64	514,000	—	—	—	—
04/05/2001 12:00	CDT	791,000	277	74	591,000	733,000	307	78	607,000
04/16/2001 11:30	CDT	602,000	185	71	301,000	542,000	219	76	321,000
05/02/2001 12:00	CDT	645,000	236	83	410,000	574,000	279	88	432,000
05/17/2001 11:00	CDT	428,000	121	76	140,000	418,000	179	85	202,000
06/21/2001 11:30	CDT	700,000	275	87	520,000	675,000	353	90	643,000
07/05/2001 12:00	CDT	484,000	432	90	564,000	479,000	485	91	627,000
08/02/2001 11:00	CDT	262,000	123	89	87,200	260,000	192	93	135,000
09/06/2001 10:00	CDT	260,000	337	98	236,000	261,000	402	99	283,000
10/11/2001 10:00	CDT	190,000	111	87	56,700	185,000	184	92	92,100
11/08/2001 12:00	CST	320,000	123	71	106,000	320,000	174	80	150,000
12/05/2001 12:30	CST	508,000	708	83	971,000	535,000	796	83	1,100,000
12/08/2001 15:00	CST	681,000	574	83	1,060,000	680,000	615	84	1,130,000
12/19/2001 12:00	CST	740,000	232	75	462,000	700,000	269	77	514,000
01/10/2002 12:00	CST	611,000	181	77	298,000	572,000	227	80	350,000
01/24/2002 11:00	CST	351,000	135	70	128,000	352,000	219	75	208,000
02/11/2002 13:00	CST	925,000	229	78	572,000	841,000	256	82	582,000
02/25/2002 11:00	CST	558,000	148	69	224,000	528,000	196	77	280,000
03/14/2002 10:00	CST	418,000	90	86	101,000	427,000	144	91	166,000
03/27/2002 11:00	CST	860,000	271	87	629,000	817,000	316	90	697,000
04/11/2002 12:00	CDT	1,100,000	153	56	455,000	1,100,000	185	63	548,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
04/24/2002 12:00	CDT	862,000	162	61	377,000	810,000	197	69	431,000
05/02/2002 12:00	CDT	786,000	228	74	484,000	758,000	264	75	540,000
05/16/2002 12:30	CDT	832,000	164	77	368,000	855,000	188	79	435,000
06/06/2002 11:00	CDT	1,090,000	98	56	286,000	992,000	128	65	343,000
07/11/2002 10:00	CDT	354,000	108	71	103,000	334,000	159	80	143,000
08/15/2002 11:00	CDT	216,000	118	86	68,900	213,000	161	90	92,200
09/19/2002 11:00	CDT	181,000	81	91	39,600	185,000	151	95	75,400
10/17/2002 11:00	CDT	302,000	176	81	143,000	303,000	215	84	176,000
11/06/2002 11:00	CST	359,000	589	88	571,000	—	—	—	—
12/05/2002 10:00	CST	312,000	125	53	105,000	325,000	180	67	158,000
12/19/2002 10:00	CST	304,000	112	48	91,800	318,000	167	66	144,000
01/09/2003 13:15	CST	680,000	208	49	382,000	702,000	253	58	439,000
01/21/2003 10:15	CST	452,000	181	60	221,000	434,000	280	74	329,000
02/03/2003 11:00	CST	253,000	119	73	81,300	265,000	206	85	148,000
02/20/2003 11:00	CST	430,000	264	59	307,000	435,000	330	67	387,000
03/03/2003 12:00	CST	935,000	365	57	922,000	1,010,000	422	62	1,080,000
03/21/2003 12:30	CST	759,000	171	56	350,000	697,187	211	68	407,000
04/03/2003 09:30	CST	588,000	160	62	254,000	561,000	210	74	319,000
04/18/2003 10:30	CST	447,000	195	64	235,000	450,000	309	78	376,000
05/08/2003 10:30	CST	464,000	123	64	154,000	457,000	189	77	234,000
05/23/2003 15:00	CST	918,000	228	65	565,000	870,000	275	74	647,000
06/19/2003 12:00	CST	614,000	170	71	282,000	640,000	224	81	388,000
07/17/2003 11:00	CDT	367,000	112	67	111,000	367,000	200	81	199,000
08/07/2003 10:30	CDT	407,000	106	66	117,000	394,000	165	79	175,000
09/22/2003 11:00	CDT	330,000	110	80	98,000	312,000	244	86	205,000
10/09/2003 10:00	CDT	291,000	82	65	64,700	291,000	136	79	107,000
11/06/2003 10:00	CST	207,000	74	73	41,300	209,000	154	88	86,700
12/04/2003 12:00	CST	589,000	323	66	514,000	548,000	389	72	575,000
12/18/2003 10:00	CST	441,000	172	54	205,000	438,000	231	66	273,000
01/08/2004 10:30	CST	483,000	170	55	222,000	477,000	223	66	287,000
01/14/2004 10:00	CST	574,000	208	54	323,000	568,000	270	69	415,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/11/2004 12:00	CST	574,000	311	74	482,000	600,000	375	80	607,000
02/19/2004 11:00	CST	826,000	265	57	591,000	862,000	320	53	745,000
03/04/2004 11:00	CST	555,000	182	52	272,000	524,000	236	64	334,000
03/17/2004 12:00	CST	810,000	387	79	847,000	790,000	455	81	971,000
04/08/2004 11:00	CST	549,000	219	66	325,000	532,000	273	73	392,000
04/22/2004 11:00	CST	485,000	160	67	209,000	458,000	211	75	260,000
05/06/2004 11:00	CST	726,000	162	61	317,000	696,000	180	74	339,000
05/20/2004 12:00	CST	639,000	285	83	492,000	619,000	311	87	521,000
06/09/2004 13:00	CST	780,000	371	83	781,000	724,000	486	74	950,000
06/17/2004 11:30	CST	849,000	244	74	559,000	784,000	290	79	614,000
07/08/2004 12:00	CST	813,000	187	67	410,000	738,000	247	77	492,000
08/12/2004 11:00	CST	370,000	102	75	102,000	327,000	169	85	149,000
09/09/2004 11:00	CDT	379,000	183	77	187,000	365,000	236	82	233,000
10/07/2004 10:30	CDT	414,000	267	85	298,000	403,000	315	88	343,000
11/14/2004 12:00	CST	590,000	261	73	416,000	428,000	305	77	353,000
12/02/2004 13:00	CST	662,000	233	55	417,000	698,000	260	62	491,000
12/27/2004 11:30	CST	985,000	171	40	454,000	1,030,000	199	48	554,000
01/13/2005 12:00	CST	872,000	228	55	537,000	871,000	263	64	619,000
01/18/2005 12:30	CST	1,030,000	271	50	752,000	1,030,000	304	56	845,000
02/03/2005 11:00	CST	1,230,000	225	29	746,000	1,140,000	221	30	682,000
02/15/2005 15:00	CST	846,000	142	45	325,000	848,000	184	58	421,000
03/09/2005 11:30	CST	772,000	157	44	327,000	755,000	209	58	426,000
03/31/2005 11:00	CST	448,000	169	41	204,000	436,000	223	59	263,000
04/14/2005 11:00	CST	734,000	230	53	456,000	711,000	285	61	548,000
04/25/2005 11:00	CST	720,000	149	64	289,000	643,000	221	63	385,000
05/11/2005 11:00	CST	529,000	213	67	305,000	519,000	273	74	382,000
05/26/2005 11:00	CST	340,000	142	54	131,000	347,000	206	69	193,000
06/09/2005 11:30	CST	325,000	103	75	90,500	320,000	159	84	137,000
07/21/2005 11:00	CST	317,000	106	77	90,300	308,000	168	86	140,000
08/18/2005 11:00	CST	173,000	73	82	34,100	174,000	183	73	85,700
09/15/2005 11:00	CST	251,000	101	84	68,600	249,000	167	91	112,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/06/2005 11:00	CDT	219,000	194	90	115,000	223,000	241	92	145,000
11/09/2005 11:00	CST	187,000	70	84	35,100	184,000	113	90	56,200
12/08/2005 11:30	CST	197,000	81	73	42,900	201,000	118	82	63,800
12/22/2005 12:30	CST	210,000	115	85	65,200	209,000	158	89	89,000
01/12/2006 13:00	CST	249,000	90	70	60,800	258,000	138	80	96,100
01/26/2006 11:00	CST	375,000	—	—	—	392,000	372	73	394,000
02/09/2006 11:30	CST	548,000	295	66	436,000	532,000	330	70	473,000
02/23/2006 11:00	CST	362,000	186	57	182,000	362,000	249	68	243,000
03/09/2006 11:30	CST	304,000	154	90	126,000	293,000	225	88	178,000
03/23/2006 11:00	CST	624,000	515	71	868,000	627,000	576	74	974,000
04/06/2006 11:00	CST	433,000	159	70	185,000	406,000	204	77	224,000
04/20/2006 12:00	CST	432,000	196	76	229,000	437,000	257	82	304,000
05/04/2006 11:00	CST	526,000	206	70	293,000	521,000	250	76	351,000
05/18/2006 11:00	CST	516,000	210	71	292,000	502,000	260	77	353,000
06/08/2006 11:00	CDT	336,000	86	79	77,700	334,000	154	81	139,000
07/06/2006 11:00	CDT	219,000	89	85	52,800	219,000	136	90	80,400
08/03/2006 11:00	CDT	202,000	85	88	46,400	198,000	126	92	67,300
09/14/2006 11:00	CDT	191,000	91	91	47,000	192,000	130	94	67,400
10/05/2006 11:00	CDT	365,000	221	78	218,000	379,000	261	82	268,000
11/08/2006 11:00	CST	442,000	243	59	289,000	448,000	283	65	342,000
12/07/2006 11:00	CST	415,000	225	67	252,000	405,000	272	73	297,000
12/21/2006 11:00	CST	354,000	120	60	114,000	356,000	161	71	155,000
01/11/2007 11:00	CST	684,000	230	55	425,000	675,000	268	60	488,000
01/25/2007 11:00	CST	912,000	294	51	724,000	888,000	369	50	885,000
02/08/2007 11:00	CST	751,000	161	52	327,000	720,000	234	52	454,000
02/26/2007 11:00	CST	387,000	161	60	168,000	383,000	206	69	213,000
03/15/2007 11:00	CST	670,000	339	73	613,000	660,000	361	79	643,000
03/29/2007 11:00	CST	536,000	232	74	336,000	546,000	279	80	411,000
04/12/2007 11:00	CST	670,000	198	68	358,000	624,000	245	75	413,000
04/25/2007 11:00	CST	620,000	188	65	315,000	627,000	228	72	386,000
05/10/2007 11:00	CDT	616,000	245	75	407,000	607,000	295	82	484,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/24/2007 11:00	CDT	633,000	382	88	653,000	605,000	424	89	692,000
06/07/2007 11:00	CDT	391,000	136	81	144,000	402,000	204	87	221,000
07/12/2007 11:00	CDT	500,000	285	90	385,000	522,000	337	89	475,000
08/02/2007 11:00	CDT	396,000	223	81	238,000	406,000	270	83	296,000
09/13/2007 11:00	CDT	347,000	206	88	193,000	345,000	257	91	240,000
10/04/2007 11:00	CDT	176,000	113	86	53,600	193,000	177	92	92,500
11/08/2007 11:00	CST	295,000	181	76	144,000	296,000	302	86	241,000
12/06/2007 11:00	CST	233,000	108	64	68,000	236,000	165	77	105,000
12/20/2007 11:00	CST	420,000	358	57	406,000	464,000	412	63	516,000
01/10/2008 11:00	CST	432,000	178	60	208,000	426,000	219	68	252,000
01/24/2008 11:00	CST	556,000	291	66	437,000	568,000	334	70	512,000
02/07/2008 11:00	CST	370,000	233	79	233,000	362,000	284	83	278,000
02/21/2008 13:00	CST	765,000	429	65	885,000	807,000	465	68	1,010,000
03/06/2008 09:00	CST	734,000	248	58	492,000	751,000	283	63	573,000
03/19/2008 09:00	CDT	910,000	369	69	907,000	843,000	401	72	912,000
03/31/2008 11:00	CDT	1,110,000	244	52	728,000	1,020,000	271	57	745,000
04/20/2008 09:00	CDT	1,440,000	135	40	527,000	1,460,000	174	54	683,000
05/17/2008 14:00	CDT	1,040,000	166	48	465,000	942,000	191	64	487,000
05/29/2008 11:00	CDT	982,000	139	61	370,000	896,000	214	59	516,000
06/25/2008 11:00	CDT	813,000	324	66	712,000	759,000	360	73	737,000
07/09/2008 11:00	CDT	793,000	222	77	475,000	720,000	327	74	636,000
08/07/2008 11:00	CDT	453,000	235	78	287,000	482,000	278	81	361,000
09/11/2008 11:00	CDT	434,000	314	91	368,000	401,000	358	92	388,000
10/02/2008 11:00	CDT	558,000	253	78	381,000	508,000	322	72	441,000
11/06/2008 11:00	CST	240,000	99	76	64,400	244,000	173	86	114,000
12/04/2008 11:00	CST	211,000	98	74	56,000	217,000	159	84	93,700
12/16/2008 11:00	CST	307,000	407	87	337,000	319,000	460	89	396,000
01/08/2009 11:00	CST	706,000	581	73	1,110,000	717,000	625	75	1,210,000
01/29/2009 11:00	CST	389,000	210	58	221,000	372,000	247	64	248,000
02/12/2009 11:00	CST	444,000	204	61	245,000	441,000	245	67	292,000
02/26/2009 11:00	CST	630,000	295	67	501,000	603,000	373	72	607,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/12/2009 11:00	CST	497,000	180	57	241,000	473,000	220	65	281,000
03/26/2009 11:00	CST	646,000	462	85	805,000	657,000	494	86	878,000
04/01/2009 11:00	CST	697,000	236	74	444,000	694,000	300	79	562,000
04/23/2009 11:00	CST	808,000	216	58	470,000	806,000	265	63	576,000
05/07/2009 11:00	CST	820,000	219	49	485,000	790,000	259	57	553,000
05/23/2009 13:30	CST	1,240,000	134	38	448,000	1,190,000	165	50	530,000
06/19/2009 11:00	CST	754,000	137	62	279,000	711,000	189	73	363,000
07/10/2009 11:00	CST	512,000	218	89	301,000	470,000	283	92	359,000
08/06/2009 11:00	CDT	432,000	160	86	186,000	430,000	195	89	227,000
09/03/2009 11:00	CDT	313,000	149	90	126,000	309,000	195	92	163,000
10/01/2009 11:00	CDT	424,000	139	81	159,000	426,000	176	85	203,000
11/05/2009 10:00	CST	868,000	285	66	667,000	880,000	397	45	943,000
12/03/2009 11:00	CST	691,000	203	60	378,000	667,000	236	66	425,000
12/18/2009 11:00	CST	708,000	224	56	427,000	771,000	259	63	497,000
01/06/2010 11:00	CST	866,000	285	56	666,000	931,000	317	61	797,000
01/28/2010 11:00	CST	644,000	276	64	479,000	675,000	302	68	551,000
02/11/2010 11:00	CST	992,000	288	44	773,000	1,020,000	327	50	902,000
02/25/2010 11:00	CST	881,000	141	46	336,000	855,000	175	57	403,000
03/10/2010 11:00	CST	656,000	149	58	263,000	632,000	181	66	309,000
03/24/2010 11:00	CST	705,000	505	81	961,000	718,000	537	82	1,040,000
04/08/2010 11:00	CST	904,000	144	69	351,000	882,000	180	78	428,000
04/22/2010 11:00	CST	700,000	177	67	334,000	677,000	221	75	404,000
05/05/2010 11:00	CST	582,000	303	71	476,000	597,000	351	76	565,000
05/20/2010 11:00	CDT	876,000	165	54	390,000	885,000	204	63	488,000
06/17/2010 11:00	CDT	550,000	193	87	287,000	566,000	272	91	415,000
07/01/2010 11:00	CDT	651,000	304	88	534,000	627,000	365	91	617,000
08/05/2010 11:00	CDT	530,000	275	88	393,000	541,000	321	91	470,000
09/01/2010 11:00	CDT	420,000	163	85	185,000	432,000	225	90	262,000
10/07/2010 10:30	CDT	340,000	311	90	286,000	341,000	363	92	334,000
11/10/2010 11:00	CST	242,000	67	88	43,800	231,000	185	93	115,000
12/09/2010 11:00	CST	357,000	180	59	174,000	390,000	326	62	343,000

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/27/2010 11:00	CST	292,000	90	63	70,800	300,000	158	79	128,000
01/13/2011 11:00	CST	336,000	197	55	178,000	372,000	377	46	378,000
01/26/2011 11:00	CST	269,000	146	73	106,000	276,000	264	55	197,000
02/14/2011 11:00	CST	364,000	137	53	134,000	361,000	180	66	175,000
02/28/2011 13:00	CST	378,000	148	68	151,000	390,000	193	76	203,000
03/10/2011 11:00	CST	800,000	508	77	1,100,000	786,000	548	79	1,160,000
03/24/2011 11:00	CDT	927,000	209	48	522,000	940,000	243	56	616,000
04/14/2011 11:00	CDT	782,000	196	52	413,000	750,000	234	60	473,000
04/28/2011 11:00	CDT	837,000	160	53	362,000	845,000	191	62	437,000
05/15/2011 13:30	CDT	1,500,000	156	47	628,000	1,500,000	179	54	722,000
05/30/2011 12:00	CDT	1,480,000	144	29	575,000	1,420,000	164	41	630,000
06/23/2011 10:30	CDT	784,000	169	57	357,000	758,000	203	65	415,000
07/14/2011 11:00	CDT	672,000	193	76	351,000	653,000	232	80	410,000
08/04/2011 11:00	CDT	410,000	138	79	153,000	437,000	190	85	224,000
09/08/2011 11:00	CDT	330,000	186	89	166,000	336,000	306	74	278,000
10/06/2011 10:00	CDT	280,000	99	71	75,000	290,000	153	82	119,000
11/09/2011 10:30	CST	265,000	87	67	62,200	260,000	138	80	97,200
12/01/2011 11:00	CST	541,000	285	72	416,000	536,000	317	75	458,000
12/14/2011 11:00	CST	800,000	272	56	587,000	814,000	303	61	666,000
01/05/2012 11:00	CST	760,000	205	49	420,000	779,000	274	48	576,000
01/23/2012 10:00	CST	463,000	148	48	184,000	476,000	188	60	242,000
02/06/2012 09:30	CST	771,000	266	48	554,000	785,000	296	54	629,000
02/22/2012 11:30	CST	661,000	208	54	372,000	594,000	233	59	374,000
03/05/2012 09:20	CST	415,000	123	49	138,000	412,000	154	60	171,000
03/19/2012 09:30	CST	730,000	248	58	489,000	735,000	264	61	524,000
04/12/2012 10:30	CDT	634,000	157	60	269,000	585,000	185	67	293,000
04/26/2012 09:00	CDT	414,000	125	72	139,000	424,000	180	71	206,000
05/10/2012 10:20	CDT	397,000	167	74	178,000	411,000	207	79	230,000
05/24/2012 10:00	CDT	436,000	205	85	241,000	434,000	242	88	284,000
06/07/2012 09:30	CDT	239,000	86	85	55,700	221,000	124	91	74,000
07/05/2012 11:00	CDT	175,000	65	93	30,600	171,000	126	97	58,100

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/02/2012 11:45	CDT	143,000	91	86	34,900	142,000	133	91	50,700
09/06/2012 11:00	CDT	156,000	101	93	42,600	159,000	140	95	60,300
10/04/2012 10:00	CDT	205,000	177	95	98,100	217,000	218	96	127,000
11/01/2012 10:30	CDT	152,000	104	86	42,500	161,000	155	91	67,000
12/03/2012 12:45	CST	155,000	62	89	26,000	162,000	110	94	48,000
01/17/2013 10:45	CST	562,000	472	74	716,000	560,000	482	75	729,000
01/31/2013 10:30	CST	746,000	305	58	614,000	756,000	332	62	677,000
02/07/2013 10:45	CST	640,000	265	58	459,000	604,000	289	62	470,000
02/21/2013 09:30	CST	647,000	196	63	343,000	601,000	231	69	375,000
03/07/2013 10:15	CST	472,000	190	60	242,000	449,000	225	66	273,000
03/21/2013 10:00	CDT	620,000	357	63	597,000	631,000	398	67	679,000
04/04/2013 12:00	CDT	698,000	224	56	423,000	679,000	245	60	449,000
04/18/2013 09:45	CDT	559,000	218	69	329,000	537,000	250	73	362,000
05/02/2013 10:50	CDT	850,000	309	77	709,000	837,000	336	79	758,000
05/22/2013 11:45	CDT	980,000	138	36	364,000	999,000	168	49	453,000
06/20/2013 11:45	CDT	840,000	170	54	385,000	832,000	198	61	445,000
07/08/2013 10:30	CDT	576,000	169	84	262,000	557,000	192	86	289,000
08/15/2013 10:00	CDT	304,000	158	85	130,000	317,000	182	88	156,000
09/09/2013 10:30	CDT	246,000	88	83	58,100	255,000	113	88	78,000
10/03/2013 09:45	CDT	210,000	78	88	44,000	208,000	110	92	62,000
11/07/2013 10:00	CST	226,000	129	90	78,800	—	—	—	—
12/05/2013 10:30	CST	299,000	118	65	95,300	—	—	—	—
12/19/2013 11:00	CST	456,000	385	50	474,000	—	—	—	—
01/07/2014 12:00	CST	720,000	208	65	404,000	—	—	—	—
01/23/2014 09:45	CST	576,000	226	50	351,000	—	—	—	—
02/06/2014 09:30	CST	345,000	151	59	140,000	—	—	—	—
02/20/2014 09:45	CST	590,000	213	62	340,000	—	—	—	—
03/06/2014 10:00	CST	623,000	396	63	666,000	—	—	—	—
03/20/2014 10:00	CDT	537,000	201	56	291,000	—	—	—	—
04/03/2014 10:00	CDT	510,000	224	76	308,000	—	—	—	—
04/17/2014 09:30	CDT	800,000	410	74	886,000	—	—	—	—

Table 4–4. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Tarbert Landing, Mississippi (U.S. Geological Survey station 07295100).—Continued

[Discharge data were supplied by the U.S. Army Corps of Engineers (USACE) and were computed from stage read at noon at the Red River Landing gage (USACE 01100). Tarbert Landing is at river mile 306.3, about 4 miles upstream of Red River Landing. Some original results for discharge had been measured at other locations or were affected by data-entry errors. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/01/2014 09:45	CDT	658,000	192	72	341,000	—	—	—	—
05/15/2014 11:45	CDT	663,000	228	74	408,000	—	—	—	—
06/12/2014 10:00	CDT	505,000	158	66	215,000	—	—	—	—
07/21/2014 10:15	CDT	527,000	323	81	459,000	—	—	—	—
08/04/2014 10:30	CDT	347,000	156	78	147,000	—	—	—	—
09/11/2014 10:15	CDT	279,000	133	86	100,000	—	—	—	—
10/09/2014 10:30	CDT	246,000	134	84	88,800	—	—	—	—

[1]Original result for suspended-sediment discharge on 10/19/1992 was miscalculated as 795,000 short tons per day and should have been reported as 79,500 short tons per day.

[2]Two methods were used for the sample collected on 08/20/1998. The results reported for 11:01 are considered more reliable than are the results reported for 11:00.

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/13/1989 12:00	CDT	487,000	—	—	—	—	—	—	—
11/09/1989 12:30	CST	359,000	—	—	—	359,000	101	95	97,700
11/22/1989 11:15	CST	371,000	84	79	84,300	371,000	118	88	118,000
12/08/1989 11:00	CST	456,000	566	96	696,000	456,000	603	97	743,000
12/18/1989 13:00	CST	322,000	26	62	22,400	322,000	84	90	73,000
01/05/1990 13:00	CST	293,000	541	98	428,000	293,000	595	98	471,000
01/19/1990 12:30	CST	644,000	239	82	415,000	644,000	262	83	455,000
02/05/1990 12:00	CST	883,000	299	77	712,000	883,000	307	78	732,000
02/27/1990 12:00	CST	E 1,330,000	167	67	598,000	1,270,000	189	68	649,000
03/07/1990 12:30	CST	E 1,420,000	141	57	542,000	1,280,000	162	65	560,000
03/21/1990 12:00	CST	1,040,000	231	65	649,000	1,040,000	230	65	646,000
04/06/1990 12:30	CDT	1,100,000	145	76	432,000	1,100,000	466	93	1,380,000
04/16/1990 12:30	CDT	852,000	139	90	320,000	852,000	144	92	331,000
05/03/1990 12:00	CDT	886,000	123	82	294,000	886,000	190	57	454,000
05/31/1990 12:00	CDT	E 1,320,000	176	82	626,000	1,080,000	198	86	578,000
07/10/1990 12:00	CDT	809,000	367	93	801,000	809,000	386	93	843,000
08/09/1990 11:30	CDT	435,000	164	93	193,000	435,000	192	94	226,000
08/23/1990 11:45	CDT	359,000	129	99	125,000	359,000	138	100	134,000
09/04/1990 12:30	CDT	400,000	108	99	116,000	400,000	110	100	118,000
09/19/1990 12:30	CDT	298,000	92	88	74,000	298,000	124	93	99,600
10/12/1990 13:30	CDT	291,000	124	95	97,500	291,000	128	98	100,000
10/26/1990 12:45	CDT	404,000	137	83	149,000	404,000	177	77	193,000
11/14/1990 08:00	CST	329,000	77	87	68,600	329,000	103	83	92,000
11/29/1990 10:15	CST	256,000	63	93	43,800	256,000	90	95	62,500
12/17/1990 09:00	CST	491,000	245	76	324,000	491,000	266	81	352,000
12/26/1990 12:00	CST	730,000	527	76	1,040,000	730,000	530	79	1,040,000
02/02/1991 11:10	CST	E 1,430,000	156	64	603,000	1,040,000	176	71	493,000
04/26/1991 12:10	CDT	E 1,210,000	139	78	453,000	1,050,000	162	76	458,000
05/10/1991 13:15	CDT	E 1,290,000	134	81	465,000	967,000	149	88	389,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/24/1991 13:00	CDT	E 1,110,000	175	82	526,000	912,000	201	82	494,000
06/07/1991 12:25	CDT	953,000	253	82	651,000	953,000	283	86	728,000
06/20/1991 12:50	CDT	E 745,000	259	92	521,000	—	—	—	—
07/09/1991 11:25	CDT	469,000	217	93	274,000	469,000	226	95	286,000
07/23/1991 11:15	CDT	432,000	—	—	—	432,000	138	87	160,000
08/07/1991 11:55	CDT	297,000	74	90	59,500	297,000	76	94	61,000
08/16/1991 10:35	CDT	261,000	73	93	51,100	261,000	101	97	71,000
09/12/1991 10:15	CDT	242,000	96	88	63,000	242,000	92	81	60,000
10/01/1991 11:05	CDT	248,000	54	100	36,400	248,000	70	100	47,000
10/10/1991 12:25	CDT	226,000	—	—	—	226,000	89	99	54,000
10/25/1991 10:40	CDT	195,000	—	—	—	195,000	88	98	46,000
11/06/1991 12:10	CST	378,000	326	96	333,000	378,000	267	96	272,000
11/22/1991 12:00	CST	383,000	—	—	—	383,000	223	91	230,000
12/06/1991 10:50	CST	624,000	300	84	505,000	624,000	314	86	529,000
12/18/1991 11:55	CST	1,110,000	331	71	991,000	1,110,000	295	72	883,000
01/03/1992 12:55	CST	751,000	—	—	—	751,000	179	83	363,000
01/17/1992 09:30	CST	737,000	131	67	261,000	737,000	173	76	344,000
01/31/1992 13:05	CST	483,000	109	78	142,000	483,000	155	85	202,000
02/19/1992 12:20	CST	418,000	186	93	210,000	418,000	167	95	188,000
02/28/1992 11:55	CST	569,000	124	73	190,000	569,000	144	79	222,000
03/13/1992 11:15	CST	684,000	169	72	313,000	684,000	202	80	374,000
03/27/1992 11:25	CST	896,000	165	66	398,000	896,000	197	76	481,000
04/10/1992 12:15	CDT	723,000	—	—	—	723,000	238	71	465,000
04/24/1992 10:55	CDT	500,000	99	77	134,000	500,000	156	86	211,000
05/13/1992 11:20	CDT	593,000	193	82	310,000	593,000	244	85	391,000
05/22/1992 10:30	CDT	517,000	110	80	154,000	517,000	123	86	172,000
06/05/1992 11:05	CDT	379,000	68	86	69,900	379,000	117	91	120,000
06/19/1992 11:00	CDT	535,000	153	87	221,000	535,000	191	91	276,000
07/02/1992 11:00	CDT	456,000	87	83	107,000	456,000	120	89	148,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/17/1992 10:40	CDT	413,000	92	87	103,000	413,000	120	91	133,000
08/14/1992 11:20	CDT	737,000	344	89	685,000	737,000	452	93	899,000
08/28/1992 12:10	CDT	482,000	521	95	678,000	482,000	649	97	845,000
10/15/1992 11:45	CDT	298,000	111	88	89,200	298,000	132	92	106,000
11/04/1992 15:00	CST	354,000	98	93	94,100	354,000	125	95	119,000
11/18/1992 11:30	CST	491,000	177	56	235,000	491,000	204	66	270,000
12/02/1992 11:00	CST	992,000	605	65	1,620,000	992,000	653	69	1,750,000
12/16/1992 12:00	CST	681,000	290	43	534,000	681,000	269	63	495,000
01/21/1993 14:00	CST	E 1,130,000	391	44	1,190,000	1,280,000	414	54	1,430,000
02/03/1993 10:30	CST	1,180,000	249	44	795,000	1,180,000	309	38	986,000
02/16/1993 12:30	CST	682,000	197	59	362,000	682,000	223	65	411,000
03/01/1993 10:00	CST	804,000	236	64	512,000	804,000	272	69	591,000
03/15/1993 09:30	CST	1,120,000	358	70	1,080,000	1,120,000	381	75	1,150,000
03/29/1993 11:00	CST	E 1,210,000	258	53	843,000	1,160,000	267	59	839,000
04/12/1993 13:00	CDT	E 1,360,000	276	44	1,010,000	1,230,000	247	54	819,000
06/21/1993 11:00	CDT	960,000	361	69	937,000	960,000	385	74	997,000
07/07/1993 08:30	CDT	E 833,000	335	76	753,000	—	—	—	—
07/19/1993 12:00	CDT	965,000	307	79	800,000	965,000	342	82	890,000
08/04/1993 11:30	CDT	1,090,000	253	49	746,000	1,090,000	285	61	838,000
08/16/1993 14:30	CDT	E 1,160,000	333	51	1,040,000	1,150,000	366	62	1,130,000
08/30/1993 12:00	CDT	927,000	187	64	468,000	927,000	293	55	734,000
09/13/1993 11:00	CDT	741,000	187	85	374,000	741,000	198	86	397,000
10/14/1993 13:00	CDT	963,000	—	—	—	963,000	255	65	663,000
10/25/1993 12:00	CDT	619,000	160	65	268,000	619,000	191	56	320,000
11/08/1993 15:00	CST	491,000	117	77	155,000	491,000	157	84	209,000
11/22/1993 11:00	CST	804,000	398	70	864,000	804,000	419	73	910,000
12/13/1993 11:00	CST	1,070,000	242	56	700,000	1,070,000	248	56	715,000
01/10/1994 12:00	CST	506,000	171	38	234,000	506,000	181	48	247,000
01/24/1994 12:00	CST	815,000	297	49	653,000	815,000	307	56	676,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/07/1994 12:30	CST	1,030,000	348	50	966,000	1,030,000	374	56	1,040,000
03/07/1994 14:00	CST	E 1,230,000	293	50	974,000	1,090,000	294	52	865,000
03/21/1994 11:00	CST	E 1,290,000	236	42	821,000	1,220,000	245	45	808,000
04/04/1994 13:00	CDT	E 1,160,000	179	47	559,000	1,140,000	178	51	548,000
04/18/1994 12:00	CDT	E 1,270,000	132	32	452,000	1,140,000	113	43	381,000
06/07/1994 12:00	CDT	561,000	91	84	137,000	561,000	127	82	192,000
06/21/1994 13:00	CDT	509,000	125	76	172,000	509,000	179	86	246,000
07/07/1994 13:00	CDT	541,000	152	78	222,000	541,000	232	86	340,000
07/21/1994 12:00	CDT	453,000	—	—	—	453,000	379	94	464,000
08/02/1994 12:30	CDT	482,000	—	—	—	482,000	313	95	408,000
08/16/1994 13:00	CDT	386,000	62	82	64,900	386,000	127	91	132,000
09/13/1994 10:00	CDT	323,000	40	84	35,000	—	—	—	—
09/27/1994 10:00	CDT	256,000	44	92	30,300	—	—	—	—
10/12/1994 09:00	CDT	340,000	63	88	57,600	—	—	—	—
10/25/1994 10:30	CDT	308,000	131	95	109,000	—	—	—	—
11/22/1994 12:30	CST	486,000	243	85	319,000	—	—	—	—
12/06/1994 08:30	CST	583,000	214	65	337,000	—	—	—	—
12/20/1994 11:30	CST	774,000	275	60	575,000	—	—	—	—
01/24/1995 12:30	CST	848,000	427	61	977,000	848,000	447	64	1,020,000
02/07/1995 12:30	CST	861,000	184	58	428,000	861,000	217	68	504,000
03/07/1995 13:00	CST	640,000	170	67	294,000	640,000	269	81	465,000
03/28/1995 13:00	CST	806,000	137	69	298,000	806,000	219	75	477,000
04/11/1995 13:00	CDT	513,000	—	—	—	513,000	353	91	489,000
04/25/1995 12:00	CDT	803,000	476	89	1,030,000	803,000	755	93	1,640,000
05/09/1995 13:00	CDT	906,000	183	77	448,000	906,000	220	80	539,000
06/06/1995 13:00	CDT	E 1,460,000	160	57	629,000	1,190,000	180	63	579,000
06/20/1995 11:30	CDT	E 1,560,000	90	66	379,000	1,140,000	107	75	331,000
07/18/1995 12:00	CDT	828,000	205	76	458,000	828,000	229	78	511,000
08/01/1995 12:00	CDT	498,000	120	81	161,000	—	—	—	—

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/15/1995 11:00	CDT	552,000	194	80	289,000	—	—	—	—
09/12/1995 12:00	CDT	309,000	80	90	66,700	—	—	—	—
10/03/1995 12:00	CDT	290,000	58	85	45,700	—	—	—	—
10/31/1995 12:00	CST	316,000	69	76	59,200	—	—	—	—
12/05/1995 12:00	CST	412,000	67	63	74,800	—	—	—	—
12/19/1995 12:15	CST	459,000	774	95	959,000	—	—	—	—
02/06/1996 11:00	CST	1,140,000	495	58	1,520,000	1,140,000	598	54	1,840,000
02/27/1996 12:15	CST	658,000	253	49	449,000	658,000	277	61	492,000
03/12/1996 11:00	CST	734,000	215	58	426,000	734,000	223	62	441,000
04/02/1996 10:00	CST	889,000	205	66	492,000	889,000	252	75	604,000
04/23/1996 12:00	CDT	581,000	324	82	508,000	—	—	—	—
05/07/1996 12:00	CDT	1,050,000	255	78	723,000	1,050,000	285	80	809,000
05/21/1996 12:00	CDT	E 1,250,000	248	52	836,000	1,280,000	285	61	982,000
06/11/1996 11:00	CDT	E 1,390,000	199	68	745,000	1,180,000	242	76	766,000
06/25/1996 10:45	CDT	E 1,270,000	194	54	666,000	1,120,000	220	65	666,000
07/23/1996 11:00	CDT	493,000	132	74	176,000	—	—	—	—
08/06/1996 12:00	CDT	572,000	320	87	494,000	572,000	375	91	579,000
08/27/1996 11:00	CDT	437,000	118	90	139,000	—	—	—	—
09/24/1996 11:00	CDT	329,000	69	92	61,500	—	—	—	—
10/08/1996 10:00	CDT	516,000	161	79	225,000	516,000	237	87	331,000
11/05/1996 11:00	CST	505,000	169	72	230,000	—	—	—	—
12/03/1996 11:00	CST	956,000	415	74	1,070,000	956,000	541	71	1,400,000
12/17/1996 12:00	CST	1,180,000	312	52	994,000	1,180,000	405	55	1,300,000
01/28/1997 12:00	CST	676,000	273	68	498,000	676,000	344	74	628,000
02/11/1997 12:00	CST	1,140,000	309	60	951,000	1,140,000	397	64	1,220,000
03/04/1997 11:00	CST	1,060,000	443	82	1,270,000	1,060,000	554	841	1,590,000
04/08/1997 12:00	CDT	E 1,700,000	99	47	455,000	1,130,000	152	68	463,000
04/29/1997 13:00	CDT	E 1,120,000	265	77	802,000	1,030,000	326	84	906,000
05/14/1997 13:00	CDT	1,010,000	197	65	538,000	1,010,000	259	87	704,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
06/03/1997 11:00	CDT	707,000	—	—	—	707,000	364	87	694,000
06/17/1997 11:00	CDT	1,050,000	180	66	511,000	1,050,000	306	76	868,000
07/08/1997 11:30	CDT	861,000	133	73	310,000	861,000	197	84	457,000
08/05/1997 11:00	CDT	426,000	76	85	87,400	426,000	198	95	228,000
08/19/1997 11:00	CDT	356,000	76	94	72,800	—	—	—	—
09/09/1997 11:00	CDT	342,000	—	—	—	—	—	—	—
09/30/1997 11:00	CDT	314,000	76	93	64,700	—	—	—	—
10/21/1997 11:00	CDT	273,000	79	97	58,000	273,000	154	98	114,000
12/02/1997 11:00	CST	336,000	105	92	95,200	336,000	157	94	142,000
01/06/1998 13:00	CST	518,000	310	84	433,000	518,000	362	86	506,000
01/27/1998 11:00	CST	E 1,190,000	212	68	681,000	1,150,000	240	76	745,000
02/10/1998 12:30	CST	674,000	143	61	261,000	674,000	186	72	338,000
03/10/1998 12:00	CST	984,000	253	66	673,000	984,000	325	75	862,000
03/31/1998 11:00	CST	E 1,150,000	303	71	941,000	1,170,000	374	78	1,180,000
04/21/1998 08:30	CDT	E 1,170,000	216	69	683,000	1,090,000	352	63	1,030,000
05/12/1998 11:30	CDT	E 1,470,000	136	49	540,000	1,180,000	207	67	660,000
07/07/1998 11:30	CDT	983,000	258	75	685,000	983,000	302	79	803,000
08/11/1998 11:00	CDT	612,000	206	86	341,000	612,000	279	90	462,000
08/25/1998 11:00	CDT	495,000	123	85	164,000	495,000	207	91	277,000
11/03/1998 11:00	CST	405,000	207	85	227,000	405,000	305	87	330,000
12/01/1998 11:00	CST	495,000	198	68	264,000	495,000	259	78	346,000
01/05/1999 12:00	CST	505,000	—	—	—	505,000	484	91	660,000
02/02/1999 11:00	CST	E 1,120,000	564	68	1,710,000	1,080,000	597	70	1,750,000
03/02/1999 11:00	CST	935,000	215	59	543,000	935,000	253	66	639,000
04/13/1999 11:00	CDT	723,000	188	70	368,000	723,000	261	69	509,000
04/20/1999 10:30	CDT	692,000	—	—	—	692,000	200	71	374,000
05/18/1999 11:00	CDT	E 1,200,000	279	61	904,000	999,000	322	67	867,000
06/08/1999 13:00	CDT	750,000	355	82	718,000	750,000	421	85	852,000
07/14/1999 13:00	CDT	744,000	433	87	870,000	744,000	509	90	1,020,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/24/1999 11:00	CDT	351,000	84	87	80,000	351,000	116	94	110,000
09/13/1999 13:00	CDT	262,000	72	92	50,800	262,000	116	97	82,000
10/26/1999 10:30	CDT	220,000	—	—	—	220,000	141	99	83,700
11/30/1999 11:00	CST	198,000	47	100	25,100	198,000	112	100	59,900
12/14/1999 10:00	CST	268,000	74	95	53,200	268,000	117	97	85,100
01/04/2000 11:00	CST	232,000	74	92	46,400	232,000	123	96	77,400
02/01/2000 10:30	CST	256,000	—	—	—	256,000	436	99	302,000
03/21/2000 10:00	CST	416,000	140	79	157,000	416,000	185	81	208,000
04/04/2000 11:00	CDT	776,000	511	87	1,070,000	776,000	538	89	1,130,000
04/18/2000 11:00	CDT	933,000	256	64	644,000	933,000	266	72	670,000
05/02/2000 12:00	CDT	576,000	145	64	225,000	576,000	168	72	261,000
06/06/2000 12:00	CDT	592,000	151	68	241,000	592,000	230	79	368,000
07/11/2000 11:00	CDT	742,000	291	82	583,000	742,000	322	85	645,000
08/08/2000 11:00	CDT	361,000	103	89	101,000	361,000	138	92	135,000
09/19/2000 11:30	CDT	216,000	73	95	42,500	216,000	114	97	66,600
11/07/2000 10:30	CST	223,000	83	98	49,900	223,000	130	99	78,000
11/21/2000 10:30	CST	337,000	124	82	113,000	337,000	167	87	152,000
12/12/2000 11:00	CST	306,000	67	84	55,200	306,000	118	92	97,000
01/09/2001 12:00	CST	322,000	100	91	87,200	322,000	132	94	114,000
02/15/2001 11:00	CST	599,000	238	70	385,000	599,000	307	69	497,000
03/20/2001 12:00	CST	902,000	192	81	466,000	902,000	226	84	551,000
04/03/2001 12:00	CDT	893,000	240	76	578,000	893,000	276	80	666,000
04/17/2001 11:30	CDT	640,000	159	69	274,000	640,000	224	79	386,000
05/01/2001 10:30	CDT	701,000	238	85	450,000	701,000	266	87	503,000
06/05/2001 11:30	CDT	894,000	232	79	559,000	894,000	290	83	700,000
07/24/2001 10:15	CDT	416,000	101	90	113,000	416,000	131	93	147,000
08/07/2001 10:00	CDT	415,000	117	88	131,000	415,000	153	91	171,000
09/19/2001 10:30	CDT	265,000	66	96	47,100	265,000	151	99	108,000
10/16/2001 10:30	CDT	316,000	197	99	168,000	316,000	261	100	223,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/06/2001 10:00	CST	446,000	133	74	160,000	446,000	181	81	218,000
12/08/2001 12:00	CST	863,000	533	84	1,240,000	863,000	577	86	1,340,000
01/08/2002 11:30	CST	702,000	175	71	332,000	702,000	259	70	490,000
02/05/2002 11:00	CST	927,000	289	81	724,000	927,000	266	70	666,000
03/05/2002 11:00	CST	492,000	90	79	120,000	492,000	131	86	175,000
04/02/2002 10:30	CST	E 1,220,000	198	79	653,000	1,140,000	232	82	717,000
04/16/2002 10:30	CDT	E 1,340,000	116	63	421,000	1,080,000	144	70	419,000
05/07/2002 11:00	CDT	976,000	239	88	630,000	976,000	257	89	677,000
06/04/2002 10:00	CDT	E 1,470,000	83	78	329,000	1,160,000	107	83	338,000
07/09/2002 10:00	CDT	461,000	112	80	140,000	461,000	180	87	223,000
08/06/2002 11:00	CDT	352,000	81	93	77,400	352,000	133	91	126,000
09/24/2002 11:00	CDT	273,000	108	98	79,400	273,000	184	99	136,000
10/22/2002 11:00	CDT	454,000	161	75	197,000	454,000	201	80	247,000
11/19/2002 11:00	CST	520,000	155	67	217,000	520,000	239	78	336,000
12/10/2002 10:00	CST	380,000	95	75	97,900	380,000	149	84	152,000
01/07/2003 11:00	CST	806,000	193	59	420,000	806,000	234	66	509,000
02/04/2003 10:30	CST	320,000	106	86	91,300	320,000	170	92	147,000
03/08/2003 11:00	CST	E 1,240,000	261	52	873,000	1,220,000	310	59	1,020,000
04/01/2003 10:30	CST	739,000	129	75	257,000	739,000	212	73	423,000
04/19/2003 10:30	CST	597,000	164	68	265,000	597,000	226	77	364,000
05/07/2003 10:30	CST	613,000	130	60	216,000	613,000	193	73	319,000
06/03/2003 11:00	CST	E 1,410,000	134	40	510,000	1,160,000	200	58	627,000
07/22/2003 11:00	CDT	609,000	162	76	266,000	609,000	248	84	407,000
08/05/2003 11:00	CDT	554,000	124	64	186,000	554,000	171	74	256,000
09/17/2003 10:30	CDT	602,000	193	73	313,000	602,000	257	80	418,000
10/07/2003 10:30	CDT	421,000	71	69	81,200	421,000	128	83	146,000
11/04/2003 11:00	CST	301,000	57	90	46,400	301,000	99	94	80,100
12/02/2003 10:30	CST	783,000	330	64	698,000	783,000	379	68	802,000
01/23/2004 11:00	CST	973,000	246	62	647,000	973,000	302	67	794,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/06/2004 11:00	CST	688,000	778	92	1,450,000	—	—	—	—
03/02/2004 11:00	CST	633,000	143	75	244,000	633,000	196	82	335,000
04/06/2004 10:00	CST	705,000	172	54	327,000	705,000	227	66	432,000
04/21/2004 11:00	CST	638,000	150	72	258,000	638,000	197	79	340,000
05/25/2004 11:00	CST	655,000	128	76	227,000	655,000	172	82	304,000
06/15/2004 08:30	CST	1,040,000	291	83	817,000	1,040,000	341	86	955,000
07/14/2004 11:00	CST	776,000	138	84	289,000	776,000	208	90	435,000
08/10/2004 11:00	CST	518,000	107	70	150,000	518,000	185	83	259,000
09/14/2004 11:00	CDT	412,000	174	94	193,000	412,000	229	95	255,000
10/05/2004 10:30	CDT	638,000	258	83	445,000	638,000	304	85	523,000
11/02/2004 10:30	CST	521,000	126	65	177,000	521,000	171	74	241,000
12/08/2004 11:00	CST	1,060,000	290	67	829,000	1,060,000	368	63	1,050,000
01/11/2005 12:00	CST	1,030,000	198	61	551,000	1,030,000	331	49	918,000
01/27/2005 11:00	CST	E 1,580,000	191	47	814,000	1,310,000	246	52	870,000
02/10/2005 11:00	CST	E 1,290,000	170	35	592,000	1,130,000	206	47	631,000
02/17/2005 11:00	CST	939,000	135	46	343,000	939,000	179	59	453,000
03/15/2005 11:15	CST	801,000	120	62	260,000	801,000	174	74	377,000
04/19/2005 11:30	CST	1,020,000	160	57	442,000	1,020,000	199	66	550,000
05/03/2005 11:00	CDT	636,000	134	64	231,000	636,000	190	75	326,000
06/01/2005 11:30	CDT	578,000	269	89	419,000	578,000	329	91	513,000
07/06/2005 11:30	CDT	415,000	119	89	133,000	415,000	185	93	208,000
08/02/2005 11:30	CDT	301,000	71	94	57,600	301,000	131	97	107,000
09/07/2005 12:00	CDT	410,000	153	90	170,000	410,000	218	94	241,000
10/04/2005 11:00	CDT	307,000	182	97	151,000	307,000	273	98	226,000
11/01/2005 11:00	CST	250,000	68	93	45,900	250,000	110	96	74,700
12/13/2005 11:00	CST	354,000	105	73	101,000	354,000	142	80	135,000
01/18/2006 11:00	CST	458,000	171	69	212,000	458,000	219	76	271,000
02/14/2006 11:00	CST	660,000	219	80	391,000	660,000	280	78	500,000
03/14/2006 11:00	CST	346,000	140	90	130,000	346,000	221	93	206,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
04/11/2006 11:30	CST	436,000	121	68	143,000	436,000	177	78	208,000
04/25/2006 11:30	CST	—	—	—	—	—	—	—	—
05/09/2006 11:00	CST	689,000	140	76	261,000	689,000	182	82	339,000
06/14/2006 11:00	CST	455,000	89	68	110,000	455,000	141	80	173,000
07/11/2006 11:00	CDT	349,000	76	87	72,000	349,000	129	93	121,000
08/01/2006 11:00	CDT	293,000	82	89	64,700	293,000	137	94	108,000
09/06/2006 11:00	CST	211,000	75	95	42,500	211,000	114	97	65,000
10/03/2006 11:00	CDT	538,000	78	11	113,000	538,000	291	76	422,000
11/07/2006 11:00	CDT	594,000	198	68	317,000	594,000	236	73	378,000
12/12/2006 11:00	CST	596,000	147	67	236,000	596,000	205	66	329,000
01/17/2007 11:00	CST	945,000	241	65	615,000	945,000	273	70	697,000
02/06/2007 11:00	CST	1,000,000	177	52	477,000	1,000,000	210	60	568,000
03/06/2007 11:00	CST	771,000	256	80	533,000	771,000	341	75	710,000
04/04/2007 11:00	CST	863,000	213	73	496,000	863,000	263	79	614,000
04/17/2007 11:00	CST	847,000	196	78	447,000	847,000	244	83	558,000
05/01/2007 11:00	CST	928,000	182	73	455,000	928,000	239	80	598,000
06/05/2007 11:00	CDT	486,000	144	81	188,000	486,000	205	87	268,000
07/17/2007 11:00	CDT	614,000	323	92	535,000	614,000	385	93	639,000
08/14/2007 11:00	CDT	324,000	132	96	115,000	324,000	193	97	169,000
09/11/2007 11:00	CDT	424,000	211	89	242,000	424,000	260	91	298,000
10/10/2007 11:00	CDT	239,000	91	96	58,400	239,000	185	86	119,000
11/14/2007 11:00	CST	317,000	129	81	111,000	317,000	233	89	199,000
12/11/2007 11:00	CST	345,000	81	68	75,600	345,000	174	66	162,000
01/08/2008 11:00	CST	569,000	172	66	265,000	569,000	216	73	332,000
02/12/2008 11:00	CST	645,000	213	68	371,000	645,000	275	67	478,000
03/04/2008 11:00	CST	954,000	232	66	597,000	954,000	264	70	680,000
04/01/2008 11:00	CDT	E 1,480,000	203	59	811,000	1,220,000	256	58	842,000
05/17/2008 11:00	CDT	E 1,290,000	152	57	528,000	1,040,000	184	65	516,000
05/28/2008 11:00	CDT	E 1,290,000	157	57	548,000	1,070,000	199	67	577,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
06/10/2008 11:00	CDT	960,000	191	67	495,000	960,000	231	73	598,000
07/08/2008 11:00	CDT	1,010,000	236	71	643,000	1,010,000	275	76	750,000
08/12/2008 11:00	CDT	677,000	463	92	846,000	677,000	479	92	907,000
09/09/2008 11:00	CDT	469,000	349	96	441,000	469,000	361	97	499,000
10/15/2008 11:00	CDT	377,000	96	91	97,600	377,000	149	95	151,000
11/12/2008 11:00	CST	317,000	132	91	113,000	317,000	204	94	175,000
12/09/2008 11:00	CST	280,000	58	89	43,800	280,000	101	94	76,200
01/13/2009 11:00	CST	868,000	343	70	803,000	868,000	390	74	914,000
02/10/2009 11:00	CST	658,000	207	70	368,000	658,000	246	75	436,000
03/10/2009 11:00	CST	685,000	149	72	276,000	685,000	182	77	336,000
04/14/2009 11:00	CST	1,020,000	244	72	671,000	1,020,000	279	76	769,000
04/28/2009 11:00	CDT	1,020,000	172	62	474,000	1,020,000	209	69	575,000
05/24/2009 14:30	CDT	E 1,590,000	109	52	466,000	1,140,000	145	64	448,000
06/18/2009 14:30	CDT	846,000	120	72	274,000	846,000	164	79	374,000
07/14/2009 11:00	CDT	545,000	147	84	217,000	545,000	184	87	271,000
08/04/2009 11:00	CDT	526,000	156	91	222,000	526,000	197	93	280,000
08/10/2009 11:00	CST	—	—	—	—	[1]685,000	[1]158	[1]71	[1]293,000
09/01/2009 10:30	CDT	453,000	99	86	121,000	453,000	148	91	181,000
10/20/2009 11:00	CDT	949,000	404	74	1,040,000	949,000	431	76	1,100,000
11/10/2009 11:00	CST	E 1,110,000	232	73	694,000	1,070,000	259	77	750,000
12/08/2009 11:00	CST	685,000	128	64	236,000	685,000	158	71	293,000
01/29/2010 11:00	CST	872,000	243	69	572,000	872,000	286	69	673,000
02/12/2010 11:00	CST	E 1,240,000	215	51	721,000	1,180,000	246	58	786,000
03/02/2010 11:00	CST	866,000	107	58	249,000	866,000	151	71	353,000
04/06/2010 11:00	CST	E 1,190,000	176	58	565,000	1,120,000	210	65	637,000
04/20/2010 11:00	CST	972,000	176	63	461,000	972,000	214	70	562,000
05/04/2010 11:00	CST	707,000	146	72	278,000	707,000	198	80	379,000
06/08/2010 11:00	CDT	1,000,000	173	66	468,000	1,000,000	224	75	605,000
07/07/2010 11:00	CDT	861,000	264	88	614,000	861,000	314	90	731,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/03/2010 11:00	CDT	761,000	276	91	568,000	761,000	323	89	663,000
09/08/2010 11:00	CDT	456,000	135	91	166,000	456,000	189	94	233,000
10/05/2010 10:30	CDT	486,000	284	90	373,000	486,000	327	92	429,000
11/16/2010 11:00	CST	326,000	161	98	142,000	326,000	242	99	213,000
12/07/2010 11:00	CST	E 472,000	160	62	204,000	326,000	205	71	181,000
01/12/2011 11:00	CST	484,000	155	62	203,000	484,000	252	78	330,000
02/01/2011 11:00	CST	334,000	118	85	107,000	334,000	217	81	196,000
03/01/2011 11:00	CST	639,000	265	76	457,000	639,000	333	81	575,000
04/05/2011 11:00	CDT	E 1,340,000	160	35	580,000	1,200,000	193	42	628,000
04/19/2011 11:00	CDT	1,020,000	185	58	509,000	1,020,000	226	66	620,000
05/03/2011 11:00	CDT	E 1,350,000	151	54	550,000	1,200,000	175	61	568,000
06/16/2011 11:00	CDT	E 1,340,000	122	64	442,000	985,000	154	72	409,000
07/12/2011 10:30	CDT	919,000	248	72	614,000	919,000	279	76	692,000
08/03/2011 11:00	CDT	598,000	123	89	199,000	598,000	168	92	270,000
09/07/2011 10:30	CDT	459,000	216	93	268,000	459,000	268	95	332,000
10/05/2011 11:30	CDT	407,000	87	81	95,900	407,000	142	90	156,000
11/08/2011 10:30	CST	358,000	70	71	67,900	358,000	114	83	110,000
12/06/2011 11:00	CST	854,000	317	77	731,000	854,000	369	76	851,000
01/11/2012 10:15	CST	952,000	172	46	443,000	952,000	208	55	534,000
02/07/2012 09:45	CST	979,000	219	58	578,000	979,000	251	63	663,000
03/07/2012 11:15	CST	520,000	120	46	168,000	520,000	163	60	229,000
04/12/2012 13:15	CST	686,000	115	75	213,000	686,000	149	81	277,000
04/25/2012 11:30	CST	516,000	126	73	176,000	516,000	178	82	247,000
05/08/2012 11:15	CST	503,000	200	78	272,000	503,000	259	83	352,000
06/12/2012 10:30	CST	319,000	87	91	75,000	319,000	162	96	140,000
07/11/2012 10:45	CST	248,000	69	96	46,500	248,000	123	99	83,000
08/07/2012 10:30	CST	241,000	82	96	53,100	241,000	144	98	94,000
09/11/2012 10:30	CST	219,000	98	96	58,100	219,000	150	98	89,000
10/10/2012 12:00	CDT	239,000	134	90	86,500	239,000	177	93	115,000

Table 4–5. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Mississippi River at Union Point, Louisiana (U.S. Geological Survey station 07295025).—Continued

[Discharge supplied by the U.S. Army Corps of Engineers. Before March 1991, sediment and flows were measured at Coochie (U.S. Geological Survey [USGS] station 310552091361200) and were considered hydrologically equivalent to flows at Union Point (USGS 07295025). During higher flows at Union Point (UPT), the Mississippi River is not well constrained by the riverbanks, and measurements made "from treeline to treeline" likely underestimate the flow; therefore, a linear regression model, UPT=[(TAR+ORO)*0.9813]+6182.4, was used to estimate flow whenever the combined flows from Tarbert Landing (TAR) and the Old River Outflow (ORO) were greater than 1,120,000 cubic feet per second. Discharges estimated by linear regression are assigned the "E" remark code to indicate higher uncertainty. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the USGS National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/14/2012 10:30	CST	332,000	124	74	111,000	332,000	172	81	154,000
12/11/2012 10:45	CST	209,000	56	96	31,500	209,000	97	95	55,000
01/19/2013 10:30	CST	728,000	420	72	825,000	728,000	432	73	850,000
02/05/2013 13:45	CST	828,000	265	63	592,000	828,000	305	65	683,000
03/05/2013 10:30	CST	625,000	208	66	351,000	625,000	242	72	410,000
04/09/2013 11:45	CDT	752,000	194	55	393,000	752,000	228	63	463,000
04/30/2013 10:45	CDT	1,080,000	297	76	867,000	1,080,000	332	79	966,000
05/14/2013 11:00	CDT	E 1,300,000	130	60	457,000	1,180,000	156	67	499,000
06/04/2013 09:30	CDT	E 1,120,000	186	45	562,000	995,000	215	53	579,000
07/09/2013 11:15	CDT	780,000	196	69	413,000	780,000	227	74	479,000
08/13/2013 10:00	CDT	418,000	79	83	89,600	418,000	111	89	125,000
09/11/2013 09:30	CDT	351,000	61	94	58,100	351,000	84	96	80,000
10/02/2013 11:00	CDT	281,000	70	98	53,100	—	—	—	—
11/05/2013 11:15	CST	265,000	129	99	92,400	—	—	—	—
12/18/2013 13:00	CST	601,000	224	84	363,000	—	—	—	—
01/07/2014 12:00	CST	954,000	246	76	633,000	—	—	—	—
02/05/2014 10:30	CST	442,000	150	64	179,000	—	—	—	—
03/05/2014 12:00	CST	815,000	355	70	781,000	—	—	—	—
04/09/2014 10:30	CDT	692,000	381	89	712,000	—	—	—	—
04/22/2014 12:00	CDT	1,050,000	230	58	651,000	—	—	—	—
05/06/2014 10:30	CDT	774,000	209	77	437,000	—	—	—	—
06/10/2014 12:45	CDT	668,000	139	74	250,000	—	—	—	—
07/22/2014 09:45	CDT	734,000	311	88	616,000	—	—	—	—
08/06/2014 10:15	CDT	457,000	99	88	122,000	—	—	—	—
09/10/2014 10:15	CDT	379,000	82	94	84,200	—	—	—	—
10/08/2014 12:30	CDT	342,000	124	94	115,000	—	—	—	—

[1]Original results were incorrectly attributed to 08/10/2009, likely mistakenly entered from the sample collected on 12/08/2009.

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/17/1989 12:30	EDT	54,400	63	89	9,220	54,400	129	98	18,900
11/20/1989 12:30	EST	32,700	28	93	2,500	32,700	55	99	4,560
12/12/1989 13:45	EST	39,600	58	88	6,150	39,600	95	98	10,100
01/23/1990 11:45	EST	54,900	277	99	41,100	54,900	332	100	49,200
02/15/1990 11:30	EST	118,000	478	83	152,000	118,000	493	89	157,000
03/20/1990 13:00	EST	113,000	342	78	104,000	113,000	355	83	108,000
04/11/1990 11:30	EDT	119,000	325	79	104,000	119,000	368	87	118,000
05/29/1990 16:00	EDT	133,000	497	76	178,000	133,000	441	79	158,000
06/18/1990 12:15	EDT	137,000	291	71	108,000	137,000	303	74	112,000
07/03/1990 12:20	EDT	104,000	342	89	95,900	104,000	354	90	99,400
09/11/1990 12:00	EDT	49,100	56	98	7,430	—	—	—	—
09/24/1990 12:15	EDT	26,800	80	98	5,810	26,800	97	100	7,050
10/15/1990 12:00	EDT	23,600	28	96	1,810	23,600	57	99	3,630
01/22/1991 12:30	EST	160,000	—	—	—	160,000	355	62	153,000
02/13/1991 12:00	EST	97,300	157	80	41,200	97,300	186	88	48,900
03/19/1991 12:00	EST	118,000	130	68	41,200	118,000	163	79	51,900
04/16/1991 15:45	EDT	132,000	199	65	71,100	132,000	238	44	84,800
05/21/1991 16:30	EDT	139,000	273	78	103,000	139,000	312	81	117,000
06/13/1991 09:45	EDT	120,000	171	85	55,500	120,000	195	87	63,200
07/31/1991 12:15	EDT	29,100	61	74	4,780	—	—	—	—
08/21/1991 11:30	EDT	25,000	—	—	—	—	—	—	—
09/17/1991 11:30	EDT	25,100	—	—	—	25,100	52	99	3,520
10/24/1991 09:30	EDT	26,300	32	81	2,300	26,000	83	94	5,820
11/25/1991 13:45	EST	45,400	121	96	14,800	45,000	172	98	20,900
12/18/1991 09:15	EST	109,000	373	87	110,000	109,000	454	91	134,000
01/28/1992 12:15	EST	79,000	195	95	41,500	79,000	260	98	55,600
03/10/1992 12:00	EST	83,800	—	—	—	84,000	289	92	65,600
04/01/1992 12:00	EST	100,000	75	97	20,300	—	—	—	—
05/06/1992 10:00	EDT	75,600	348	95	71,100	76,000	378	97	77,600
05/20/1992 10:30	EDT	36,500	200	80	19,700	36,000	246	87	23,900
07/08/1992 09:45	EDT	52,000	99	95	13,900	52,000	147	98	20,600
07/30/1992 10:40	EDT	65,000	228	99	40,000	65,000	266	100	46,600
09/09/1992 09:00	EDT	30,800	—	—	—	31,000	159	95	13,300

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/01/1992 12:00	EDT	51,300	—	—	—	—	—	—	—
10/29/1992 08:30	EST	39,100	38	76	4,010	39,000	135	97	14,200
11/25/1992 09:00	EST	71,800	162	99	31,400	72,000	217	100	42,000
12/23/1992 08:00	EST	91,600	436	96	108,000	92,000	491	98	122,000
02/09/1993 08:30	EST	113,000	158	62	48,100	113,000	210	74	64,000
02/25/1993 08:45	EST	81,200	196	93	43,100	81,000	271	97	59,000
03/24/1993 08:00	EST	125,000	296	71	99,700	125,000	297	78	100,000
04/29/1993 09:25	EDT	161,000	260	55	113,000	161,000	272	66	118,000
05/19/1993 08:45	EDT	162,000	328	66	143,000	162,000	360	74	157,000
07/01/1993 09:00	EDT	94,700	—	—	—	95,000	325	97	83,000
07/21/1993 10:30	EDT	93,300	247	95	62,300	93,000	313	98	79,000
08/19/1993 08:45	EDT	115,000	179	82	55,500	115,000	248	89	77,000
09/29/1993 09:10	EDT	68,700	140	97	26,000	69,000	208	100	39,000
10/28/1993 07:30	EDT	70,100	224	99	42,300	70,100	239	99	45,000
11/23/1993 08:00	EST	74,200	181	98	36,300	74,200	225	99	45,000
01/19/1994 08:00	EST	67,800	89	93	16,200	67,800	108	96	20,000
03/03/1994 09:00	EST	131,000	280	65	99,100	131,000	300	72	106,000
03/23/1994 08:00	EST	144,000	206	56	80,200	144,000	230	69	89,000
04/05/1994 09:00	EDT	133,000	161	67	57,900	—	—	—	—
04/20/1994 08:15	EDT	140,000	166	55	62,900	140,000	261	79	99,000
05/05/1994 09:00	EDT	162,000	195	65	85,100	162,000	288	79	126,000
05/12/1994 12:00	EDT	169,000	214	74	97,500	—	—	—	—
06/02/1994 08:30	EDT	121,000	216	85	70,400	121,000	279	90	91,000
06/23/1994 10:30	EDT	57,500	152	99	23,700	—	—	—	—
07/06/1994 11:30	EDT	56,500	111	97	16,900	—	—	—	—
07/19/1994 09:15	EDT	62,800	147	100	24,900	62,800	232	100	39,000
08/26/1994 08:15	EDT	41,000	39	96	4,330	41,000	170	100	19,000
09/07/1994 10:15	EDT	45,800	56	92	6,930	—	—	—	—
09/22/1994 08:30	EDT	39,300	11	100	1,150	39,300	56	99	5,900
10/14/1994 12:00	EDT	35,700	44	98	4,270	36,000	81	99	7,850
10/26/1994 09:30	EDT	55,000	77	98	11,400	55,000	93	99	13,900
11/03/1994 09:00	EST	48,000	42	95	5,430	48,000	66	99	8,540
11/17/1994 09:00	EST	45,000	97	99	11,800	42,000	133	100	15,100

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/07/1994 09:00	EST	79,100	88	100	18,800	79,000	127	100	27,100
12/21/1994 09:15	EST	101,000	257	97	70,100	101,000	341	99	92,900
01/04/1995 09:30	EST	76,200	86	95	17,600	76,000	95	97	19,500
02/16/1995 16:00	EST	81,400	99	89	21,700	81,000	141	93	30,800
03/14/1995 09:15	EST	105,000	201	86	56,900	105,000	251	90	71,200
03/31/1995 08:45	EST	105,000	106	83	30,200	—	—	—	—
04/07/1995 14:30	EDT	86,400	96	85	22,300	86,000	136	94	31,600
04/28/1995 12:45	EDT	119,000	418	79	134,000	119,000	404	88	130,000
05/03/1995 08:50	EDT	121,000	308	73	101,000	121,000	350	80	114,000
05/25/1995 13:30	EDT	143,000	318	67	123,000	143,000	345	76	133,000
06/08/1995 13:00	EDT	191,000	386	62	199,000	191,000	393	72	203,000
06/22/1995 09:45	EDT	206,000	306	61	170,000	206,000	324	72	180,000
07/06/1995 15:00	EDT	164,000	211	64	93,400	164,000	284	78	126,000
07/20/1995 08:10	EDT	108,000	113	96	32,900	108,000	182	99	53,100
08/03/1995 12:00	EDT	66,700	83	98	14,900	67,000	155	100	28,000
08/17/1995 13:10	EDT	83,400	132	94	29,600	83,000	204	99	45,700
08/30/1995 13:30	EDT	65,500	77	99	13,600	66,000	154	100	27,500
09/14/1995 14:30	EDT	49,300	24	99	3,240	49,000	100	99	13,200
09/27/1995 14:30	EDT	34,900	—	—	—	35,000	234	100	22,100
10/12/1995 14:40	EDT	31,400	—	—	—	31,400	145	99	12,300
10/25/1995 16:00	EDT	32,100	—	—	—	32,100	89	99	7,740
11/08/1995 13:00	EST	39,800	18	99	1,930	39,800	96	99	10,400
12/01/1995 09:15	EST	58,200	49	99	7,730	58,200	107	99	16,800
12/04/1995 12:30	EST	54,800	39	97	5,740	54,800	123	99	18,200
01/04/1996 12:30	EST	61,100	58	96	9,520	61,100	127	100	21,000
01/17/1996 12:30	EST	42,700	60	98	6,860	44,888	114	100	13,200
01/30/1996 12:00	EST	88,400	279	94	66,600	88,400	338	97	80,800
02/21/1996 10:00	EST	97,800	144	84	38,100	97,800	323	95	85,400
02/29/1996 13:45	EST	72,200	118	89	23,000	72,200	234	99	45,700
03/14/1996 08:40	EST	103,000	155	87	43,100	103,000	330	100	91,600
03/26/1996 08:00	EST	98,200	99	96	26,200	98,200	214	100	56,600
04/10/1996 12:00	EDT	123,000	219	67	72,700	123,000	269	91	89,200
04/23/1996 11:00	EDT	88,700	—	—	—	88,700	245	100	58,600

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
05/09/1996 08:25	EDT	128,000	185	97	63,800	128,000	257	99	88,700
05/22/1996 16:05	EDT	149,000	172	95	69,300	149,000	211	99	85,000
06/05/1996 08:30	EDT	175,000	108	100	51,000	175,000	142	100	67,300
07/02/1996 14:50	EDT	143,000	105	99	40,500	143,000	160	100	61,900
07/18/1996 11:05	EDT	73,900	—	—	—	73,900	255	100	50,800
07/31/1996 09:30	EDT	59,300	96	100	15,400	59,300	238	100	38,100
08/14/1996 13:00	EDT	70,300	139	100	26,400	70,300	214	100	40,600
08/28/1996 13:00	EDT	50,000	—	—	—	50,000	231	100	31,200
09/10/1996 13:20	EDT	53,000	80	94	11,500	53,000	189	100	27,100
09/24/1996 11:00	EDT	45,000	36	96	4,390	45,000	151	100	18,400
10/09/1996 09:10	EDT	77,600	133	97	28,000	78,000	292	100	61,500
10/22/1996 11:30	EDT	40,200	—	—	—	40,000	96	100	10,400
11/07/1996 10:00	EST	76,000	94	97	19,300	76,000	156	100	32,000
11/21/1996 10:00	EST	109,000	227	87	66,900	109,000	316	93	93,000
12/03/1996 09:30	EST	128,000	546	93	189,000	128,000	636	95	220,000
12/23/1996 12:00	EST	154,000	140	89	58,400	154,000	208	94	86,000
01/22/1997 09:30	EST	109,000	97	98	28,600	109,000	183	100	54,000
02/06/1997 09:00	EST	142,000	180	96	68,900	142,000	269	100	103,000
02/19/1997 12:00	EST	164,000	313	66	139,000	164,000	375	77	166,000
03/05/1997 12:00	EST	168,000	260	95	118,000	168,000	363	97	165,000
03/18/1997 14:30	EST	215,000	222	85	129,000	215,000	314	89	182,000
04/02/1997 10:30	EST	232,000	277	59	174,000	232,000	347	75	217,000
04/17/1997 10:40	EDT	208,000	155	78	86,800	208,000	218	85	123,000
05/01/1997 09:15	EDT	172,000	166	89	77,000	172,000	271	93	126,000
05/15/1997 13:30	EDT	156,000	107	95	45,000	156,000	209	98	88,000
05/28/1997 10:45	EDT	125,000	195	92	65,600	125,000	287	96	97,000
06/26/1997 09:35	EDT	149,000	156	79	62,700	149,000	313	92	126,000
07/17/1997 09:36	EDT	90,400	197	95	48,000	90,000	377	99	92,000
07/30/1997 12:00	EDT	59,400	35	87	5,650	59,000	308	100	[1]19,000
08/14/1997 12:00	EDT	49,300	28	81	3,700	49,000	301	100	40,000
09/03/1997 10:22	EDT	55,800	38	92	5,720	56,000	160	100	24,000
09/17/1997 10:30	EDT	51,900	41	92	5,670	52,000	168	100	24,000
09/30/1997 09:00	EDT	50,700	28	98	3,840	51,000	186	100	26,000

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/15/1997 10:25	EDT	47,000	23	97	2,870	47,000	232	100	29,400
10/30/1997 12:00	EST	48,300	39	99	5,120	48,000	250	100	32,300
11/14/1997 09:00	EST	58,800	31	98	4,910	59,000	120	99	19,000
11/25/1997 14:40	EST	31,500	22	91	1,830	32,000	157	99	13,500
12/09/1997 10:30	EST	34,700	20	96	1,840	34,700	177	100	16,700
12/22/1997 15:30	EST	53,900	46	92	6,730	54,000	180	100	26,200
01/07/1998 09:33	EST	88,100	—	—	—	—	—	—	—
01/23/1998 12:00	EST	170,000	—	—	—	170,000	1,060	87	487,000
02/05/1998 10:15	EST	132,000	—	—	—	132,000	793	92	282,000
02/19/1998 10:27	EST	133,000	282	73	101,000	133,000	353	83	127,000
03/03/1998 16:30	EST	153,000	292	56	120,000	153,000	351	73	145,000
04/29/1998 11:00	EDT	150,000	133	95	53,800	150,000	230	99	93,100
05/07/1998 13:15	EDT	169,000	187	61	85,500	169,000	264	76	120,000
05/22/1998 10:00	EDT	178,000	88	97	42,300	178,000	190	99	91,200
06/04/1998 14:35	EDT	130,000	135	76	47,500	130,000	238	91	83,500
07/17/1998 12:00	EDT	116,000	226	91	70,700	—	—	—	—
07/28/1998 10:00	EDT	92,600	255	97	63,600	93,000	364	99	91,400
08/27/1998 13:10	EDT	65,200	86	99	15,100	65,000	240	100	42,000
09/09/1998 13:50	EDT	—	—	—	—	—	—	—	—
09/23/1998 14:00	EDT	43,200	136	100	15,800	—	—	—	—
10/08/1998 12:00	EDT	55,100	39	99	5,740	55,000	105	100	15,600
11/12/1998 13:40	EST	56,500	—	—	—	56,500	164	100	25,000
12/10/1998 11:00	EST	58,500	78	95	12,300	58,500	207	100	32,700
01/13/1999 14:30	EST	82,600	—	—	—	82,600	1,260	100	280,000
03/25/1999 13:30	EST	162,000	191	68	83,500	162,000	303	80	133,000
04/14/1999 13:00	EDT	123,000	122	98	40,500	123,000	179	100	59,000
05/05/1999 10:15	EDT	132,000	226	88	80,400	132,000	299	92	107,000
05/18/1999 11:45	EDT	154,000	192	79	79,700	154,000	300	87	125,000
07/26/1999 11:30	EDT	80,900	—	—	—	80,900	315	100	69,000
08/31/1999 11:15	EDT	43,100	48	99	5,630	43,100	160	100	19,000
09/08/1999 11:30	EDT	30,900	37	100	3,110	30,900	112	99	9,400
10/26/1999 10:00	EDT	33,100	51	84	4,510	33,100	134	98	12,000
11/17/1999 09:30	EST	26,600	—	—	—	26,600	150	95	10,700

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/27/1999 11:00	EST	58,700	—	—	—	58,700	330	100	52,300
02/02/2000 09:30	EST	39,100	23	100	2,380	39,100	131	99	13,900
04/06/2000 08:45	EDT	111,000	242	95	72,400	110,000	316	97	93,900
05/17/2000 10:00	EDT	67,300	82	97	14,900	67,300	139	100	25,200
06/13/2000 08:00	EDT	68,900	91	97	16,900	68,900	164	99	30,500
07/11/2000 14:30	EDT	112,000	210	93	63,400	112,000	264	94	79,700
07/26/2000 12:00	EDT	62,200	44	100	7,330	62,200	87	99	14,500
08/29/2000 10:30	EDT	43,300	40	95	4,680	43,300	103	99	12,100
09/28/2000 10:00	EDT	41,000	13	100	1,440	41,000	55	99	6,130
10/31/2000 10:30	EST	44,700	23	100	2,820	44,700	50	99	6,010
11/15/2000 14:00	EST	41,000	45	98	4,960	41,000	87	99	9,580
12/20/2000 10:15	EST	37,400	41	100	4,090	37,400	103	100	10,400
01/31/2001 09:45	EST	85,000	160	97	36,700	85,000	227	99	52,000
02/21/2001 11:00	EST	127,000	369	83	126,000	127,000	444	87	152,000
03/22/2001 12:00	EST	162,000	397	64	174,000	162,000	499	73	218,000
03/29/2001 09:15	EST	159,000	280	77	120,000	159,000	332	81	143,000
04/04/2001 09:30	EDT	154,000	246	66	102,000	154,000	323	75	134,000
04/18/2001 09:30	EDT	123,000	172	78	57,200	123,000	260	88	86,400
04/30/2001 10:00	EDT	120,000	196	86	63,400	120,000	261	91	84,700
05/23/2001 10:00	EDT	81,600	74	100	16,300	81,600	242	99	53,300
05/31/2001 09:30	EDT	106,000	252	93	72,200	106,000	391	97	112,000
06/21/2001 13:30	EDT	132,000	267	93	95,200	132,000	489	96	174,000
06/27/2001 09:30	EDT	113,000	183	93	55,700	113,000	276	96	84,100
07/12/2001 12:00	EDT	71,800	179	100	34,600	71,800	289	100	56,100
08/01/2001 09:30	EDT	50,700	148	100	20,300	50,700	239	100	32,700
08/29/2001 09:00	EDT	38,500	29	98	3,010	38,500	63	99	6,600
09/27/2001 09:00	EDT	42,200	18	96	2,040	42,200	62	99	7,110
11/01/2001 10:00	EST	62,400	57	100	9,650	62,400	89	100	15,100
12/20/2001 09:30	EST	140,000	265	79	100,000	140,000	319	82	120,000
01/28/2002 10:00	EST	81,400	87	100	19,000	81,400	117	100	25,600
02/22/2002 10:00	EST	124,000	129	85	43,300	124,000	178	89	59,500
02/26/2002 09:30	EST	121,000	117	87	38,300	121,000	164	91	53,500
03/14/2002 09:00	EST	85,400	53	92	12,200	85,400	123	98	28,500

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/28/2002 09:00	EST	153,000	438	93	181,000	153,000	561	95	232,000
04/16/2002 09:30	EDT	195,000	264	76	139,000	195,000	565	89	297,000
04/29/2002 10:00	EDT	154,000	167	89	69,500	154,000	211	91	87,900
05/09/2002 11:00	EDT	154,000	162	86	67,200	154,000	209	89	86,700
05/23/2002 09:30	EDT	183,000	305	79	151,000	183,000	368	83	182,000
06/13/2002 09:30	EDT	179,000	103	73	49,500	179,000	139	80	67,000
06/25/2002 13:00	EDT	120,000	166	96	53,800	120,000	211	98	68,000
07/11/2002 09:30	EDT	59,000	66	95	10,500	59,000	181	99	28,800
08/07/2002 11:00	EDT	48,200	40	100	5,240	48,200	132	99	17,000
08/21/2002 09:30	EDT	36,600	40	100	3,930	36,600	100	99	9,890
09/23/2002 11:00	EDT	32,300	30	100	2,630	32,800	72	99	6,390
09/30/2002 11:00	EDT	54,900	29	100	4,340	54,900	69	99	10,200
11/19/2002 11:00	CST	72,800	72	99	14,100	72,800	126	100	24,800
12/23/2002 10:30	CST	83,900	82	95	18,600	83,900	141	92	31,900
01/16/2003 10:15	CST	116,000	111	89	34,800	116,000	152	93	47,800
02/03/2003 10:45	CST	58,300	50	96	7,890	58,300	126	99	19,900
02/26/2003 10:30	CST	144,000	349	89	136,000	144,000	409	90	159,000
03/19/2003 10:30	CST	171,000	143	73	65,900	171,000	184	79	84,800
03/27/2003 08:30	CST	142,000	119	77	45,500	142,000	153	82	58,800
04/10/2003 10:30	CST	105,000	96	92	27,300	105,000	146	95	41,300
04/22/2003 10:30	CST	87,100	104	96	24,400	87,100	160	99	37,600
06/03/2003 12:30	CST	184,000	165	77	81,900	184,000	205	82	102,000
06/25/2003 15:00	CST	138,000	147	89	54,700	138,000	196	93	73,000
07/02/2003 12:00	CST	127,000	132	93	45,300	127,000	183	95	62,800
07/16/2003 10:15	CDT	68,500	70	100	13,000	68,500	124	100	22,900
07/29/2003 11:30	CDT	80,500	108	97	23,400	80,500	178	100	38,700
08/13/2003 11:00	CDT	71,000	62	99	11,900	71,000	143	100	27,400
08/28/2003 14:15	CDT	45,700	21	97	2,530	45,700	65	100	8,060
09/17/2003 10:30	CDT	88,300	140	98	33,400	88,300	229	100	54,700
09/25/2003 10:30	CDT	57,000	43	100	6,580	57,000	79	100	12,100
10/16/2003 14:00	CDT	57,700	29	99	4,580	57,700	72	100	11,200
11/19/2003 11:00	CST	69,100	58	100	10,800	69,100	118	100	22,100
12/17/2003 14:45	CST	89,600	114	96	27,500	89,300	174	99	41,900

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
01/15/2004 10:30	CST	106,000	98	91	28,100	106,000	163	95	46,800
02/13/2004 10:30	CST	122,000	214	93	70,400	122,000	260	94	85,500
02/27/2004 13:45	CST	147,000	152	79	60,300	147,000	200	84	79,300
03/08/2004 10:30	CST	119,000	113	90	36,200	119,000	158	93	50,800
03/29/2004 10:30	CST	141,000	132	83	50,200	141,000	166	86	63,200
04/08/2004 14:00	CST	112,000	93	94	28,100	112,000	135	97	40,800
04/28/2004 11:30	CST	99,100	109	96	29,200	99,100	159	98	42,500
05/13/2004 11:45	CST	138,000	122	91	45,500	138,000	159	94	59,300
05/20/2004 08:15	CST	138,000	158	92	58,900	138,000	188	94	70,200
06/15/2004 10:30	CST	152,000	246	93	101,000	152,000	317	95	130,000
06/29/2004 10:30	CST	159,000	165	86	70,900	159,000	210	89	90,200
07/15/2004 12:00	CST	140,000	121	90	45,600	[2]182,000	154	93	[2]75,900
07/29/2004 12:00	CST	80,400	122	98	26,400	80,400	181	99	39,400
08/12/2004 09:45	CST	73,200	74	98	14,500	73,200	164	100	32,400
09/09/2004 10:00	CST	57,400	57	100	8,760	57,400	145	100	22,500
10/21/2004 09:15	CDT	52,100	55	99	7,760	52,100	134	99	18,800
11/22/2004 10:30	CST	97,400	106	93	28,000	97,400	158	96	41,600
12/15/2004 14:00	CST	163,000	234	77	103,000	163,000	291	81	128,000
12/28/2004 09:00	CST	178,000	151	62	72,300	178,000	191	71	91,700
01/18/2005 10:30	CST	168,000	248	83	112,000	168,000	292	85	132,000
02/09/2005 13:30	CST	209,000	129	61	73,000	209,000	171	71	96,300
03/03/2005 14:15	CST	151,000	148	86	60,400	151,000	186	89	75,900
03/29/2005 11:15	CST	91,700	67	95	16,600	91,700	127	99	31,300
05/05/2005 13:45	CST	93,400	80	98	20,300	93,400	153	100	38,500
05/19/2005 10:30	CST	74,200	73	99	14,700	74,200	152	100	30,500
06/02/2005 10:45	CDT	77,000	141	100	29,300	77,000	319	100	66,300
06/30/2005 10:00	CDT	68,500	169	100	31,200	68,500	254	100	46,900
07/14/2005 10:30	CDT	52,800	56	100	7,940	52,800	179	100	25,500
07/26/2005 12:45	CDT	53,500	16	100	2,230	53,500	143	100	20,600
08/11/2005 11:00	CDT	34,400	26	100	2,400	34,400	71	100	6,640
09/19/2005 11:30	CDT	48,300	26	100	3,440	48,300	71	99	9,290
10/13/2005 10:30	CDT	35,300	21	99	2,040	35,300	59	99	5,640
11/29/2005 10:35	CST	62,000	43	100	7,200	62,000	146	100	24,400

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/08/2006 13:50	CST	108,000	272	96	79,300	108,000	334	97	97,300
02/22/2006 11:05	CST	67,100	87	100	15,700	67,100	148	100	26,900
03/08/2006 11:30	CST	45,800	63	100	7,780	—	—	—	—
05/03/2006 11:35	CST	89,100	137	99	32,900	89,100	257	100	61,700
05/10/2006 13:05	CDT	90,500	111	99	27,100	—	—	—	—
06/01/2006 10:35	CDT	65,100	73	99	12,800	65,100	240	100	42,300
06/06/2006 11:35	CDT	65,200	67	100	11,900	65,200	207	100	36,400
06/12/2006 11:05	CDT	47,600	38	98	4,880	47,600	120	100	15,400
06/28/2006 10:05	CDT	33,900	35	96	3,200	33,900	150	99	13,800
07/13/2006 13:35	CDT	46,100	30	98	3,780	40,900	69	99	7,590
07/19/2006 10:35	CDT	46,900	27	97	3,420	46,900	92	99	11,600
08/23/2006 10:35	CDT	28,800	—	—	—	28,800	175	100	13,600
09/20/2006 10:05	CDT	32,900	38	100	3,340	32,900	262	100	23,200
10/31/2006 10:30	CDT	65,200	—	—	—	65,200	159	96	28,000
11/29/2006 10:30	CDT	81,800	105	98	23,100	81,800	172	100	38,000
01/26/2007 10:30	CDT	174,000	348	82	164,000	174,000	392	84	184,000
02/07/2007 13:00	CDT	154,000	132	78	54,900	154,000	169	83	70,300
03/21/2007 12:30	CST	115,000	157	95	48,900	115,000	213	96	66,100
04/04/2007 12:15	CST	118,000	159	94	50,700	118,000	214	96	68,300
04/18/2007 12:00	CST	123,000	140	95	46,500	123,000	216	98	71,600
05/02/2007 11:30	CST	126,000	131	94	44,500	126,000	287	98	97,600
06/13/2007 10:00	CST	72,400	103	100	20,100	72,400	185	100	36,200
06/26/2007 12:00	CST	77,300	128	100	26,600	—	—	—	—
07/18/2007 10:30	CST	105,000	220	98	62,400	105,000	272	99	77,000
07/24/2007 12:30	CST	97,500	167	98	44,000	97,500	229	99	60,300
07/31/2007 10:30	CST	81,600	108	99	23,900	81,600	179	100	39,500
08/22/2007 12:00	CDT	44,700	38	100	4,520	44,700	110	100	13,300
09/20/2007 11:00	CDT	60,400	71	100	11,600	[3]6,040	141	100	[3]2,300
09/27/2007 11:00	CDT	53,000	49	100	6,940	53,000	118	100	16,900
10/18/2007 10:45	CDT	38,600	21	100	2,160	38,600	68	100	7,060
12/18/2007 13:30	CST	51,900	51	100	7,080	51,900	158	100	22,200
02/07/2008 10:45	CST	84,500	92	97	20,900	84,500	135	99	30,900
02/25/2008 11:00	CST	161,000	319	87	139,000	161,000	352	88	153,000

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/06/2008 09:00	CST	158,000	183	81	77,900	158,000	225	85	95,800
03/19/2008 10:30	CST	174,000	284	88	134,000	174,000	320	90	150,000
03/27/2008 14:30	CDT	187,000	250	85	126,000	187,000	284	86	143,000
04/03/2008 11:15	CDT	204,000	253	79	139,000	204,000	287	81	158,000
04/17/2008 10:45	CDT	228,000	200	75	123,000	228,000	235	79	145,000
04/28/2008 11:00	CDT	239,000	196	78	126,000	239,000	234	81	151,000
06/05/2008 13:30	CDT	173,000	85	90	39,800	173,000	145	95	67,700
06/25/2008 12:00	CDT	156,000	217	94	91,400	156,000	258	95	109,000
07/17/2008 14:00	CDT	149,000	150	94	60,400	149,000	199	96	79,900
07/31/2008 11:00	CDT	86,600	109	100	25,500	86,600	194	100	45,400
08/14/2008 13:00	CDT	99,200	278	99	74,500	99,200	352	99	94,300
09/25/2008 11:00	CDT	105,000	133	99	37,600	105,000	168	100	47,600
11/20/2008 11:00	CST	41,700	43	99	4,870	41,700	88	100	9,860
02/12/2009 12:30	CST	90,200	120	99	29,200	90,200	204	100	49,700
02/25/2009 10:30	CST	124,000	212	95	70,900	124,000	274	96	91,800
03/10/2009 09:30	CST	107,000	111	96	32,200	107,000	185	99	53,500
04/03/2009 10:30	CDT	149,000	188	85	75,500	149,000	238	88	95,600
05/12/2009 10:30	CDT	173,000	274	89	128,000	173,000	314	91	147,000
06/10/2009 13:00	CDT	200,000	121	78	65,100	200,000	158	84	85,500
06/24/2009 10:30	CDT	146,000	120	92	47,300	146,000	156	95	61,300
07/13/2009 12:00	CDT	98,700	143	100	38,000	98,700	214	100	56,900
07/27/2009 13:00	CDT	79,400	82	98	17,600	79,400	152	99	32,600
08/27/2009 09:30	CDT	60,200	50	98	8,200	60,200	88	99	14,300
09/23/2009 12:00	CST	74,500	67	100	13,500	74,500	110	100	22,100
11/11/2009 10:00	CST	182,000	268	76	132,000	182,000	295	79	145,000
12/22/2009 13:00	CST	156,000	165	82	69,300	156,000	235	88	99,000
01/28/2010 12:00	CST	127,000	164	92	56,100	127,000	260	96	89,000
02/18/2010 12:30	CST	197,000	206	69	109,000	197,000	303	79	161,000
03/04/2010 13:00	CST	160,000	104	75	44,900	160,000	214	89	92,000
05/25/2010 13:30	CST	170,000	145	86	66,700	170,000	182	89	83,000
06/02/2010 13:30	CST	170,000	111	83	50,800	170,000	208	92	95,000
08/05/2010 12:40	CST	105,000	177	100	50,200	105,000	336	97	95,000
08/24/2010 14:00	CDT	82,800	126	99	28,200	—	—	—	—

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
09/13/2010 14:30	CST	73,000	84	100	16,500	73,000	243	100	48,000
09/30/2010 13:30	CST	71,000	72	99	13,800	71,000	264	99	51,000
10/06/2010 13:30	CST	66,000	106	100	18,800	66,000	241	100	43,000
02/28/2011 14:00	CST	65,000	—	—	—	65,000	630	100	111,000
03/10/2011 14:00	CST	155,000	549	90	230,000	155,000	626	92	262,000
04/26/2011 15:20	CST	155,000	115	90	47,900	155,000	208	96	87,000
05/05/2011 14:00	CST	189,000	170	78	86,700	189,000	238	85	122,000
05/19/2011 12:40	CST	244,000	250	73	164,000	244,000	308	79	203,000
05/24/2011 14:00	CST	284,000	243	73	186,000	284,000	295	78	226,000
06/01/2011 10:00	CST	309,000	177	68	147,000	309,000	230	76	192,000
06/15/2011 12:20	CST	211,000	98	71	55,900	211,000	152	82	86,000
06/29/2011 10:15	CST	150,000	139	93	56,100	150,000	196	96	79,000
07/13/2011 10:30	CST	132,000	119	96	42,400	132,000	206	99	73,000
08/25/2011 11:15	CDT	71,200	62	99	12,000	71,200	150	100	29,000
10/04/2011 11:30	CDT	55,200	44	97	6,560	55,200	229	100	34,000
11/02/2011 12:30	CDT	50,100	31	100	4,140	50,100	110	100	[1]149,000
01/25/2012 13:30	CST	106,000	51	98	14,600	106,000	104	100	[1]298,000
02/08/2012 11:40	CST	156,000	218	87	92,000	156,000	268	90	113,000
03/19/2012 10:30	CST	139,000	150	94	56,400	139,000	194	97	72,700
04/18/2012 10:05	CDT	113,000	80	96	24,500	113,000	132	99	40,400
05/03/2012 12:30	CDT	62,900	50	100	8,470	62,900	119	100	20,200
06/06/2012 12:30	CDT	51,800	29	100	4,010	47,200	92	100	11,700
06/14/2012 10:30	CDT	47,700	33	100	4,260	47,700	94	100	12,200
07/24/2012 13:00	CDT	43,800	26	98	3,050	43,800	91	100	10,800
08/21/2012 13:00	CDT	53,800	32	99	4,680	53,800	83	100	12,100
09/27/2012 10:20	CDT	32,000	40	98	3,480	32,000	132	100	11,400
10/11/2012 12:00	CDT	39,600	29	100	3,120	39,600	113	100	12,200
03/04/2013 13:40	CST	103,000	132	98	36,700	103,000	184	100	51,400
03/21/2013 13:40	CDT	103,000	109	97	30,200	103,000	189	99	52,700
04/04/2013 12:00	CDT	143,000	153	87	59,200	143,000	238	93	92,000
04/17/2013 13:00	CDT	134,000	119	97	43,100	134,000	182	99	66,000
05/15/2013 12:20	CDT	176,000	122	80	58,000	176,000	166	86	79,100
07/02/2013 13:30	CDT	145,000	129	93	50,700	145,000	230	97	90,100

Table 4–6. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Wax Lake Outlet at Calumet, Louisiana (U.S. Geological Survey station 07381590).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/11/2013 13:00	CDT	117,000	113	98	35,600	117,000	197	100	62,400
08/21/2013 10:10	CDT	84,300	107	98	24,300	84,300	209	100	47,700
09/25/2013 13:30	CDT	57,300	30	100	4,570	57,300	92	100	14,300
11/19/2013 13:00	CST	58,700	53	100	8,430	—	—	—	—
01/08/2014 12:00	CST	135,000	186	95	68,000	—	—	—	—
03/12/2014 13:15	CDT	131,000	159	91	56,300	—	—	—	—
03/27/2014 13:00	CDT	95,500	72	99	18,500	—	—	—	—
04/09/2014 12:40	CDT	108,000	153	98	44,500	—	—	—	—
04/30/2014 13:00	CDT	147,000	126	88	50,100	—	—	—	—
06/26/2014 12:00	CDT	116,000	253	99	79,200	—	—	—	—
07/29/2014 14:00	CDT	92,700	125	98	31,200	—	—	—	—
08/14/2014 14:20	CDT	62,800	49	99	8,340	—	—	—	—
08/20/2014 10:00	CDT	49,200	37	100	4,930	—	—	—	—
09/10/2014 12:40	CDT	58,800	73	100	11,600	—	—	—	—
10/21/2014 12:10	CDT	87,900	151	98	35,900	—	—	—	—
11/24/2014 16:00	CST	57,500	63	99	9,810	—	—	—	—
01/06/2015 14:30	CST	95,300	157	99	40,300	—	—	—	—
02/10/2015 13:20	CST	59,100	48	100	7,710	—	—	—	—

[1]Due to data-entry errors, the original result for suspended-sediment discharge on 07/30/1997 should have been reported as 49,000 short tons per day, the original result for suspended-sediment discharge on 11/02/2011 should have been reported as 14,900 short tons per day, and the original result for suspended-sediment discharge on 01/25/2012 should have been reported as 29,800 short tons per day.

[2]Original discharge result on 07/15/2004 was in error and should have been 140,000 cubic feet per second, which would have resulted in a sediment discharge result of 58,200 short tons per day.

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
10/18/1989 09:45	EDT	115,000	76	85	23,600	115,000	128	96	39,700
11/21/1989 09:15	EST	79,000	45	90	9,640	79,000	72	99	15,400
12/13/1989 09:30	EST	97,500	56	80	14,800	98,000	81	96	21,500
01/24/1990 09:00	EST	153,000	444	92	183,000	153,000	474	94	196,000
02/16/1990 09:45	EST	253,000	—	—	—	253,000	541	71	369,000
03/21/1990 08:30	EST	234,000	443	61	280,000	234,000	449	70	284,000
04/12/1990 09:00	EDT	247,000	—	—	—	247,000	386	79	257,000
05/30/1990 09:45	EDT	269,000	473	67	344,000	269,000	482	76	350,000
06/19/1990 08:00	EDT	269,000	310	66	225,000	—	—	—	—
07/04/1990 09:15	EDT	227,000	324	87	199,000	227,000	371	91	227,000
07/26/1990 11:00	EDT	142,000	130	93	49,600	—	—	—	—
08/23/1990 09:00	EDT	98,900	95	99	25,400	99,000	111	99	29,600
09/25/1990 09:30	EDT	85,900	107	96	24,700	85,900	105	99	24,400
10/16/1990 09:45	EDT	98,000	77	98	20,400	98,000	92	100	24,340
01/23/1991 09:15	EST	364,000	—	—	—	—	—	—	—
02/14/1991 08:30	EST	221,000	221	60	132,000	221,000	214	63	127,700
03/20/1991 08:45	EST	237,000	196	47	125,000	237,000	331	74	211,800
04/17/1991 08:45	EDT	244,000	305	59	201,000	244,000	336	67	221,400
05/22/1991 08:45	EDT	294,000	327	66	260,000	294,000	362	68	287,400
06/12/1991 11:00	EDT	244,000	230	64	152,000	244,000	268	72	176,600
08/01/1991 09:30	EDT	69,300	60	80	11,100	—	—	—	—
08/22/1991 08:30	EDT	76,000	94	90	19,200	—	—	—	—
09/18/1991 08:15	EDT	61,700	24	89	3,980	61,700	57	99	9,496
10/23/1991 11:15	EDT	53,600	51	91	7,410	54,000	106	98	15,400
11/26/1991 09:30	EST	136,000	196	95	72,100	136,000	251	97	92,300
12/17/1991 11:45	EST	216,000	470	78	274,000	216,000	537	83	313,000
01/29/1992 08:40	EST	174,000	—	—	—	174,000	252	87	118,000
03/11/1992 07:45	EST	183,000	—	—	—	183,000	290	87	143,000
04/02/1992 09:45	EST	224,000	296	60	179,000	224,000	324	68	196,000
05/05/1992 11:45	EDT	166,000	190	96	85,000	166,000	240	97	108,000
05/19/1992 11:45	EDT	98,900	96	97	25,500	98,900	149	99	40,000
07/07/1992 12:00	EDT	133,000	174	96	62,400	133,000	189	99	68,000
07/29/1992 13:00	EDT	140,000	250	96	94,300	140,000	227	99	86,000

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
09/09/1992 14:30	EDT	88,800	54	99	13,000	88,800	80	98	19,000
09/30/1992 10:30	EDT	112,000	—	—	—	112,000	121	95	37,000
10/28/1992 10:30	EST	98,600	48	86	12,600	99,000	102	96	27,000
11/24/1992 13:30	EST	134,000	203	88	73,600	134,000	287	93	104,000
12/22/1992 10:45	EST	194,000	302	99	158,000	194,000	348	99	182,000
02/08/1993 12:45	EST	234,000	—	—	—	234,000	241	61	152,000
02/24/1993 12:30	EST	174,000	163	99	76,400	174,000	205	100	96,000
03/23/1993 11:00	EST	261,000	388	52	274,000	261,000	347	68	245,000
04/28/1993 11:45	EDT	308,000	348	51	289,000	308,000	334	59	278,000
05/18/1993 12:15	EDT	294,000	—	—	—	294,000	393	76	312,000
06/30/1993 12:15	EDT	201,000	162	89	88,100	201,000	246	90	133,000
07/20/1993 11:00	EDT	180,000	272	90	132,000	180,000	333	95	162,000
08/18/1993 11:00	EDT	236,000	191	85	122,000	236,000	242	85	154,000
09/28/1993 10:55	EDT	147,000	150	98	59,700	147,000	207	97	82,000
10/27/1993 11:15	EDT	147,000	147	93	58,400	—	—	—	—
11/22/1993 12:25	EST	148,000	187	93	74,500	148,000	234	94	93,000
12/15/1993 11:00	EST	215,000	—	—	—	215,000	350	75	203,000
01/18/1994 12:30	EST	145,000	89	79	34,700	145,000	110	85	43,000
03/02/1994 11:15	EST	256,000	321	46	222,000	256,000	305	56	211,000
03/22/1994 11:50	EST	288,000	340	41	264,000	288,000	330	51	257,000
04/05/1994 13:30	EDT	266,000	—	—	—	—	—	—	—
04/19/1994 11:00	EDT	267,000	158	51	114,000	267,000	252	73	182,000
05/04/1994 11:40	EDT	303,000	239	54	195,000	303,000	341	71	279,000
05/12/1994 12:00	EDT	319,000	—	—	—	—	—	—	—
06/01/1994 14:00	EDT	232,000	—	—	—	232,000	237	89	149,000
06/23/1994 14:30	EDT	119,000	164	97	52,700	—	—	—	—
07/06/1994 15:30	EDT	114,000	203	97	62,300	—	—	—	—
07/18/1994 13:30	EDT	114,000	159	98	48,900	—	—	—	—
08/25/1994 11:30	EDT	78,200	29	90	6,170	78,000	154	100	33,000
09/07/1994 15:30	EDT	82,100	52	77	11,400	—	—	—	—
09/21/1994 14:00	EDT	80,500	16	87	3,460	80,000	63	99	14,000
10/13/1994 14:00	EDT	77,800	44	100	9,270	78,000	99	99	20,900
10/25/1994 13:00	EDT	100,000	60	97	16,200	100,000	120	98	32,500

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/02/1994 12:00	EST	76,000	42	97	8,600	76,000	68	99	13,900
11/16/1994 11:30	EST	92,600	118	99	29,500	93,000	159	100	40,000
12/06/1994 13:00	EST	128,000	90	99	30,900	128,000	153	100	53,000
12/20/1994 11:30	EST	156,000	159	100	66,900	156,000	209	100	88,000
01/03/1995 14:30	EST	138,000	50	99	18,500	138,000	74	99	27,800
01/19/1995 11:00	EST	129,000	121	87	42,200	129,000	197	94	68,500
01/30/1995 14:30	EST	190,000	102	99	52,200	—	—	—	—
02/01/1995 12:00	EST	190,000	302	77	155,000	190,000	333	84	171,000
02/16/1995 10:00	EST	144,000	124	88	48,300	144,000	156	93	60,800
03/30/1995 11:30	EST	—	173	77	—	—	—	—	—
04/07/1995 10:30	EDT	136,000	129	93	47,200	136,000	165	97	60,600
04/28/1995 09:10	EDT	170,000	322	91	148,000	170,000	374	94	172,000
05/02/1995 10:45	EDT	182,000	269	85	132,000	182,000	301	90	148,000
05/25/1995 09:00	EDT	208,000	250	81	140,000	208,000	281	89	158,000
06/08/1995 09:30	EDT	264,000	333	60	237,000	264,000	360	70	257,000
06/21/1995 10:50	EDT	325,000	389	46	341,000	325,000	379	61	333,000
07/06/1995 10:00	EDT	229,000	170	72	105,000	229,000	209	80	129,000
07/19/1995 10:40	EDT	161,000	—	—	—	161,000	127	99	55,100
08/02/1995 12:45	EDT	108,000	—	—	—	108,000	179	100	52,100
08/17/1995 08:30	EDT	114,000	147	97	45,300	114,000	218	99	67,100
09/27/1995 10:00	EDT	87,800	—	—	—	88,000	234	99	55,600
10/12/1995 12:00	EDT	82,200	—	—	—	82,200	138	99	30,600
10/25/1995 10:30	EDT	95,000	29	100	7,540	95,000	104	99	26,700
11/08/1995 12:00	EST	90,900	44	96	10,800	—	—	—	—
11/30/1995 12:00	EST	93,600	56	96	14,200	93,600	119	100	30,100
12/05/1995 10:30	EST	94,900	52	94	13,300	94,900	131	99	33,700
01/03/1996 12:00	EST	112,000	76	96	22,900	112,000	117	100	35,400
01/17/1996 12:00	EST	100,000	67	100	18,000	100,000	109	100	29,500
01/31/1996 09:00	EST	153,000	305	88	126,000	153,000	354	92	146,000
02/21/1996 14:00	EST	154,000	129	94	53,500	154,000	280	99	116,000
02/29/1996 09:30	EST	142,000	125	95	48,100	142,000	251	98	96,100
03/12/1996 10:50	EST	110,000	—	—	—	—	—	—	—
03/25/1996 10:00	EST	139,000	133	98	49,700	139,000	218	98	81,900

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
04/10/1996 12:15	EDT	172,000	—	—	—	—	—	—	—
04/22/1996 12:10	EDT	122,000	—	—	—	122,000	277	100	91,100
05/09/1996 13:00	EDT	177,000	140	100	67,000	177,000	171	100	81,700
05/22/1996 08:50	EDT	208,000	129	98	72,200	208,000	171	97	96,200
06/05/1996 11:20	EDT	235,000	99	97	62,600	235,000	122	98	77,200
06/18/1996 07:50	EDT	264,000	282	50	201,000	—	—	—	—
07/02/1996 11:00	EDT	199,000	146	81	78,200	199,000	272	93	[1]416,000
07/18/1996 08:40	EDT	116,000	91	99	28,400	116,000	229	100	71,800
07/30/1996 12:30	EDT	92,700	115	93	28,800	92,700	270	99	67,700
08/14/1996 09:10	EDT	107,000	131	93	38,000	107,000	242	99	70,000
08/29/1996 09:00	EDT	90,500	50	90	12,300	90,500	186	100	45,500
09/10/1996 10:45	EDT	71,900	63	93	12,100	71,900	176	100	34,100
09/23/1996 12:30	EDT	68,700	38	100	7,020	68,700	105	100	19,500
10/09/1996 12:30	EDT	108,000	145	98	42,200	108,000	350	100	102,000
10/22/1996 14:30	EDT	47,000	40	96	5,050	47,000	112	100	14,000
11/06/1996 09:55	EST	112,000	63	98	19,100	112,000	146	100	44,000
11/21/1996 16:00	EST	136,000	183	99	67,100	136,000	247	100	91,000
12/03/1996 13:00	EST	179,000	531	92	257,000	179,000	638	94	309,000
12/23/1996 14:00	EST	205,000	112	97	62,200	205,000	204	100	113,000
02/19/1997 15:30	EST	224,000	363	54	219,000	224,000	401	69	242,000
03/05/1997 12:00	EST	228,000	269	92	166,000	228,000	350	95	216,000
04/02/1997 13:30	EST	381,000	236	54	243,000	381,000	336	69	346,000
04/17/1997 13:30	EDT	315,000	114	87	96,500	315,000	175	93	149,000
04/30/1997 13:30	EDT	240,000	306	54	198,000	240,000	388	67	251,000
05/15/1997 10:20	EDT	226,000	80	98	48,600	226,000	180	99	110,000
05/28/1997 15:45	EDT	180,000	186	93	90,600	180,000	282	97	137,000
07/29/1997 11:00	EDT	93,100	30	80	7,610	93,000	247	99	62,000
08/14/1997 14:00	EDT	81,600	24	89	5,240	82,000	241	100	53,000
09/03/1997 14:00	EDT	84,200	25	95	5,650	84,000	155	100	35,000
09/17/1997 14:00	EDT	56,900	24	81	3,680	57,000	243	100	37,000
09/29/1997 10:15	EDT	65,200	22	98	3,850	65,200	194	100	34,000
10/14/1997 15:05	EDT	36,700	18	98	1,750	37,000	178	100	17,800
10/29/1997 11:45	EST	70,400	25	99	4,770	70,000	186	100	35,000

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/13/1997 11:40	EST	74,200	19	86	3,760	74,000	136	100	27,000
11/25/1997 10:00	EST	84,000	30	100	6,820	84,000	138	99	31,000
12/10/1997 09:20	EST	91,200	23	100	5,620	91,000	187	100	46,000
12/22/1997 11:30	EST	94,600	55	100	14,100	95,000	185	100	48,000
01/06/1998 11:00	EST	111,000	—	—	—	111,000	979	99	290,000
01/23/1998 14:15	EST	232,000	—	—	—	232,000	1,229	88	770,000
02/05/1998 14:30	EST	190,000	—	—	—	190,000	732	91	376,000
02/18/1998 11:05	EST	183,000	259	74	128,000	183,000	322	83	159,000
03/03/1998 09:45	EST	210,000	260	63	148,000	210,000	317	73	180,000
03/31/1998 14:00	EST	269,000	—	—	—	269,000	405	74	294,000
04/28/1998 13:00	EDT	222,000	234	58	140,000	222,000	321	75	192,000
05/07/1998 09:30	EDT	237,000	222	52	142,000	237,000	303	70	194,000
05/21/1998 14:00	EDT	255,000	84	88	57,700	255,000	171	96	118,000
06/04/1998 11:00	EDT	196,000	135	87	71,500	196,000	242	93	128,000
07/01/1998 09:30	EDT	173,000	367	91	171,000	173,000	515	95	241,000
07/16/1998 12:00	EDT	179,000	260	90	126,000	179,000	372	93	180,000
07/28/1998 14:30	EDT	145,000	269	95	105,000	145,000	463	98	181,000
08/12/1998 13:00	EDT	116,000	75	100	23,500	116,000	230	100	71,900
08/27/1998 09:37	EDT	93,000	83	97	20,900	93,000	223	100	56,000
09/09/1998 09:35	EDT	83,500	142	100	31,900	84,000	966	100	219,000
09/23/1998 10:00	EDT	68,900	112	99	20,900	69,000	674	100	126,000
10/08/1998 13:00	EDT	66,900	40	98	7,280	67,000	132	100	24,000
11/11/1998 14:00	EST	90,700	112	96	27,500	91,000	222	100	54,000
12/10/1998 14:00	EST	79,000	68	94	14,500	79,000	168	100	36,000
01/13/1999 12:00	EST	118,000	—	—	—	118,000	1,114	100	355,000
03/25/1999 15:30	EST	213,000	249	52	143,000	213,000	395	70	227,000
04/13/1999 14:00	EDT	171,000	142	93	65,700	171,000	233	98	108,000
05/04/1999 12:00	EDT	164,000	232	92	103,000	164,000	303	95	134,000
05/19/1999 10:00	EDT	224,000	202	78	122,000	224,000	268	85	162,000
07/27/1999 11:00	EDT	112,000	152	100	45,900	112,000	384	100	116,000
09/01/1999 11:00	EDT	58,000	44	96	6,880	58,000	153	100	24,000
09/09/1999 09:30	EDT	68,000	50	99	9,140	68,000	247	100	45,000
10/26/1999 16:00	EDT	38,800	48	92	4,980	38,800	150	99	15,700

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/23/1999 10:00	EST	64,900	36	91	6,280	65,000	91	98	16,000
12/27/1999 14:45	EST	87,800	38	99	9,100	87,800	344	100	81,400
02/02/2000 14:00	EST	24,800	31	100	2,040	24,800	194	99	13,000
04/06/2000 14:25	EDT	147,000	222	95	88,000	147,000	302	97	120,000
05/17/2000 13:00	EDT	87,300	81	98	19,200	87,300	129	100	30,400
06/12/2000 11:00	EDT	106,000	112	92	32,100	106,000	174	98	49,800
07/10/2000 16:30	EDT	158,000	201	91	85,600	158,000	255	94	109,000
07/26/2000 15:00	EDT	102,000	50	100	13,800	102,000	87	100	23,900
08/29/2000 14:00	EDT	53,600	40	98	5,760	53,600	112	99	16,200
09/28/2000 13:00	EDT	56,000	17	100	2,590	56,000	54	99	8,150
10/31/2000 13:00	EST	62,300	22	100	3,710	62,300	65	100	10,900
11/16/2000 08:00	EST	81,100	34	94	7,380	81,100	85	100	18,600
12/20/2000 12:30	EST	22,900	40	100	2,470	22,900	142	100	8,790
01/31/2001 12:00	EST	117,000	170	96	53,500	117,000	257	98	81,200
02/21/2001 13:30	EST	158,000	368	84	157,000	158,000	482	88	206,000
03/23/2001 10:00	EST	216,000	311	77	182,000	216,000	391	83	228,000
03/29/2001 12:30	EST	210,000	310	67	176,000	210,000	418	76	237,000
04/04/2001 12:30	EDT	212,000	254	65	145,000	212,000	350	75	200,000
04/18/2001 12:00	EDT	175,000	172	92	81,200	175,000	236	95	112,000
04/30/2001 12:00	EDT	150,000	195	85	79,100	150,000	267	90	108,000
05/23/2001 13:00	EDT	106,000	104	100	29,700	106,000	164	100	46,800
05/31/2001 11:00	EDT	127,000	258	94	88,500	127,000	416	98	143,000
06/20/2001 13:00	EDT	165,000	254	92	113,000	165,000	343	94	153,000
06/27/2001 11:30	EDT	153,000	184	93	76,100	153,000	264	96	109,000
07/12/2001 09:30	EDT	102,000	184	100	50,700	102,000	280	100	77,000
08/01/2001 12:30	EDT	74,300	37	100	7,400	74,300	115	100	23,200
08/29/2001 11:00	EDT	40,300	28	100	2,990	40,300	66	100	7,200
09/27/2001 12:00	EDT	56,500	23	100	3,520	56,500	62	99	9,440
11/01/2001 13:00	EST	68,600	61	100	11,300	68,600	90	100	16,700
12/20/2001 13:30	EST	187,000	278	78	140,000	187,000	331	82	167,000
01/28/2002 12:30	EST	114,000	104	97	32,000	114,000	136	98	42,000
02/22/2002 12:00	EST	171,000	120	83	55,400	171,000	177	90	81,800
02/26/2002 12:00	EST	166,000	114	81	50,900	166,000	166	88	74,500

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
03/14/2002 12:00	EST	113,000	59	95	18,000	113,000	136	99	41,300
03/28/2002 12:00	EST	187,000	477	88	241,000	187,000	610	90	308,000
04/16/2002 13:00	EDT	272,000	392	53	288,000	272,000	513	64	377,000
04/29/2002 12:00	EDT	217,000	174	79	102,000	217,000	245	85	144,000
05/09/2002 14:00	EDT	210,000	250	64	142,000	210,000	321	72	182,000
05/23/2002 12:00	EDT	229,000	208	73	129,000	229,000	279	80	173,000
06/13/2002 12:00	EDT	239,000	143	54	92,100	239,000	176	63	113,000
06/25/2002 10:00	EDT	163,000	185	95	81,200	163,000	254	97	111,800
07/11/2002 12:00	EDT	88,000	91	98	21,600	88,000	204	100	48,470
08/07/2002 16:00	EDT	76,500	41	97	8,450	76,500	181	99	37,390
08/21/2002 12:00	EDT	51,500	31	98	4,360	51,500	180	99	25,000
09/23/2002 14:00	EDT	38,700	25	100	2,600	38,700	86	99	9,030
09/30/2002 12:00	EDT	76,200	30	99	6,180	76,200	66	100	13,500
11/21/2002 09:45	CST	108,000	89	97	25,900	108,000	134	99	39,100
12/23/2002 13:00	CST	117,000	104	95	33,000	117,300	171	98	54,200
01/16/2003 12:30	CST	157,000	124	78	52,600	157,000	186	86	79,000
02/03/2003 13:45	CST	59,100	57	98	9,070	59,100	136	99	21,700
02/26/2003 13:15	CST	160,000	361	87	156,000	160,000	419	89	181,000
03/21/2003 08:30	CST	217,000	195	46	114,000	217,000	248	63	145,000
03/27/2003 11:00	CST	172,000	135	72	62,800	172,000	189	81	87,800
04/10/2003 12:30	CST	135,000	101	94	36,900	135,000	164	98	59,800
04/22/2003 12:45	CST	105,000	111	99	31,400	105,000	166	99	47,000
06/04/2003 15:15	CST	266,000	209	63	150,000	266,000	256	70	184,000
06/26/2003 08:30	CST	167,000	150	88	67,400	167,000	189	91	85,000
07/03/2003 09:00	CST	161,000	118	95	51,200	161,000	188	98	81,600
07/16/2003 13:30	CDT	97,300	74	100	19,400	97,300	140	100	36,700
07/29/2003 14:00	CDT	102,000	124	99	34,200	102,000	190	100	52,400
08/14/2003 08:30	CDT	84,000	63	100	14,400	84,000	151	100	34,200
08/27/2003 15:00	CDT	57,800	32	99	4,980	57,800	83	100	12,900
09/17/2003 12:45	CDT	116,000	110	99	34,600	116,000	258	100	80,600
09/25/2003 13:00	CDT	71,900	44	100	8,530	71,900	80	100	15,600
10/15/2003 15:45	CDT	62,400	40	99	6,660	62,400	87	100	14,600
11/19/2003 15:00	CST	88,200	61	99	14,500	88,200	131	100	31,100

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
12/16/2003 13:30	CST	130,000	117	94	40,900	130,000	179	97	62,900
01/15/2004 13:00	CST	134,000	113	84	41,000	134,000	200	91	72,500
02/13/2004 13:00	CST	154,000	234	92	97,300	154,000	283	93	118,000
02/26/2004 14:45	CST	207,000	220	67	123,000	207,000	266	72	149,000
03/08/2004 12:30	CST	160,000	139	83	60,200	160,000	183	88	79,200
03/29/2004 12:45	CST	176,000	150	67	71,300	176,000	196	75	93,100
04/07/2004 15:45	CST	147,000	91	87	36,000	147,000	146	93	57,800
04/27/2004 16:00	CST	120,000	91	96	29,600	120,000	153	99	49,400
05/13/2004 09:30	CDT	174,000	140	80	65,800	174,000	213	87	100,000
05/19/2004 14:45	CDT	173,000	142	89	66,100	173,000	181	92	84,400
06/15/2004 13:30	CDT	184,000	271	89	134,000	184,000	353	92	175,000
06/29/2004 13:00	CDT	196,000	192	77	101,000	196,000	252	83	134,000
07/15/2004 14:00	CDT	182,000	138	81	67,800	182,000	182	86	89,400
07/28/2004 14:30	CDT	116,000	115	99	36,100	116,000	177	100	55,400
08/11/2004 14:00	CDT	94,100	81	99	20,600	94,100	175	100	44,400
09/08/2004 14:30	CDT	87,300	107	90	25,300	87,300	173	94	40,700
10/20/2004 14:00	CDT	85,000	62	100	14,100	85,000	142	100	32,600
11/22/2004 13:30	CST	127,000	115	93	39,500	127,000	202	98	69,300
12/14/2004 14:45	CST	222,000	326	63	195,000	222,000	391	69	234,000
12/27/2004 16:00	CST	244,000	270	40	178,000	244,000	316	49	208,000
01/18/2005 14:15	CST	218,000	315	61	185,000	218,000	384	69	226,000
02/09/2005 15:30	CST	299,000	298	29	240,000	299,000	340	38	275,000
03/02/2005 17:00	CST	195,000	170	75	89,700	195,000	227	81	119,000
03/29/2005 14:00	CST	125,000	70	95	23,500	125,000	155	99	52,300
05/04/2005 15:30	CDT	121,000	104	94	34,000	121,000	203	98	66,300
05/19/2005 13:00	CDT	98,500	83	85	22,000	98,500	156	92	41,600
06/02/2005 13:30	CDT	107,000	147	100	42,600	107,000	283	100	81,800
06/30/2005 12:30	CDT	91,600	163	100	40,200	91,600	286	100	70,700
07/14/2005 13:00	CDT	78,500	61	100	13,000	78,500	162	100	34,400
07/26/2005 16:00	CDT	78,300	—	—	—	—	—	—	—
08/11/2005 13:00	CDT	60,600	24	100	3,980	60,600	66	100	10,900
09/19/2005 13:30	CDT	67,000	20	99	3,520	67,000	76	99	13,700
10/13/2005 12:30	CDT	44,500	21	100	2,570	44,500	57	99	6,790

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
11/29/2005 13:00	CST	68,600	40	100	7,450	68,600	159	100	29,500
02/07/2006 15:15	CST	142,000	309	93	118,000	142,000	371	94	142,000
02/22/2006 13:30	CST	78,800	89	100	18,900	78,800	147	100	31,300
03/08/2006 14:30	CST	34,000	63	100	5,760	34,000	222	99	20,400
05/03/2006 14:00	CDT	110,000	133	99	39,500	110,000	305	100	90,600
05/10/2006 15:35	CDT	107,000	125	98	36,200	107,000	242	100	69,800
06/01/2006 15:05	CDT	92,100	105	97	26,100	92,100	311	99	77,400
06/06/2006 14:35	CDT	78,300	63	100	13,200	78,300	197	100	41,700
06/12/2006 15:05	CDT	76,900	33	100	6,880	76,900	119	99	24,600
06/28/2006 14:05	CDT	49,200	37	100	4,860	49,200	137	100	18,200
07/13/2006 12:05	CDT	39,300	23	100	2,460	39,300	70	100	7,390
07/19/2006 15:05	CDT	76,600	29	97	5,890	76,600	127	100	26,200
08/23/2006 14:35	CDT	29,900	27	99	2,200	29,900	151	100	12,200
09/20/2006 15:05	CDT	24,100	50	100	3,230	24,100	245	100	15,900
10/31/2006 13:30	CST	95,300	96	99	24,800	95,300	158	99	40,600
11/29/2006 13:30	CST	99,100	103	99	27,600	99,100	184	100	49,300
01/26/2007 13:30	CST	232,000	388	69	243,000	232,000	436	73	273,000
02/08/2007 09:30	CST	211,000	156	61	88,900	211,000	197	70	112,000
03/21/2007 17:15	CST	144,000	170	93	66,000	144,000	236	95	91,600
04/04/2007 16:30	CST	147,000	165	93	65,400	147,000	232	96	92,200
04/18/2007 15:30	CST	151,000	145	89	59,300	151,000	200	92	81,300
05/02/2007 16:00	CST	152,000	144	90	59,200	152,000	273	95	112,000
06/13/2007 13:30	CDT	94,200	110	100	28,100	—	—	—	—
06/26/2007 07:45	CST	70,700	137	100	26,100	70,700	248	100	47,300
07/18/2007 13:30	CST	133,000	218	98	78,400	133,000	309	99	111,000
07/24/2007 09:00	CST	128,000	185	98	63,900	128,000	261	99	90,300
07/31/2007 13:30	CST	108,000	120	99	34,900	108,000	196	100	57,100
08/22/2007 13:00	CST	64,900	47	100	8,180	64,900	120	100	21,100
09/20/2007 13:30	CST	87,500	86	100	20,200	87,500	151	100	35,600
09/27/2007 13:30	CST	73,200	55	99	10,800	73,200	126	100	24,900
10/18/2007 13:15	CDT	58,800	24	100	3,830	58,800	75	100	12,000
12/18/2007 10:15	CST	73,900	66	100	13,100	73,900	156	100	31,100
02/07/2008 14:30	CST	106,000	97	96	27,700	106,000	157	98	44,800

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
02/25/2008 13:30	CST	194,000	346	81	181,000	194,000	389	83	204,000
03/05/2008 16:15	CST	190,000	235	69	121,000	190,000	284	74	146,000
03/19/2008 14:00	CST	218,000	366	68	215,000	218,000	415	72	244,000
03/27/2008 12:30	CDT	252,000	322	65	219,000	252,000	362	69	246,000
04/03/2008 13:45	CDT	279,000	360	57	271,000	279,000	404	62	305,000
04/17/2008 14:00	CDT	332,000	293	59	263,000	332,000	319	62	286,000
04/28/2008 15:00	CDT	345,000	317	50	295,000	345,000	345	55	321,000
06/05/2008 10:45	CDT	217,000	100	74	58,500	217,000	156	84	91,300
06/24/2008 11:15	CDT	185,000	250	92	125,000	185,000	297	93	149,000
07/17/2008 11:00	CDT	182,000	159	87	78,200	182,000	223	91	110,000
07/31/2008 13:00	CDT	114,000	107	99	33,000	114,000	207	100	63,700
08/14/2008 11:00	CDT	122,000	277	100	91,100	122,000	365	100	120,000
09/25/2008 13:30	CDT	125,000	43	100	14,500	125,000	77	99	26,000
11/20/2008 13:00	CST	67,300	55	99	10,100	67,300	99	100	18,000
02/12/2009 12:30	CST	116,000	117	98	36,600	116,000	210	100	65,800
02/25/2009 14:00	CST	154,000	218	94	90,600	154,000	294	96	122,000
03/10/2009 12:00	CST	135,000	111	92	40,300	135,000	190	96	69,200
04/03/2009 13:15	CST	177,000	175	82	83,600	177,000	238	87	114,000
05/13/2009 08:20	CST	212,000	295	80	169,000	212,000	378	84	216,000
06/11/2009 10:00	CST	268,000	148	61	107,000	268,000	191	70	138,000
06/24/2009 13:00	CST	188,000	114	88	57,600	188,000	167	92	84,800
07/13/2009 09:00	CST	117,000	148	97	46,600	117,000	234	99	73,900
07/27/2009 10:00	CST	81,700	95	100	20,900	81,700	187	100	41,100
08/27/2009 12:00	CST	76,800	68	99	14,100	76,800	96	99	20,000
09/23/2009 10:00	CST	88,700	44	100	10,600	88,700	97	100	23,200
11/11/2009 12:00	CST	230,000	312	66	194,000	230,000	343	70	213,000
12/22/2009 10:30	CST	187,000	158	66	79,900	187,000	219	75	111,000
01/28/2010 09:30	CST	159,000	165	87	70,600	159,000	338	94	145,000
02/18/2010 10:00	CST	271,000	397	35	290,000	271,000	460	45	337,000
03/04/2010 10:00	CST	192,000	124	58	64,000	192,000	194	74	101,000
05/25/2010 10:30	CST	206,000	179	66	99,700	206,000	257	77	143,000
06/02/2010 10:30	CST	220,000	174	50	103,000	220,000	254	67	151,000
08/05/2010 10:15	CST	121,000	243	98	79,400	121,000	440	100	144,000

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
08/24/2010 10:40	CST	95,400	143	100	36,900	—	—	—	—
09/13/2010 11:00	CST	85,000	88	100	20,100	85,000	215	99	49,000
09/30/2010 10:20	CST	77,000	70	100	14,500	77,000	206	99	43,000
10/06/2010 10:40	CST	84,000	133	100	30,200	84,000	247	100	56,000
02/28/2011 11:20	CST	95,700	93	97	24,000	95,700	516	100	133,000
03/10/2011 11:00	CST	174,000	607	86	285,000	174,000	689	88	342,000
04/26/2011 11:40	CST	189,000	150	72	76,500	189,000	237	84	121,000
05/05/2011 11:15	CST	224,000	199	66	121,000	224,000	271	76	164,000
05/19/2011 09:40	CST	377,000	265	59	270,000	377,000	313	67	319,000
05/24/2011 10:40	CST	459,000	244	56	303,000	459,000	289	63	358,000
06/01/2011 12:01	CDT	478,000	247	35	319,000	478,000	299	47	386,000
06/15/2011 10:45	CST	301,000	161	38	131,000	301,000	223	57	182,000
06/29/2011 12:00	CST	188,000	119	95	60,400	188,000	180	98	91,000
07/13/2011 12:30	CST	154,000	136	98	56,500	154,000	195	99	81,000
08/24/2011 10:30	CDT	81,000	72	95	15,800	81,000	197	100	43,000
10/04/2011 09:40	CDT	58,800	40	87	6,310	59,000	186	99	30,000
11/02/2011 11:20	CDT	61,500	39	98	6,400	61,500	121	100	20,100
01/25/2012 10:30	CST	121,000	61	96	19,800	120,000	133	100	43,000
02/08/2012 14:00	CST	185,000	234	87	117,000	185,000	279	90	139,000
03/19/2012 13:00	CST	159,000	168	94	71,900	159,000	218	97	93,500
04/18/2012 12:00	CDT	150,000	101	98	40,700	150,000	155	100	62,800
05/03/2012 10:00	CDT	83,200	44	100	9,850	83,200	112	100	25,300
06/06/2012 10:00	CDT	48,700	25	100	3,310	48,700	101	100	13,200
06/14/2012 12:00	CDT	67,100	28	97	4,990	67,100	82	99	14,800
07/24/2012 10:30	CDT	30,400	33	99	2,680	30,400	98	100	8,050
08/21/2012 09:45	CDT	61,900	26	98	4,290	61,900	84	100	14,000
09/27/2012 10:20	CDT	44,500	45	89	5,450	44,500	122	96	14,600
10/11/2012 13:20	CDT	45,400	51	99	6,260	45,400	118	99	14,500
03/04/2013 10:30	CST	125,000	111	98	37,400	125,000	185	99	62,700
03/21/2013 10:20	CDT	137,000	116	94	43,000	137,000	272	99	101,000
04/04/2013 10:30	CDT	168,000	147	88	66,500	168,000	243	94	110,000
04/17/2013 10:30	CDT	151,000	112	98	45,600	151,000	200	100	82,000
05/15/2013 10:00	CDT	209,000	149	65	84,000	209,000	210	76	119,000

Table 4–7. Corrected and original results for instantaneous discharge, suspended-sediment concentration, suspended-sediment percent smaller than 0.0625 millimeter, and suspended-sediment discharge for water samples collected from the Lower Atchafalaya River at Morgan City, Louisiana (U.S. Geological Survey station 07381600).—Continued

[Discharge data were supplied by the U.S. Geological Survey. The five-digit "pcode" below each constituent name uniquely identifies that constituent in the U.S. Geological Survey National Water Information System (NWIS) at http://waterdata.usgs.gov/nwis. Suspended sediment smaller than 0.0625 millimeter (p70331) is equivalent to "percent fines" as used in the body of the report. Results denoted as "—" were not available in the original dataset or could not be corrected because of a lack of metadata. EDT, eastern daylight time; EST, eastern standard time; CDT, central daylight time; CST, central standard time]

Sample date and time (month/day/year hour:minutes)	Time datum	Corrected results				Original results			
		Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)	Discharge, instantaneous (cubic feet per second)	Suspended-sediment concentration (milligrams per liter)	Suspended sediment smaller than 0.0625 millimeter (percent)	Suspended-sediment discharge (short tons per day)
		p00061	p80154	p70331	p80155	p00061	p80154	p70331	p80155
07/02/2013 10:30	CDT	180,000	141	84	68,600	180,000	282	93	137,000
07/11/2013 10:20	CDT	139,000	114	97	42,800	139,000	263	100	99,000
08/21/2013 11:10	CDT	102,000	146	99	40,100	102,000	272	100	75,000
09/25/2013 10:00	CDT	67,900	38	100	6,940	67,000	93	99	17,000
11/19/2013 10:40	CST	76,800	69	95	14,200	—	—	—	—
01/08/2014 11:10	CST	160,000	219	88	94,800	—	—	—	—
03/12/2014 11:00	CDT	152,000	170	86	69,800	—	—	—	—
03/27/2014 10:15	CDT	134,000	89	94	32,300	—	—	—	—
04/09/2014 10:30	CDT	138,000	252	99	93,800	—	—	—	—
04/30/2014 10:30	CDT	178,000	143	78	68,900	—	—	—	—
06/26/2014 11:30	CDT	138,000	284	99	106,000	—	—	—	—
07/29/2014 10:30	CDT	121,000	136	99	44,400	—	—	—	—
08/14/2014 11:00	CDT	79,400	58	97	12,400	—	—	—	—
08/20/2014 13:30	CDT	61,800	42	95	7,070	—	—	—	—
09/10/2014 10:10	CDT	75,000	90	99	18,200	—	—	—	—
10/21/2014 15:00	CDT	96,100	146	98	37,900	—	—	—	—
11/24/2014 11:00	CST	90,300	73	100	17,900	—	—	—	—
01/06/2015 11:40	CST	122,000	161	95	53,000	—	—	—	—
02/10/2015 10:40	CST	75,100	42	100	8,450	—	—	—	—

[1]Due to a data-entry error, the original result for suspended-sediment discharge on 07/02/1996 should have been reported as 146,000 short tons per day.

Reference Cited

Norton, K.K., Olsen, L.D., Baumann, T.E., Simmons, L.B., Clark, A.P., Demcheck, D.K., and Johnson, M., 2019, Revised data and supporting information for seven sites located on the lower Mississippi and Atchafalaya Rivers sampled as part of a cooperative sediment program with the U.S. Army Corps of Engineers, October 1989 through February 2015: U.S. Geological Survey data release, https://doi.org/10.5066/F7K936GW.

For more information about this publication, contact
Director, Lower Mississippi-Gulf Water Science Center
U.S. Geological Survey
640 Grassmere Park Drive
Nashville, TN 37211

For additional information visit
https://www.usgs.gov/centers/lmg-water

Publishing support provided by
Lafayette Publishing Service Center

Norton and others—**Revisions to Suspended-Sediment and Discharge Data, Mississippi-Atchafalaya River Basin, 1989–2015**—SIR 2018–5147

ISBN 978-1-4113-4290-3

ISSN 2328-031X (print)
ISSN 2328-0328 (online)
https://doi.org/10.3133/sir20185147

Printed on recycled paper