DYE TRACER SURVEY OF THE GREENUP POOL OF THE OHIO RIVER FOR SPILL MODEL VERIFICATION

Part of a Partnership Between the U. S. Army Corps of Engineers and ORSANCO to Conduct an Ohio River Water Supply Study

Submitted by: The Ohio River Valley Water Sanitation Commission
Cincinnati, Ohio

Submitted to: U.S. Army Corps of Engineers - Huntington District
Huntington, WV

August 1997

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

In August 1996, the Ohio River Valley Water Sanitation Commission conducted a dye tracer survey of the Greenup Pool of the Ohio River as part of a partnership with the United States Army Corps of Engineers to conduct an Ohio River Water Supply Study. The purpose of the project was to verify ORSANCO's Ohio River spill model which is used to prediction travel time and resulting concentrations resulting from spills and accidental discharges to the Ohio River. Accurate predictions of spill movement are critical for drinking water utility managers to make appropriate decisions for the protection of public health. Predictive water quality models must be verified with actual data to develop and quantify a level of confidence. The dye tracer survey provides such information for the Greenup Pool of the Ohio River under a particular flow regime. The Greenup Pool of the Ohio River is 61 miles long extending from thirty miles upstream of Huntington, WV to ten miles upstream of Portsmouth, OH. Four water utilities reside within the pool which borders the states of Kentucky, Ohio, and West Virginia.

One-hundred pounds of rhodamine WT dye was injected in to the Ohio River just downstream of RC Byrd L&D. The dye cloud was tracked with a fluorometer over the next four days to the downstream boundary of the Greenup Pool. River flows during the survey ranged from sixty percent to 140 percent of long-term average August flows.

The Commission's spill model utilizes the Corps' FLOWSED reservoir flow model in conjunction with U.S. EPA's WASP4 water quality model set up for the Ohio River. Additional model inputs include spill time, location, duration and mass. Model output includes concentration versus time and location.

Corps' FLOWSED predicted flows agreed better with measured flows from a U.S. Geological Survey gage station at Greenup L&D than did the National Weather Service predicted flows. National Weather Service predicted velocities agreed extremely well with measured velocities of the dye cloud. Velocities decreased consistently through the pool in a downstream direction as anticipated. Measured velocities ranged from 0.6 to 1.1 MPH during the survey. Travel time through the Greenup Pool was approximately four days.

The dye cloud plume increased in length from the injection point until reaching the Guyandotte River (from 0.4 to 10 mi.), after which it decreased in length (to 7 mi.). This may be caused by large plume tails with concentrations below detectable levels.

The model predicted travel times and concentration of the dye cloud peak very well. However, the model predicted a larger plume than was observed in all cases. The leading edge arrival time was predicted earlier than actual, and the trailing edge arrival later than actual. At mid-way through the pool, only 14 percent of the dye mass was measured by fluorometry, while the model estimated 150 percent of the actual dye mass injected. The primary error associated with model overestimates is probably numerical dispersion. The results of this study will be invaluable for future spill modeling efforts in the Greenup Pool, as well as having general application to all Ohio River spill modeling efforts.

Results of this study will be used to qualify future spill modeling applications. In conjunction with additional dye tracer surveys to be conducted in the Greenup Pool in FY98, the accuracy of spill model results under various flow conditions will be quantified.

INTRODUCTION

In August 1996 the Ohio River Valley Water Sanitation Commission (ORSANCO) conducted a dye tracer survey of the Greenup Pool of the Ohio River as part of a U.S. Army Corps of Engineers' (USACOE) Ohio River Water Supply Study. ORSANCO acted as contractor to the USACOE (Award No. DACW69-96-R-0036) to complete this portion of the study. The Ohio River Water Supply Study was authorized by the 1996 Energy and Water Appropriations Act, which directed the Corps to undertake a study to assess the water quality, biological, and ecological aspects of the Ohio River Basin and develop such methodologies as may be necessary to make adequate improvements. The study is a joint effort of the Huntington, Louisville, and Pittsburgh Districts, in collaboration with the Ohio River Division, and partnering with the Ohio River Valley Water Sanitation Commission. The Ohio River Water Supply Study focuses on the Ohio River Corridor including the main stem and lower reaches of selected major tributaries. This report addresses Task 4 of the Scope of Services, to conduct time of travel studies, and fulfills the deliverable requirement of a letter report describing the results of the dye tests for ORSANCO's time-of-travel model calibration.

There are twenty-nine water utilities, serving nearly three million people, which utilize the Ohio River as a source for drinking water after treatment. Source water protection is therefore vital. Since accidental spills and discharges is one of the greatest threats to Ohio River water quality, a capability to make advanced estimate of impacts from spills is essential. ORSANCO assumes a lead role in predicting the movement of Ohio River spills when necessary. This is accomplished through the application of a computer model to predict spill movement in terms of travel time and resulting concentration, as well as through actual monitoring, in an effort to provide water utilities with adequate information. The accuracy of predictive water quality models can be quantified by comparison with actual data on the movement of spills. This can be accomplished through dye tracer surveys which allows the movement of a spill to be tracked in terms of travel time and resulting concentration. The information is used to qualify results of the predictive model.

Purpose

The purpose of this dye tracer study is to quantify the accuracy of ORSANCO's time-of-travel model for the Greenup Pool of the Ohio River under the flow regime occurring during the survey.

Objectives

Specific project objectives, all successfully achieved, necessary to evaluate the accuracy of ORSANCO's spill model are as follows:

1) Measurement of the time-of-travel of the leading edge, peak concentration, and trailing edge of a dye cloud through the Greenup Pool under a certain flow regime, and comparison to the spill model results.
2) Measurement of dye concentrations at various points throughout the dye cloud and comparison to the spill model results.
3) Estimation of longitudinal dispersion of the dye cloud.
4) Estimation of percent recovery of the dye and estimation of the measured dye mass to the predicted mass.

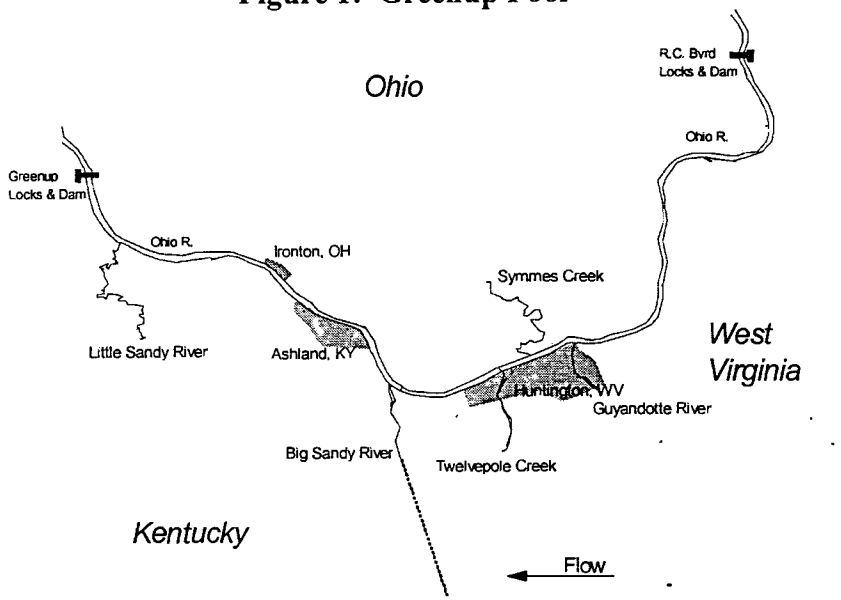
DESCRIPTION OF STUDY

The dye tracer survey was conducted in the Greenup Pool of the Ohio River from August 19-23, 1996.

Study Area

The Greenup Pool of the Ohio River is 61.8 miles long, beginning at RC Byrd L&D at Ohio River mile (ORM) 279.2, and ending at Greenup L&D at ORM 341.0 (Figure 1). The pool extends into portions of three states, each having a metropolitan area including Huntington, WV, Ashland, KY, and Ironton, OH. There are four drinking water intakes utilizing the Ohio River as a source including Huntington (ORM 304.2 and 306.9), Ashland (ORM 319.7), Ironton (ORM 327.0) and Russell, KY (ORM 327.5).

Figure 1: Greenup Pool



Huntington, WV is located midway through the pool and drains an area of 55,900 square miles Greenup L&D is the lower boundary of the Greenup Pool and drains an area of 62,000 square miles The pool has an average depth of 26 feet, an average width of 1111 feet, and an average bottom slope of 0.4 ft. per mile. Selected tributaries entering the Ohio River in the Greenup Pool are listed in table 1 with corresponding stream length and drainage area.

Table 1: Selected Tributaries

	State	ORM of Confluence	Length, mi.	Drainage Area, sq. mi.
Guyandotte R.	WV	305.2	66	1670
Symmes Cr.	OH	308.7	70	356
Twelvepole Cr.	WV	313.2	not available	440
Big Sandy R.	WV-KY	317.1	27	4280
Little Sandy R.	KY	336.4	not available	724

Stream Flows

Three sources of stream flow data are available for the Ohio River and its tributaries. The U. S. Geological Survey (USGS) operates a network of gaging stations, one of which is located in the study area at Greenup L&D (ORM 341.5). Gaging stations generate measured flows on a daily basis. The National Weather Service (NWS) utilizes a model to predict flows at various forecast points within the study area. The USACOE uses a reservoir model called FLOWSED to predict flows at numerous locations within the study area, and at hundreds of other points throughout the Ohio River Basin. Additionally, ORSANCO's spill model uses the FLOWSED model results in its Ohio River spill model.

Table 2 presents National Weather Service (NWS) flow and velocity predicted data, FLOWSED flow and stage predicted data, and USGS gage station measured flow data, for the upstream and downstream boundaries and midpoint of the Greenup Pool, over the period of the dye survey (also data for one day before and after the survey). As can be seen from the table, the NWS and FLOWSED data varied substantially over the latter portion of the survey. Figure 2 presents flows from the three data sources at Greenup L&D for the survey period. The FLOWSED data appears to agree better with the measured USGS gage data at Greenup L&D which can be reasonably assumed to be more accurate. Flows during the survey were generally greater than the long-term August monthly average, but usually not by more than 50 percent. Flows were generally declining over the survey.

Figure 2: Flows at Greenup Lock & Dam

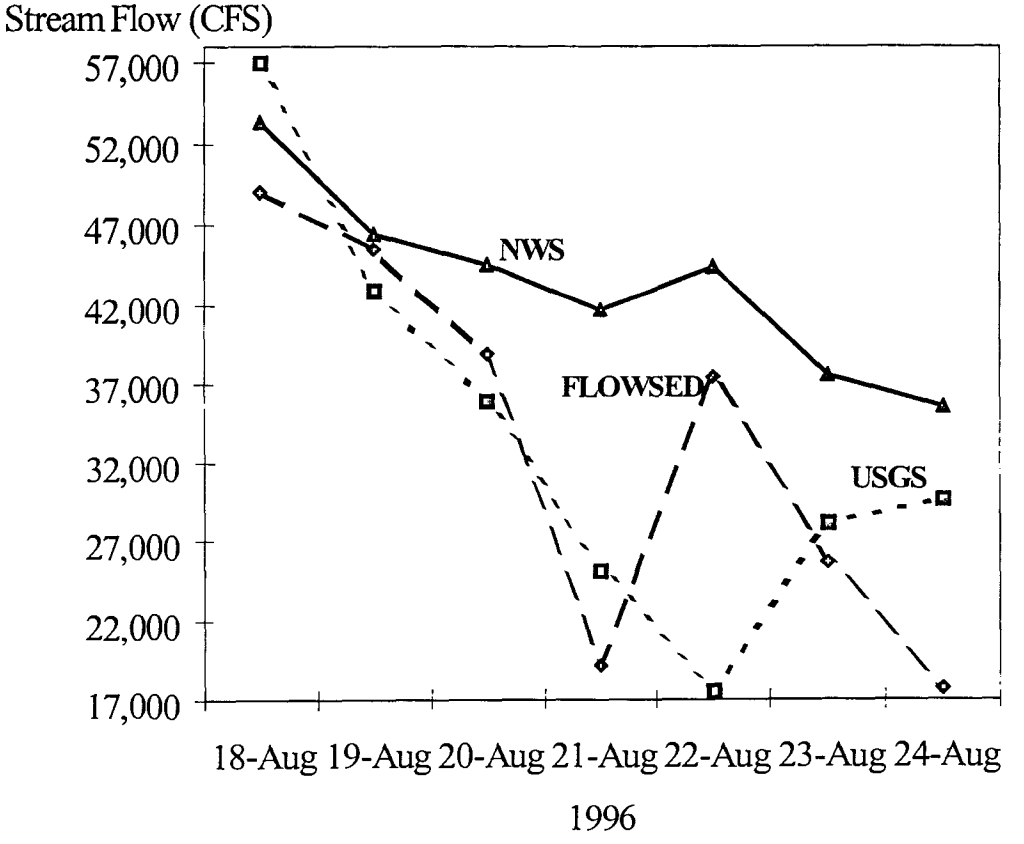


Table 2: Ohio River Flows August 18th - August 24th, 1996

R.C. BYRD (ORM 279.2)

Date	NWS Flow (CFS)	Flowsed Flow (CFS)	NWS Velocity (MPH)	Stage (Ft.)	% Long Term Monthly AVG. for August *	% 7day 10yr Low Flow (CFS) *
08/18/96	48,100	47,665.82	0.95	16.1	120	523
08/19/96	41,200	39,712.40	0.82	14.4	100	435
08/20/96	39,500	31,873.04	0.79	13.4	80	349
08/21/96	39,500	21,051.99	0.79	13.4	53	231
08/22/96	40,300	31,416.75	0.81	14.4	79	344
08/23/96	33,600	28,184.92	0.67	13.4	71	309
08/24/96	32,100	15,403.56	0.64	12.6	39	169

HUNTINGTON (ORM 311.4)

Date	NWS Flow (CFS)	Flowsed Flow (CFS)	NWS Velocity (MPH)	Stage (Ft.)	% Long Term Monthly AVG. for August *	% 7day 10yr Low Flow (CFS) *
08/18/96	50,100	50,280.20	0.98	26.6	153	541
08/19/96	43,400	42,589.14	0.86	26	129	458
08/20/96	41,500	36,429.11	0.83	25.4	111	392
08/21/96	40,100	18,895.16	0.8	25.7	57	203
08/22/96	41,900	33,880.55	0.84	26.4	103	364
08/23/96	34,900	25,548.68	0.7	25.5	78	275
08/24/96	33,200	18,040.77	0.66	25.6	55	194

GREENUP (ORM 341.2)

Date	NWS Flow (CFS)	Flowsed Flow (CFS)	USGS Flow (CFS)	NWS Velocity (MPH)	Stage (Ft.)	% Long Term Monthly AVG. for August	% 7day 10yr Low Flow (CFS)
08/18/96	53,400	49,017.90	57000	0.82	16.5	149	490
08/19/96	46,500	45,525.21	42900	0.72	15.1	138	455
08/20/96	44,500	38,883.83	35900	0.68	13.9	118	389
08/21/96	41,700	19,179.35	25200	0.64	12.4	58	192
08/22/96	44,400	37,361.80	17600	0.68	13.9	113	374
08/23/96	37,500	25,748.11	28200	0.58	14.4	78	257
08/24/96	35,500	17,655.71	29600	0.55	12.4	54	177

*Flowsed data used for % Long-term monthly & % Low flows, except for Greenup where measured USGS gage data is used.

Table 3 contains FLOWSED flow data for all Ohio River nodes used by ORSANCO's spill model. Figure 3 presents that data for the first, third and fifth day of the dye survey. The Guyandotte and Big Sandy Rivers' influences on Ohio River flows can be seen from the graph. It is interesting that FLOWSED flow data shows a declining flow in a downstream direction during several days of the survey. While this is possible, substantial flow contributions from the Guyandotte and Big Sandy Rivers make it unlikely.

Table 3: Flowsed Flows & Tributary River Flows for August 18th - August 24th, 1996

			Flow (CFS)						
River	Node #	River Mile	8/18/96	8/19/96	8/20/96	8/21/96	8/22/96	8/23/96	8/24/96
Ohio	90	279.4	47,666	39,712	31,873	21,052	31,417	28,185	15,404
Ohio	91	282.5	48,319	39,858	32,416	20,396	31,562	27,698	16,110
Ohio	92	287	49,060	40,179	33,220	19,861	31,848	27,233	16,859
Ohio	93	291.5	49,421	40,351	33,815	19,314	31,968	26,647	17,220
Ohio	94	298.5	49,553	40,613	34,548	18,705	32,174	25,866	17,440
Ohio	95	303.5	49,402	40,816	34,984	18,351	32,387	25,356	17,450
Ohio	96	304.7	49,341	40,865	35,072	18,274	32,451	25,245	17,441
Guyandotte		* 305.2	997	296	389	514	265	197	263
Ohio	97	305.7	50,462	42,136	35,869	19,001	33,290	25,773	17,913
Ohio	98	311 4	50,280	42,589	36,429	18,895	33,881	25,549	18,041
Ohio	99	313 5	50,093	42,674	36,533	18,779	34,040	25,400	17,988
Ohio	100	316 6	49,759	42,808	36,677	18,596	34,328	25,182	17,886
Big Sandy		* 317 1	2,000	1,900	1,600	1,500	1,800	1,500	1,500
Ohio	101	317.6	51,175	44,799	38,295	19,574	35,650	26,049	18,621
Ohio	102	319.5	51,009	44,854	38,346	19,491	35,794	25,962	18,569
Ohio	103	322.5	50,720	44,941	38,417	19,361	36,040	25,834	18,470
Ohio	104	327	50,271	45,054	38,498	19,192	36,394	25,681	18,290
Ohio	105	332.5	49,638	45,176	38,573	19,018	36,806	25,538	17,975
Ohio	106	335.9	49,477	45,453	38,827	19,176	37,219	25,714	17,971
Little Sandy		* 336.4	57	55	53	51	85	66	55
Ohio	107	336.9	49,430	45,509	38,877	19,203	37,294	25,764	17,958
Ohio	108	340 8	49,018	45,525	38,884	19,179	37,362	25,748	17,656
Ohio	109	341.2	49,018	45,525	38,884	19,179	37,362	25,748	17,656

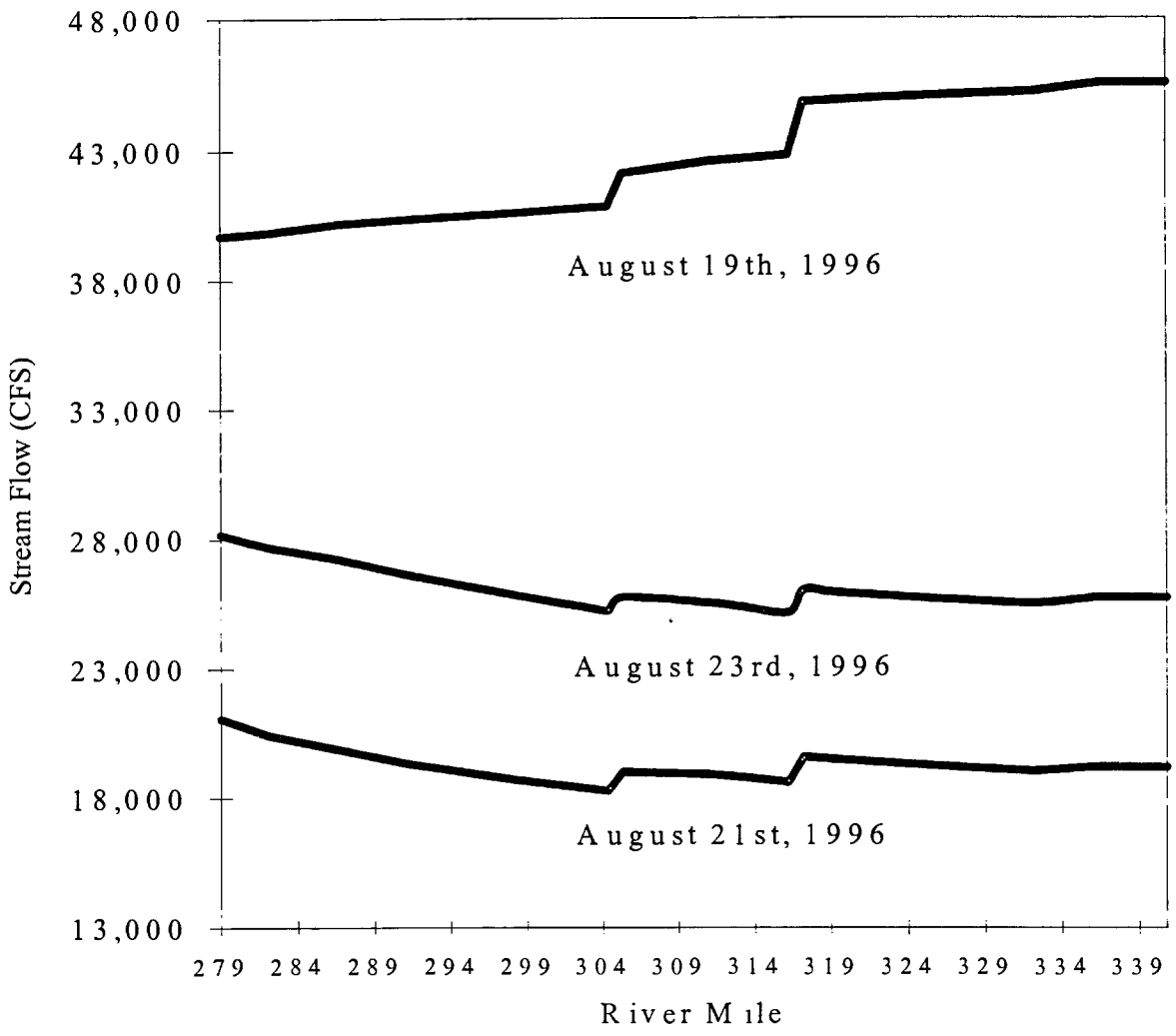
* Ohio River Mile at tributary confluence

Spill Model

A major role of the Commission is to estimate time-of-travel and plume characteristics of significant spills to the Ohio River. During a spill, water utilities want information on its time-of-arrival, contaminant concentrations, and duration of the plume moving past the intake. This information allows water utility managers to determine risk to human health and make decisions regarding water treatment options or intake closing. As a result of these information needs, the Commission has developed a predictive model of spill plume movement customized for the Ohio River (model description in Appendix A). This study represents the first effort to verify/calibrate the model through a designed project.

The Corps' FLOWSED reservoir model provides the hydraulic data input requirements to ORSANCO's Ohio River spill model. U.S. EPA's WASP4 provides the spill routing framework to simulate the time-varying processes of advection, dispersion, mass contaminant loadings, a first-order decay process, and boundary exchanges. WASP4 is a dynamic compartment model, each of which are completely mixed volumes. The Ohio River is represented by the WASP4

Figure 3: FLOWSED Data for the Greenup Pool



model in a one-dimensional fashion with 176 completely mixed compartments. There are eight flow segments representing the Ohio River in WASP4, flows being constant within each segment but varying with time.

Within the 61.8 mile long Greenup Pool, there are 15 WASP4 compartments averaging 4.1 miles per compartment and two flow segments (pages 45-49 of Appendix A). FLOWSED's 20 nodes are used to determine flow within the two flow segments (divided by the Big Sandy River) and volumes for each of the 15 compartments utilizing water surface elevation data. As flows change on a daily basis, spill residence time within each completely mixed compartment is recalculated.

A graphical, menu-driven interface was constructed such that no experience using WASP4 is necessary to operate the model and produce acceptable results. Model input requirements include time, location, quantity and duration of the spill, FLOWSED flow data which is format-

ted for input into WASP, decay rate, and time step. The time step is the period, in days, over which the model performs a calculation. Correct selection of time step is critical to generate good predictions. A time step which is too small (the model makes many calculations over a one day period) will introduce excessive numerical dispersion of the spill plume, and a time step which is too large will result in instability (radical changes in concentration spatially). It is recommended to use the largest time step that results in little or no instability. The displays output in graphical form such that instability is easily identified. Time steps of 80-90 percent of the minimum residence time within a compartment is recommended (time step = 0.1 days is a good starting point).

Dye Tracer Survey

A dye tracer survey of the Greenup Pool of the Ohio River was conducted on August 19-23, 1996. Approximately 51.25 gal. of 20 percent Rhodamine WT dye, (approx. 100 lbs. active ingredient) was injected across the Ohio River just downstream of the RC Byrd L&D (ORM 279.5) between 3:10 p.m. and 3:25 p.m. This quantity of dye was used to avoid concentrations above 2 ug/L instream at any drinking water intake (recommended when stream nitrite levels are above 50 ug/L) while remaining detectable (0.1 ug/L) at the downstream boundary of the pool. The following empirical equation (Kilpatrick, USGS, 1970) was used to determine the Rhodamine WT dosage requirement to meet the above conditions:

$$V_s = 3.4 \times 10^{-4} ((Q_m \times L) / v)^{0.94} \times C_p$$

where

V_s = volume stock rhodamine WT 20-perecnt dye, in liters;
Q_m = max. stream discharge at downstream site of interest, in cfs;
L = distance to downstream site of interest, in miles;
v = mean stream velocity, in fps;
C_p = peak concentration at downstream site of interest, in ug/L.

The equation worked very well for in this study. The dosage was designed to produce a concentration of 1.5 ug/L at the Huntington water intake located 25 miles downstream of the dye tracer injection site and 0.6 ug/L at Greenup L&D located 60 miles downstream. The actual measured concentration was 2.0 ug/L at Huntington and approximately 0.4 ug/L at Greenup. National Weather Service flow and velocity estimates were used as input to the equation.

The dye cloud was tracked over the next five days by boat with a Turner Model 10 fluorometer. Real-time fluorometric monitoring was conducted in addition to collection of water samples which were analyzed later under a controlled environment. Fixed station sampling was conducted along with longitudinal, lateral, and depth sampling. Longitudinal sampling was conducted using a "flow-through cell" on the fluorometer.

RESULTS

All fluorometric data from longitudinal runs is contained in Appendix B. These data reflect Rhodamine dye concentrations measured real-time, at the surface, on-the-fly with a fluorometer set up with a flow-through system.

Plume Travel Time and Dispersion

Table 4 provides a summary of time of travel data based on longitudinal runs. Slight inaccuracies exist in travel times and velocities because the dye was dumped over a fifteen minute period, and the midpoint of that period was used to estimate time the dye was dumped. Leading edge velocities for the left bank would be 0.1 MPH less if the time the dye dump was initiated was used in the calculation. As can be seen from table 4, velocities decrease in a downstream direction as would be expected. Velocities are very consistent between left and right bank data which also would be expected. Leading edge velocities are generally, slightly greater than peak concentration velocities which are slightly greater than trailing edge velocities.

Table 4
Travel Times from Longitudinal Survey Data
LEFT BANK

Leading Edge			Peak Conc.			Trailing Edge		
Date/Time	ORM	Vel., MPH	Date/Time	ORM	Vel., MPH	Date/Time	ORM	Vel., MPH
8/19/97 17 10	282 7	1 7	8/19/97 17 09	281 9	1 3	8/19/97 17 08	281 5	1 1
8/20/97 11 51	301 7	1 1	8/20/97 11 46	298 9	0 9	8/20/97 11 38	294 5	0 7
8/20/97 18 06	306 5	1 0	8/20/97 18 03	304 8	0 9	8/20/97 14 47	296 1	0 7
8/21/97 11 21	314 4	0 8	8/21/97 11 18	313 1	0 8	8/21/97 11 05	306.1	0 6
8/21/97 17 08	316 8	0 7	8/21/97 17 03	314 5	0 7	8/21/97 16 51	308 1	0 6
8/22/97 16 51	327 7	0 7	8/22/97 16 47	325 4	0 6	8/22/97 16 37	320 1	0 6
8/23/97 12 26	338 5	0 6	8/23/97 12 21	336 0	0 6	8/23/97 12 11	330 9	0 6

RIGHT BANK

Leading Edge			Peak Conc.			Trailing Edge		
Date/Time	ORM	Vel., MPH	Date/Time	ORM	Vel., MPH	Date/Time	ORM	Vel., MPH
8/19/97 17 18	282.7	1 6	8/19/97 17 20	281 3	0 9	8/19/97 17 20	281 1	0.8
8/20/97 11 59	301 6	1 1	8/20/97 12 01	300 6	1 0	8/20/97 12 11	295 1	0 7
8/20/97 17 25	306 0	1 0	8/20/97 17 27	304 9	1 0	8/20/97 17 43	296 8	0 7
8/21/97 11 34	313 2	0 8	8/21/97 11 36	312 0	0 7	8/21/97 11 46	306.8	0 6
8/21/97 16 35	315 7	0 7	8/21/97 16 37	314 4	0 7	8/21/97 16 48	309.1	0 6
8/22/97 16 18	328 4	0 7	8/22/97 16 26	324 1	0 6	8/22/97 16 32	321.1	0 6
8/23/97 11 57	338 2	0 6	8/23/97 12 02	335 3	0 6	8/23/97 12 09	331 5	0 6

****Dye Dump Occurred on 8/19/97 at ORM 279.5 from 15:10 to 15:25**

Figure 4 is developed from data in Table 4. Velocities predicted by the National Weather Service agree extremely well with the measured velocities in Table 4. Figure 4 can be used to estimate arrival times for the dye cloud leading edge, peak, and trailing edge at any location within the pool. It can also be used to estimate velocity at any location within the pool. Note that the slopes of the curves for the leading edge and peak increase at approximately 25 miles. This would reflect a lesser rate of velocity change which occurs downstream of the Guyandotte River, a significant flow input to the Ohio River. Another slope change might be expected to occur, but does not, as a result of significant flow input to the Ohio River from the Big Sandy River.

Appendix C contains concentration profiles of each longitudinal run. The dye was initially dumped over a fifteen minute period. With an estimated velocity of 1.7 MPH, the resulting initial plume length would be 0.4 miles. Table 5 contains plume lengths based on longitudinal data. Figures 5 and 6 present, respectively, right and left bank dye cloud profiles for the entire Greenup Pool. Dye cloud lengths increase to a maximum of almost ten miles in the pool segment between the RC Byrd L&D and the Guyandotte River. At an estimated average velocity of approximately 0.9 MPH, the plume would require approximately eleven hours to pass an intake at Huntington. After that point, dye cloud lengths decrease to seven miles at downstream pool

boundary. A possible explanation for the decrease is a very long trailing edge which is below the detection level. Total travel time through the Greenup Pool was approximately four days.

Figure 4. Cumulative Travel Times

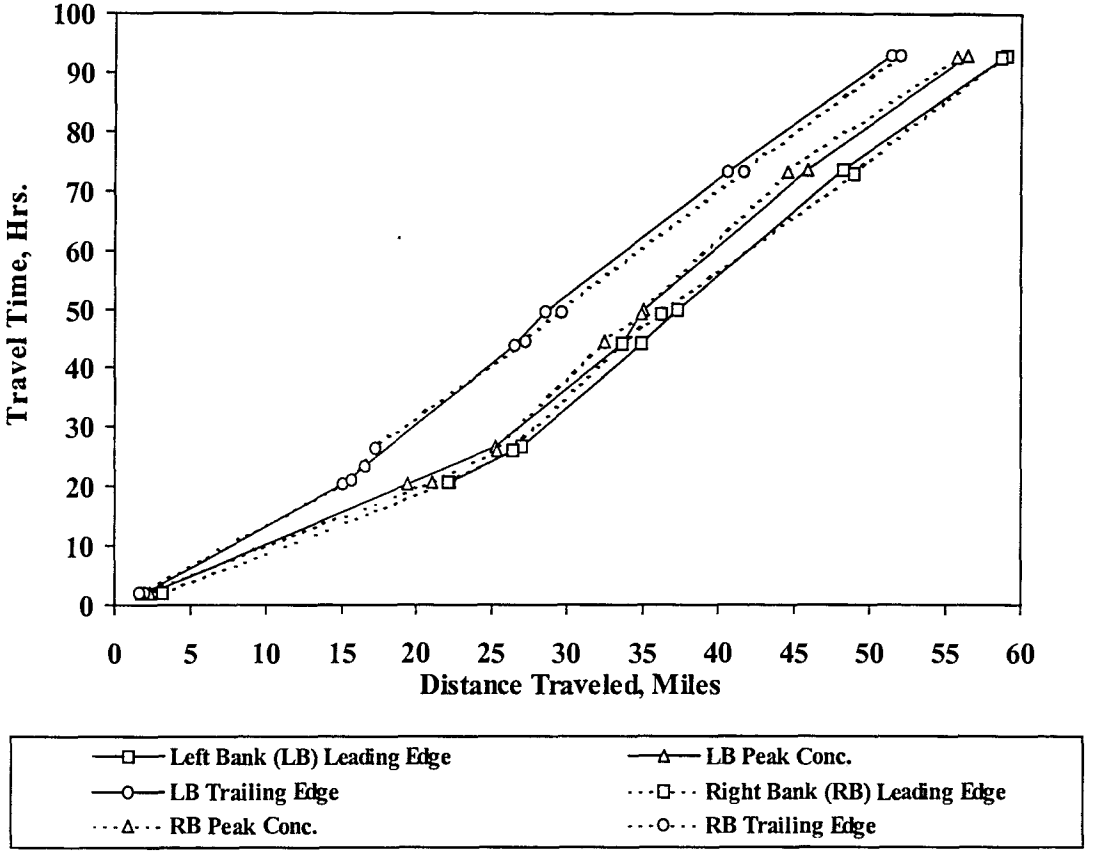


Table 5: Dispersion Data

Approximate Position of Dye Cloud Leading Edge	Approximate Dye Cloud Travel Time, hrs.	Avg. Dye Cloud Length(left & right banks), mi.
ORM 283	2	1.4
ORM 302	21	6.8
ORM 306	27	9.8
ORM 314	44	7.3
ORM 316	50	7.6
ORM 328	73	7.4
ORM 338	93	7.2
ORM 339	95	7.0

Figure 5. Right Bank Longitudinal Data
August 19-23, 1996

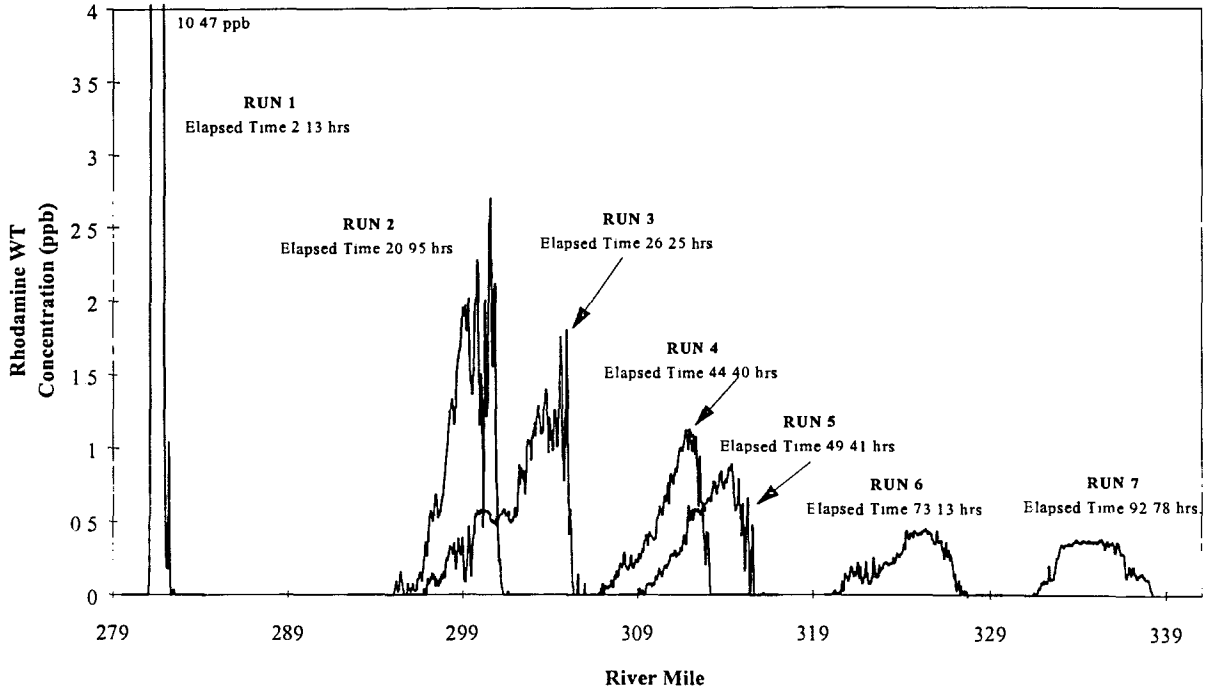
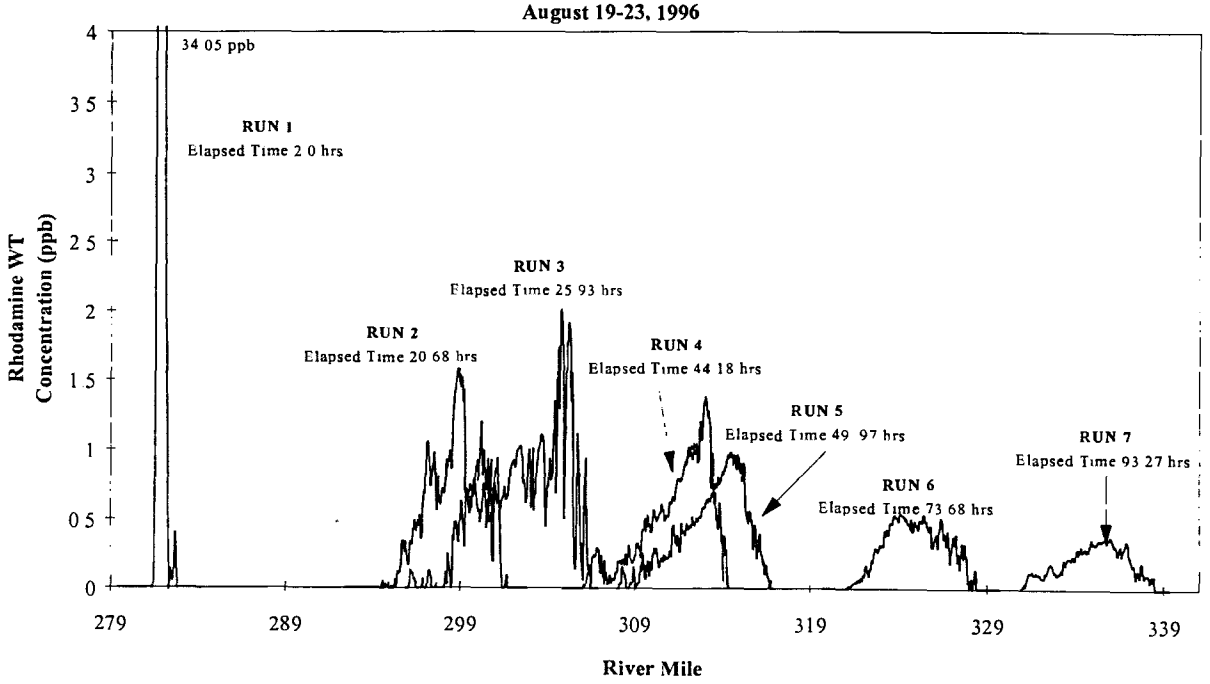


Figure 6. Left Bank Longitudinal Data
August 19-23, 1996



Comparison of Dye Survey to Model Results

Figures 7 through 10 compare dye cloud profiles to ORSANCO's spill model predictions. Spill model inputs used in executing the model for the comparison are as follows:

SPILL MODEL INPUT

Spill Date:	**Aug-19 1996**
Spill Time:	**15:10**
Spill Duration:	**4 hrs.**
Spill Mass:	**100 lbs.**
Decay Rate:	**0 day $^{-1}$**
Time Step:	**0.16 day**
Print Interval:	**0.25 day**

Note that a spill duration of four hours was used, while the dye was actually injected over a 15 minute period. This was necessary due to constraints of the spill model and introduces additional error into the model results. Apparently an error occurs if a spill duration is selected which is less than the time step (described earlier). For example, if a spill duration of 15 minutes was input in conjunction with a time step of 0.16 days (4 hours) and mass of 100 lbs., the model reads that input as 100 lbs. per 15 minute period for four hours (a total of 1600 lbs). As a result, the spill duration selected must be equal to or greater than the time step. Alternately, it was not possible to reduce the time step without violating time step selection protocol (which would be used during a spill scenario), and a smaller time step would introduce increased numerical dispersion.

Results of the model compared to dye tracer data at four locations are presented in Figures 7 through 10. The model predicts dye cloud peak time of travel and concentrations very well. The model tends to predict a larger plume than what is actually measured, probably due to numerical dispersion. The model always predicts the leading edge arrival earlier than actual, and the trailing edge arrival much later. Table 6 summarizes the differences between the dye survey and model results. The table tends to present a picture which appears worse than in actuality, much of which is due to long leading edges and tails which have very low concentrations.

Table 6. Difference Between Spill Model and Dye Survey Results

Dye Cloud Travel Time, hrs.	Dye Cloud Location, ORM	Lead Edge/Trail Edge Velocity, MPH	Leading Edge Arrival Time Differential, hrs.	Trailing Edge Arrival time Differential, hrs.
21	294-302	1.1/0.7	1.8	10
27	290-306	1.0/0.7	5	8.5
50	293-330	0.7/0.6	18.5	25
93	312-365	0.6/0.6	45	32

Figure 7. Comparison of Model Simulation Results to Left Bank Longitudinal Data August 20, 1996

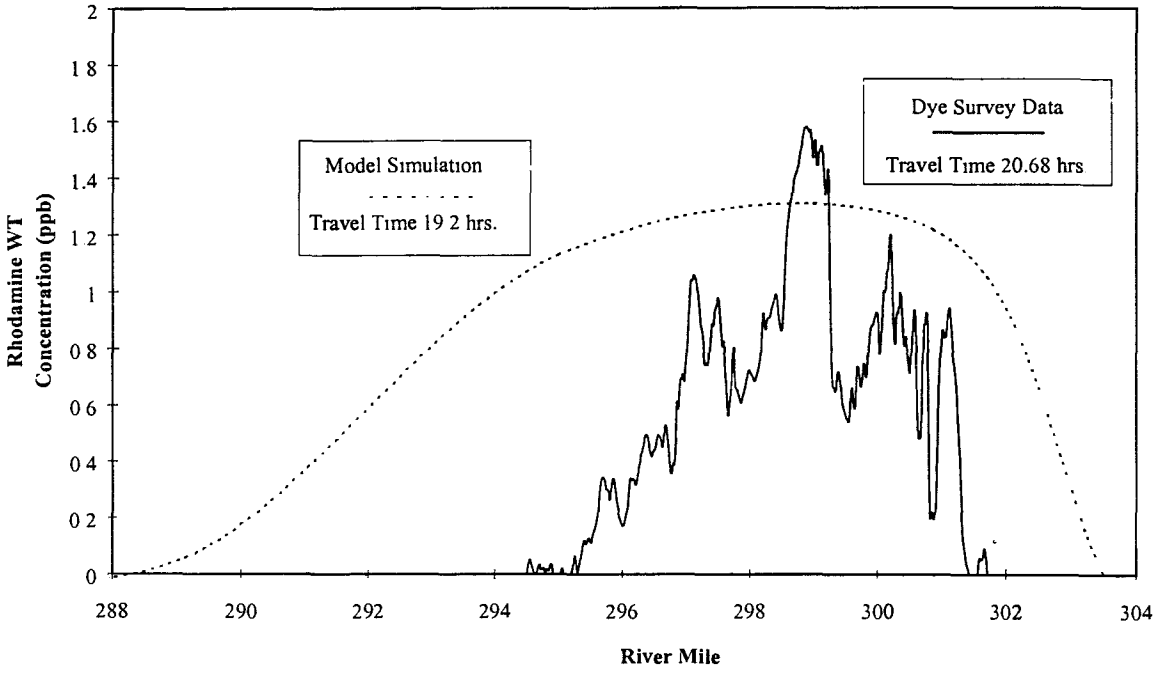


Figure 8. Comparison of Model Simulation Results to Left Bank Longitudinal Data August 20, 1996

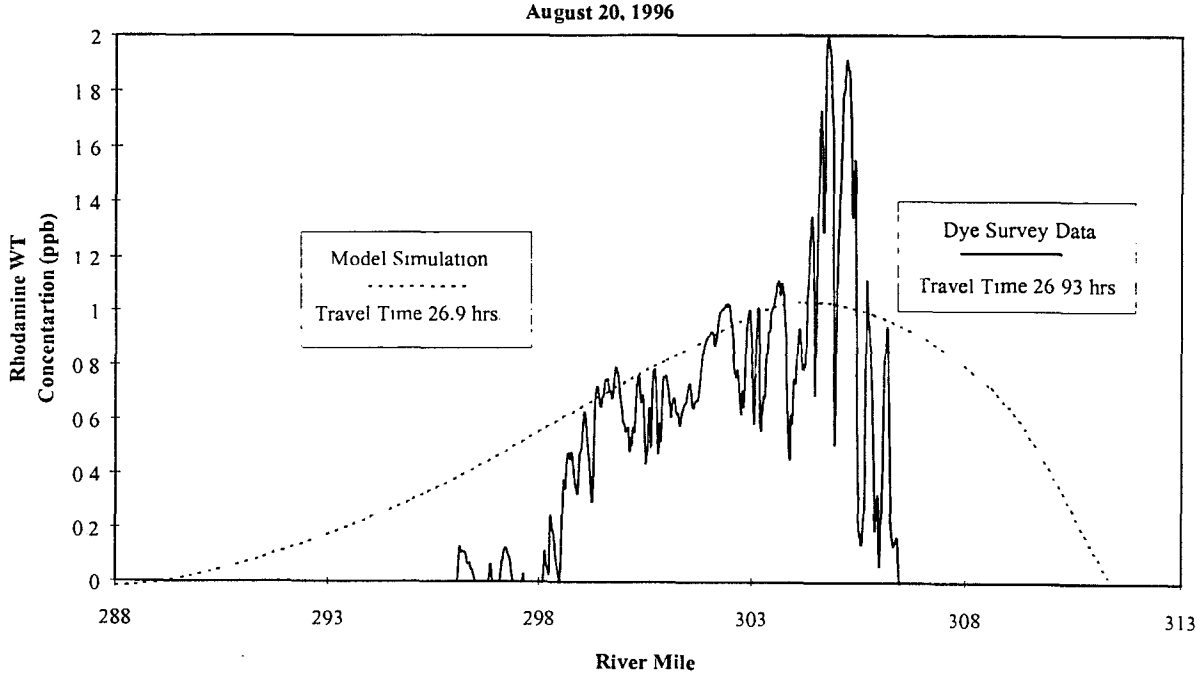


Figure 9. Comparison of Model Simualtion Results to Left Bank Logitudinal Data August 21, 1996

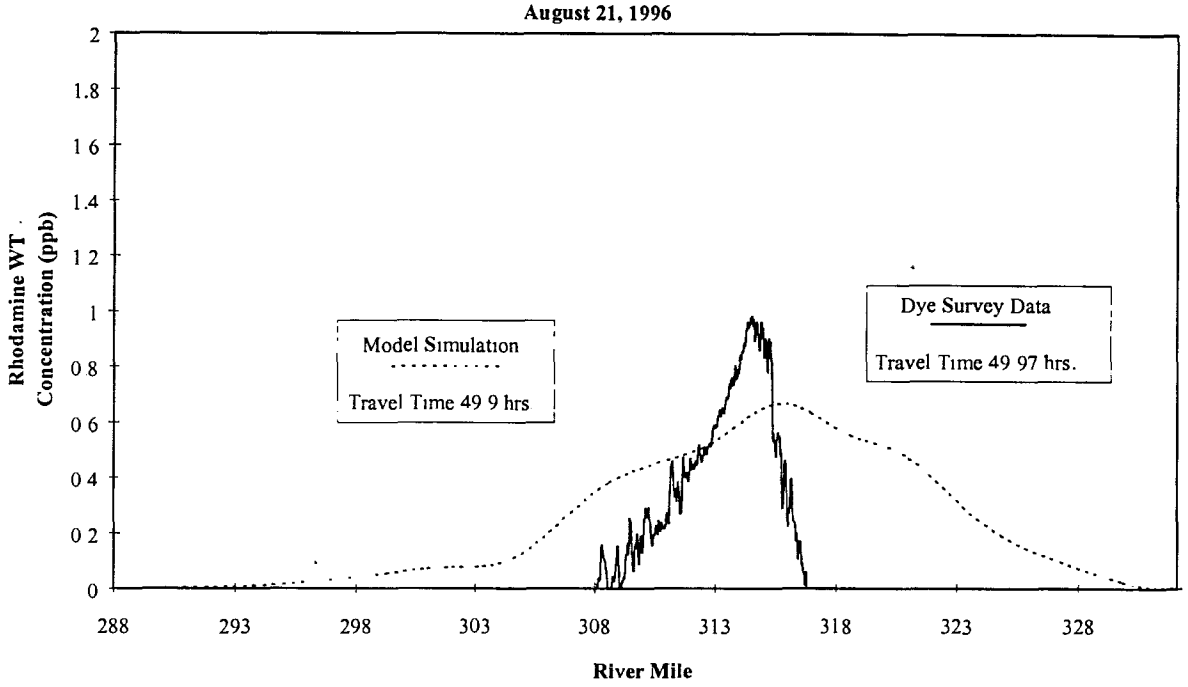


Figure 10. Comparison of Model Simulation Results to Left Bank Longitudinal Data August 23, 1996

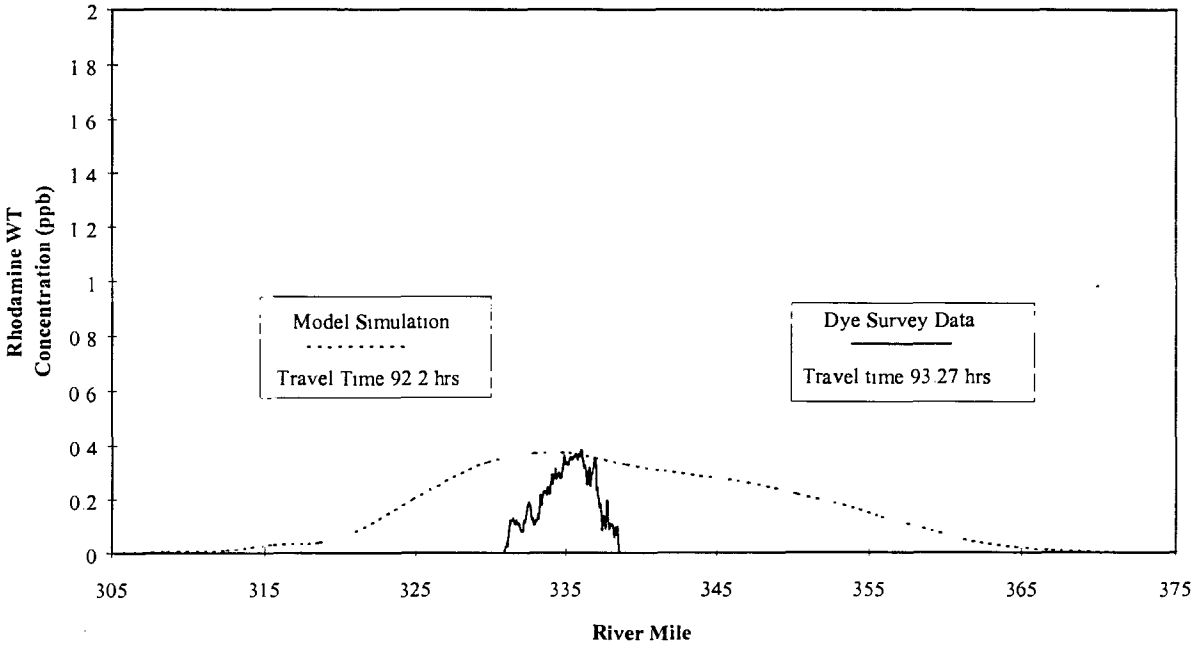
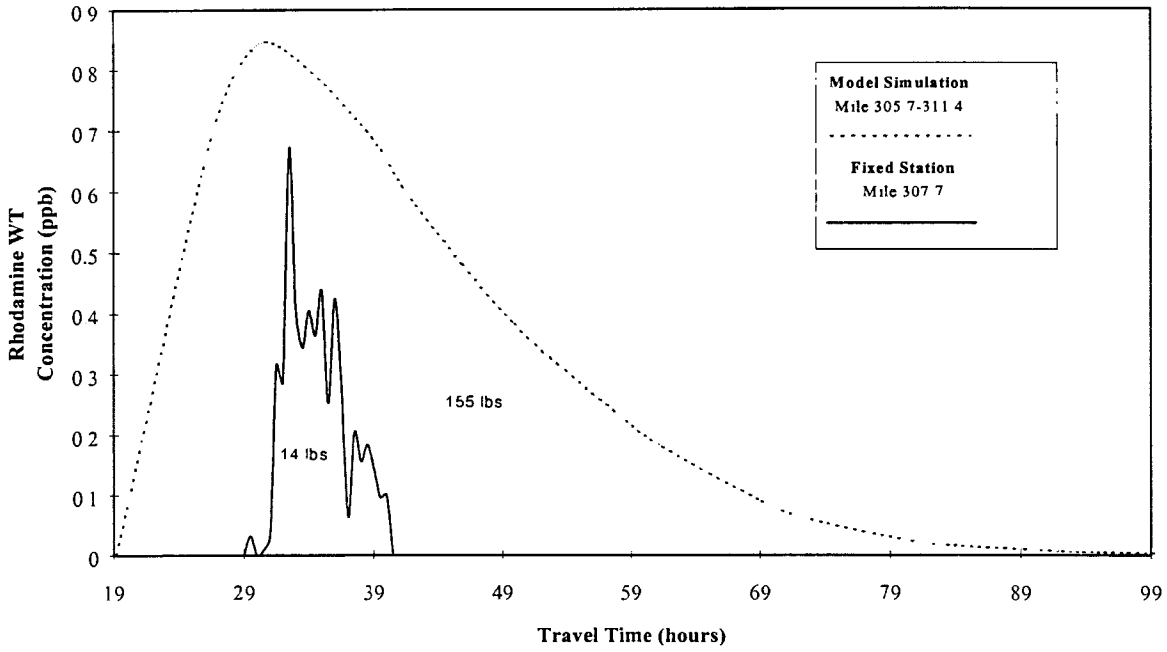


Figure 11 presents the time-varying results of fixed-station monitoring of the dye cloud (data contained in Appendix D) along with corresponding results generated by the spill model. The area under the curves, when multiplied by flow, represents mass of the plume. Estimates of the total mass of rhodamine dye under the curves are approximately 14 pounds and 150 pounds for the dye cloud and spill model results, respectively. One-hundred pounds of rhodamine dye was injected and was the input for the spill model. Causes for the spill model to add mass during the simulation are being evaluated.

Depth-width river cross-section sampling results are included in Appendix E. Results indicate that good lateral and vertical mixing did not occur. Some cross-sections exhibited reasonably consistent concentrations vertically and laterally.

Figure 11. Comparison of Model Simulation Results to Fixed Station Sampling Data



CONCLUSIONS

1) FLOWSED flow data to agree better than NWS flow data with measured flows from the Greenup USGS gage station.
2) Flows were generally slightly above August monthly long-term average flows during the dye tracer survey.
3) FLOWSED flow data predicted decreasing flows in a downstream direction in the Greenup Pool over much of the period. This type of hydraulic regime is uncommon and it is unlikely that the FLOWSED results accurately reflect flow conditions over the survey period.

4) The equation (Kilpatrick, USGS, 1970) used to determine the quantity of rhodamine WT dye needed for the tracer survey performed well.
5) Results of the dye tracer survey indicated velocities ranging from 1.1 to 0.6 MPH over the survey period. Velocities decreased in a downstream direction as anticipated. There was excellent agreement between National Weather Service velocities and those calculated from movement of the dye cloud.
6) Travel time through the Greenup Pool was approximately four days.
7) The dye cloud plume length decreased. The decrease may have resulted from very long plum tails with concentrations below detection.
8) The spill model accurately predicted travel times for the dye cloud peak, as well as concentration.
9) The model predicts early arrival times for the leading edge and late arrival times of the trailing edge.
10) The model over-predicts mass.
11) The duration of spill for input to the model must be set equal to or greater than the model time step.
12) At mid-way through the pool, only 14 percent of the rhodamine dye mass was accounted for.
13) Based on cross-section data, there was incomplete mixing, both vertically and laterally, of the rhodamine dye in the Ohio River.

Appendix A

OHIO RIVER MAINSTEM MODELING

Background

As an interstate water quality management agency, ORSANCO has long had an interest in the impacts of discharges to the mainstem or tributaries on the water quality in the Ohio River. By the early 1970's ORSANCO had developed and routinely were using computer models which simulated the movement and transformation of contaminants in the river. During the 1970's a more advanced model, QUAL II, was applied to the Ohio River by various agencies using data supplied by ORSANCO (Goodrich and Clark, 1984; Dames & Moore, 1975). In recent years, the computer model had been replaced by a series of nomographs based on travel times that was amenable to use during emergency spill situations (ORSANCO, 1988).

Model Selection

One objective of the present study was the selection and application of a water quality model that could be used by ORSANCO in conjunction with the GIS technology being developed in the study. Though the initial application was to be in the prediction of pollutant movement and transformation under emergency spill situations, the model was also required to be robust enough to allow for future expansion for use in studying the cumulative impacts of discharges to the river.

Several prospective models were identified and examined for potential use in the study. Two water quality models evolved as serious candidates for use in the study: EPA's WASP 4 model (Ambrose et al., 1990) and an Oil Spill Model developed for the Corps of Engineers' Cold Regions Research and Engineering Laboratory (Yapa et al., 1990). Though both models had pros and cons associated with them, the greater likelihood of continued support for WASP by EPA and the wider applicability of WASP for future modeling needs led to the selection of that model for use in this study.

WASP requires detailed hydraulic information as input to the model. Generally this information is provided to the model by linking it to a hydraulic model. Two such models were examined for potential use in the study: EPA's DYNHYD4 model (Ambrose et al., 1990) and the Corps of Engineers' FLOWSED model (Johnson, 1982). DYNHYD can provide detailed flow information, at a small time scale, to WASP and the linkages between DYNHYD4 and WASP have been developed and are routinely supported by EPA. However, DYNHYD4 also requires detailed inflow hydrographs from tributaries and is quite difficult and time consuming to apply. FLOWSED was specifically developed by the Corps of Engineers to provide daily flow and stage elevation predictions. It is used on a daily basis by the Corps' Ohio River Division for reservoir operation and

the results of this routine application (5-day forecasts of flow and stage) are available to ORSANCO in electronic form and can be downloaded using a PC and modem at any time. Investigation of the programming requirements to link the output from FLOWSED with WASP indicated that such linkages could be established with relative ease. Since the primary modeling objective in the present study was development of a model that could be used quickly and easily under emergency spill conditions, it was felt that the availability of hydraulic data through the use of FLOWSED by the Corps of Engineers, far outweighed the high operational costs associated the more detailed hydraulic information that could be supplied by DYNHYD4.

Thus the decision was made to utilize EPA's WASP model and to build an interface which would allow the quick and easy use of hydraulic data generated by the Corps of Engineers using their FLOWSED model.

WASP Model

The WASP4 model (Water Quality Simulation Program-4) is an enhancement of the original WASP model (Di Toro et al, 1983). By the end of the project, newer versions of WASP (WASP 5.1) have been released but for continuity purposes, the project has continued with the WASP4 version. WASP4 is a dynamic compartment modeling program for aquatic systems, including both the water column and the underlying benthos. The time varying processes of advection, dispersion, point and diffuse mass loading, and boundary exchange are represented in the program (Ambrose et al., 1990). It has been used widely by EPA and other organizations to model lakes, estuaries and free flowing rivers. EPA's Environmental Research Laboratory in Athens, Georgia continues to enhance the model and provide support.

WASP4 provides a very flexible modeling environment. Within WASP, the aquatic environment is represented as a series of completely mixed compartments. These compartments may be arranged to structure one, two or three dimensional models. Similarly, the modeler may choose from a wide range of kinetic and reactive modules or the modeler may substitute their own modules. Complete details on the theory, structure and use of WASP4 are provided in the EPA documentation (Ambrose et al., 1990). Further details on the application of WASP4 are presented later in this Section.

Ohio River Representation

The WASP4 is a general water quality system with a great deal of flexibility in representing a wide range of aquatic environments. The initial step in using this model (or any other water quality model) is to represent the specific aquatic environment in the model. This includes representing the physical, hydrologic, chemical and biological characteristics of the actual system and the particular pollutant loading patterns being

studied in the model. Each of these areas is discussed below.

Segmentation--

The Ohio River was represented in the WASP model by a series of compartments that were strung together in a one-dimensional chain. For the purposes of emergency spill simulation, lateral movement can generally be ignored (except in relatively near field situations) and vertical variation and movement, with possible interaction with the benthos, was considered to be infeasible. It was the general experience of ORSANCO personnel that the lock and dams on the Ohio River tended to result in relatively complete mixing (both laterally and vertically) throughout the river.

The mainstem was divided into 176 segments (compartments) ranging in length from 2 miles to 10 miles and averaging 5.5 miles in length. A minimum segment length of 2 miles was selected to improve the stability of the numerical scheme in WASP. The upstream and downstream locations of all segments corresponded to locations on the Ohio River where Corps of Engineers' approximate cross sectional information was available and where flow and stage information was reported by FLOWSED. Table 6 contains a listing of segments and the locations of water intakes, dams and tributaries by segment.

A maximum of 60 segments can be simulated by WASP4. Thus, the maximum length of river that can be modeled, at a single time, is approximately 250 miles in the upper portion of the river to 450 miles in the lower portion of the river where there are longer segments.

Within WASP, the volume of the segment is calculated at the start of the simulation and is either assumed to remain constant throughout the run or is linearly adjusted with flow. Neither assumption is totally valid since the first method does not account for changes in water surface elevation while the second method assumes that velocity is directly related to the flow. The EPA support group at the Athens laboratory recommended the use of the first assumption. The volume of the segment is determined by: a) calculating the cross sectional area at the upstream and downstream ends of each segment for the water surface elevation at the time of the spill; 2) averaging these two areas; and 3) multiplying the average cross sectional area by the length of the segment.

TABLE 6
OHIO RIVER SEGMENTATION

SEG. NO.	U/S MILE	D/S MILE	DRINK. WATER INTAKES	DAMS (U/S End)	TRIBUTARIES
1	0.00	2.00			Alleg-Mon
2	2.00	4.00			
3	4.00	6.20	West View		
4	6.20	10.50	Robinson Twp.	Emsworth	
5	10.50	13.20	Moon Twp.		
6	13.20	16.00		Dashields	
7	16.00	21.00			
8	21.00	25.00			
9	25.00	28.50			Beaver R.
10	28.50	31.70			
11	31.70	35.00		Montgomery	
12	35.00	39.00	Midland		
13	39.00	42.50	E.Liverpool		
14	42.50	46.00			
15	46.00	50.50			
16	50.50	54.40			
17	54.40	57.50		New Cumberland	
18	57.50	61.90	Toronto		
19	61.90	67.20	Weirton, Steubenville		
20	67.20	72.20			
21	72.20	78.30			
22	78.30	84.20			
23	84.20	86.50		Pike Island	
24	86.50	90.62	Wheeling		
25	90.62	96.00	Bellaire		
26	96.00	101.62			
27	101.62	107.25			
28	107.25	112.37			
29	112.37	116.75			
30	116.75	120.75			
31	120.75	124.00			
32	124.00	126.40			
33	126.40	129.50		Hannibal	
34	129.50	133.50			
35	133.50	138.50	Sisterville		
36	138.50	143.50			
37	143.50	148.50			
38	148.50	153.00			
39	153.00	157.00			
40	157.00	161.70			
41	161.70	164.00		Willow Island	
42	164.00	168.80			
43	168.80	172.60			
44	172.60	178.00			Muskingum R.
45	178.00	184.10	Parkersburg		
46	184.10	189.00			Little Kanawha
47	189.00	193.50			
48	193.50	199.00			
49	199.00	203.90			Hocking R.
50	203.90	207.50		Belleville	
51	207.50	212.50			
52	212.50	217.50			
53	217.50	223.00			
54	223.00	228.50			
55	228.50	233.50			
56	233.50	237.50			
57	237.50	240.00		Racine	
58	240.00	244.00			

TABLE 6 OHIO RIVER SEGMENTATION (continued)

SEG. NO.	U/S MILE	D/S MILE	DRINK. WATER INTAKES	DAMS (U/S End)	TRIBUTARIES
59	244.00	250.00			
60	250.00	255.00			
61	255.00	260.00			
62	260.00	266.10			
63	266.10	270.50			Kanawha R.
64	270.50	276.00			
65	276.00	279.20			
66	279.20	282.50		Gallipolis	
67	282.50	287.00			
68	287.00	291.50			
69	291.50	298.50			
70	298.50	303.50			
71	303.50	305.70	Huntington		Guyandot R.
72	305.70	311.40	Huntington		
73	311.40	313.50			
74	313.50	317.60			
75	317.60	319.50			Big Sandy R.
76	319.50	322.50	Ashland		
77	322.50	327.00			
78	327.00	332.50	Ironton		
79	332.50	336.90			
80	336.90	341.00			
81	341.00	345.50		Greenup	
82	345.50	348.50			
83	348.50	352.00	Portsmouth		
84	352.00	354.50			
85	354.50	357.00			
86	357.00	360.00			Scioto R.
87	360.00	364.50			
88	364.50	369.50			
89	369.50	374.50			
90	374.50	379.50			
91	379.50	384.50			
92	384.50	390.00			
93	390.00	395.50			
94	395.50	400.50			
95	400.50	405.50			
96	405.50	408.70	Maysville		
97	408.70	412.00			
98	412.00	417.50			
99	417.50	422.50			
100	422.50	427.50			
101	427.50	432.50			
102	432.50	436.20			
103	436.20	438.40		Meldahl	
104	438.40	441.25			
105	441.25	447.00			
106	447.00	453.00			
107	453.00	458.00			
108	458.00	463.90	(Cincinnati, Kenton Co., Newport)		
109	463.90	470.50			Little Miami R.
110	470.50	475.25			Licking R.
111	475.25	483.50			
112	483.50	491.50			
113	491.50	498.55			Great Miami R.
114	498.55	506.55			
115	506.55	514.15			
116	514.15	521.25			
117	521.25	527.50			

TABLE 6 OHIO RIVER SEGMENTATION (continued)

SEG. NO.	U/S MILE	D/S MILE	DRINK. WATER INTAKES	DAMS (U/S End)	TRIBUTARIES
118	527.50	531.60			
119	531.60	535.00		Markland	
120	535.00	542.00			
121	542.00	546.30			
122	546.30	552.15			Kentucky R.
123	552.15	557.80			
124	557.80	561.50			
125	561.50	568.00			
126	568.00	576.00			
127	576.00	584.00			
128	584.00	595.00	Louisville		
129	595.00	603.00	Louisville		
130	603.00	606.80			
131	606.80	610.00	New Albany	McAlpine	
132	610.00	614.15			
133	614.15	623.50			
134	623.50	632.85			Salt River
135	632.85	642.20			
136	642.20	651.55			
137	651.55	660.90			
138	660.90	670.93			
139	670.93	680.97			
140	680.97	691.00			
141	691.00	701.03			
142	701.03	711.07			
143	711.07	716.08			
144	716.08	720.70			
145	720.70	730.33		Cannelton	
146	730.33	739.57			
147	739.57	748.80			
148	748.80	758.03			
149	758.03	767.27			
150	767.27	771.88			
151	771.88	776.10			
152	776.10	780.55		Newburgh	
153	780.55	782.57			
154	782.57	784.80			
155	784.80	794.90	Evansville		Green River
156	794.90	805.20	Henderson		
157	805.20	815.50			
158	815.50	825.80			
159	825.80	836.10	Mt.Vernon		
160	836.10	841.25	Morganfield		
161	841.25	846.00	Uniontown		
162	846.00	848.20		Uniontown	
163	848.20	858.81			Wabash River
164	858.81	868.83			
165	868.83	878.84	Sturgis		
166	878.84	888.86			
167	888.86	898.87	Rosiclaire		
168	898.87	908.89	Golconda		
169	908.89	918.50			
170	918.50	923.12		Smithland	
171	923.12	929.56			Cumberland R.
172	929.56	935.80	Paducah		
173	935.80	938.90			Tennessee R.
174	938.90	949.85		L&D 52	
175	949.85	960.50			
176	960.50	971.15			
177	971.15	979.60	Cairo		

Flow information--

When WASP is used in conjunction with a model such as FLOWSED which provides flow information on a daily basis, then flow is assumed to be spatially constant over long stretches of the river (flow segments). Due to limitations in the number of such flow segments that can be simulated by WASP (maximum of 4 in a single run of the model), flow segments were defined based on only the major tributaries. A list of flow segments and their relationship to tributaries is presented in Table 7. For each flow segment, the average flow is calculated (for each day) by averaging the flow at the upstream and downstream ends of the flow segment.

Within WASP, the flow increments resulting from each tributary are, in effect, modeled separately. Thus, for example, as shown in Figure 12, if there are three major tributaries, then there are four flow segments. This is represented by four "passes" of the model. In the first pass, the entire mainstem is modeled assuming a flow corresponding to the flow in flow segment A. In the second pass, the flow from the most upstream tributary is modeled through flow segments B, C and D. This flow corresponds to the difference in flow between flow segment B and flow segment A. This is repeated in the third and fourth pass for the other two tributaries. It is currently assumed that the flow in the river will always be greater downstream of a tributary. This would be expected to be true in the large majority of cases. However, if a flood wave was moving down the river and had not reached the point where the tributary enters the mainstem, the flow in the mainstem upstream of the tributary could exceed the flow downstream of the tributary.

Dispersion--

Dispersion in the river can be represented in WASP4 by dispersion coefficients. However, additionally, due to the solution technique, numerical dispersion is also introduced causing a pollutant plume to spread out in space and time as it moves down the river. Because of the relatively large numerical dispersion that can be introduced and the lack of actual field data on dispersion that can be gleaned from dye studies, no explicit dispersion was assumed in representing the river. The sensitivity of the model response in terms of numerical dispersion to changes in the model time step were investigated and will be discussed later in the Section.

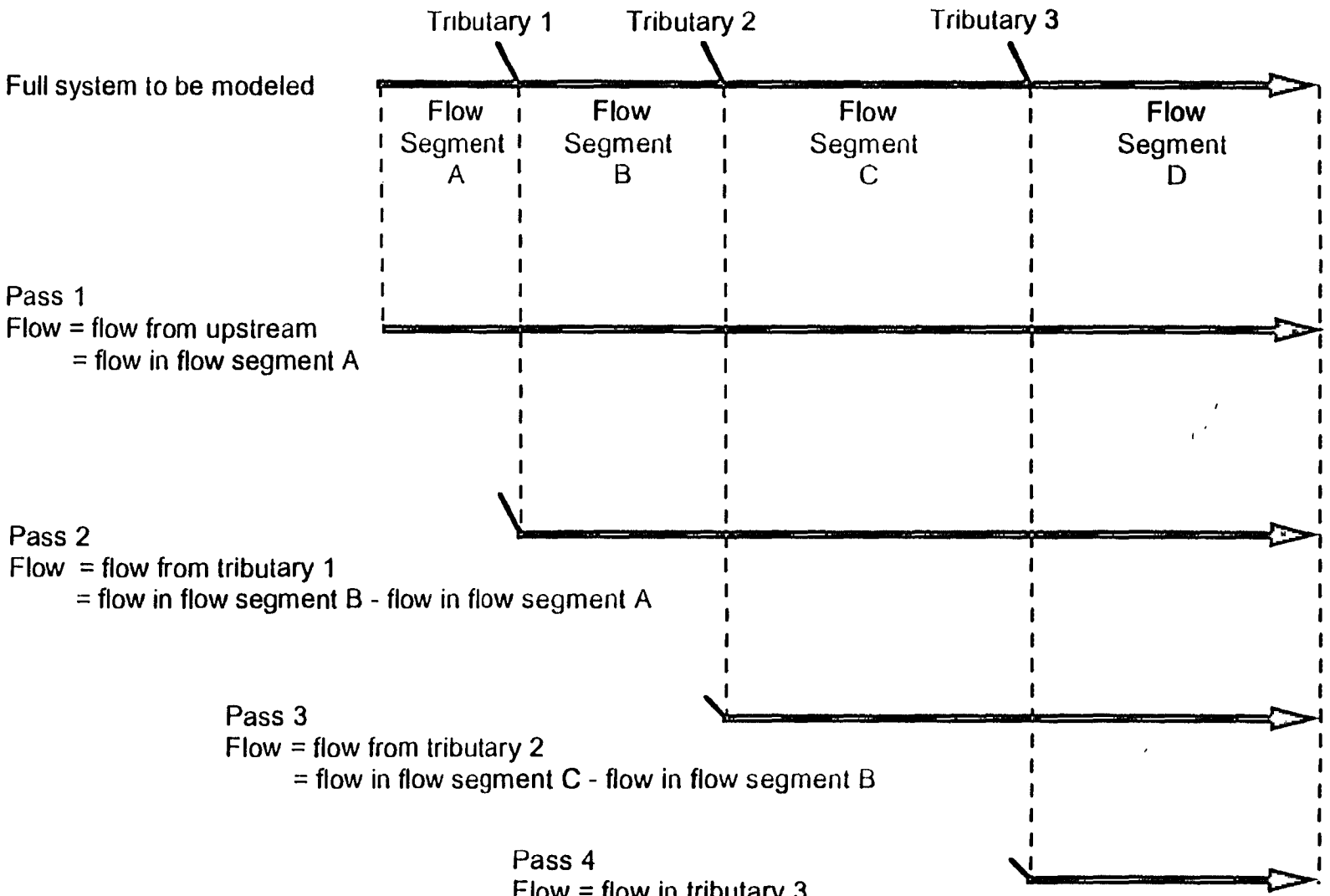
Reaction processes and rates--

WASP4 is capable of representing a wide range of kinetic reactions. For each constituent (pollutant) there may be different processes that occur (e.g. volatilization, bacterial degradation, oxidation, etc.), different pathways such as interaction with the benthos, and multiple rate coefficients for each process and path. Application of such specific kinetic processes is generally very time consuming, data intensive and pollutant, and sometimes, location specific. Such a process does not lend itself well to the prediction of a very wide range of pollutants under emergency spill conditions.

TABLE 7
OHIO RIVER FLOW SEGMENTS

UPSTREAM RIVER MILE	DOWNSTREAM RIVER MILE	UPSTREAM TRIBUTARY
0.00	171.60	ALLEGHENY-MONONGAHELA
172.60	265.10	MUSKINGUM
266.10	316.60	KANAWHA
317.60	490.50	BIG SANDY
491.50	545.30	GREAT MIAMI
546.30	847.60	KENTUCKY
848.20	922.72	WABASH
923.12	979.60	CUMBERLAND

FIGURE 12
CALCULATION OF FLOWS FOR WASP4 FLOW SEGMENTS



An alternative mechanism for representing a wide range of pollutants is the use of a first order decay function of the form:

$$c_t = c_o \exp(-kt) \qquad (7)$$

where c_t is the concentration at time t

c_o is the concentration at time 0

k is the rate coefficient (generally in days^{-1})

Values of k may range from near zero representing conservative substances to values exceeding 100. A value of k of 1.0 means that after 1 day, the concentration of the substance will be only 36.8% of the original concentration. Various publications provide data that may be used to estimate values for k (Mabey et al, 1981; Bowie et al., 1985).

Pollutant loading--

In WASP4, pollutant loadings are specified by segments. Loads may be constant or may vary over time. In using WASP4 as an emergency spill model, only a single load is specified and this load is represented as a pulse of specified duration and rate (pounds). WASP4 is capable of accepting a time history of loadings at single or multiple points though this feature is not used in the emergency spill model.

Model Verification

Verification of a model generally requires detailed field data collected under different hydrologic conditions and pollutant loadings. Alternatively, controlled dye tracer experiments can be used to develop a data set that may be used to calibrate or verify a model. Unfortunately, there is relatively little detailed field data tracing spills on the Ohio River and, due to the high costs of dye studies, no systematic dye studies have been performed. As a result, there is only limited information that can be used to test the validity of WASP4.

One limited data set that is available resulted from a spill of toluene that occurred at river mile 609.4 in the Louisville, Kentucky area on March 10, 1993 at approximately 12:00 PM (noon) CST. This spill was estimated at a total of 470,000 pounds with an estimated duration of approximately 3 hours. Samples were taken on the following day at the Cannelton Dam sampling site and analyzed at the organics data station (ODS) at Evansville, Indiana. The WASP model was applied on March 11, 1993 to give some first cut estimates of the movement and transformation of the plume. Subsequently, the model was applied to study the calibration process and to verify the model results.

Flow in the river at the time of the spill was considered to be moderately high. The flow at the spill

site was approximately 425,000 cfs. As a comparison, average annual flow at that location in the river is 115,000 cfs and average monthly flow for March (the statistically highest flow month) is 250,000 cfs.

Analysis of the toluene concentrations at Cannelton (see Figure 13), led to the following observations:

- the width of the plume remained remarkably narrow during the 33 hour, 110 mile travel between the spill location and Cannelton dam. At Cannelton, the time between the leading edge and the (extrapolated time of the) trailing edge is approximately 13 hours. The temporal width of the plume at a concentration of 50% of the peak concentration at Cannelton is approximately 4 hours.

- The calculated mass of toluene passing Cannelton is approximately 66,000 pounds or around 14% of the estimated total spill.

In applying the WASP4 model, three parameters (duration, time step, and decay) were varied over a reasonable range and the best fit curve at Cannelton was found. Durations of 3 hours (the reported spill duration) and 1.5 hours were studied. Because of the narrow temporal width of the observed plume at Cannelton, the shorter duration of 1.5 hours resulted in a better fit. For the decay coefficient, values of 0.01 per day (essentially conservative) up to 2.5 per day were studied. When a simple mass balance between the reported spill load and the observed mass passing Cannelton is performed and an average travel time of 33 hours is applied, the calculated first order decay rate is 1.43 per day. Though toluene is considered quite volatile, no representative decay rates were found in the literature. A decay rate of 2.0 per day was found to give the best model results.

The third parameter, the WASP model time step, was varied between 0.02 days and 0.08 days. Generally, smaller time steps result in greater numerical dispersion in the model results. At the other end, if the time step is too large, the model will become unstable.

The narrowness of the plume at Cannelton suggests that there is little dispersion in the river under the observed flow conditions. Thus, the logical time step (and the one that gave the best results) was the largest time step that did not lead to model instability. A time step of 0.08 days was selected. In fact, this time step did lead to some instability in the model downstream of Cannelton but appeared to be stable in the area of interest. Instability is easily recognized by large fluctuations in concentrations between segments and sometimes, increasing concentrations as you move downstream.

FIGURE 13
OBSERVED AND MODELED TOLUENE CONCENTRATIONS IN THE OHIO RIVER

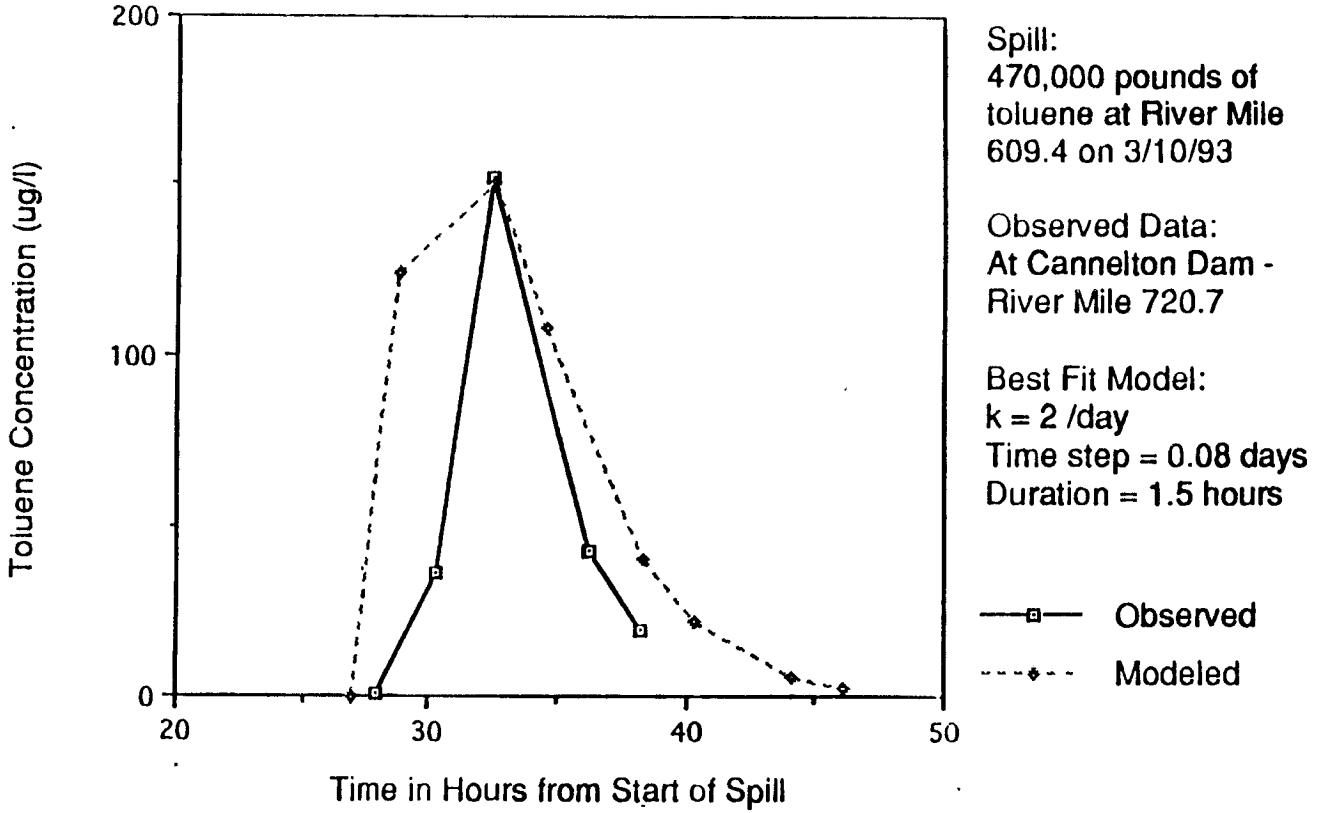
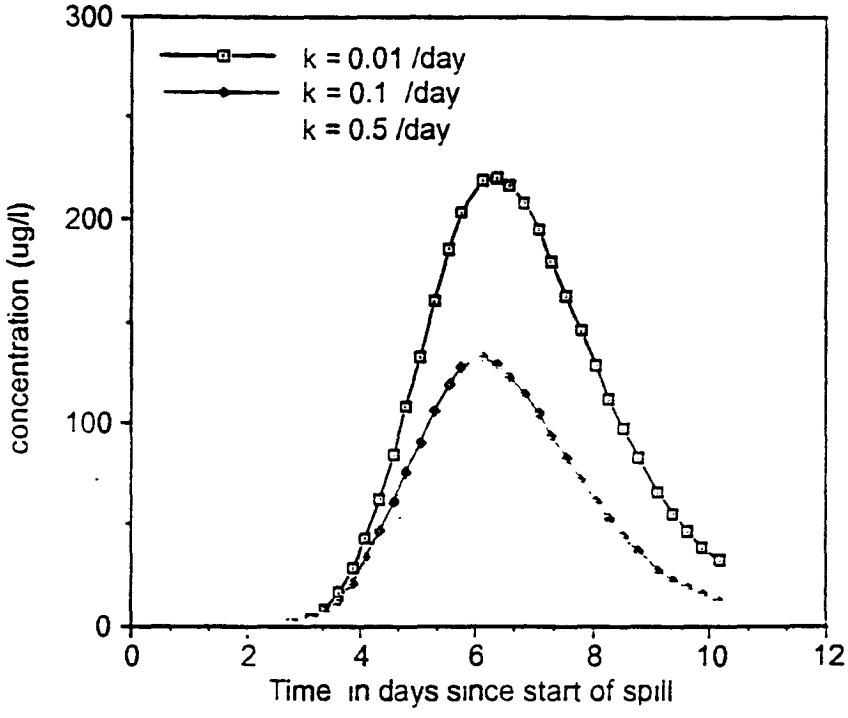


FIGURE 15: WASP SENSITIVITY UNDER LOW FLOW CONDITIONS

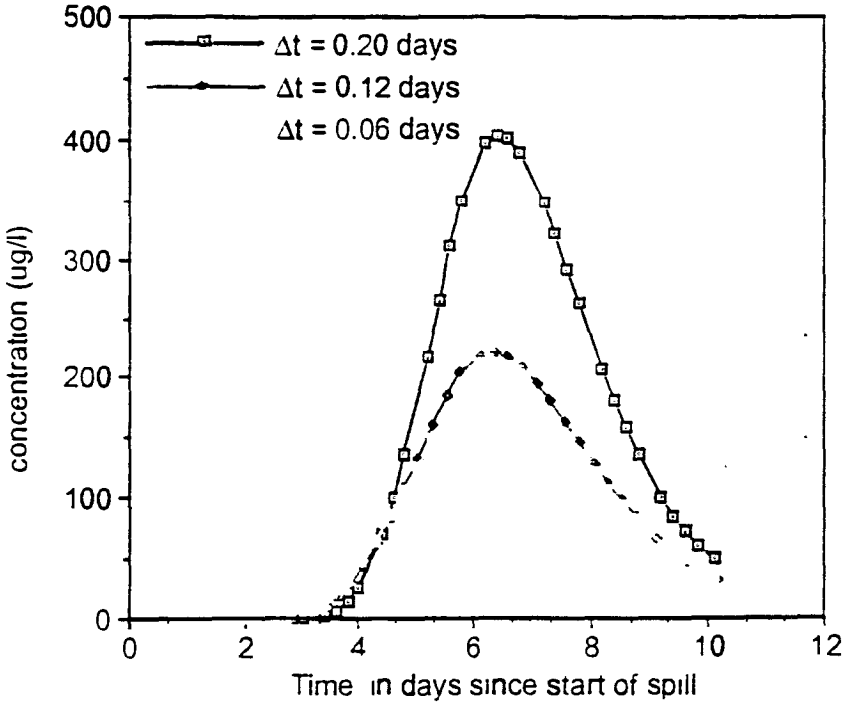


(a) Effects of Decay Rate

Load = 470,000 pounds
Spill at river mile 609.4
Spill duration = 24 hours
Period: 2/6/92 - 2/15/92
Time step = 0.12 days

Flow at spill location on day 1 was 57,690 cfs

Concentrations simulated at Canneiton Dam at river mile 720.7



(b) Effects of Time Step

Same conditions as (a)

Decay rate = 0 01 /day

Figures 14-b and 15-b illustrate the model response to different time steps under high and low flow conditions respectively. In both cases, the largest value for the time step, 0.08 days and 0.20 days for high and low flow respectively resulted in some model instability and also significantly higher peak concentrations. The model was relatively insensitive to the lower values for time steps. With decreasing flows, the allowable time step values increase. The reasons and consequences of this fact are described later in this section.

Selection of Model Time Steps

The WASP4 User's Manual (Ambrose, 1990) provides some guidance on the selection of the model time step. The model is most susceptible to becoming unstable if the time step approaches or exceeds the residence time (flow through time) in any segment. The residence time in a segment is defined as:

$$\text{residence time} = \text{Segment Volume} / \text{Flow} \qquad (8)$$

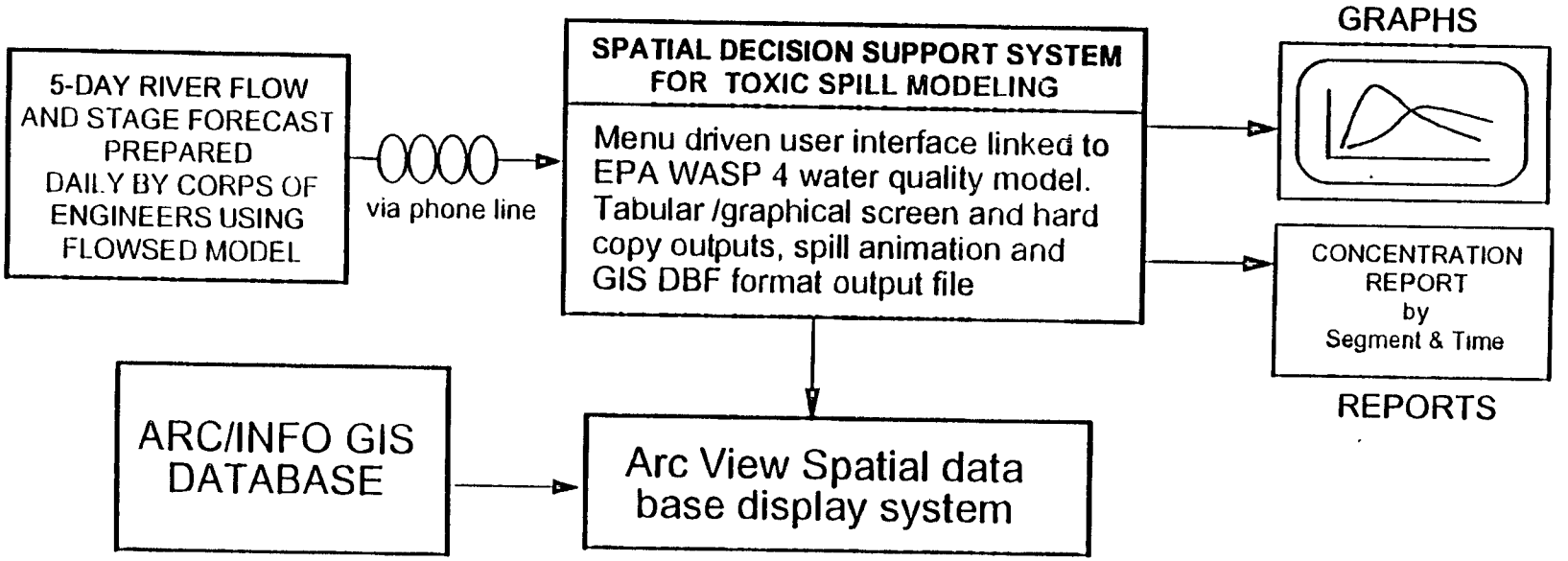
Generally, if the time step is set so that it is approximately 80 to 90% of the minimum residence time then instability will be avoided and numerical dispersion is minimized. In order to achieve the best results, it is optimal to set the segmentation so that the residence times in segments are approximately equal.

Spill Management System

The WASP4 model is a relatively complex model that requires an input file that is quite lengthy. Furthermore, the input file format mimics the fixed format, card image form that was popular on mainframe computers with card readers. In order to facilitate its use under emergency spill conditions, a user friendly 'Spill Management System' was developed. A complete user's manual for the Spill Management System is presented in Appendix C. Details on the structure, programs and files associated with the Spill Management System are presented in Appendix D.

The approach selected for the Spill Management System was to use well accepted, existing and tested models and to embed those models into a user friendly 'shell'. The system is implemented on a PC-based work station. The primary elements in the Spill Management System are shown in Figure 16 . Five day flow and stage predictions along the Ohio River are downloaded from the Corps of Engineers via phone lines and used as input to the System. The Spill Management System itself, is composed of a menu driven interface which uses the flow information and guides the user through a series of operations centered around the WASP4 model and produces several graphical and tabular displays.

FIGURE 16
SCHEMATIC REPRESENTATION OF SPILL MODELING SYSTEM PROCESS



The Spill Management System consists of a series of programs and files which interact and are invoked by the user from a menuing system. All of the programs are written in the C language with the exception of EPA's WASP4 model which is written in FORTRAN. Interaction between the program modules is provided by files which are written by one program and used as input to other programs.

The primary functions of the Spill Management System are as follows:

1) Construct an input file for the WASP4 model based on a short form into which the user enters information on the spill.

2) Run the WASP4 model.

3) Generate a report summarizing the WASP4 results which may be viewed on the screen or directed to a printer.

4) Generate x-y plots showing the results of the WASP4 run in the form of concentration vs. time at particular sites or concentration vs. river mile at particular times. The plots may also be animated to show the movement of the spill plume down the river over time.

5) Generate a summary file which may be used by the ARCVIEW program to view the results of the WASP4 run in relationship to other GIS coverages.

The main menuing system is composed of a main menu bar and a series of 'pull-down' menus (pillars) as shown in Figure 17. The five pull-down menus allow the user to perform a series of tasks:

1) The System pillar provides the user access to several utilities and access to the DOS prompt.

2) The Control File pillar is used to construct a 'control file' containing the characteristics of the spill to be simulated and to construct the input file for the WASP4 model. The general characteristics of the spill to be simulated are entered into a form as shown in Figure 18.

3) The Wasp pillar is used to run the WASP4 model.

FIGURE 17
SPILL MODELING SYSTEM MENU

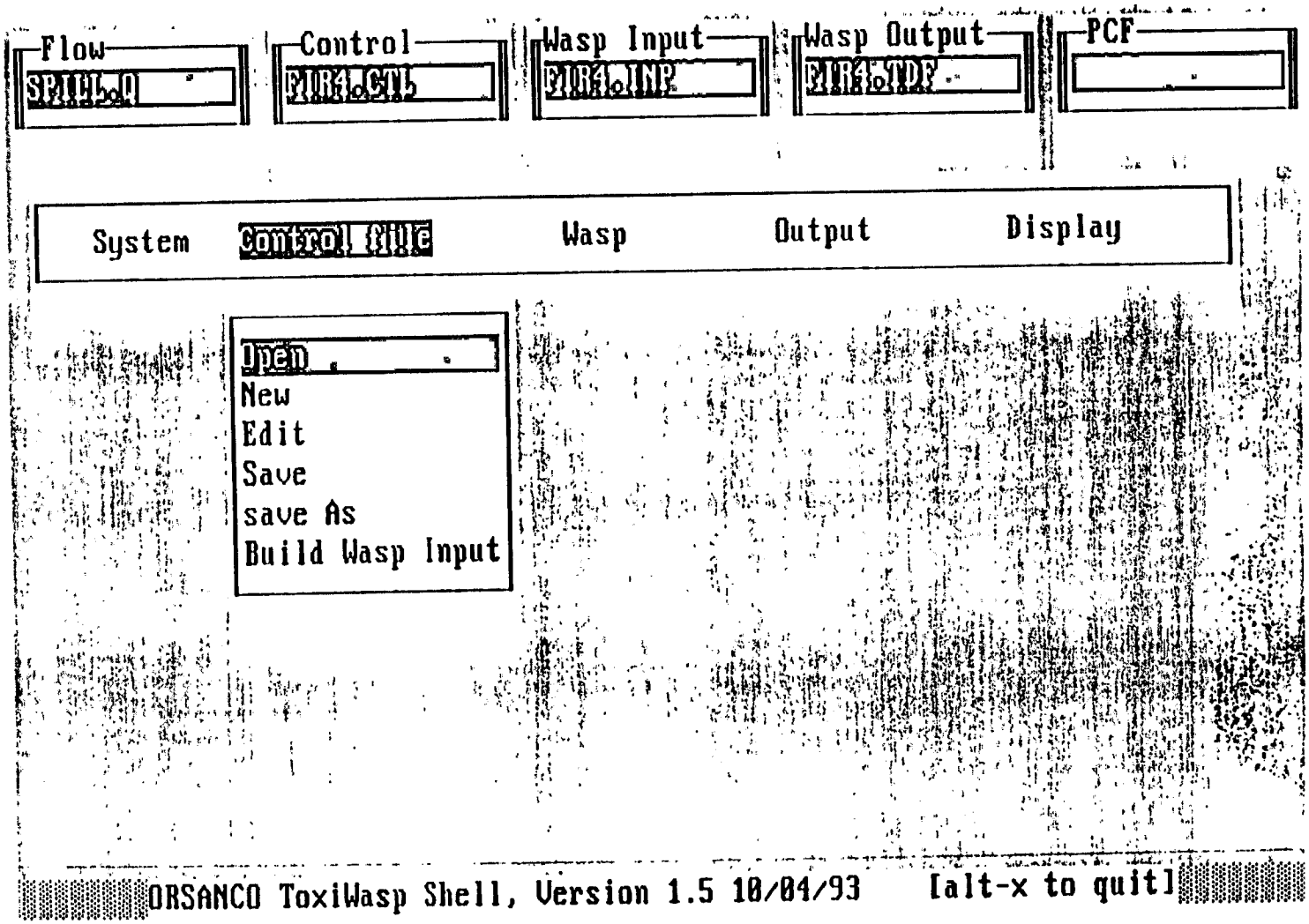
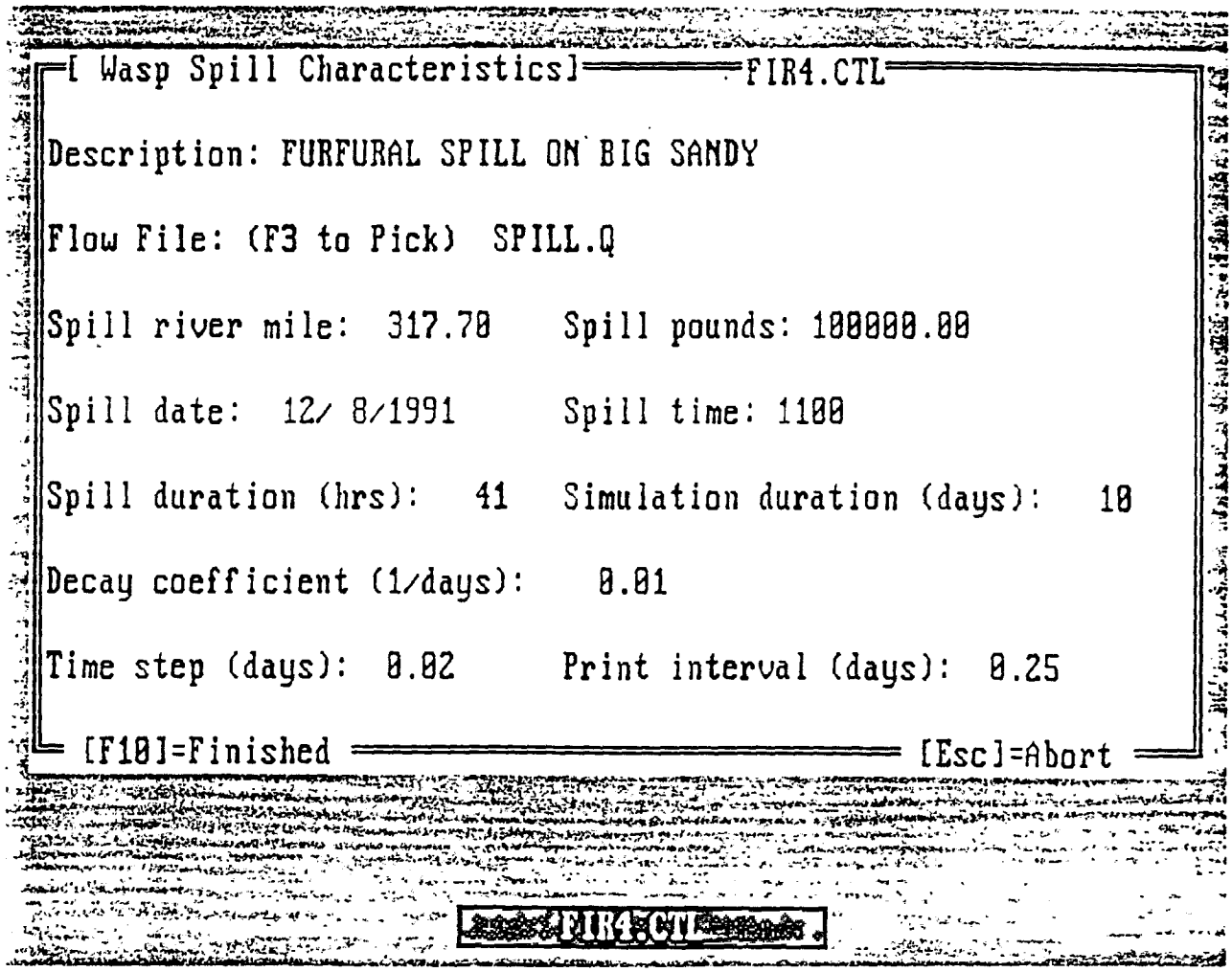


FIGURE 18
SPILL MODELING SYSTEM INPUT FORM



4) The Output pillar is used to view and print the summary report, to construct control files specifying the characteristics of the x-y plots, and to construct an output file that can be used by ARCVIEW to view the results of the simulation. A portion of the summary table is shown in Figure 19.

5) The Display pillar is used to view the screen plots and to generate plots on a printer. An example of an x-y plot is shown in Figure 20.

In actual operation, the user generally moves through the pillars from left to right, specifying the spill, running WASP4 and constructing and viewing reports and plots of the results of the model application. It is recommended that after running the WASP4 model that the animation option be used to examine the output for instability and, if unusual fluctuations are found. that the time step be modified and the WASP4 model rerun.

Conclusions

The Spill Management System provides a fast, user friendly mechanism for tracing a spill to the Ohio River mainstem under emergency conditions. It uses a widely accepted water quality model, WASP4, that is supported and updated by EPA. Flow and stage predictions may be acquired daily from the Corps of Engineers via phone lines and used as input to the model. Additionally, the results of the model application may be viewed in graphical or tabular form from within the Spill Management System or may be exported and viewed within the ARCVIEW system in relationship to other GIS coverages.

The model was successfully adjusted to simulate, with reasonable accuracy, an actual spill to the Ohio River. However, actual field information on the Ohio River is relatively sparse and future applications using either data collected during spill events to the Ohio River or, preferably, during a controlled dye or tracer study, will lead to better calibration information for the model. The WASP4 model may also be used to simulate the impacts of multiple discharges to the Ohio River.

FIGURE 19
SPILL MODELING SYSTEM OUTPUT REPORT

SEGMENT CONCENTRATION REPORT Page 2 of 8
TOLUENE SPILL NEAR LOUISVILLE
9- 9-1993 10:20 spill at rm 609.40

Time(days)	Seg OH137	Seg OH138	Seg OH139	Seg OH140	Seg OH141	Seg OH142
0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.54	55.0000	16.8000	2.3500	0.0000	0.0000	0.0000
0.72	119.0000	77.7000	37.4000	13.4000	3.5800	0.4170
0.90	137.0000	123.0000	91.5000	58.0000	32.7000	13.5000
1.02	129.0000	130.0000	115.0000	89.8000	64.1000	36.8000
1.20	102.0000	118.0000	124.0000	117.0000	104.0000	80.2000
1.38	69.4000	91.3000	108.0000	117.0000	117.0000	109.0000
1.56	37.1000	59.2000	80.9000	97.5000	108.0000	113.0000
1.74	15.7000	31.2000	51.0000	69.9000	84.6000	97.9000
1.92	5.5700	13.6000	26.9000	42.5000	57.0000	73.4000
2.10	1.7600	5.2000	12.2000	22.1000	32.9000	47.6000
2.22	0.7830	2.5700	6.7100	13.3000	21.1000	32.9000
2.40	0.2200	0.8400	2.5400	5.6600	9.7900	17.0000
2.58	0.0592	0.2580	0.8890	2.2000	4.1000	7.8700
2.76	0.0154	0.0758	0.2940	0.7990	1.5900	3.3300
2.94	0.0039	0.0216	0.0933	0.2750	0.5790	1.3100
3.12	0.0010	0.0060	0.0287	0.0908	0.2010	0.4870
3.24	0.0004	0.0026	0.0129	0.0428	0.0974	0.2460
3.42	0.0001	0.0007	0.0039	0.0136	0.0322	0.0862
3.60	0.0000	0.0002	0.0012	0.0043	0.0105	0.0295
3.78	0.0000	0.0001	0.0003	0.0013	0.0034	0.0099
3.96	0.0000	0.0000	0.0001	0.0004	0.0011	0.0033
4.14	0.0000	0.0000	0.0000	0.0001	0.0003	0.0009
4.26	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003
4.44	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
4.62	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.98	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5.07	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix B

APPENDIX C

SPILL MODELING SYSTEM USER'S MANUAL

GETTING STARTED

The Spill Modeling System operates under a menuing system which is accessed by typing 'TOXSHELL' while in the directory in which it resides. The ORSANCO seal appears. After pressing the ESCAPE key, a title screen appears welcoming the user. To reach the menuing system either press any key or wait approximately 10 seconds and the menu will appear.

A diagram showing all of the options under the menuing system is shown in Figure C-1. The menu is composed of three parts: the 5 boxes containing file names in the top row on the menu; the main menu bar containing the pillar names (System, Control file, Wasp, Output and Display); and the pull down pillars below the bar. In actual operation, only one pull down pillar is visible at any time.

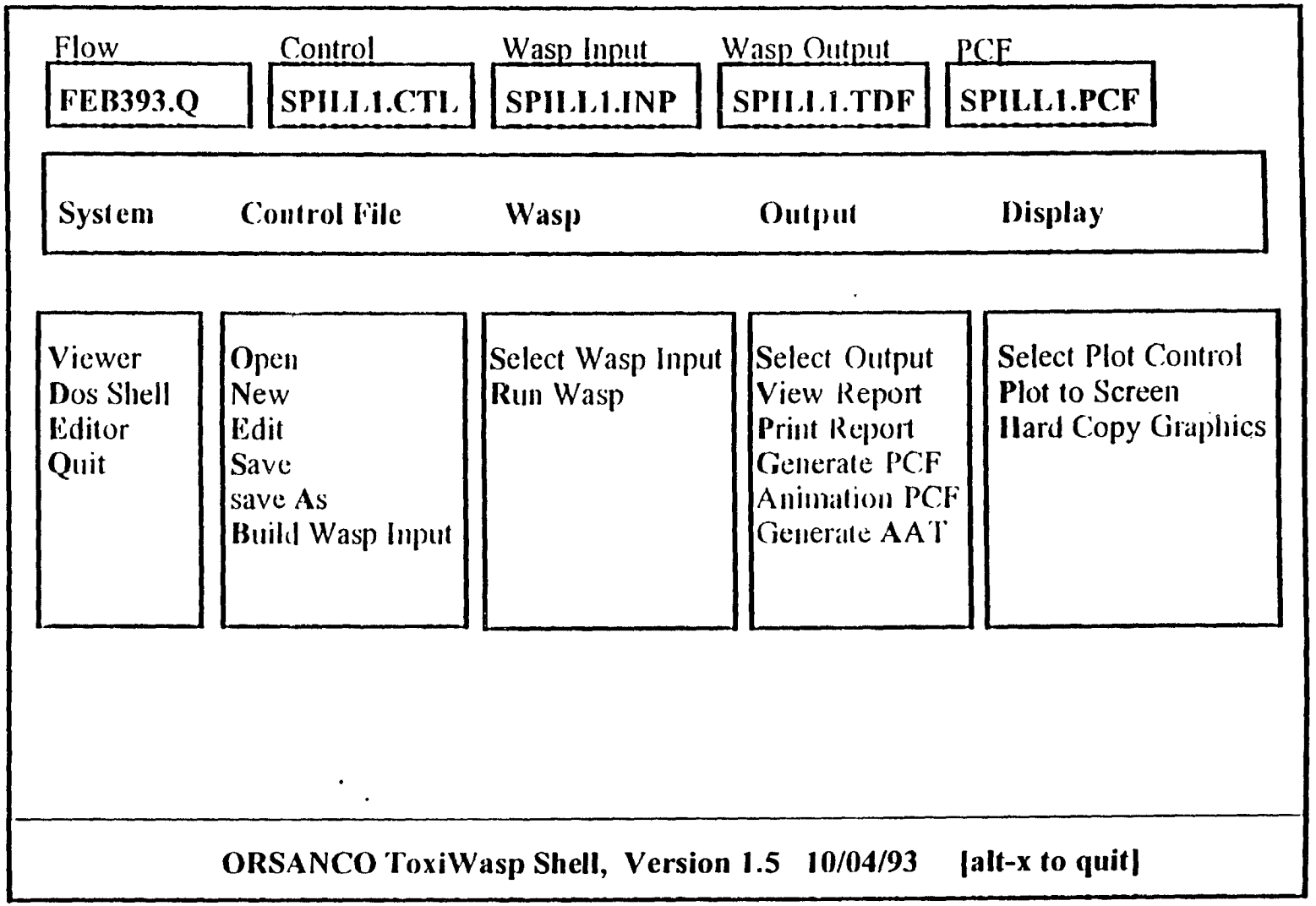
The main menu bar is navigated by using the left or right arrow until the desired pillar becomes visible. When you are located at the extreme left (System) item of the main menu bar, pressing the left arrow key results in jumping to the extreme right item (Display) and similarly when you are located at the extreme right (Display) item. The specific operations on each pillar are described below.

System Pillar

The System pillar contains various utility options that may be useful during the operation of the Spill Modeling System. Options on the pillar are highlighted by using the up and down arrow keys. Once highlighted, the option is actually invoked by pressing Enter (Carriage Return). Alternatively, an option can be selected and invoked while the pillar is active by pressing the 'hot' key which is the bold capital letter in the desired item. For example, to get to the DOS shell, either use the up or down arrow key to highlight 'Dos shell' and then press ENTER or press 'Shift D'.

When the Viewer option is selected, a list of all files in the current directory is listed. Arrow keys may then be used to navigate through the list. Once a file is highlighted, if you press ENTER then you can view the contents of that file. The resulting list is only meaningful for text files. Other options that are available from the Viewer are shown in a help screen which can be accessed by pressing the F1 key. To return to the main menu from the Viewer, press the ESC key. The 'Dos shell' option takes you to the DOS prompt where any DOS

FIGURE C-1
COMPLETE SPILL MODELING SYSTEM MENU ITEMS



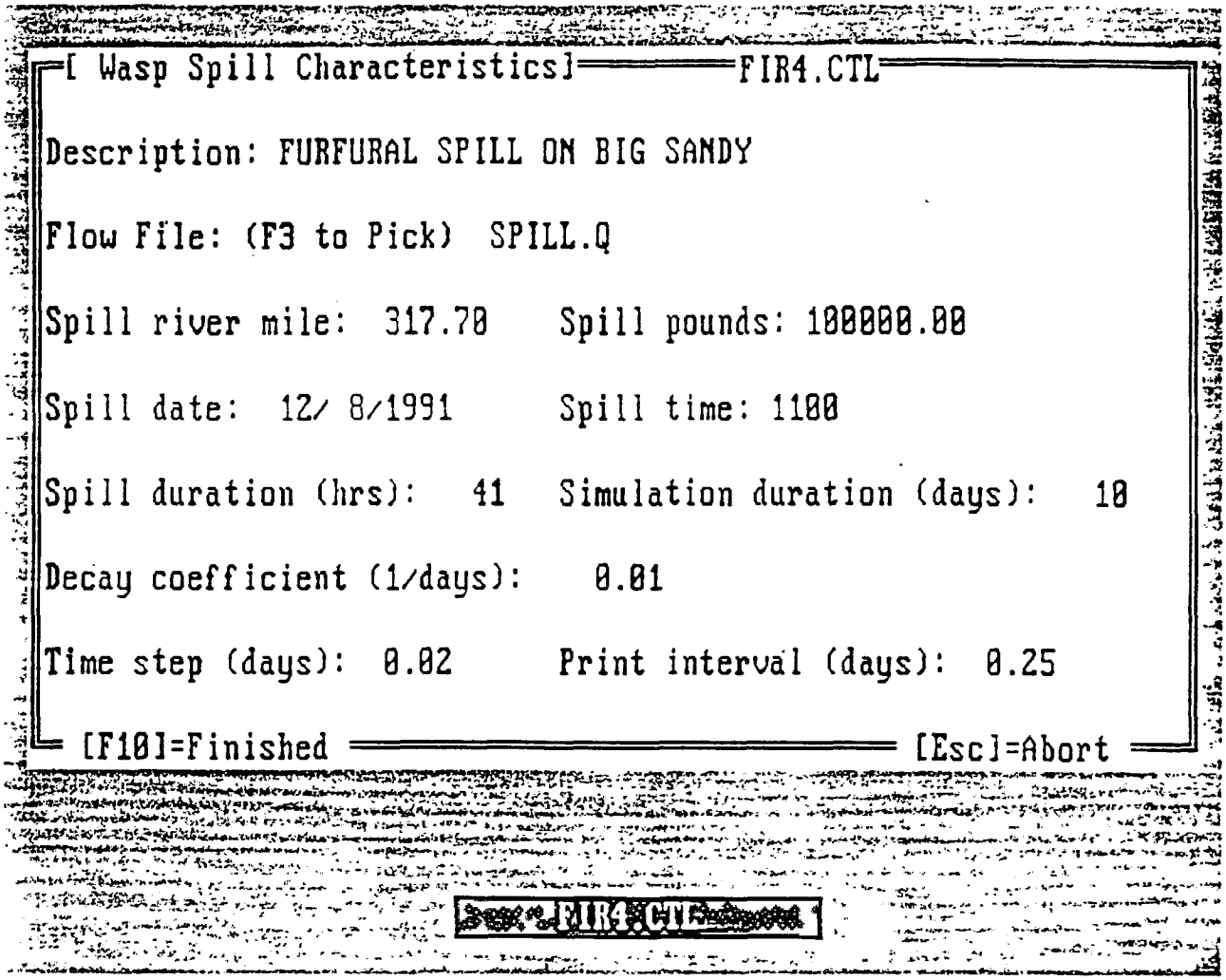
actions can be entered. Once you are finished in DOS, type 'exit' at the DOS prompt and you will return to the menu. The 'Editor' option takes you to the MS-DOS Editor in which text files may be created or edited. To leave this editor, press the ALT key to select the editor's 'File' pillar and then select 'Exit' to return to the menu. The final option on the 'System' pillar is the 'Quit' option. This option may also be reached from anywhere in the menuing system by pressing 'ALT-x'. When you select 'Quit', a dialog box appears asking if you are sure you want to quit; if you enter 'Y' then you will leave the Spill Modeling System. If you select 'N', then you will return to the menuing system.

Control File Pillar

This pillar contains options that prepare you to make a run of the WASP model. Within the Spill Modeling System, a run of the model is controlled by a 'control file'; a text file containing user supplied location on the spill characteristics. The 'Open' option displays a list of existing control files and allows the user to open one of these files for viewing or editing. Figure C-2 illustrates the form used to view, enter or edit control information. A description of each of these fields is provided below:

Description:	Text description of the model run
Flow file:	The name of the flow file to be used in running WASP. These files are downloaded from the Corps of Engineers (see details later in this Appendix on downloading files) and are generally followed by the extension of .Q. If you do not know the name of the flow file, then pressing the F3 key will display a list of all files with the .Q extension and then highlighting the desired file and pressing ENTER will enter that name into the form.
Spill mile:	Enter the river mile at which the spill occurred.
Spill pounds:	Enter the total pounds spilled.
Spill date:	Enter the date of the spill in the format MM/DD/YYYY where MM is the month number (e.g. 5 = May), DD is the spill day and YYYY is the year (e.g. 1993).
Spill time:	Enter the time of the spill in military time (e.g. 1335 is 1:35 P.M.). Note that this field is for future reference only, it is not used by the model.
Spill duration:	Duration of the spill in hours.
Simulation duration:	Length of the simulation in days.
Decay coefficient:	Decay coefficient in units of 1/days.
Time step:	Time step to be used by WASP in days. Note that this value should be as large as possible without causing model instability in order to minimize numerical dispersion. Values in the range of 0.5 to 0.1 appear to give best results.

FIGURE C-2
EXAMPLE SPILL MODELING SYSTEM INPUT FORM



Print interval: Interval in days at which WASP results are reported. When creating an 'AAT' file for viewing in ArcView, an interval that is an equal multiple of 0.25 days should be used.

Once the required information is entered into the form, the F10 key is pressed to return to the menu. The box in the top row on the left lists the name of the flow file that has been entered into the form while the next box to the right lists the current name of the control file. At this point, if you select 'Save' the control file will be saved (if there is an existing file with this name, you will be asked whether you wish to overwrite the existing file). If you wish to save it under a new name, then select 'save As' and enter the new file name with no extension (an extension of .CTL) will automatically be added. The 'New' option on the pillar presents a blank form with the assumed name of 'newinput.ctl'. The 'Edit' option is used to edit the control file that is listed in the control file box in the top row.

When a control file has been selected or constructed using the form, the 'Build Wasp Input' option is used to actually build an input file for use as input to the WASP model. When the WASP input file is built, summary information on the WASP run is displayed in a text screen ending with the words 'end of program'. Press any key to return to the menu. This file is automatically given the same name as the control file with an extension of .INP and the name is displayed in the 'Wasp Input' box in the top row of the menu.

Wasp Pillar

The Wasp pillar is used to run the WASP model. You may either use the input file listed in 'Wasp Input' box or use 'Select Wasp Input' to display a list of available input files to choose from. An actual run of WASP is performed by choosing 'Run Wasp' and pressing 'ENTER'. After confirming that you want a run of WASP to be made, WASP will start running and display various status messages as it runs. Depending upon the duration of the run, the number of segments, and the speed of the computer, a run of WASP can take from less than one minute to ten minutes.

Output Pillar

Upon completion of a WASP run, several options are provided for viewing the results of the run. The output to be displayed is listed in the 'Wasp Output' box in the top row. This box automatically contains the name of the output file created by WASP with the extension .TDF. If you wish to view a different output file, then the 'Select Output' option should be selected. The 'View Report' and 'Print Report' options are used to either view or print a report containing concentrations at each print interval and at each segment. When viewing a report, the 'Page Down' key or space bar is used to move through the report in a forward direction while the

'Page Up' key is used to move backwards. The ESCAPE key is used to return to the main menu.

The output may also be viewed in the form of x-y plots where concentration is plotted against either time for selected segments or against river mile for selected time steps. The 'Generate PCF' option is used to construct a 'plot control file' which defines the plots that can be viewed. When selected, a form will be displayed (Figure C-3) asking the user to specify the name of the plot control file (with a .PCF extension), the plot type and the critical value. The user may either keep the file name that is displayed or replace it with another name ending in the .PCF extension. Then the tab key is used to move to the next field to select either a full frame (F) or half frame (H) plot. If you wish to also display a critical concentration level (e.g. the stream standard) as a horizontal dotted line on the plot, then the critical value should be entered in that field. If a value of -1.0000 is left then no critical value is displayed. If you wish to abort the process of creating a plot control file, then the ESCAPE key is pressed: if you wish to continue the process of defining a PCF then the F10 key is pressed. When F10 is pressed, a list of available plots is presented. (Note: the user may expand the list of available plots. See the section later in this Appendix on how to define additional plot options.) The user may press F2 to select all plots or may use the arrow keys to highlight plots and ENTER key to select them. If at any point you wish to deselect all plots then F3 may be pressed. Once completed, the ESCAPE key is pressed to continue the process. A dialog box will then appear listing the plots that you have selected and you are asked to confirm whether you wish to generate the PCF. A 'Y' will result in generating the PCF while a 'N' will abort the process.

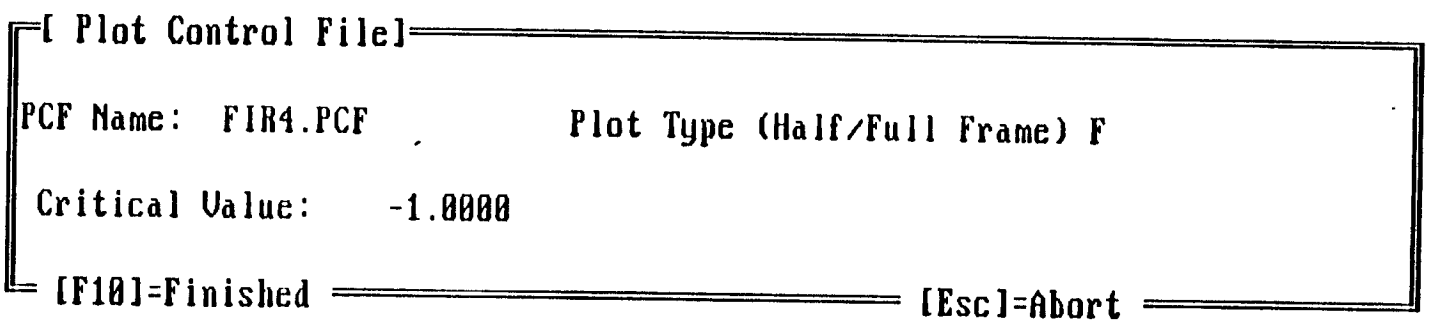
An alternative x-y plot may be generated by selecting the 'Animation PCF' option. When selected, an animation control file is generated with the name being the same as the WASP output file name and an extension of .ACF. A text screen will report the time steps at which the output will be viewed along with the message, 'ANIMGEN complete'. To return to the main menu any key should be pressed. Both the 'Generate PCF' and 'Animation PCF' options only generate the control files; actions are required on the 'Display' pillar to actually display the plots.

The final option on the Output Pillar, is the 'Generate AAT' option. When this option is selected, a file is generated called 'aat.dbf' which is a dbase format file containing concentrations at one day intervals for each segment. This file is used to view the results of the WASP run in ArcView. Procedures for viewing this file in ArcView are presented later in this Appendix. To return to the main menu, any key can be pressed.

Display Pillar

The final pillar is used to display graphics to the screen or printer. To display an x-y plot, the user may accept the current 'plot control file' or may use the 'Select Plot Control' option to pick a control file. Note that

FIGURE C-3
EXAMPLE SPILL MODELING SYSTEM PLOT INPUT FORM



normal plot control files have the extension of .PCF while animation control files have the extension of .ACF. Plots are displayed by choosing the ' Plot to Screen' option. In order to move forward through the various plots (assuming more than one plot has been requested), any key can be pressed. To return to the main menu, press the ESCAPE key. Sometimes the ESCAPE key must be pressed multiple times to return to the main menu. If an animation control file has been selected, a separate plot of concentration vs. river mile is generated for each time step. These may be viewed individually by pressing any key or the animation effect may be achieved (i.e. the pollutant cloud moving downstream over time) by holding the space bar down. In the animation mode, the dotted line near the top of the graph represents the maximum concentration at any time.

The final option on the 'Display' pillar provides a mechanism for capturing graphics screens and directing them to a printer. This option uses a proprietary shareware package called "ScreenShot". To capture any graphics screen (this may be an x-y plot, a menu, a report, etc.), press the CNTL and S key at the same time (an audible beep will be emitted indicating the successful capture of the screen). Multiple screens can be captured; each one will be given the name 'scrnNNN.sho' where NNN is a number starting with 000. To view and print any of the screens, the 'Hard Copy Graphics' option on the Display pillar is selected. A title screen is displayed (press any key to move on) followed by a screen listing all available '.sho' files that are available. After using the left and right arrow keys to move to the desired screen, the ENTER key is pressed to display the screen. If you wish to print the screen, press either H if you have a Hewlett Packard printer or E if you have an EPSON printer. To return to the list of available screens press ESCAPE. To return to the main menu, the ESCAPE key is pressed three times.

File Management

The Spill Modeling System creates a number of files during its operation. With the exception of the .sho files, these files generally have the same name with different extensions. Following is a list of extensions and a description of the file:

.TDF	WASP output file containing concentration time history
.TRN	Auxiliary output file created by WASP
.CTL	Control file for running WASP
.INP	Input file for running WASP
.OUT	Summary output file created by WASP
.MSB	Mass balance summary file created by WASP
.RP1	Concentration output report formatted for viewing on the screen
.RP2	Concentration output report formatted for sending to printer

.SEG Listing of segments and time steps for the particular run of WASP

.POF Plot option file containing list of selected plots

.PCF Plot control file listing details of each of the selected plots

.ACF Animation control file listing details of the animation plots

Some of these files can be quite large (especially the .TRN and .TDF files). When you are finished with a particular run of WASP, any of these files (or the .sho) files may be deleted using standard DOS commands or a file manager.

Downloading Corps of Engineers' Flow Files

Flow information used by the Spill Modeling System is acquired from the Corps of Engineers' Ohio River Division Reservoir Operations Section via phone lines. The following steps should be taken to acquire and prepare the flow files for use in the Spill Management System.

1) Dial up the Corps of Engineers' computer from your computer at 684-2735 (Area code 513 in Cincinnati).

2) When the computer answers, logon as follows (note: normal print represents message printed by Corps computer and bold faced print is your response):

Destination: H1000
Enter Signon: 500ORSA ORSA
Password: press the ENTER (CR) key

3) The Corps computer will print a response and then, at the cursor, type the following:

CO 4SSSS*D.FORSYS * CC

Then prior to pressing the ENTER key, turn your local capture mode on (with a local file name of your choosing such as TEMP.Q) with the ASCII option. After pressing ENTER, the latest 5-day flow prediction file will be transferred. After completion of the transfer, turn your local capture mode off.

4) To logoff, type OFF and hang up.

5) Due to differences in communications packages and procedures, the file capture process may result in several unacceptable characters such as multiple line feeds or carriage returns being present in the downloaded file. In order to prepare the flow file for use in the Spill Management System, the program FILTER3 should be used. This program is run at the DOS prompt by typing:

FILTER3 <InputFileName >OutputFileName

For example, if the input file name downloaded from the Corps is TEST.Q and the name that you want to save it under is FEB0393.Q, then the following should be typed at the DOS prompt:

FILTER3 <TEST.Q >FEB0393.Q

The flow files should all be named with the extension of .Q and some identifiable name such as the date of the file as shown in the example should be selected.

Creating New Plot Options

The 'Generate PCF' option on the Output Pillar of the Spill Management System menu provides the user with several different pre-specified x-y plots which can be created and plotted under the 'Plot to Screen' option in the Display Pillar. However, if there are other plots that the user wishes to routinely generate, a flexible mechanism has been created to allow for this. The list of plots from which the user can pick is defined in a file, ALLPLOTS.DOC, that can be modified. The current version of this file is shown below:

```
 1 INTAKE SEGMENTS        0  1    0   INTAKES.SLF
 2 DAM SEGMENTS           0  1    0   DAMS.SLF
 3 TRIBUTARY SEGMENTS     0  1    0   TRIBS.SLF
 4 EVERY 5TH SEGMENT      0  2    5
 5 EVERY 10TH SEGMENT     0  2   10
 6 EVERY 25 MILES         0  3   25
 7 4 EVEN SEGMENTS        0  4    4
 8 EVERY 4TH TIME STEP    1  6    4
 9 EVERY 8TH TIME STEP    1  6    8
10 START OF EACH DAY      1  7    1
11 4 EVEN TIMESTEPS       1  8    4
```

Each line in this file defines a predefined plot. There are 6 parameters which define a plot:

1) The plot number (a sequential number starting with 1).
2) Plot description
3) X-axis description:
   0 = concentration vs. time
   1 = concentration vs. river mile

4) Plot type:
   1 = Plot selected segments as defined in .slf file
   2 = Plot every nth segment
   3 = Plot every n miles
   4 = Plot n evenly spaced segments based on river mile
   5 = Plot selected times as defined in .slf file
   6 = Plot every nth time step
   7 = Plot at start of every nth day
   8 = Plot n evenly spaced time steps
5) Parameter 'n' used in several of the plot types
6) Name of .slf file used in several of the plot types

The .slf file (for segment list file) contains a list of segments or time steps at which plots are to be made. The current options include .slf files containing segments with intakes, dams or tributaries in them.

In order to modify the list of available plots or augment the list, the user need only change the ALLPLOTS.DOC file.

Viewing the Results of the WASP Run in ARCVIEW

The results of a run of WASP within the Spill Management System may be viewed by generating a file called AAT.DBF using the 'Generate AAT ' option under the Output Pillar. To view the results in ARCVIEW, one must exit the spill management system and then copy the file AAT.DBF from the directory in which the Spill Management System resides to the appropriate ARCVIEW subdirectory. This can be done using a file manager or at the DOS prompt. To perform this operation from the DOS prompt, while in the Spill Management System directory, type:

COPY AAT.DBF \ARCVIEW\XXX\WASPSEGS

where XXX is the subdirectory in the ARCVIEW directory where coverages are stored. It is important that file AAT.DBF be copied rather than moved since it is reused in future applications of the Spill Management System.

Within ARCVIEW, the suggested way of viewing the results is to set the legend within the Properties menu to the following values:

- Set the line width to the widest available
- Use unique values
- Use a color ramp (yellow to black works well)

These settings must be reset when each time step is viewed.

APPENDIX D
STRUCTURE, PROGRAMS AND FILES OF THE SPILL MANAGEMENT SYSTEM

STRUCTURE

The Spill Management System is composed of a series of programs and files that interact to perform various tasks associated with spill modeling. The various components of the system and their interaction are shown graphically in Figure D-1. The purpose and usage of each program are described later in this Appendix. The format, purpose and contents of each file are also described later in this Appendix.

Overall control of the Spill Management System is performed by the TOXSHELF program. The menuing system, embedded within this program, uses the commercial TCXL library. TOXSHELF calls several other programs and passes information between programs by use of files that are written by TOXSHELF or other programs and then read by the various programs. All programs are written in the C language with the exception of EPA's WASP4 program which is written in FORTRAN.

The process of downloading flow/stage files from the Corps of Engineers' computer and modifying the files to eliminate unwanted line feeds and carriage returns is performed externally to the Spill Management System. Similarly, results of the modeling process within the Spill Management System may be viewed using the ARCVIEW program external to the Spill Management System.

PROGRAMS

The characteristics of the programs used as part of the Spill Management System are summarized in Table D-1. This table includes a brief description of each program, the files passed into and out of the program, any auxiliary libraries required in compiling the programs, the compile procedure, and the function in the TOXSHELF program that accesses the program. Additional description of each of the programs is provided below.

TOXSHELF: This program serves as the overall manager for the Spill Management System. It utilizes a menuing system library called TCXL. The program is composed of a series of functions which perform various tasks and/or transfer control to the other programs operating under the Spill Management System.

FIGURE D-1
SPILL MODELING SYSTEM PROGRAM AND FILE INTERACTION

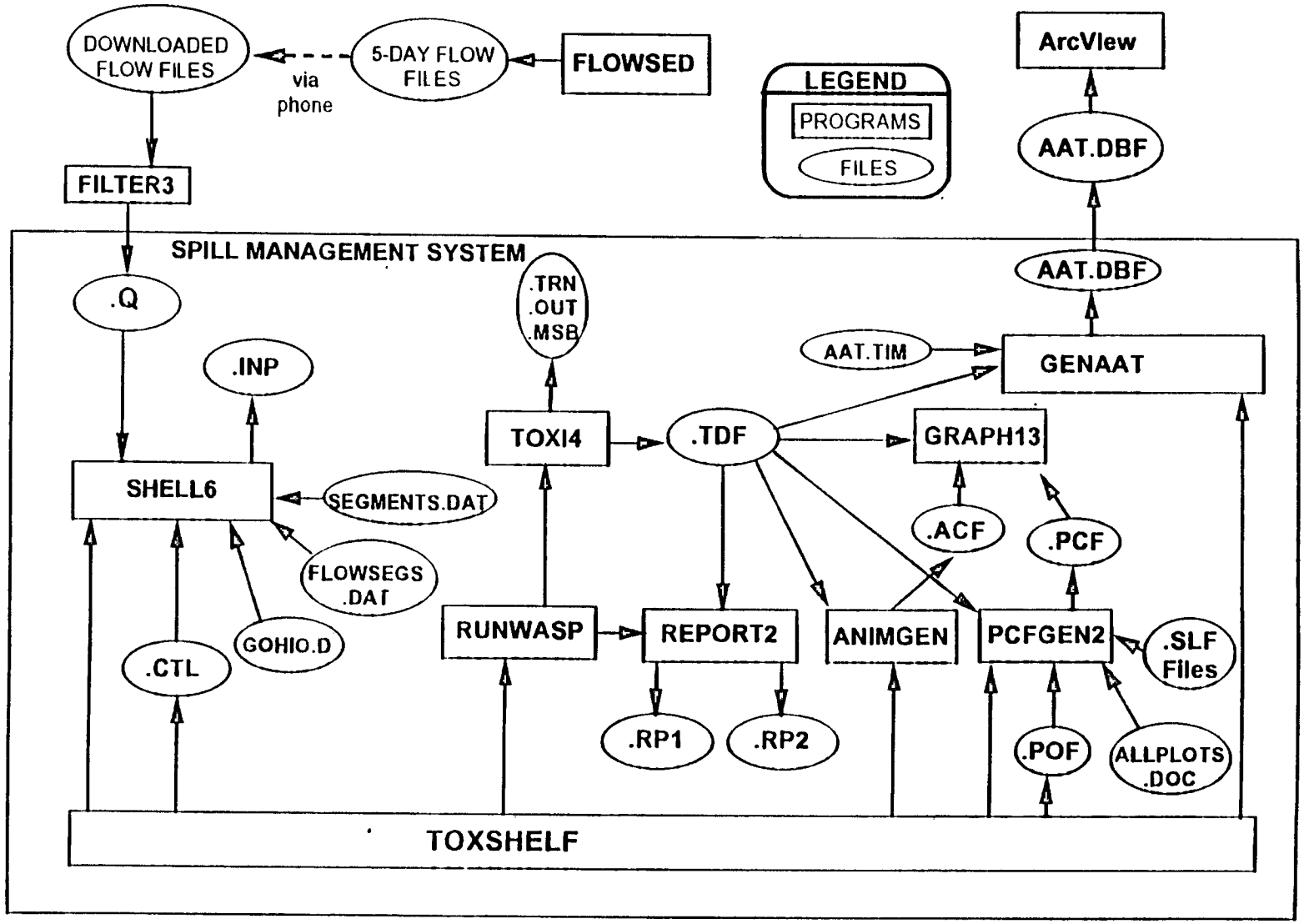


TABLE D-1

SPILL MODELING SYSTEM PROGRAM SUMMARY

Program	Purpose	Usage	Auxiliary	Compile	Shell
ANIMGEN.C	Generate animation control file (.acf)	animgen fn.tdf[input] fn acf[output]		bcc -ml	GenerateAnimationPCF()
GRAPH13.C	plot .acf or .pcf	graph13 fn pcf	requires plotlib	plotcomp	PlotToScreen()
PCFGEN2.C	generate .pcf	pcfgen2 fn.tdf fn pof fn.pcf allplots.doc		bcc ml	GeneratePCF()
REPORT2.C	report writer	report2 < wspfile xxx		bcc -ml	WaspReport()
RUNWASP.C	stub to run toxi.bat from within toxshelf	runwasp		bcc -ml	RunWasp()
SHELL6.C	create inp from ctl	shell6 fn.ctl		bcc -ml	BuildWaspInput()
TOXSHELF.C	control shell program	toxshelf	requires tcxl library	maketcxd	
GENAAT.CPP	revise aat.dbf from info in .inp, .tdf	genaat fn.inp	uses AAT TIM, requires codebase	cmain	GenerateAAT()
FILTER3.CPP	clean up downloaded flow files			bcc -ml	

SHELL6: This program accepts a control file created by the user under TOXSHELF containing the general characteristics of the spill to be simulated. SHELL6 then builds an input file for the WASP4 model in the fixed format required by WASP4.

RUNWASP: This short program calls a 'batch file' which runs the WASP4 model and report writer program. This process is needed because WASP4 requires more memory than is available if the shell is allowed to remain active.

REPORT2: This program generates two output summary reports after each run of WASP4. The two reports are identical except that one is formatted for viewing on the screen while the second is formatted for the printer.

PCFGEN2: This program generates a plot control file based on plots selections made by the user.

ANIMGEN: This program generates an 'animation control file' used as input to the x-y plot routine to allow an animated plot of concentration with time.

GRAPH13: This program plots an x-y screen plot of either concentration vs. time or concentration vs. river mile as specified in the plot control file or animation control file.

GENAAT: This program revises an existing file called aat.dbf to include the modeled concentrations in each segment at selected times.

FILES

Files are used to provide input to programs within the Spill Management System or to pass information between files. Each of the files utilized as part of the Spill Management System are described below. For those files which may be edited by the user, the format and current contents of the file are described. For those files which merely transfer information between programs, only a brief description is provided.

1) Flow/stage file (.Q file): This type of file contains flow and stage information downloaded from the Corps of Engineers and used in preparing input for WASP. Portions of a flow/stage file are shown below. This file is organized by date. The first line lists the month, day, year, and time followed by the number of nodes. The last two values are the number of two types of auxiliary data stored in the file. Following this line, stage information and then flow information is listed for this date followed by

the two types of auxiliary information. This whole block repeats itself for each date in the file.

```
12  7  91        7.00     400  59   2
 709.52   709.35   709.16   709.07   696.16   695.91   695.70   695.58
 695.56   684.24   683.63   683.08   682.85   682.78   682.66   682.61
 682.60   666.76   666.45   666.08   666.03   665.89   665.69   665.49
 665.40   647.40   646.83   646.07   645.49   645.15   644.86   644.72
 644.70   626.94   626.57   625.75   624.91   624.90   624.57   624.27
 ..............
 ..............
40800.00 40800.01 40800.03 40832.45 40832.45 40832.60 40832.74 40832.80
40865.21 40865.21 40926.14 40996.77 41062.02 42214.81 42254.05 42288.92
42354.29 42354.29 42358.38 42362.34 42448.35 42450.37 42452.13 42453.30
42538.68 42538.68 42502.27 42399.95 42368.90 42233.57 42039.32 41897.22
42047.49 42047.49 42063.01 42089.71 42214.04 42215.74 42232.22 42245.42
```

A list of the location of the Corps of Engineers nodes is presented in Table D-2.

2) Segment file (segments.dat): The segment file lists the spatial extent of each segment on the Ohio River mainstem. For each segment, the upstream and downstream river mile is listed along with the upstream and downstream cross section river used in calculating segment volume. The first set of river miles are used for identification and in calculating segment lengths while the second set correspond to Corps of Engineer nodes where cross section and stage information is available. Though for most segments, the two pairs of river miles are the same, the most common case where they diverge is at dams where cross sectional information is available upstream and downstream of the dam. An example portion of the segment file is shown below:

```
1   0.00   2.00   0.00   2.00
2   2.00   4.00   2.00   4.00
3   4.00   8.00   4.00   8.00
4   8.00  10.50   8.00  10.50
5  10.50  13.20  10.50  13.10
6  13.20  16.00  13.50  16.00
```

TABLE D-2
FLOWSED OHIO RIVER MAINSTEM NODES

Node	1	Ohio River mile	0 00	PITTSBURGH (694 2)
Node	2	Ohio River mile	2 00	
Node	3	Ohio River mile	4.00	
Node	4	Ohio River mile	6 00	EMSWORTH HEADWATER (694 0)
Node	5	Ohio River mile	6 40	EMSWORTH TAILWATER (680.0)
Node	6	Ohio River mile	8 00	
Node	7	Ohio River mile	10 50	
Node	8	Ohio River mile	12.50	
Node	9	Ohio River mile	13.10	DASHIELD HEADWATER (680 0)
Node	10	Ohio River mile	13 50	DASHIELD TAILWATER (670.0)
Node	11	Ohio River mile	16.00	
Node	12	Ohio River mile	21.00	
Node	13	Ohio River mile	25 00	Beaver River
Node	14	Ohio River mile	26.00	
Node	15	Ohio River mile	28.50	
Node	16	Ohio River mile	30.50	
Node	17	Ohio River mile	31 50	MONTGOMERY HEADWATER (670 0)
Node	18	Ohio River mile	31.90	MONTGOMERY TAILWATER (652.5)
Node	19	Ohio River mile	35 00	
Node	20	Ohio River mile	39 00	
Node	21	Ohio River mile	40 00	
Node	22	Ohio River mile	42 50	
Node	23	Ohio River mile	46.00	
Node	24	Ohio River mile	50.50	
Node	25	Ohio River mile	54.20	NEW CUMBERLAND HEADWATER (652.5)
Node	26	Ohio River mile	55 30	NEW CUMBERLAND TAILWATER (632.0)
Node	27	Ohio River mile	57.50	
Node	28	Ohio River mile	61.90	
Node	29	Ohio River mile	67 20	
Node	30	Ohio River mile	72 20	
Node	31	Ohio River mile	78 30	
Node	32	Ohio River mile	82.60	
Node	33	Ohio River mile	83 90	PIKE ISLAND HEADWATER (632 0)
Node	34	Ohio River mile	84.40	PIKE ISLAND TAILWATER (611.0)
Node	35	Ohio River mile	86 50	WHEELING (610.8)
Node	36	Ohio River mile	90.62	
Node	37	Ohio River mile	96.00	
Node	38	Ohio River mile	96.50	
Node	39	Ohio River mile	101 62	
Node	40	Ohio River mile	101.25	
Node	41	Ohio River mile	112.37	
Node	42	Ohio River mile	112.80	
Node	43	Ohio River mile	116 75	
Node	44	Ohio River mile	120.75	
Node	45	Ohio River mile	124 00	
Node	46	Ohio River mile	126.20	HANNIBAL HEADWATER (611.0)
Node	47	Ohio River mile	126.60	HANNIBAL TAILWATER (590 0)
Node	48	Ohio River mile	127.10	
Node	49	Ohio River mile	129 50	
Node	50	Ohio River mile	133 50	
Node	51	Ohio River mile	138 50	
Node	52	Ohio River mile	143 50	
Node	53	Ohio River mile	144 00	
Node	54	Ohio River mile	148 50	
Node	55	Ohio River mile	153 00	
Node	56	Ohio River mile	157 00	
Node	57	Ohio River mile	160.00	
Node	58	Ohio River mile	161.50	WILLOW ISLAND HEADWATER (590.0)
Node	59	Ohio River mile	161.90	WILLOW ISLAND TAILWATER (570.0)
Node	60	Ohio River mile	164 00	
Node	61	Ohio River mile	167.80	
Node	62	Ohio River mile	168.80	
Node	63	Ohio River mile	171 60	ABOVE MUSKINGUM RIVER AT MARIETTA (567 1)
Node	64	Ohio River mile	172.60	BELOW MUSKINGUM RIVER
Node	65	Ohio River mile	178.00	
Node	66	Ohio River mile	184.10	PARKERSBURG (562 0) L Kanawha R.
Node	67	Ohio River mile	189.00	
Node	68	Ohio River mile	191.50	
Node	69	Ohio River mile	199 00	Hocking River
Node	70	Ohio River mile	203.70	BELLEVILLE HEADWATER (570 0)
Node	71	Ohio River mile	204.10	BELLEVILLE TAILWATER (548.0)
Node	72	Ohio River mile	207.50	
Node	73	Ohio River mile	212 50	
Node	74	Ohio River mile	217 50	
Node	75	Ohio River mile	222.00	
Node	76	Ohio River mile	228.50	
Node	77	Ohio River mile	233.50	
Node	78	Ohio River mile	237 30	RACINE HEADWATER (548 0)
Node	79	Ohio River mile	237.70	RACINE TAILWATER (526 0)
Node	80	Ohio River mile	240 00	
Node	81	Ohio River mile	244 00	
Node	82	Ohio River mile	250.00	POMEROY (517 5)
Node	83	Ohio River mile	255 00	
Node	84	Ohio River mile	260.00	
Node	85	Ohio River mile	265.10	ABOVE KANAWHA RIVER @ PT PLEASANT (514 1)
Node	86	Ohio River mile	266 10	BELOW KANAWHA RIVER

Table D-2 (continued)

Node 87	Ohio River mile	270 50	
Node 88	Ohio River mile	276 00	
Node 89	Ohio River mile	279.00	GALLIPOLIS HEADWATER (526 0)
Node 90	Ohio River mile	279.40	GALLIPOLIS TAILWATER (503.0)
Node 91	Ohio River mile	282 50	
Node 92	Ohio River mile	287 00	
Node 93	Ohio River mile	291 50	
Node 94	Ohio River mile	298 50	
Node 95	Ohio River mile	303 50	
Node 96	Ohio River mile	304 70	Guyandotte River
Node 97	Ohio River mile	305 70	
Node 98	Ohio River mile	311 40	HUNTINGTON (490 3)
Node 99	Ohio River mile	313.50	Twelvepole Creek
Node 100	Ohio River mile	316 60	ABOVE BIG SANDY RIVER
Node 101	Ohio River mile	317 60	BELOW BIG SANDY RIVER
Node 102	Ohio River mile	319 50	
Node 103	Ohio River mile	322 50	ASHLAND (481 5)
Node 104	Ohio River mile	327 00	
Node 105	Ohio River mile	332 50	
Node 106	Ohio River mile	335 90	Little Sandy River
Node 107	Ohio River mile	336 90	
Node 108	Ohio River mile	340.80	GREENUP HEADWATER (503 0)
Node 109	Ohio River mile	341.20	GREENUP TAILWATER (473 0)
Node 110	Ohio River mile	345 50	
Node 111	Ohio River mile	348 50	
Node 112	Ohio River mile	349.50	
Node 113	Ohio River mile	352 00	
Node 114	Ohio River mile	354.50	
Node 115	Ohio River mile	356 00	ABOVE SCIOTO RIVER
Node 116	Ohio River mile	357 00	BELOW SCIOTO RIVER
Node 117	Ohio River mile	360 00	
Node 118	Ohio River mile	364 50	
Node 119	Ohio River mile	369.50	
Node 120	Ohio River mile	374 50	
Node 121	Ohio River mile	379.50	
Node 122	Ohio River mile	384 50	
Node 123	Ohio River mile	390 00	
Node 124	Ohio River mile	395 50	
Node 125	Ohio River mile	400 50	
Node 126	Ohio River mile	405.50	
Node 127	Ohio River mile	408 70	MAYSVILLE (451 5)
Node 128	Ohio River mile	412 00	
Node 129	Ohio River mile	417.50	
Node 130	Ohio River mile	422 50	
Node 131	Ohio River mile	427 50	
Node 132	Ohio River mile	432.50	
Node 133	Ohio River mile	436 00	MELDAHL HEADWATER (473 0)
Node 134	Ohio River mile	436 40	MELDAHL TAILWATER (443 0)
Node 135	Ohio River mile	438 40	
Node 136	Ohio River mile	441 25	
Node 137	Ohio River mile	447 00	
Node 138	Ohio River mile	453 00	
Node 139	Ohio River mile	458 00	
Node 140	Ohio River mile	462.90	Little Miami River
Node 141	Ohio River mile	463 90	
Node 142	Ohio River mile	470 00	ABOVE LICKING RIVER
Node 143	Ohio River mile	470 50	BELOW LICKING RIVER AT CINCINNATI (429 6)
Node 144	Ohio River mile	475 25	
Node 145	Ohio River mile	483 50	
Node 146	Ohio River mile	490 50	ABOVE GREAT MIAMI RIVER
Node 147	Ohio River mile	491.50	BELOW GREAT MIAMI RIVER
Node 148	Ohio River mile	493 40	
Node 149	Ohio River mile	498 55	
Node 150	Ohio River mile	506 55	
Node 151	Ohio River mile	514 15	
Node 152	Ohio River mile	521 25	
Node 153	Ohio River mile	527 50	
Node 154	Ohio River mile	531 60	MARKLAND HEADWATER (443 0)
Node 155	Ohio River mile	532 00	MARKLAND TAILWATER (408 0)
Node 156	Ohio River mile	535 00	
Node 157	Ohio River mile	542 00	
Node 158	Ohio River mile	545 30	ABOVE KENTUCKY RIVER
Node 159	Ohio River mile	546 30	BELOW KENTUCKY RIVER
Node 160	Ohio River mile	552.15	
Node 161	Ohio River mile	557.80	
Node 162	Ohio River mile	561.50	
Node 163	Ohio River mile	568.00	
Node 164	Ohio River mile	576.00	
Node 165	Ohio River mile	584 00	
Node 166	Ohio River mile	595.00	
Node 167	Ohio River mile	603 00	
Node 168	Ohio River mile	606 60	MCALPINE HEADWATER (408 0)
Node 169	Ohio River mile	607 00	MCALPINE TAILWATER (374 0)
Node 170	Ohio River mile	610 00	
Node 171	Ohio River mile	614 15	
Node 172	Ohio River mile	623 50	Salt River
Node 173	Ohio River mile	632.85	
Node 174	Ohio River mile	642 20	
Node 175	Ohio River mile	651.55	
Node 176	Ohio River mile	660.90	
Node 177	Ohio River mile	670.93	
Node 178	Ohio River mile	680.97	
Node 179	Ohio River mile	691.00	
Node 180	Ohio River mile	701.03	
Node 181	Ohio River mile	711.07	
Node 182	Ohio River mile	716 08	
Node 183	Ohio River mile	720.50	CANNELTON HEADWATER (374 0)
Node 184	Ohio River mile	720 90	CANNELTON TAILWATER (348.0)
Node 185	Ohio River mile	730.33	
Node 186	Ohio River mile	739 57	
Node 187	Ohio River mile	748 80	
Node 188	Ohio River mile	758 03	
Node 189	Ohio River mile	767.27	
Node 190	Ohio River mile	771.88	
Node 191	Ohio River mile	775.90	NEWBURGH HEADWATER (348.0)
Node 192	Ohio River mile	776.30	NEWBURGH TAILWATER (330.0)
Node 193	Ohio River mile	780.55	
Node 194	Ohio River mile	782 57	

Table D-2 (continued)

Node 195	Ohio River mile	784.00	ABOVE GREEN RIVER
Node 196	Ohio River mile	784.80	BELOW GREEN RIVER
Node 197	Ohio River mile	794.90	EVANSVILLE (329.2)
Node 198	Ohio River mile	805.20	
Node 199	Ohio River mile	815.50	
Node 200	Ohio River mile	825.80	
Node 201	Ohio River mile	836.10	
Node 202	Ohio River mile	841.25	
Node 203	Ohio River mile	845.80	UNIONTOWN HEADWATER (330.0)
Node 204	Ohio River mile	846.20	UNIONTOWN TAILWATER (312.0)
Node 205	Ohio River mile	847.00	
Node 206	Ohio River mile	847.60	ABOVE WABASH RIVER
Node 207	Ohio River mile	848.20	BELOW WABASH RIVER
Node 208	Ohio River mile	849.00	
Node 209	Ohio River mile	858.81	
Node 210	Ohio River mile	868.83	
Node 211	Ohio River mile	878.84	
Node 212	Ohio River mile	888.86	
Node 213	Ohio River mile	898.87	
Node 214	Ohio River mile	908.89	
Node 215	Ohio River mile	918.30	SMITHLAND HEADWATER (312.0)
Node 216	Ohio River mile	918.70	SMITHLAND TAILWATER (290.0)
Node 217	Ohio River mile	920.91	
Node 218	Ohio River mile	922.72	ABOVE CUMBERLAND RIVER
Node 219	Ohio River mile	923.12	BELOW CUMBERLAND RIVER
Node 220	Ohio River mile	929.56	
Node 221	Ohio River mile	934.80	ABOVE TENNESSEE RIVER AT PADUCAH (286.3)
Node 222	Ohio River mile	935.80	BELOW TENNESSEE RIVER
Node 223	Ohio River mile	936.95	
Node 224	Ohio River mile	937.70	
Node 225	Ohio River mile	938.45	
Node 226	Ohio River mile	938.80	L & D 52 HEADWATER (283.3)
Node 227	Ohio River mile	939.40	L & D 52 TAILWATER (281.0)
Node 228	Ohio River mile	949.85	
Node 229	Ohio River mile	960.50	
Node 230	Ohio River mile	971.15	
Node 231	Ohio River mile	979.60	CAIRO (270.9)

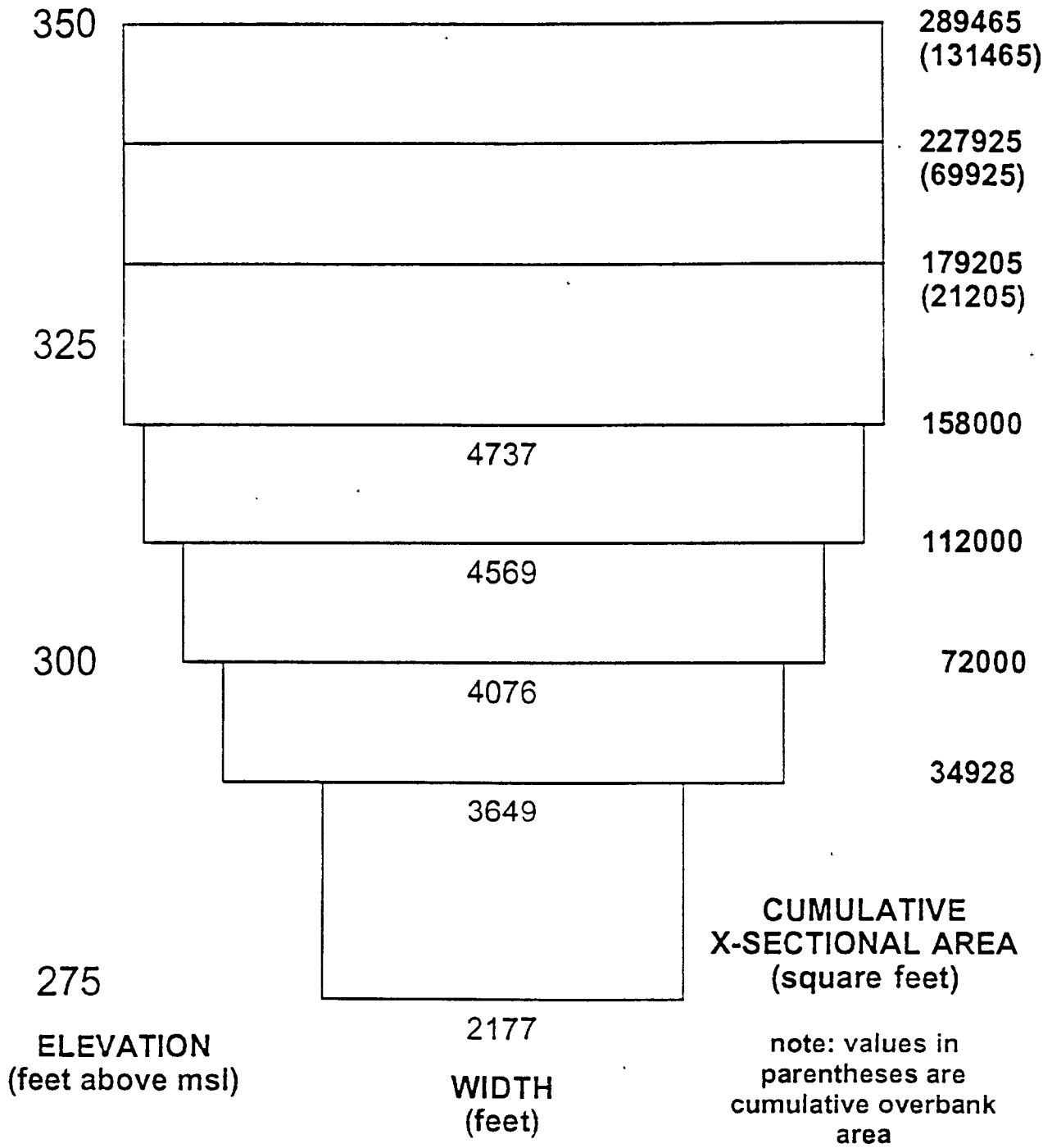
3) Flow segment file (flowsegs.dat): This file contains the location of flow segments along the Ohio River mainstem at which flows change in the WASP4 input. The three fields in this file are: the upstream river mile (i.e. where the tributary enters), the downstream end of the flow segment, and the name of the upstream tributary.

```
  0.00  171.60 ALLEGHENY-MONONGAHELA
172.60  265.10 MUSKINGUM
266.10  316.60 KANAWHA
317.60  490.50 BIG SANDY
491.50  545.30 GREAT MIAMI
546.30  847.60 KENTUCKY
848.20  922.72 WABASH
923.12  979.60 CUMBERLAND
```

4) Cross section file (gohio.d): This file contains approximate cross sectional information for each of the Corps of Engineers nodes. The Corps has emphasized that these values are not meant to be considered as accurate, measured values but rather, are approximations which have been adjusted to provide reasonable results from the FLOWSED model. For each node, the first line contains: the river name (OHIO); the river mile measured from the confluence of the Ohio and Mississippi Rivers (subtract from 981.80 to determine river mile in the more customary up to down direction; the elevation (above msl) of the top of the bank (320.00) and the channel bottom (274.00) and an index (always 1.00). The following lines contain cumulative area and width at different elevations. Refer to Figure D-2 for a graphical description of this data.

```
OHIO            44.85                320.00    274.00      1.00
      274.          0.      2177.      0.025
      290.      34928.      3649.      0.025
      300.      72000.      4076.      0.025
      310.     112000.      4569.      0.025
      320.     158000.      4737.      0.030
      330.      21205.
      340.      69925.
      350.     131465.
```

FIGURE D-2
EXAMPLE CROSS-SECTION DATA DIAGRAM



Appendix C

TIME OF TRAVEL DYE STUDY
LONGITUDINAL RUN #1
August 19, 1996

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4214	8/19/96	17.04:59	279.5	ND
4215	8/19/96	17:05:01	279.52	ND
4216	8/19/96	17:05:11	279.62	ND
4217	8/19/96	17:05:21	279.71	ND
4218	8/19/96	17:05:31	279.81	ND
4219	8/19/96	17:05:41	279.91	ND
4220	8/19/96	17:05:51	280.01	ND
4221	8/19/96	17:06:01	280.11	ND
4222	8/19/96	17:06:11	280.20	ND
4223	8/19/96	17.06:21	280.30	ND
4224	8/19/96	17:06:31	280.40	ND
4225	8/19/96	17.06:41	280.50	ND
4226	8/19/96	17:06:51	280.59	ND
4227	8/19/96	17 07:01	280.69	ND
4228	8/19/96	17 07:02	280.7	ND
4229	8/19/96	17 07:11	280.77	ND
4230	8/19/96	17 07:21	280.86	ND
4231	8/19/96	17 07.31	280.94	ND
4232	8/19/96	17:07:41	281.02	ND
4233	8/19/96	17:07:51	281.11	ND
4234	8/19/96	17 08:01	281.19	ND
4235	8/19/96	17.08:11	281 27	ND
4236	8/19/96	17:08:21	281.36	ND
4237	8/19/96	17 08:31	281.44	ND
4238	8/19/96	17:08:41	281.52	0.287
4239	8/19/96	17:08:51	281.61	2.55
4240	8/19/96	17:09:01	281.69	11.745
4241	8/19/96	17.09:02	281.7	12.932
4242	8/19/96	17:09:11	281.79	25.711
4243	8/19/96	17:09:21	281.88	34 045
4244	8/19/96	17 09:31	281.98	25.851
4245	8/19/96	17:09:41	282.07	8.937
4246	8/19/96	17 09:51	282.17	2.559
4247	8/19/96	17 10:01	282.26	1.325
4248	8/19/96	17:10:11	282.36	ND
4249	8/19/96	17 10:21	282.45	0.139
4250	8/19/96	17 10:31	282.55	0.053
4251	8/19/96	17:10:41	282.64	0.154
4252	8/19/96	17:10:51	282.74	0 397
4253	8/19/96	17 11:01	282.83	ND
4254	8/19/96	17:11:11	282.93	ND
4255	8/19/96	17.11:21	283.02	ND
4256	8/19/96	17:11:31	283.12	ND
4257	8/19/96	17:11:41	283.21	ND
4258	8/19/96	17:11:50	283.3	ND
4259	8/19/96	17.11:51	283.31	ND
4260	8/19/96	17:12.01	283.39	ND
4261	8/19/96	17 12:11	283.47	ND
4262	8/19/96	17 12:21	283.55	ND
4263	8/19/96	17.12:31	283.64	ND
4264	8/19/96	17:12:41	283.72	ND
4265	8/19/96	17:12:51	283.80	ND
4266	8/19/96	17:13.01	283.88	ND
4267	8/19/96	17:13:11	283.96	ND
4268	8/19/96	17:13:21	284.05	ND
4269	8/19/96	17:13:31	284 13	ND
4270	8/19/96	17:13:41	284.21	ND
4271	8/19/96	17.13:51	284.29	ND
4272	8/19/96	17 13:52	284.3	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4330	8/19/96	17:23:30	279.5	ND
4329	8/19/96	17:23:21	279.60	ND
4328	8/19/96	17:23:11	279.71	ND
4327	8/19/96	17.23:01	279.82	ND
4326	8/19/96	17:22:51	279.93	ND
4325	8/19/96	17:22:41	280.04	ND
4324	8/19/96	17:22:31	280.15	ND
4323	8/19/96	17:22:21	280.26	ND
4322	8/19/96	17:22:11	280.37	ND
4321	8/19/96	17:22:01	280.48	ND
4320	8/19/96	17:21:51	280.59	ND
4319	8/19/96	17:21:41	280.7	ND
4318	8/19/96	17:21:31	280.78	ND
4317	8/19/96	17:21:21	280.87	ND
4316	8/19/96	17:21:11	280.95	ND
4315	8/19/96	17:21:01	281 03	ND
4314	8/19/96	17 20.51	281.12	0.296
4313	8/19/96	17:20:41	281.20	5.179
4312	8/19/96	17:20:31	281.28	10.474
4311	8/19/96	17:20:21	281.37	10.195
4310	8/19/96	17:20:11	281.45	7.291
4309	8/19/96	17:20:01	281.53	8.713
4308	8/19/96	17.19.51	281.62	9.924
4307	8/19/96	17.19:41	281.7	6.779
4306	8/19/96	17.19:31	281.79	6.677
4305	8/19/96	17:19:21	281.88	7.915
4304	8/19/96	17:19:11	281.97	1.236
4303	8/19/96	17.19:01	282.06	0.209
4302	8/19/96	17:18:51	282.14	0.18
4301	8/19/96	17:18:41	282.23	1.04
4300	8/19/96	17:18:31	282.32	ND
4299	8/19/96	17:18:21	282.41	ND
4298	8/19/96	17:18:11	282.50	ND
4297	8/19/96	17.18 01	282 59	ND
4296	8/19/96	17.17.51	282.68	ND
4295	8/19/96	17.17:41	282.77	ND
4294	8/19/96	17.17.31	282.86	ND
4293	8/19/96	17:17.21	282.94	ND
4292	8/19/96	17.17 11	283.03	ND
4291	8/19/96	17.17:01	283.12	ND
4290	8/19/96	17:16:51	283.21	ND
4289	8/19/96	17.16:41	283.3	ND
4288	8/19/96	17:16:31	283.39	ND
4287	8/19/96	17:16:21	283.48	ND
4286	8/19/96	17:16:11	283.57	ND
4285	8/19/96	17:16:01	283.66	ND
4284	8/19/96	17.15.51	283.75	ND
4283	8/19/96	17 15:41	283.85	ND
4282	8/19/96	17.15:31	283.94	ND
4281	8/19/96	17:15:21	284.03	ND
4280	8/19/96	17 15:11	284.12	ND
4279	8/19/96	17:15:01	284.21	ND
4278	8/19/96	17:14:51	284 3	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6678	8/20/96	11:34:38	292.40	ND
6679	8/20/96	11:34:39	292.41	ND
6680	8/20/96	11:34:41	292.43	ND
6681	8/20/96	11:34:43	292.44	ND
6682	8/20/96	11:34:45	292.46	ND
6683	8/20/96	11:34:47	292.48	ND
6684	8/20/96	11:34:49	292.50	ND
6685	8/20/96	11:34:51	292.52	ND
6686	8/20/96	11:34:53	292.53	ND
6687	8/20/96	11:34:55	292.55	ND
6688	8/20/96	11:34:57	292.57	ND
6689	8/20/96	11:34:59	292.59	ND
6690	8/20/96	11:35:01	292.61	ND
6691	8/20/96	11:35:03	292.62	ND
6692	8/20/96	11:35:05	292.64	ND
6693	8/20/96	11:35:07	292.66	ND
6694	8/20/96	11:35:09	292.68	ND
6695	8/20/96	11:35:11	292.69	ND
6696	8/20/96	11:35:13	292.71	ND
6697	8/20/96	11:35:15	292.73	ND
6698	8/20/96	11:35:17	292.75	ND
6699	8/20/96	11:35:19	292.77	ND
6700	8/20/96	11:35:21	292.78	ND
6701	8/20/96	11:35:23	292.80	ND
6702	8/20/96	11:35:25	292.82	ND
6703	8/20/96	11:35:27	292.84	ND
6704	8/20/96	11:35:29	292.86	ND
6705	8/20/96	11:35:31	292.87	ND
6706	8/20/96	11:35:33	292.89	ND
6707	8/20/96	11:35:35	292.91	ND
6708	8/20/96	11:35:37	292.93	ND
6709	8/20/96	11:35:39	292.94	ND
6710	8/20/96	11:35:41	292.96	ND
6711	8/20/96	11:35:43	292.98	ND
6712	8/20/96	11:35:45	293.00	ND
6713	8/20/96	11:35:47	293.02	ND
6714	8/20/96	11:35:49	293.03	ND
6715	8/20/96	11:35:51	293.05	ND
6716	8/20/96	11:35:53	293.07	ND
6717	8/20/96	11:35:55	293.09	ND
6718	8/20/96	11:35:57	293.11	ND
6719	8/20/96	11:35:59	293.12	ND
6720	8/20/96	11:36:01	293.14	ND
6721	8/20/96	11:36:03	293.16	ND
6722	8/20/96	11:36:05	293.18	ND
6723	8/20/96	11:36:07	293.19	ND
6724	8/20/96	11:36:09	293.21	ND
6725	8/20/96	11:36:11	293.23	ND
6726	8/20/96	11:36:13	293.25	ND
6727	8/20/96	11:36:15	293.27	ND
6728	8/20/96	11:36:17	293.28	ND
6729	8/20/96	11:36:19	293.30	ND
6730	8/20/96	11:36:21	293.32	ND
6731	8/20/96	11:36:23	293.34	ND
6732	8/20/96	11:36:25	293.36	ND
6733	8/20/96	11:36:27	293.37	ND
6734	8/20/96	11:36:29	293.39	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7971	8/20/96	12:17:24	292.40	ND
7970	8/20/96	12:17:23	292.41	ND
7969	8/20/96	12:17:21	292.42	ND
7968	8/20/96	12:17:19	292.44	ND
7967	8/20/96	12:17:17	292.46	ND
7966	8/20/96	12:17:15	292.47	ND
7965	8/20/96	12:17:13	292.49	ND
7964	8/20/96	12:17:11	292.50	ND
7963	8/20/96	12:17:09	292.52	ND
7962	8/20/96	12:17:07	292.53	ND
7961	8/20/96	12:17:05	292.55	ND
7960	8/20/96	12:17:03	292.57	ND
7959	8/20/96	12:17:01	292.58	ND
7958	8/20/96	12:16:59	292.60	ND
7957	8/20/96	12:16:57	292.61	ND
7956	8/20/96	12:16:55	292.63	ND
7955	8/20/96	12:16:53	292.64	ND
7954	8/20/96	12:16:51	292.66	ND
7953	8/20/96	12:16:49	292.68	ND
7952	8/20/96	12:16:47	292.69	ND
7951	8/20/96	12:16:45	292.71	ND
7950	8/20/96	12:16:43	292.72	ND
7949	8/20/96	12:16:41	292.74	ND
7948	8/20/96	12:16:39	292.75	ND
7947	8/20/96	12:16:37	292.77	ND
7946	8/20/96	12:16:35	292.79	ND
7945	8/20/96	12:16:33	292.80	ND
7944	8/20/96	12:16:31	292.82	ND
7943	8/20/96	12:16:29	292.83	ND
7942	8/20/96	12:16:27	292.85	ND
7941	8/20/96	12:16:25	292.86	ND
7940	8/20/96	12:16:23	292.88	ND
7939	8/20/96	12:16:21	292.90	ND
7938	8/20/96	12:16:19	292.91	ND
7937	8/20/96	12:16:17	292.93	ND
7936	8/20/96	12:16:15	292.94	ND
7935	8/20/96	12:16:13	292.96	ND
7934	8/20/96	12:16:11	292.97	ND
7933	8/20/96	12:16:09	292.99	ND
7932	8/20/96	12:16:07	293.01	ND
7931	8/20/96	12:16:05	293.02	ND
7930	8/20/96	12:16:03	293.04	ND
7929	8/20/96	12:16:01	293.05	ND
7928	8/20/96	12:15:59	293.07	ND
7927	8/20/96	12:15:57	293.08	ND
7926	8/20/96	12:15:55	293.10	ND
7925	8/20/96	12:15:53	293.12	ND
7924	8/20/96	12:15:51	293.13	ND
7923	8/20/96	12:15:49	293.15	ND
7922	8/20/96	12.15:47	293.16	ND
7921	8/20/96	12:15:45	293.18	ND
7920	8/20/96	12:15:43	293.19	ND
7919	8/20/96	12:15:41	293.21	ND
7918	8/20/96	12:15:39	293.23	ND
7917	8/20/96	12:15:37	293.24	ND
7916	8/20/96	12:15:35	293.26	ND
7915	8/20/96	12:15:33	293.27	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6735	8/20/96	11:36:30	293.40	ND
6736	8/20/96	11:36:31	293.41	ND
6737	8/20/96	11:36:33	293.42	ND
6738	8/20/96	11:36:35	293.44	ND
6739	8/20/96	11:36:37	293.46	ND
6740	8/20/96	11:36:39	293.47	ND
6741	8/20/96	11:36:41	293.49	ND
6742	8/20/96	11:36:43	293.51	ND
6743	8/20/96	11:36:45	293.52	ND
6744	8/20/96	11:36:47	293.54	ND
6745	8/20/96	11:36:49	293.56	ND
6746	8/20/96	11:36:51	293.57	ND
6747	8/20/96	11:36:53	293.59	ND
6748	8/20/96	11:36:55	293.61	ND
6749	8/20/96	11:36:57	293.62	ND
6750	8/20/96	11:36:59	293.64	ND
6751	8/20/96	11:37:01	293.65	ND
6752	8/20/96	11:37:03	293.67	ND
6753	8/20/96	11:37:05	293.69	ND
6754	8/20/96	11:37:07	293.70	ND
6755	8/20/96	11:37:09	293.72	ND
6756	8/20/96	11:37:11	293.74	ND
6757	8/20/96	11:37:13	293.75	ND
6758	8/20/96	11:37:15	293.77	ND
6759	8/20/96	11:37:17	293.79	ND
6760	8/20/96	11:37:19	293.80	ND
6761	8/20/96	11:37:21	293.82	ND
6762	8/20/96	11:37:23	293.83	ND
6763	8/20/96	11:37:25	293.85	ND
6764	8/20/96	11:37:27	293.87	ND
6765	8/20/96	11:37:29	293.88	ND
6766	8/20/96	11:37:31	293.90	ND
6767	8/20/96	11:37:33	293.92	ND
6768	8/20/96	11:37:35	293.93	ND
6769	8/20/96	11:37:37	293.95	ND
6770	8/20/96	11:37:39	293.97	ND
6771	8/20/96	11:37:41	293.98	ND
6772	8/20/96	11:37:43	294.00	ND
6773	8/20/96	11:37:45	294.02	ND
6774	8/20/96	11:37:47	294.03	ND
6775	8/20/96	11:37:49	294.05	ND
6776	8/20/96	11:37:51	294.06	ND
6777	8/20/96	11:37:53	294.08	ND
6778	8/20/96	11:37:55	294.10	ND
6779	8/20/96	11:37:57	294.11	ND
6780	8/20/96	11:37:59	294.13	ND
6781	8/20/96	11:38:01	294.15	ND
6782	8/20/96	11:38:03	294.16	ND
6783	8/20/96	11:38:05	294.18	ND
6784	8/20/96	11:38:07	294.20	ND
6785	8/20/96	11:38:09	294.21	ND
6786	8/20/96	11:38:11	294.23	ND
6787	8/20/96	11:38:13	294.24	ND
6788	8/20/96	11:38:15	294.26	ND
6789	8/20/96	11:38:17	294.28	ND
6790	8/20/96	11:38:19	294.29	ND
6791	8/20/96	11:38:21	294.31	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7914	8/20/96	12:15:31	293.29	ND
7913	8/20/96	12:15:29	293.31	ND
7912	8/20/96	12:15:27	293.32	ND
7911	8/20/96	12:15:25	293.34	ND
7910	8/20/96	12:15:23	293.35	ND
7909	8/20/96	12:15:21	293.37	ND
7908	8/20/96	12:15:19	293.38	ND
7907	8/20/96	12:15:17	293.40	ND
7906	8/20/96	12:15:15	293.42	ND
7905	8/20/96	12:15:13	293.43	ND
7904	8/20/96	12:15:11	293.45	ND
7903	8/20/96	12:15:09	293.47	ND
7902	8/20/96	12:15:07	293.48	ND
7901	8/20/96	12:15:05	293.50	ND
7900	8/20/96	12:15:03	293.52	ND
7899	8/20/96	12:15:01	293.53	ND
7898	8/20/96	12:14:59	293.55	ND
7897	8/20/96	12:14:57	293.57	ND
7896	8/20/96	12:14:55	293.58	ND
7895	8/20/96	12:14:53	293.60	ND
7894	8/20/96	12:14:51	293.62	ND
7893	8/20/96	12:14:49	293.63	ND
7892	8/20/96	12:14:47	293.65	ND
7891	8/20/96	12:14:45	293.67	ND
7890	8/20/96	12:14:43	293.68	ND
7889	8/20/96	12:14:41	293.70	ND
7888	8/20/96	12:14:39	293.72	ND
7887	8/20/96	12:14:37	293.73	ND
7886	8/20/96	12:14:35	293.75	ND
7885	8/20/96	12:14:33	293.77	ND
7884	8/20/96	12:14:31	293.78	ND
7883	8/20/96	12:14:29	293.80	ND
7882	8/20/96	12:14:27	293.82	ND
7881	8/20/96	12:14:25	293.83	ND
7880	8/20/96	12:14:23	293.85	ND
7879	8/20/96	12:14:21	293.87	ND
7878	8/20/96	12:14:19	293.88	ND
7877	8/20/96	12:14:17	293.90	ND
7876	8/20/96	12:14:15	293.92	ND
7875	8/20/96	12:14:13	293.93	ND
7874	8/20/96	12:14:11	293.95	ND
7873	8/20/96	12:14:09	293.97	ND
7872	8/20/96	12:14:07	293.98	ND
7871	8/20/96	12:14:05	294.00	ND
7870	8/20/96	12:14:03	294.02	ND
7869	8/20/96	12:14:01	294.03	ND
7868	8/20/96	12:13:59	294.05	ND
7867	8/20/96	12:13:57	294.07	ND
7866	8/20/96	12:13:55	294.08	ND
7865	8/20/96	12:13:53	294.10	ND
7864	8/20/96	12:13:51	294.12	ND
7863	8/20/96	12:13:49	294.13	ND
7862	8/20/96	12:13:47	294.15	ND
7861	8/20/96	12:13:45	294.17	ND
7860	8/20/96	12:13:43	294.18	ND
7859	8/20/96	12:13:41	294.20	ND
7858	8/20/96	12:13:39	294.22	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6792	8/20/96	11:38:23	294.33	ND
6793	8/20/96	11:38:25	294.34	ND
6794	8/20/96	11:38:27	294.36	ND
6795	8/20/96	11:38:29	294.38	ND
6796	8/20/96	11:38:31	294.39	ND
6797	8/20/96	11:38:33	294.41	ND
6798	8/20/96	11:38:35	294.43	ND
6799	8/20/96	11:38:37	294.44	ND
6800	8/20/96	11:38:39	294.46	ND
6801	8/20/96	11:38:41	294.47	ND
6802	8/20/96	11:38:43	294.49	ND
6803	8/20/96	11:38:45	294.51	ND
6804	8/20/96	11:38:47	294.52	0.031
6805	8/20/96	11:38:49	294.54	0.045
6806	8/20/96	11:38:51	294.56	0.051
6807	8/20/96	11:38:53	294.57	0.04
6808	8/20/96	11:38:55	294.59	0.027
6809	8/20/96	11:38:57	294.61	0.013
6810	8/20/96	11:38:59	294.62	ND
6811	8/20/96	11:39:01	294.64	ND
6812	8/20/96	11:39:03	294.65	ND
6813	8/20/96	11:39:05	294.67	0.012
6814	8/20/96	11:39:07	294.69	0.027
6815	8/20/96	11:39:09	294.70	0.032
6816	8/20/96	11:39:11	294.72	0.018
6817	8/20/96	11:39:13	294.74	0.016
6818	8/20/96	11:39:15	294.75	0.019
6819	8/20/96	11:39:17	294.77	0.021
6820	8/20/96	11:39:19	294.79	0.009
6821	8/20/96	11:39:21	294.80	0.004
6822	8/20/96	11:39:23	294.82	0.017
6823	8/20/96	11:39:25	294.83	0.015
6824	8/20/96	11:39:27	294.85	0.012
6825	8/20/96	11:39:29	294.87	0.024
6826	8/20/96	11:39:31	294.88	0.035
6827	8/20/96	11:39:33	294.90	0.028
6828	8/20/96	11:39:35	294.92	0
6829	8/20/96	11:39:37	294.94	ND
6830	8/20/96	11:39:39	294.96	ND
6831	8/20/96	11:39:41	294.97	ND
6832	8/20/96	11:39:43	294.99	ND
6833	8/20/96	11:39:45	295.01	ND
6834	8/20/96	11:39:47	295.03	ND
6835	8/20/96	11:39:49	295.05	0.003
6836	8/20/96	11:39:51	295.07	0.018
6837	8/20/96	11:39:53	295.08	0
6838	8/20/96	11:39:55	295.10	ND
6839	8/20/96	11:39:57	295.12	ND
6840	8/20/96	11:39:59	295.14	ND
6841	8/20/96	11:40:01	295.16	ND
6842	8/20/96	11:40:03	295.18	ND
6843	8/20/96	11:40:05	295.19	ND
6844	8/20/96	11:40:07	295.21	0.004
6845	8/20/96	11:40:09	295.23	0.024
6846	8/20/96	11:40:11	295.25	0.043
6847	8/20/96	11:40:13	295.27	0.064
6848	8/20/96	11:40:15	295.29	0.035

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7857	8/20/96	12:13:37	294.23	ND
7856	8/20/96	12:13:35	294.25	ND
7855	8/20/96	12:13:33	294.27	ND
7854	8/20/96	12:13:31	294.28	ND
7853	8/20/96	12:13:29	294.30	ND
7852	8/20/96	12:13:27	294.32	ND
7851	8/20/96	12:13:25	294.33	ND
7850	8/20/96	12:13:23	294.35	ND
7849	8/20/96	12:13:21	294.37	ND
7848	8/20/96	12:13:19	294.38	ND
7847	8/20/96	12:13:17	294.40	ND
7846	8/20/96	12:13:15	294.42	ND
7845	8/20/96	12:13:13	294.43	ND
7844	8/20/96	12:13:11	294.45	ND
7843	8/20/96	12:13:09	294.47	ND
7842	8/20/96	12:13:07	294.48	ND
7841	8/20/96	12:13:05	294.50	ND
7840	8/20/96	12:13:03	294.52	ND
7839	8/20/96	12:13:01	294.53	ND
7838	8/20/96	12:12:59	294.55	ND
7837	8/20/96	12:12:57	294.57	ND
7836	8/20/96	12:12:55	294.58	ND
7835	8/20/96	12:12:53	294.60	ND
7834	8/20/96	12:12:51	294.62	ND
7833	8/20/96	12:12:49	294.63	ND
7832	8/20/96	12:12:47	294.65	ND
7831	8/20/96	12:12:45	294.67	ND
7830	8/20/96	12:12:43	294.68	ND
7829	8/20/96	12:12:41	294.70	ND
7828	8/20/96	12:12:39	294.72	ND
7827	8/20/96	12:12:37	294.73	ND
7826	8/20/96	12:12:35	294.75	ND
7825	8/20/96	12:12:33	294.77	ND
7824	8/20/96	12:12:31	294.78	ND
7823	8/20/96	12:12:29	294.80	ND
7822	8/20/96	12:12:27	294.82	ND
7821	8/20/96	12:12:25	294.83	ND
7820	8/20/96	12:12:23	294.85	ND
7819	8/20/96	12:12:21	294.87	ND
7818	8/20/96	12:12:19	294.88	ND
7817	8/20/96	12:12:17	294.90	ND
7816	8/20/96	12:12:15	294.92	ND
7815	8/20/96	12:12:13	294.93	ND
7814	8/20/96	12:12:11	294.95	ND
7813	8/20/96	12:12:09	294.97	ND
7812	8/20/96	12:12:07	294.98	ND
7811	8/20/96	12:12:05	295.00	ND
7810	8/20/96	12:12:03	295.02	ND
7809	8/20/96	12:12:01	295.03	ND
7808	8/20/96	12:11:59	295.05	0
7807	8/20/96	12:11:57	295.07	0.026
7806	8/20/96	12:11:55	295.08	0.034
7805	8/20/96	12:11:53	295.10	0.036
7804	8/20/96	12:11:51	295.11	0.05
7803	8/20/96	12:11:49	295.13	0.058
7802	8/20/96	12:11:47	295.15	0.065
7801	8/20/96	12:11:45	295.16	0.084

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6849	8/20/96	11:40:17	295.30	0.008
6850	8/20/96	11:40:19	295.32	0.016
6851	8/20/96	11:40:21	295.34	0.048
6852	8/20/96	11:40:23	295.36	0.059
6853	8/20/96	11:40:25	295.38	0.085
6854	8/20/96	11:40:27	295.40	0.116
6855	8/20/96	11:40:29	295.41	0.119
6856	8/20/96	11:40:31	295.43	0.107
6857	8/20/96	11:40:33	295.45	0.112
6858	8/20/96	11:40:35	295.47	0.126
6859	8/20/96	11:40:37	295.49	0.126
6860	8/20/96	11:40:39	295.51	0.115
6861	8/20/96	11:40:41	295.52	0.113
6862	8/20/96	11:40:43	295.54	0.135
6863	8/20/96	11:40:45	295.56	0.152
6864	8/20/96	11:40:47	295.58	0.162
6865	8/20/96	11:40:49	295.60	0.178
6866	8/20/96	11:40:51	295.62	0.205
6867	8/20/96	11:40:53	295.63	0.256
6868	8/20/96	11:40:55	295.65	0.308
6869	8/20/96	11:40:57	295.67	0.336
6870	8/20/96	11:40:59	295.69	0.343
6871	8/20/96	11:41:01	295.71	0.342
6872	8/20/96	11:41:03	295.73	0.328
6873	8/20/96	11:41:05	295.74	0.301
6874	8/20/96	11:41:07	295.76	0.3
6875	8/20/96	11:41:09	295.78	0.29
6876	8/20/96	11:41:11	295.80	0.264
6877	8/20/96	11:41:13	295.82	0.288
6878	8/20/96	11:41:15	295.84	0.323
6879	8/20/96	11:41:17	295.85	0.338
6880	8/20/96	11:41:19	295.87	0.329
6881	8/20/96	11:41:21	295.89	0.294
6882	8/20/96	11:41:22	295.90	0.277
6883	8/20/96	11:41:23	295.91	0.262
6884	8/20/96	11:41:25	295.93	0.231
6885	8/20/96	11:41:27	295.95	0.204
6886	8/20/96	11:41:29	295.97	0.191
6887	8/20/96	11:41:31	295.99	0.176
6888	8/20/96	11:41:33	296.02	0.171
6889	8/20/96	11:41:35	296.04	0.181
6890	8/20/96	11:41:37	296.06	0.201
6891	8/20/96	11:41:39	296.08	0.233
6892	8/20/96	11:41:41	296.10	0.299
6893	8/20/96	11:41:43	296.12	0.339
6894	8/20/96	11:41:45	296.14	0.333
6895	8/20/96	11:41:47	296.16	0.336
6896	8/20/96	11:41:49	296.18	0.333
6897	8/20/96	11:41:51	296.21	0.317
6898	8/20/96	11:41:53	296.23	0.329
6899	8/20/96	11:41:55	296.25	0.356
6900	8/20/96	11:41:57	296.27	0.39
6901	8/20/96	11:41:59	296.29	0.424
6902	8/20/96	11:42:01	296.31	0.433
6903	8/20/96	11:42:03	296.33	0.458
6904	8/20/96	11:42:05	296.35	0.486
6905	8/20/96	11:42:07	296.37	0.494

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7800	8/20/96	12:11:43	295.18	0.091
7799	8/20/96	12:11:41	295.20	0.082
7798	8/20/96	12:11:39	295.21	0.068
7797	8/20/96	12:11:37	295.23	0.06
7796	8/20/96	12:11:35	295.25	0.053
7795	8/20/96	12:11:33	295.26	0.035
7794	8/20/96	12:11:31	295.28	0.021
7793	8/20/96	12:11:29	295.30	0.026
7792	8/20/96	12:11:27	295.31	0.032
7791	8/20/96	12:11:25	295.33	0.032
7790	8/20/96	12:11:23	295.35	0.043
7789	8/20/96	12:11:21	295.36	0.078
7788	8/20/96	12:11:19	295.38	0.1
7787	8/20/96	12:11:17	295.40	0.1
7786	8/20/96	12:11:15	295.41	0.124
7785	8/20/96	12:11:13	295.43	0.154
7784	8/20/96	12:11:11	295.45	0.151
7783	8/20/96	12:11:09	295.46	0.13
7782	8/20/96	12:11:07	295.48	0.106
7781	8/20/96	12:11:05	295.49	0.095
7780	8/20/96	12:11:03	295.51	0.094
7779	8/20/96	12:11:01	295.53	0.08
7778	8/20/96	12:10:59	295.54	0.054
7777	8/20/96	12:10:57	295.56	0.041
7776	8/20/96	12:10:55	295.58	0.04
7775	8/20/96	12:10:53	295.59	0.032
7774	8/20/96	12:10:51	295.61	0.014
7773	8/20/96	12:10:49	295.63	0.005
7772	8/20/96	12:10:47	295.64	ND
7771	8/20/96	12:10:45	295.66	ND
7770	8/20/96	12:10:43	295.68	ND
7769	8/20/96	12:10:41	295.69	ND
7768	8/20/96	12:10:39	295.71	ND
7767	8/20/96	12:10:37	295.73	ND
7766	8/20/96	12:10:35	295.74	ND
7765	8/20/96	12:10:33	295.76	ND
7764	8/20/96	12:10:31	295.78	ND
7763	8/20/96	12:10:29	295.79	ND
7762	8/20/96	12:10:27	295.81	0.019
7761	8/20/96	12:10:25	295.83	0.052
7760	8/20/96	12:10:23	295.84	0.073
7759	8/20/96	12:10:21	295.86	0.06
7758	8/20/96	12:10:19	295.87	0.034
7757	8/20/96	12:10:17	295.89	0.035
7756	8/20/96	12:10:16	295.90	0.034
7755	8/20/96	12:10:15	295.91	0.033
7754	8/20/96	12:10:13	295.93	0.032
7753	8/20/96	12:10:11	295.95	0.036
7752	8/20/96	12:10:09	295.97	0.044
7751	8/20/96	12:10:07	295.99	0.041
7750	8/20/96	12:10:05	296.01	0.018
7749	8/20/96	12:10:03	296.03	0.023
7748	8/20/96	12:10:01	296.05	0.035
7747	8/20/96	12:09:59	296.07	0.037
7746	8/20/96	12:09:57	296.09	0.045
7745	8/20/96	12:09:55	296.10	0.062
7744	8/20/96	12:09:53	296.12	0.073

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6906	8/20/96	11:42:09	296.39	0.49
6907	8/20/96	11:42:11	296.42	0.464
6908	8/20/96	11:42:13	296.44	0.43
6909	8/20/96	11:42:15	296.46	0.417
6910	8/20/96	11:42:17	296.48	0.432
6911	8/20/96	11:42:19	296.50	0.439
6912	8/20/96	11:42:21	296.52	0.448
6913	8/20/96	11:42:23	296.54	0.475
6914	8/20/96	11:42:25	296.56	0.492
6915	8/20/96	11:42:27	296.58	0.487
6916	8/20/96	11:42:29	296.61	0.474
6917	8/20/96	11:42:31	296.63	0.451
6918	8/20/96	11:42:33	296.65	0.479
6919	8/20/96	11:42:35	296.67	0.527
6920	8/20/96	11:42:37	296.69	0.52
6921	8/20/96	11:42:38	296.70	0.509
6922	8/20/96	11:42:39	296.71	0.489
6923	8/20/96	11:42:41	296.72	0.442
6924	8/20/96	11:42:43	296.74	0.401
6925	8/20/96	11:42:45	296.75	0.363
6926	8/20/96	11:42:47	296.77	0.357
6927	8/20/96	11:42:49	296.78	0.371
6928	8/20/96	11:42:51	296.80	0.392
6929	8/20/96	11:42:53	296.81	0.387
6930	8/20/96	11:42:55	296.83	0.415
6931	8/20/96	11:42:57	296.84	0.534
6932	8/20/96	11:42:59	296.86	0.611
6933	8/20/96	11:43:01	296.87	0.585
6934	8/20/96	11:43:03	296.89	0.599
6935	8/20/96	11:43:05	296.90	0.661
6936	8/20/96	11:43:07	296.92	0.692
6937	8/20/96	11:43:09	296.93	0.691
6938	8/20/96	11:43:11	296.95	0.708
6939	8/20/96	11:43:13	296.96	0.704
6940	8/20/96	11:43:15	296.97	0.684
6941	8/20/96	11:43:17	296.99	0.727
6942	8/20/96	11:43:19	297.00	0.772
6943	8/20/96	11:43:21	297.02	0.836
6944	8/20/96	11:43:23	297.03	0.903
6945	8/20/96	11:43:25	297.05	0.96
6946	8/20/96	11:43:27	297.06	1.023
6947	8/20/96	11:43:29	297.08	1.04
6948	8/20/96	11:43:31	297.09	1.038
6949	8/20/96	11:43:33	297.11	1.051
6950	8/20/96	11:43:35	297.12	1.057
6951	8/20/96	11:43:37	297.14	1.049
6952	8/20/96	11:43:39	297.15	1.037
6953	8/20/96	11:43:41	297.17	1.022
6954	8/20/96	11:43:43	297.18	0.999
6955	8/20/96	11:43:45	297.20	0.973
6956	8/20/96	11:43:47	297.21	0.932
6957	8/20/96	11:43:49	297.23	0 893
6958	8/20/96	11:43:51	297.24	0.868
6959	8/20/96	11:43:53	297.26	0.854
6960	8/20/96	11:43:55	297.27	0.818
6961	8/20/96	11:43:57	297.29	0.763
6962	8/20/96	11:43:59	297.30	0.742

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7743	8/20/96	12:09:51	296.14	0.064
7742	8/20/96	12:09:49	296.16	0.044
7741	8/20/96	12:09:47	296.18	0.033
7740	8/20/96	12:09:45	296.20	0.028
7739	8/20/96	12:09:43	296.22	0.03
7738	8/20/96	12:09:41	296.24	0.032
7737	8/20/96	12:09:39	296.26	0.026
7736	8/20/96	12:09:37	296.28	0.029
7735	8/20/96	12:09:35	296.30	0.036
7734	8/20/96	12:09:33	296.32	0.032
7733	8/20/96	12:09:31	296.34	0.034
7732	8/20/96	12:09:29	296.36	0.048
7731	8/20/96	12:09:27	296.38	0.077
7730	8/20/96	12:09:25	296.40	0.101
7729	8/20/96	12:09:23	296.42	0.108
7728	8/20/96	12:09:21	296.44	0.104
7727	8/20/96	12:09:19	296.46	0.106
7726	8/20/96	12:09:17	296.48	0.115
7725	8/20/96	12:09:15	296.50	0.132
7724	8/20/96	12:09:13	296.51	0.147
7723	8/20/96	12:09:11	296.53	0.149
7722	8/20/96	12:09:09	296.55	0.146
7721	8/20/96	12:09:07	296.57	0.152
7720	8/20/96	12:09:05	296.59	0.147
7719	8/20/96	12:09:03	296.61	0.139
7718	8/20/96	12:09:01	296.63	0.122
7717	8/20/96	12:08:59	296.65	0.09
7716	8/20/96	12:08:57	296.67	0.095
7715	8/20/96	12:08:55	296.69	0.13
7714	8/20/96	12:08:54	296.70	0.144
7713	8/20/96	12:08:53	296.71	0.154
7712	8/20/96	12:08:51	296.72	0.159
7711	8/20/96	12:08:49	296.74	0.172
7710	8/20/96	12:08:47	296.75	0.199
7709	8/20/96	12:08:45	296.76	0.227
7708	8/20/96	12:08:43	296.78	0.235
7707	8/20/96	12:08:41	296.79	0.241
7706	8/20/96	12:08:39	296.81	0.273
7705	8/20/96	12:08:37	296.82	0.309
7704	8/20/96	12:08:35	296.84	0.324
7703	8/20/96	12:08:33	296.85	0.33
7702	8/20/96	12:08:31	296.87	0.349
7701	8/20/96	12:08:29	296.88	0.358
7700	8/20/96	12:08:27	296.89	0.336
7699	8/20/96	12:08:25	296.91	0.312
7698	8/20/96	12:08:23	296.92	0.284
7697	8/20/96	12:08:21	296.94	0.263
7696	8/20/96	12:08:19	296.95	0.263
7695	8/20/96	12:08:17	296.97	0.266
7694	8/20/96	12:08:15	296.98	0.312
7693	8/20/96	12:08:13	296.99	0.363
7692	8/20/96	12:08:11	297.01	0.355
7691	8/20/96	12:08:09	297.02	0.364
7690	8/20/96	12:08:07	297.04	0.396
7689	8/20/96	12:08:05	297.05	0.419
7688	8/20/96	12:08:03	297.07	0.444
7687	8/20/96	12:08:01	297.08	0.463

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6963	8/20/96	11:44:01	297.32	0.743
6964	8/20/96	11:44:03	297.33	0.746
6965	8/20/96	11:44:05	297.35	0.742
6966	8/20/96	11:44:07	297.36	0.772
6967	8/20/96	11:44:09	297.38	0.808
6968	8/20/96	11:44:11	297.39	0.851
6969	8/20/96	11:44:13	297.41	0.884
6970	8/20/96	11:44:15	297.42	0.878
6971	8/20/96	11:44:17	297.44	0.894
6972	8/20/96	11:44:19	297.45	0.93
6973	8/20/96	11:44:21	297.47	0.946
6974	8/20/96	11:44:23	297.48	0.953
6975	8/20/96	11:44:25	297.50	0.977
6976	8/20/96	11:44:27	297.51	0.965
6977	8/20/96	11:44:29	297.52	0.924
6978	8/20/96	11:44:31	297.54	0.884
6979	8/20/96	11:44:33	297.55	0.833
6980	8/20/96	11:44:35	297.57	0.807
6981	8/20/96	11:44:37	297.58	0.825
6982	8/20/96	11:44:39	297.60	0.791
6983	8/20/96	11:44:41	297.61	0.725
6984	8/20/96	11:44:43	297.63	0.679
6985	8/20/96	11:44:45	297.64	0.616
6986	8/20/96	11:44:47	297.66	0.563
6987	8/20/96	11:44:49	297.67	0.574
6988	8/20/96	11:44:51	297.69	0.605
6989	8/20/96	11:44:53	297.70	0.647
6990	8/20/96	11:44:55	297.72	0.691
6991	8/20/96	11:44:57	297.73	0.758
6992	8/20/96	11:44:59	297.75	0.801
6993	8/20/96	11:45:01	297.76	0 727
6994	8/20/96	11:45:03	297.78	0.663
6995	8/20/96	11:45:05	297.79	0.655
6996	8/20/96	11:45:06	297.80	0.655
6997	8/20/96	11:45:07	297.81	0.645
6998	8/20/96	11:45:09	297.83	0.627
6999	8/20/96	11:45:11	297.85	0.615
7000	8/20/96	11:45:13	297.87	0.607
7001	8/20/96	11:45:15	297.89	0.63
7002	8/20/96	11:45:17	297.91	0.647
7003	8/20/96	11:45:19	297.93	0.66
7004	8/20/96	11:45:21	297.95	0.685
7005	8/20/96	11:45:23	297.97	0.71
7006	8/20/96	11:45:25	297.99	0.722
7007	8/20/96	11:45:27	298.01	0.718
7008	8/20/96	11:45:29	298.03	0.707
7009	8/20/96	11:45:31	298.05	0.699
7010	8/20/96	11:45:33	298.07	0.685
7011	8/20/96	11:45:35	298.09	0.687
7012	8/20/96	11:45:37	298.11	0.705
7013	8/20/96	11:45:39	298.13	0.718
7014	8/20/96	11:45:41	298.15	0.742
7015	8/20/96	11:45:43	298.17	0.775
7016	8/20/96	11:45:45	298.19	0.862
7017	8/20/96	11:45:47	298.21	0.923
7018	8/20/96	11:45:49	298.23	0.878
7019	8/20/96	11:45:51	298.25	0.867

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7686	8/20/96	12:07:59	297.10	0.493
7685	8/20/96	12:07:57	297.11	0.528
7684	8/20/96	12:07:55	297.12	0.547
7683	8/20/96	12:07:53	297.14	0.562
7682	8/20/96	12:07:51	297.15	0.57
7681	8/20/96	12:07:49	297.17	0.567
7680	8/20/96	12:07:47	297.18	0.56
7679	8/20/96	12:07:45	297.20	0.554
7678	8/20/96	12:07:43	297.21	0.551
7677	8/20/96	12:07:41	297.22	0.547
7676	8/20/96	12:07:39	297.24	0.533
7675	8/20/96	12:07:37	297.25	0.522
7674	8/20/96	12:07:35	297.27	0.521
7673	8/20/96	12:07:33	297.28	0.519
7672	8/20/96	12:07:31	297.30	0.508
7671	8/20/96	12:07:29	297.31	0.497
7670	8/20/96	12:07:27	297.33	0.51
7669	8/20/96	12:07:25	297.34	0.546
7668	8/20/96	12:07:23	297.35	0.579
7667	8/20/96	12:07:21	297.37	0.603
7666	8/20/96	12:07:19	297.38	0.629
7665	8/20/96	12:07:17	297.40	0.65
7664	8/20/96	12:07:15	297.41	0.669
7663	8/20/96	12:07:13	297.43	0.676
7662	8/20/96	12:07:11	297.44	0.677
7661	8/20/96	12:07:09	297.45	0.68
7660	8/20/96	12:07:07	297.47	0.667
7659	8/20/96	12:07:05	297.48	0.65
7658	8/20/96	12:07:03	297.50	0.634
7657	8/20/96	12:07:01	297.51	0.615
7656	8/20/96	12:06:59	297.53	0.596
7655	8/20/96	12:06:57	297.54	0.571
7654	8/20/96	12:06:55	297.56	0.551
7653	8/20/96	12:06:53	297.57	0.539
7652	8/20/96	12:06:51	297.58	0.524
7651	8/20/96	12:06:49	297.60	0.523
7650	8/20/96	12:06:47	297.61	0.531
7649	8/20/96	12:06:45	297.63	0.535
7648	8/20/96	12:06:43	297.64	0.542
7647	8/20/96	12:06:41	297.66	0.554
7646	8/20/96	12:06:39	297.67	0.562
7645	8/20/96	12:06:37	297.69	0.563
7644	8/20/96	12:06:35	297.70	0.564
7643	8/20/96	12:06:33	297.71	0.574
7642	8/20/96	12:06:31	297.73	0.584
7641	8/20/96	12:06:29	297.74	0.6
7640	8/20/96	12:06:27	297.76	0.616
7639	8/20/96	12.06:25	297.77	0.622
7638	8/20/96	12.06:23	297.79	0.627
7637	8/20/96	12.06:21	297.80	0.647
7636	8/20/96	12.06:19	297.82	0.661
7635	8/20/96	12:06:17	297.84	0.667
7634	8/20/96	12:06:15	297.86	0.677
7633	8/20/96	12:06:13	297.88	0.693
7632	8/20/96	12:06:11	297.89	0.728
7631	8/20/96	12:06:09	297.91	0.759
7630	8/20/96	12:06:07	297.93	0.781

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7020	8/20/96	11:45:53	298.27	0.902
7021	8/20/96	11:45:55	298.29	0.906
7022	8/20/96	11:45:57	298.31	0.909
7023	8/20/96	11:45:59	298.33	0.93
7024	8/20/96	11:46:01	298.35	0.945
7025	8/20/96	11:46:03	298.36	0.96
7026	8/20/96	11:46:05	298.38	0.98
7027	8/20/96	11:46:07	298.40	0.989
7028	8/20/96	11:46:09	298.42	0.963
7029	8/20/96	11:46:11	298.44	0.916
7030	8/20/96	11:46:13	298.46	0.881
7031	8/20/96	11:46:15	298.48	0.862
7032	8/20/96	11:46:17	298.50	0.878
7033	8/20/96	11:46:19	298.52	0.959
7034	8/20/96	11:46:21	298.54	1.068
7035	8/20/96	11:46:23	298.56	1.166
7036	8/20/96	11:46:25	298.58	1.229
7037	8/20/96	11:46:27	298.60	1.264
7038	8/20/96	11:46:29	298.62	1.299
7039	8/20/96	11:46:31	298.64	1.325
7040	8/20/96	11:46:33	298.66	1.356
7041	8/20/96	11:46:35	298.68	1.391
7042	8/20/96	11:46:37	298.70	1.41
7043	8/20/96	11:46:39	298.72	1.422
7044	8/20/96	11:46:41	298.74	1.439
7045	8/20/96	11:46:43	298.76	1.465
7046	8/20/96	11:46:45	298.78	1.49
7047	8/20/96	11:46:47	298.80	1.51
7048	8/20/96	11:46:49	298.82	1.545
7049	8/20/96	11:46:51	298.84	1.573
7050	8/20/96	11:46:53	298.86	1.575
7051	8/20/96	11:46:55	298.88	1.578
7052	8/20/96	11:46:57	298.90	1 57
7053	8/20/96	11:46:59	298.92	1.561
7054	8/20/96	11:47:01	298.94	1.568
7055	8/20/96	11:47:03	298.96	1.536
7056	8/20/96	11:47:05	298.98	1.472
7057	8/20/96	11:47:07	299.00	1.511
7058	8/20/96	11:47:09	299.02	1.528
7059	8/20/96	11:47:11	299.04	1.448
7060	8/20/96	11:47:13	299.06	1.446
7061	8/20/96	11:47:15	299.08	1.489
7062	8/20/96	11:47:17	299.10	1.501
7063	8/20/96	11:47:19	299.12	1.511
7064	8/20/96	11:47:21	299.14	1.478
7065	8/20/96	11:47:23	299.16	1.387
7066	8/20/96	11:47:25	299.17	1.344
7067	8/20/96	11:47:27	299.19	1.38
7068	8/20/96	11:47:29	299.21	1.427
7069	8/20/96	11:47:31	299.23	1.302
7070	8/20/96	11:47:33	299.25	0.948
7071	8/20/96	11:47:35	299.27	0.797
7072	8/20/96	11:47:37	299.29	0.668
7073	8/20/96	11:47:39	299.31	0.66
7074	8/20/96	11:47:41	299.33	0.646
7075	8/20/96	11:47:43	299.35	0.653
7076	8/20/96	11:47:45	299.37	0.706

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7629	8/20/96	12:06:05	297.95	0.798
7628	8/20/96	12:06:03	297.97	0.82
7627	8/20/96	12:06:01	297.99	0.855
7626	8/20/96	12:05:59	298.01	0.882
7625	8/20/96	12:05:57	298.03	0.904
7624	8/20/96	12:05:55	298.04	0.929
7623	8/20/96	12:05:53	298.06	0.959
7622	8/20/96	12:05:51	298.08	0.981
7621	8/20/96	12:05:49	298.10	0.996
7620	8/20/96	12:05:47	298.12	1.014
7619	8/20/96	12:05:45	298.14	1.041
7618	8/20/96	12:05:43	298.16	1.086
7617	8/20/96	12:05:41	298.18	1.129
7616	8/20/96	12:05:39	298.19	1.148
7615	8/20/96	12:05:37	298.21	1.158
7614	8/20/96	12:05:35	298.23	1.182
7613	8/20/96	12:05:33	298.25	1.209
7612	8/20/96	12:05:31	298.27	1.238
7611	8/20/96	12:05:29	298.29	1.272
7610	8/20/96	12:05:27	298.31	1.287
7609	8/20/96	12:05:25	298.33	1.295
7608	8/20/96	12:05:23	298.35	1.31
7607	8/20/96	12:05:21	298.36	1.33
7606	8/20/96	12:05:19	298.38	1.296
7605	8/20/96	12:05:17	298.40	1.279
7604	8/20/96	12:05:15	298.42	1.284
7603	8/20/96	12:05:13	298.44	1.27
7602	8/20/96	12:05:11	298.46	1.26
7601	8/20/96	12:05:09	298.48	1.24
7600	8/20/96	12:05:07	298.50	1.188
7599	8/20/96	12:05:05	298.51	1.163
7598	8/20/96	12:05:03	298.53	1.172
7597	8/20/96	12:05:01	298.55	1.187
7596	8/20/96	12:04:59	298.57	1.231
7595	8/20/96	12:04:57	298.59	1.332
7594	8/20/96	12:04:55	298.61	1.447
7593	8/20/96	12:04:53	298.63	1.503
7592	8/20/96	12:04:51	298.65	1.532
7591	8/20/96	12:04:49	298.66	1.54
7590	8/20/96	12:04:47	298.68	1.56
7589	8/20/96	12:04:45	298.70	1.596
7588	8/20/96	12:04:43	298.72	1.605
7587	8/20/96	12:04:41	298.74	1.611
7586	8/20/96	12:04:39	298.76	1.633
7585	8/20/96	12:04:37	298.78	1.656
7584	8/20/96	12:04:35	298.80	1.662
7583	8/20/96	12:04:33	298.82	1.664
7582	8/20/96	12:04:31	298.83	1.68
7581	8/20/96	12:04:29	298.85	1.698
7580	8/20/96	12:04:27	298.87	1.718
7579	8/20/96	12:04:25	298.89	1.766
7578	8/20/96	12:04:24	298.9	1.799
7577	8/20/96	12:04:23	298.91	1.82
7576	8/20/96	12:04:21	298.93	1.825
7575	8/20/96	12:04:19	298.95	1.853
7574	8/20/96	12:04:17	298.96	1.911
7573	8/20/96	12:04:15	298.98	1.933

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7077	8/20/96	11:47:47	299.39	0.717
7078	8/20/96	11:47:49	299.41	0.693
7079	8/20/96	11:47:51	299.43	0.661
7080	8/20/96	11:47:53	299.45	0.605
7081	8/20/96	11:47:55	299.47	0.589
7082	8/20/96	11:47:57	299.49	0.572
7083	8/20/96	11:47:59	299.51	0.555
7084	8/20/96	11:48:01	299.53	0.549
7085	8/20/96	11:48:03	299.55	0.54
7086	8/20/96	11:48:05	299.57	0.579
7087	8/20/96	11:48:07	299.59	0.649
7088	8/20/96	11:48:09	299.61	0.658
7089	8/20/96	11:48:11	299.63	0.598
7090	8/20/96	11:48:13	299.65	0.587
7091	8/20/96	11:48:15	299.67	0.657
7092	8/20/96	11:48:17	299.69	0.734
7093	8/20/96	11:48:19	299.71	0.733
7094	8/20/96	11:48:21	299.72	0.686
7095	8/20/96	11:48:23	299.74	0.666
7096	8/20/96	11:48:25	299.76	0.691
7097	8/20/96	11:48:27	299.78	0.745
7098	8/20/96	11:48:29	299.80	0.737
7099	8/20/96	11:48:31	299.82	0.699
7100	8/20/96	11:48:33	299.84	0.742
7101	8/20/96	11:48:35	299.86	0.816
7102	8/20/96	11:48:37	299.88	0.856
7103	8/20/96	11:48:39	299.90	0.879
7104	8/20/96	11:48:41	299.92	0.882
7105	8/20/96	11:48:43	299.94	0.899
7106	8/20/96	11:48:45	299.96	0.913
7107	8/20/96	11:48:47	299.98	0.926
7108	8/20/96	11:48:49	300.00	0.912
7109	8/20/96	11:48:51	300.02	0.829
7110	8/20/96	11:48:53	300.03	0.781
7111	8/20/96	11:48:55	300.05	0.822
7112	8/20/96	11:48:57	300.06	0.877
7113	8/20/96	11:48:59	300.08	0.95
7114	8/20/96	11:49:01	300.09	1.001
7115	8/20/96	11:49:03	300.11	0.998
7116	8/20/96	11:49:05	300.13	1.011
7117	8/20/96	11:49:07	300.14	1.068
7118	8/20/96	11:49:09	300.16	1.077
7119	8/20/96	11:49:11	300.17	1.115
7120	8/20/96	11:49:13	300.19	1.198
7121	8/20/96	11:49:15	300.20	1.199
7122	8/20/96	11:49:17	300.22	1.097
7123	8/20/96	11:49:19	300.24	0.96
7124	8/20/96	11:49:21	300.25	0.836
7125	8/20/96	11:49:23	300.27	0.818
7126	8/20/96	11:49:25	300.28	0.892
7127	8/20/96	11:49:27	300.30	0.926
7128	8/20/96	11:49:29	300.31	0.923
7129	8/20/96	11:49:31	300.33	0.949
7130	8/20/96	11:49:33	300.35	0.994
7131	8/20/96	11:49:35	300.36	0.98
7132	8/20/96	11:49:37	300.38	0.913
7133	8/20/96	11:49:39	300.39	0.851

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7572	8/20/96	12:04:13	299.00	1.95
7571	8/20/96	12:04:11	299.02	1.954
7570	8/20/96	12:04:09	299.04	1.934
7569	8/20/96	12:04:07	299.06	1.904
7568	8/20/96	12:04:05	299.08	1.896
7567	8/20/96	12:04:03	299.09	1.901
7566	8/20/96	12:04:01	299.11	1.932
7565	8/20/96	12:03:59	299.13	1.967
7564	8/20/96	12:03:57	299.15	1.959
7563	8/20/96	12:03:55	299.17	1.872
7562	8/20/96	12:03:53	299.19	1.811
7561	8/20/96	12:03:51	299.20	1.804
7560	8/20/96	12:03:49	299.22	1.798
7559	8/20/96	12:03:47	299.24	1.822
7558	8/20/96	12:03:45	299.26	1 848
7557	8/20/96	12:03:43	299.28	1.881
7556	8/20/96	12:03:41	299.30	1.981
7555	8/20/96	12:03:39	299.32	2.011
7554	8/20/96	12:03:37	299.33	1.891
7553	8/20/96	12:03:35	299.35	1.771
7552	8/20/96	12:03:33	299.37	1.696
7551	8/20/96	12:03:31	299.39	1.58
7550	8/20/96	12:03:29	299.41	1.472
7549	8/20/96	12:03:27	299.43	1.439
7548	8/20/96	12:03:25	299.45	1.444
7547	8/20/96	12:03:23	299.46	1.473
7546	8/20/96	12:03:21	299.48	1.472
7545	8/20/96	12:03:19	299.50	1.399
7544	8/20/96	12:03:17	299.52	1.365
7543	8/20/96	12:03:15	299.54	1.403
7542	8/20/96	12:03:13	299.56	1.471
7541	8/20/96	12:03:11	299.57	1.492
7540	8/20/96	12:03:09	299.59	1.486
7539	8/20/96	12:03:07	299.61	1.546
7538	8/20/96	12:03:05	299.63	1.655
7537	8/20/96	12:03:03	299.65	1.751
7536	8/20/96	12:03:01	299.67	1.866
7535	8/20/96	12:02:59	299.69	1.958
7534	8/20/96	12:02:57	299.70	1.979
7533	8/20/96	12:02:55	299.72	2.004
7532	8/20/96	12:02:53	299.74	2.049
7531	8/20/96	12:02:51	299.76	2.054
7530	8/20/96	12:02:49	299.78	2.163
7529	8/20/96	12:02:47	299.80	2.274
7528	8/20/96	12:02:45	299.81	2.265
7527	8/20/96	12:02:43	299.83	2.255
7526	8/20/96	12:02:41	299.85	2.171
7525	8/20/96	12:02:39	299.87	1.932
7524	8/20/96	12:02:37	299.89	1.687
7523	8/20/96	12:02:35	299.91	1.52
7522	8/20/96	12:02:33	299.93	1.385
7521	8/20/96	12:02:31	299.94	1.217
7520	8/20/96	12:02:29	299.96	1.16
7519	8/20/96	12:02:27	299.98	1.267
7518	8/20/96	12:02:25	300	1.34
7517	8/20/96	12:02:23	300.01	1.481
7516	8/20/96	12:02:21	300.03	1.506

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7134	8/20/96	11:49:41	300.41	0.808
7135	8/20/96	11:49:43	300.42	0.831
7136	8/20/96	11:49:45	300.44	0.84
7137	8/20/96	11:49:47	300.46	0.794
7138	8/20/96	11:49:49	300.47	0.765
7139	8/20/96	11:49:51	300.49	0.724
7140	8/20/96	11:49:53	300.50	0.713
7141	8/20/96	11:49:55	300.52	0.77
7142	8/20/96	11:49:57	300.54	0.819
7143	8/20/96	11:49:59	300.55	0.884
7144	8/20/96	11:50:01	300.57	0.933
7145	8/20/96	11:50:03	300.58	0.916
7146	8/20/96	11:50:05	300.60	0.802
7147	8/20/96	11:50:07	300.61	0 588
7148	8/20/96	11:50:09	300.63	0.489
7149	8/20/96	11:50:11	300.65	0.48
7150	8/20/96	11:50:13	300.66	0.484
7151	8/20/96	11:50:15	300.68	0.534
7152	8/20/96	11:50:17	300.69	0.66
7153	8/20/96	11:50:19	300.71	0.803
7154	8/20/96	11:50:21	300.72	0.884
7155	8/20/96	11:50:23	300.74	0.886
7156	8/20/96	11:50:25	300.76	0.923
7157	8/20/96	11:50:27	300.77	0.918
7158	8/20/96	11:50:29	300.79	0.608
7159	8/20/96	11:50:31	300.80	0.271
7160	8/20/96	11:50:33	300.82	0.199
7161	8/20/96	11:50:35	300.83	0.218
7162	8/20/96	11:50:37	300.85	0.217
7163	8/20/96	11:50:39	300.87	0.198
7164	8/20/96	11:50:41	300.88	0.196
7165	8/20/96	11:50:43	300.90	0.23
7166	8/20/96	11:50:45	300.91	0.324
7167	8/20/96	11:50:47	300.93	0.451
7168	8/20/96	11:50:49	300.94	0.595
7169	8/20/96	11:50:51	300.96	0.71
7170	8/20/96	11:50:53	300.98	0.77
7171	8/20/96	11:50:55	300.99	0 823
7172	8/20/96	11:50:56	301.00	0.857
7173	8/20/96	11:50:57	301.01	0.864
7174	8/20/96	11:50:59	301.04	0.838
7175	8/20/96	11:51:01	301.06	0.844
7176	8/20/96	11:51:03	301.09	0.919
7177	8/20/96	11:51:05	301.12	0.94
7178	8/20/96	11:51:07	301.14	0.87
7179	8/20/96	11:51:09	301.17	0.776
7180	8/20/96	11:51:11	301.19	0.738
7181	8/20/96	11:51:13	301.22	0.665
7182	8/20/96	11:51:15	301.25	0.549
7183	8/20/96	11:51:17	301.27	0.429
7184	8/20/96	11:51:19	301.30	0.268
7185	8/20/96	11:51:21	301.32	0.138
7186	8/20/96	11:51:23	301.35	0.084
7187	8/20/96	11:51:25	301.38	0.042
7188	8/20/96	11:51:27	301.40	0.017
7189	8/20/96	11:51:29	301.43	ND
7190	8/20/96	11:51:31	301.45	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7515	8/20/96	12:02:19	300.04	1.46
7514	8/20/96	12:02:17	300.06	1.421
7513	8/20/96	12:02:15	300.07	1.422
7512	8/20/96	12:02:13	300.09	1.422
7511	8/20/96	12:02:11	300.10	1.245
7510	8/20/96	12:02:09	300.12	1.16
7509	8/20/96	12:02:07	300.13	0.893
7508	8/20/96	12:02:05	300.14	0.54
7507	8/20/96	12:02:03	300.16	0.457
7506	8/20/96	12:02:01	300.17	0.541
7505	8/20/96	12:01:59	300.19	0.758
7504	8/20/96	12:01:57	300.20	0.812
7503	8/20/96	12:01:55	300.22	0.945
7502	8/20/96	12:01:53	300.23	1.457
7501	8/20/96	12:01:51	300.24	1.874
7500	8/20/96	12:01:49	300.26	2
7499	8/20/96	12:01:47	300.27	1 96
7498	8/20/96	12:01:45	300.29	1.898
7497	8/20/96	12:01:43	300.30	1.8
7496	8/20/96	12:01:41	300.32	1.704
7495	8/20/96	12:01:39	300.33	1.665
7494	8/20/96	12:01:37	300.35	1.448
7493	8/20/96	12:01:35	300.36	1.281
7492	8/20/96	12:01:33	300.37	1.217
7491	8/20/96	12:01:31	300.39	1.217
7490	8/20/96	12:01:29	300.40	1.29
7489	8/20/96	12:01:27	300.42	1.345
7488	8/20/96	12:01:25	300.43	1.582
7487	8/20/96	12:01:23	300.45	1.908
7486	8/20/96	12:01:21	300.46	2.049
7485	8/20/96	12:01:19	300.47	2.184
7484	8/20/96	12:01:17	300.49	2.388
7483	8/20/96	12.01:15	300.50	2.487
7482	8/20/96	12:01:13	300.52	2.55
7481	8/20/96	12.01:11	300.53	2.505
7480	8/20/96	12:01:09	300.55	2.545
7479	8/20/96	12:01:07	300.56	2.65
7478	8/20/96	12:01:05	300.58	2.695
7477	8/20/96	12:01:03	300.59	2.542
7476	8/20/96	12:01:01	300.60	2.344
7475	8/20/96	12:00:59	300.62	2.182
7474	8/20/96	12:00:57	300.63	1.941
7473	8/20/96	12:00:55	300.65	1.689
7472	8/20/96	12:00:53	300.66	1.56
7471	8/20/96	12:00:51	300.68	1.561
7470	8/20/96	12:00:49	300.69	1.559
7469	8/20/96	12:00:47	300.70	1 553
7468	8/20/96	12:00:45	300.72	1 623
7467	8/20/96	12:00:43	300.73	1.767
7466	8/20/96	12:00:41	300.75	1.826
7465	8/20/96	12:00:39	300.76	1.844
7464	8/20/96	12:00:37	300.78	1 964
7463	8/20/96	12:00:35	300.79	2.095
7462	8/20/96	12:00:33	300.81	2.116
7461	8/20/96	12:00:31	300.82	2.11
7460	8/20/96	12:00:29	300.83	2.093
7459	8/20/96	12:00:27	300.85	1.914

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7191	8/20/96	11:51:33	301.48	ND
7192	8/20/96	11:51:35	301.51	ND
7193	8/20/96	11:51:37	301.53	ND
7194	8/20/96	11:51:39	301.56	ND
7195	8/20/96	11:51:41	301.58	0.057
7196	8/20/96	11:51:43	301.61	0.052
7197	8/20/96	11:51:45	301.64	0.057
7198	8/20/96	11:51:47	301.66	0.092
7199	8/20/96	11:51:49	301.69	0.06
7200	8/20/96	11:51:51	301.71	0
7201	8/20/96	11:51:53	301.74	ND
7202	8/20/96	11:51:55	301.77	ND
7203	8/20/96	11:51:57	301.79	ND
7204	8/20/96	11:51:59	301.82	ND
7205	8/20/96	11:52:01	301.84	ND
7206	8/20/96	11:52:03	301.87	ND
7207	8/20/96	11:52:05	301.90	ND
7208	8/20/96	11:52:07	301.92	ND
7209	8/20/96	11:52:09	301.95	ND
7210	8/20/96	11:52:11	301.97	ND
7211	8/20/96	11:52:13	302.00	ND
7212	8/20/96	11:52:15	302.01	ND
7213	8/20/96	11:52:17	302.02	ND
7214	8/20/96	11:52:19	302.04	ND
7215	8/20/96	11:52:21	302.05	ND
7216	8/20/96	11:52:23	302.06	ND
7217	8/20/96	11:52:25	302.07	ND
7218	8/20/96	11:52:27	302.08	ND
7219	8/20/96	11:52:29	302.10	ND
7220	8/20/96	11:52:31	302.11	ND
7221	8/20/96	11:52:33	302.12	ND
7222	8/20/96	11:52:35	302.13	ND
7223	8/20/96	11:52:37	302.15	ND
7224	8/20/96	11:52:39	302.16	ND
7225	8/20/96	11:52:41	302.17	ND
7226	8/20/96	11:52:43	302.18	ND
7227	8/20/96	11:52:45	302.19	ND
7228	8/20/96	11:52:47	302.21	ND
7229	8/20/96	11:52:49	302.22	ND
7230	8/20/96	11:52:51	302.23	ND
7231	8/20/96	11:52:53	302.24	ND
7232	8/20/96	11:52:55	302.25	ND
7233	8/20/96	11:52:57	302.27	ND
7234	8/20/96	11:52:59	302.28	ND
7235	8/20/96	11:53:01	302.29	ND
7236	8/20/96	11:53:03	302.30	ND
7237	8/20/96	11:53:05	302.32	ND
7238	8/20/96	11:53:07	302.33	ND
7239	8/20/96	11:53:09	302.34	ND
7240	8/20/96	11:53:11	302.35	ND
7241	8/20/96	11:53:13	302.36	ND
7242	8/20/96	11:53:15	302.38	ND
7243	8/20/96	11:53:17	302.39	ND
7244	8/20/96	11:53:19	302.40	ND
7245	8/20/96	11:53:21	302.41	ND
7246	8/20/96	11:53:23	302.42	ND
7247	8/20/96	11:53:25	302.44	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7458	8/20/96	12:00:25	300.86	1.684
7457	8/20/96	12:00:23	300.88	1.373
7456	8/20/96	12:00:21	300.89	0.916
7455	8/20/96	12:00:19	300.91	0.732
7454	8/20/96	12:00:17	300.92	0.757
7453	8/20/96	12:00:15	300.93	0.725
7452	8/20/96	12:00:13	300.95	0.72
7451	8/20/96	12:00:11	300.96	0.619
7450	8/20/96	12:00:09	300.98	0.567
7449	8/20/96	12:00:07	300.99	0.501
7448	8/20/96	12:00:06	301	0.499
7447	8/20/96	12:00:05	301.02	0.452
7446	8/20/96	12:00:03	301.05	0.317
7445	8/20/96	12:00:01	301.08	0.214
7444	8/20/96	11:59:59	301.12	0.242
7443	8/20/96	11:59:57	301.15	0.208
7442	8/20/96	11:59:55	301.19	0.086
7441	8/20/96	11:59:53	301.22	0.049
7440	8/20/96	11:59:51	301.25	0.05
7439	8/20/96	11:59:49	301.29	0.015
7438	8/20/96	11:59:47	301.32	ND
7437	8/20/96	11:59:45	301.36	ND
7436	8/20/96	11:59:43	301.39	ND
7435	8/20/96	11:59:41	301.42	ND
7434	8/20/96	11:59:39	301.46	ND
7433	8/20/96	11:59:37	301.49	ND
7432	8/20/96	11:59:35	301.53	ND
7431	8/20/96	11:59:33	301.56	0.015
7430	8/20/96	11:59:31	301.59	0.02
7429	8/20/96	11:59:29	301.63	ND
7428	8/20/96	11:59:27	301.66	ND
7427	8/20/96	11:59:25	301.69	ND
7426	8/20/96	11:59:23	301.73	ND
7425	8/20/96	11:59:21	301.76	ND
7424	8/20/96	11:59:19	301.80	ND
7423	8/20/96	11:59:17	301.83	ND
7422	8/20/96	11:59:15	301.86	ND
7421	8/20/96	11:59:13	301.90	ND
7420	8/20/96	11:59:11	301.93	ND
7419	8/20/96	11:59:09	301.97	ND
7418	8/20/96	11:59:07	302	ND
7417	8/20/96	11:59:05	302.01	ND
7416	8/20/96	11:59:03	302.02	ND
7415	8/20/96	11:59:01	302.04	ND
7414	8/20/96	11:58:59	302.05	ND
7413	8/20/96	11:58:57	302.06	ND
7412	8/20/96	11 58:55	302.07	ND
7411	8/20/96	11:58:53	302.08	ND
7410	8/20/96	11:58:51	302.10	ND
7409	8/20/96	11:58:49	302.11	ND
7408	8/20/96	11:58:47	302.12	ND
7407	8/20/96	11:58:45	302.13	ND
7406	8/20/96	11:58:43	302.14	ND
7405	8/20/96	11:58:41	302.16	ND
7404	8/20/96	11:58:39	302.17	ND
7403	8/20/96	11:58:37	302.18	ND
7402	8/20/96	11:58:35	302.19	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7248	8/20/96	11:53:27	302.45	ND
7249	8/20/96	11:53:29	302.46	ND
7250	8/20/96	11:53:31	302.47	ND
7251	8/20/96	11:53:33	302.48	ND
7252	8/20/96	11:53:35	302.50	ND
7253	8/20/96	11:53:37	302.51	ND
7254	8/20/96	11:53:39	302.52	ND
7255	8/20/96	11:53:41	302.53	ND
7256	8/20/96	11:53:43	302.55	ND
7257	8/20/96	11:53:45	302.56	ND
7258	8/20/96	11:53:47	302.57	ND
7259	8/20/96	11:53:49	302.58	ND
7260	8/20/96	11:53:51	302.59	ND
7261	8/20/96	11:53:53	302.61	ND
7262	8/20/96	11:53:55	302.62	ND
7263	8/20/96	11:53:57	302.63	ND
7264	8/20/96	11:53:59	302.64	ND
7265	8/20/96	11:54:01	302.65	ND
7266	8/20/96	11:54:03	302.67	ND
7267	8/20/96	11:54:05	302.68	ND
7268	8/20/96	11:54:07	302.69	ND
7269	8/20/96	11:54:09	302.70	ND
7270	8/20/96	11:54:11	302.72	ND
7271	8/20/96	11:54:13	302.73	ND
7272	8/20/96	11:54:15	302.74	ND
7273	8/20/96	11:54:17	302.75	ND
7274	8/20/96	11:54:19	302.76	ND
7275	8/20/96	11:54:21	302.78	ND
7276	8/20/96	11:54:23	302.79	ND
7277	8/20/96	11:54:25	302.80	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7401	8/20/96	11:58:33	302.20	ND
7400	8/20/96	11:58:31	302.21	ND
7399	8/20/96	11:58:29	302.23	ND
7398	8/20/96	11:58:27	302.24	ND
7397	8/20/96	11:58:25	302.25	ND
7396	8/20/96	11:58:23	302.26	ND
7395	8/20/96	11:58:21	302.27	ND
7394	8/20/96	11:58:19	302.29	ND
7393	8/20/96	11:58:17	302.30	ND
7392	8/20/96	11:58:15	302.31	ND
7391	8/20/96	11:58:13	302.32	ND
7390	8/20/96	11:58:11	302.33	ND
7389	8/20/96	11:58:09	302.35	ND
7388	8/20/96	11:58:07	302.36	ND
7387	8/20/96	11:58:05	302.37	ND
7386	8/20/96	11:58:03	302.38	ND
7385	8/20/96	11:58:01	302.39	ND
7384	8/20/96	11:57:59	302.41	ND
7383	8/20/96	11:57:57	302.42	ND
7382	8/20/96	11:57:55	302.43	ND
7381	8/20/96	11:57:53	302.44	ND
7380	8/20/96	11:57:51	302.45	ND
7379	8/20/96	11:57:49	302.47	ND
7378	8/20/96	11:57:47	302.48	ND
7377	8/20/96	11:57:45	302.49	ND
7376	8/20/96	11:57:43	302.50	ND
7375	8/20/96	11:57:41	302.51	ND
7374	8/20/96	11:57:39	302.53	ND
7373	8/20/96	11:57:37	302.54	ND
7372	8/20/96	11:57:35	302.55	ND
7371	8/20/96	11:57:33	302.56	ND
7370	8/20/96	11:57:31	302.57	ND
7369	8/20/96	11:57:29	302.59	ND
7368	8/20/96	11:57:27	302.60	ND
7367	8/20/96	11:57:25	302.61	ND
7366	8/20/96	11:57:23	302.62	ND
7365	8/20/96	11:57:21	302.63	ND
7364	8/20/96	11:57:19	302.64	ND
7363	8/20/96	11:57:17	302.66	ND
7362	8/20/96	11:57:15	302.67	ND
7361	8/20/96	11:57:13	302.68	ND
7360	8/20/96	11:57:11	302.69	ND
7359	8/20/96	11:57:09	302.70	ND
7358	8/20/96	11:57:07	302.72	ND
7357	8/20/96	11:57:05	302.73	ND
7356	8/20/96	11:57:03	302.74	ND
7355	8/20/96	11:57:01	302.75	ND
7354	8/20/96	11:56:59	302.76	ND
7353	8/20/96	11:56:57	302.78	ND
7352	8/20/96	11:56:55	302.79	ND
7351	8/20/96	11:56:53	302.8	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5295	8/20/96	17:47:00	295.90	ND
5296	8/20/96	17:47:01	295.91	ND
5297	8/20/96	17:47:03	295.94	ND
5298	8/20/96	17:47:05	295.96	ND
5299	8/20/96	17:47:07	295.98	ND
5300	8/20/96	17:47:09	296.01	ND
5301	8/20/96	17:47:11	296.03	ND
5302	8/20/96	17:47:13	296.05	ND
5303	8/20/96	17:47:15	296.08	0 015
5304	8/20/96	17:47:17	296.10	0 077
5305	8/20/96	17:47:19	296.12	0.13
5306	8/20/96	17.47:21	296.15	0 121
5307	8/20/96	17:47:23	296.17	0.11
5308	8/20/96	17 47:25	296.19	0.113
5309	8/20/96	17 47:27	296.22	0.111
5310	8/20/96	17 47:29	296.24	0 111
5311	8/20/96	17 47.31	296.26	0 105
5312	8/20/96	17 47:33	296.29	0 084
5313	8/20/96	17 47:35	296.31	0 066
5314	8/20/96	17.47:37	296.34	0.066
5315	8/20/96	17:47:39	296.36	0 069
5316	8/20/96	17:47:41	296.38	0 053
5317	8/20/96	17:47:43	296.41	0 045
5318	8/20/96	17:47:45	296.43	0 042
5319	8/20/96	17:47:47	296.45	0 027
5320	8/20/96	17.47:49	296.48	0 009
5321	8/20/96	17:47:51	296.50	ND
5322	8/20/96	17:47:53	296.52	ND
5323	8/20/96	17:47:55	296.55	ND
5324	8/20/96	17:47:57	296.57	ND
5325	8/20/96	17:47:59	296 59	ND
5326	8/20/96	17:48:01	296.62	ND
5327	8/20/96	17:48:03	296.64	ND
5328	8/20/96	17.48.05	296 66	ND
5329	8/20/96	17:48:07	296.69	ND
5330	8/20/96	17 48.08	296.70	ND
5331	8/20/96	17 48:09	296.71	ND
5332	8/20/96	17 48:11	296.72	ND
5333	8/20/96	17:48:13	296.74	ND
5334	8/20/96	17:48:15	296.75	ND
5335	8/20/96	17 48:17	296 77	ND
5336	8/20/96	17:48.19	296.78	ND
5337	8/20/96	17 48:21	296.80	ND
5338	8/20/96	17 48:23	296.82	0 006
5339	8/20/96	17.48.25	296.83	0 038
5340	8/20/96	17 48:27	296.85	0 062
5341	8/20/96	17.48:29	296.86	0.064
5342	8/20/96	17 48:31	296 88	0 037
5343	8/20/96	17 48:33	296.89	0 008
5344	8/20/96	17 48:35	296.91	ND
5345	8/20/96	17:48:37	296 92	ND
5346	8/20/96	17:48:39	296.94	ND
5347	8/20/96	17:48:41	296.95	ND
5348	8/20/96	17 48:43	296 97	ND
5349	8/20/96	17:48:45	296.98	ND
5350	8/20/96	17 48.47	297.00	ND
5351	8/20/96	17:48:49	297.02	ND
5352	8/20/96	17 48.51	297.03	ND
5353	8/20/96	17:48.53	297.05	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5221	8/20/96	17:44:34	295.90	ND
5220	8/20/96	17:44:33	295.91	ND
5219	8/20/96	17:44:31	295.93	ND
5218	8/20/96	17:44:29	295.95	ND
5217	8/20/96	17:44:27	295.97	ND
5216	8/20/96	17:44:25	296.00	ND
5215	8/20/96	17:44:23	296.02	ND
5214	8/20/96	17:44:21	296.04	ND
5213	8/20/96	17.44:19	296.06	ND
5212	8/20/96	17:44:17	296.08	ND
5211	8/20/96	17:44:15	296.10	ND
5210	8/20/96	17 44:13	296.12	ND
5209	8/20/96	17:44:11	296.15	ND
5208	8/20/96	17 44:09	296.17	ND
5207	8/20/96	17.44:07	296.19	ND
5206	8/20/96	17 44:05	296.21	ND
5205	8/20/96	17 44:03	296.23	ND
5204	8/20/96	17:44:01	296.25	ND
5203	8/20/96	17:43:59	296.27	ND
5202	8/20/96	17:43:57	296.29	ND
5201	8/20/96	17:43:55	296.32	ND
5200	8/20/96	17:43:53	296.34	ND
5199	8/20/96	17:43:51	296.36	ND
5198	8/20/96	17:43:49	296.38	ND
5197	8/20/96	17 43:47	296.40	ND
5196	8/20/96	17 43:45	296.42	ND
5195	8/20/96	17:43:43	296.44	ND
5194	8/20/96	17:43:41	296.47	ND
5193	8/20/96	17:43:39	296.49	ND
5192	8/20/96	17:43:37	296.51	ND
5191	8/20/96	17:43:35	296.53	ND
5190	8/20/96	17:43:33	296.55	ND
5189	8/20/96	17:43:31	296.57	ND
5188	8/20/96	17 43.29	296.59	ND
5187	8/20/96	17 43:27	296.61	ND
5186	8/20/96	17 43:25	296.64	ND
5185	8/20/96	17 43:23	296.66	ND
5184	8/20/96	17 43 21	296 68	ND
5183	8/20/96	17 43:19	296.70	ND
5182	8/20/96	17 43 17	296.72	ND
5181	8/20/96	17 43:15	296.73	ND
5180	8/20/96	17 43 13	296.75	ND
5179	8/20/96	17 43 11	296.76	ND
5178	8/20/96	17 43:09	296.78	0 024
5177	8/20/96	17:43:07	296.79	0.039
5176	8/20/96	17 43.05	296.81	0.035
5175	8/20/96	17.43.03	296.82	0.019
5174	8/20/96	17 43 01	296.84	ND
5173	8/20/96	17.42:59	296.85	ND
5172	8/20/96	17.42:57	296.87	ND
5171	8/20/96	17 42 55	296.88	ND
5170	8/20/96	17:42:53	296.90	ND
5169	8/20/96	17 42.51	296.91	0.013
5168	8/20/96	17 42:49	296.93	0.047
5167	8/20/96	17.42.47	296.94	0.045
5166	8/20/96	17.42:45	296.96	0.061
5165	8/20/96	17:42:43	296.97	0.09
5164	8/20/96	17.42:41	296.99	0.106
5163	8/20/96	17:42:39	297.00	0.105

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5354	8/20/96	17.48:55	297.06	ND
5355	8/20/96	17:48:57	297.08	ND
5356	8/20/96	17:48:59	297.09	0.015
5357	8/20/96	17:49:01	297.11	0.049
5358	8/20/96	17:49:03	297.12	0.077
5359	8/20/96	17:49:05	297.14	0 079
5360	8/20/96	17:49:07	297.15	0.092
5361	8/20/96	17:49:09	297.17	0.115
5362	8/20/96	17:49:11	297.18	0.12
5363	8/20/96	17:49:13	297.20	0.124
5364	8/20/96	17:49:15	297.22	0.127
5365	8/20/96	17:49.17	297.23	0.122
5366	8/20/96	17:49:19	297 25	0.117
5367	8/20/96	17 49:21	297.26	0.108
5368	8/20/96	17 49:23	297.28	0 097
5369	8/20/96	17 49:25	297.29	0 093
5370	8/20/96	17:49:27	297.31	0 086
5371	8/20/96	17:49:29	297.32	0.074
5372	8/20/96	17:49:31	297 34	0.052
5373	8/20/96	17:49:33	297.35	0.032
5374	8/20/96	17:49:35	297 37	0.019
5375	8/20/96	17:49:37	297.38	0.002
5376	8/20/96	17.49:39	297.40	ND
5377	8/20/96	17:49:41	297.42	ND
5378	8/20/96	17:49:43	297.43	ND
5379	8/20/96	17:49:45	297.45	ND
5380	8/20/96	17:49:47	297.46	ND
5381	8/20/96	17:49:49	297.48	ND
5382	8/20/96	17.49:51	297.49	ND
5383	8/20/96	17:49.53	297.51	ND
5384	8/20/96	17:49:55	297.52	ND
5385	8/20/96	17:49:57	297.54	ND
5386	8/20/96	17:49:59	297 55	ND
5387	8/20/96	17:50:01	297 57	ND
5388	8/20/96	17:50:03	297.58	ND
5389	8/20/96	17:50:05	297.60	ND
5390	8/20/96	17:50:07	297.62	0.014
5391	8/20/96	17:50:09	297.63	0 029
5392	8/20/96	17 50:11	297.65	0.001
5393	8/20/96	17:50:13	297 66	ND
5394	8/20/96	17 50:15	297.68	ND
5395	8/20/96	17.50.17	297.69	ND
5396	8/20/96	17 50:19	297.71	ND
5397	8/20/96	17:50:21	297.72	ND
5398	8/20/96	17.50:23	297.74	ND
5399	8/20/96	17:50.25	297.75	ND
5400	8/20/96	17:50:27	297.77	ND
5401	8/20/96	17 50:29	297.78	ND
5402	8/20/96	17:50:31	297.80	ND
5403	8/20/96	17:50:33	297.82	ND
5404	8/20/96	17:50:35	297.84	ND
5405	8/20/96	17:50:37	297.86	ND
5406	8/20/96	17:50:39	297.88	ND
5407	8/20/96	17:50:41	297.90	ND
5408	8/20/96	17:50:43	297.92	ND
5409	8/20/96	17.50:45	297.94	ND
5410	8/20/96	17:50:47	297.96	ND
5411	8/20/96	17.50:49	297.98	ND
5412	8/20/96	17:50:51	298.00	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5162	8/20/96	17:42:37	297.02	0.093
5161	8/20/96	17:42:35	297.03	0.089
5160	8/20/96	17:42:33	297.05	0.087
5159	8/20/96	17:42:31	297.06	0.086
5158	8/20/96	17:42:29	297.08	0.078
5157	8/20/96	17:42:27	297.09	0.075
5156	8/20/96	17:42:25	297.11	0.09
5155	8/20/96	17:42:23	297.12	0.091
5154	8/20/96	17:42:21	297.14	0.094
5153	8/20/96	17.42:19	297.15	0.109
5152	8/20/96	17.42:17	297.17	0.118
5151	8/20/96	17:42:15	297.18	0.115
5150	8/20/96	17:42:13	297.20	0.108
5149	8/20/96	17 42:11	297.21	0.113
5148	8/20/96	17:42:09	297.23	0.129
5147	8/20/96	17:42:07	297.24	0.144
5146	8/20/96	17 42:05	297.26	0.132
5145	8/20/96	17:42:03	297.27	0.109
5144	8/20/96	17:42:01	297.29	0.115
5143	8/20/96	17:41:59	297.30	0.125
5142	8/20/96	17:41.57	297.32	0.135
5141	8/20/96	17:41:55	297.33	0.138
5140	8/20/96	17:41:53	297.35	0.117
5139	8/20/96	17:41:51	297.36	0.102
5138	8/20/96	17:41:49	297.38	0.103
5137	8/20/96	17:41:47	297.39	0.111
5136	8/20/96	17:41:45	297.41	0.119
5135	8/20/96	17.41:43	297.42	0.103
5134	8/20/96	17.41:41	297.44	0.066
5133	8/20/96	17:41:39	297.45	0.058
5132	8/20/96	17:41:37	297.47	0.091
5131	8/20/96	17:41.35	297.48	0.107
5130	8/20/96	17:41:33	297.50	0.094
5129	8/20/96	17.41:31	297.51	0.089
5128	8/20/96	17:41:29	297.53	0.084
5127	8/20/96	17:41 27	297.54	0.084
5126	8/20/96	17.41 25	297.56	0.088
5125	8/20/96	17 41:23	297.57	0 086
5124	8/20/96	17:41.21	297.59	0.071
5123	8/20/96	17 41:19	297.60	0.059
5122	8/20/96	17:41:17	297.62	0.071
5121	8/20/96	17 41:15	297.63	0.085
5120	8/20/96	17:41:13	297.65	0.077
5119	8/20/96	17.41:11	297.66	0 091
5118	8/20/96	17:41.09	297.68	0.107
5117	8/20/96	17 41:07	297.69	0.082
5116	8/20/96	17:41:05	297.71	0.08
5115	8/20/96	17 41:03	297.72	0.099
5114	8/20/96	17.41:01	297.74	0.103
5113	8/20/96	17:40:59	297.75	0.107
5112	8/20/96	17:40:57	297.77	0.123
5111	8/20/96	17:40:55	297.78	0.136
5110	8/20/96	17:40:53	297.80	0.126
5109	8/20/96	17:40:51	297.82	0.109
5108	8/20/96	17:40:49	297.84	0.109
5107	8/20/96	17.40:47	297.86	0.12
5106	8/20/96	17.40:45	297.88	0.137
5105	8/20/96	17.40:43	297.89	0.152
5104	8/20/96	17:40:41	297.91	0.152

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5413	8/20/96	17.50:53	298.02	ND
5414	8/20/96	17.50:55	298.04	ND
5415	8/20/96	17.50:57	298.06	ND
5416	8/20/96	17:50:59	298.08	ND
5417	8/20/96	17:51:01	298.10	ND
5418	8/20/96	17:51:03	298.12	0.061
5419	8/20/96	17:51:05	298.14	0 115
5420	8/20/96	17:51:07	298.16	0.091
5421	8/20/96	17:51:09	298.18	0.063
5422	8/20/96	17.51:11	298.20	0 052
5423	8/20/96	17:51:13	298.22	0.04
5424	8/20/96	17.51:15	298.24	0 026
5425	8/20/96	17 51:17	298.26	0.21
5426	8/20/96	17 51:19	298.28	0 246
5427	8/20/96	17·51·21	298.30	0 229
5428	8/20/96	17·51·23	298.32	0 199
5429	8/20/96	17·51·25	298 34	0 185
5430	8/20/96	17 51·27	298.35	0 165
5431	8/20/96	17.51·29	298.37	0 128
5432	8/20/96	17.51:31	298.39	0 093
5433	8/20/96	17·51:33	298.41	0 07
5434	8/20/96	17:51:35	298.43	0 048
5435	8/20/96	17 51:37	298.45	0 026
5436	8/20/96	17 51:39	298.47	ND
5437	8/20/96	17·51:41	298.49	ND
5438	8/20/96	17:51:43	298.51	0 054
5439	8/20/96	17·51:45	298.53	0 171
5440	8/20/96	17:51:47	298.55	0 298
5441	8/20/96	17·51:49	298.57	0.374
5442	8/20/96	17·51:51	298.59	0.353
5443	8/20/96	17·51·53	298.61	0.345
5444	8/20/96	17 51:55	298.63	0.398
5445	8/20/96	17 51·57	298.65	0.452
5446	8/20/96	17 51·59	298 67	0.473
5447	8/20/96	17.52.01	298 69	0.475
5448	8/20/96	17:52 03	298.71	0 459
5449	8/20/96	17 52:05	298 73	0.454
5450	8/20/96	17 52.07	298.75	0 477
5451	8/20/96	17 52·09	298.77	0 476
5452	8/20/96	17 52·11	298.79	0 439
5453	8/20/96	17 52.13	298.81	0 405
5454	8/20/96	17 52:15	298.83	0 375
5455	8/20/96	17 52:17	298.85	0 356
5456	8/20/96	17 52·19	298 87	0 344
5457	8/20/96	17 52:21	298.89	0 328
5458	8/20/96	17 52·22	298.90	0 328
5459	8/20/96	17 52:23	298.91	0 348
5460	8/20/96	17 52.25	298.93	0 415
5461	8/20/96	17.52.27	298.95	0 471
5462	8/20/96	17·52.29	298.97	0 48
5463	8/20/96	17 52.31	298.99	0 495
5464	8/20/96	17:52·33	299.01	0 531
5465	8/20/96	17 52.35	299.03	0 568
5466	8/20/96	17 52:37	299.05	0 615
5467	8/20/96	17 52·39	299 07	0.627
5468	8/20/96	17 52.41	299.09	0.603
5469	8/20/96	17.52:43	299.11	0.568
5470	8/20/96	17 52:45	299.13	0 517
5471	8/20/96	17:52.47	299 15	0 48

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5103	8/20/96	17:40:39	297.93	0.136
5102	8/20/96	17:40:37	297.95	0.115
5101	8/20/96	17:40·35	297.97	0.115
5100	8/20/96	17·40:33	297.99	0.145
5099	8/20/96	17:40:31	298.01	0.179
5098	8/20/96	17.40:29	298.03	0.209
5097	8/20/96	17:40:27	298.05	0.225
5096	8/20/96	17:40:25	298.07	0.233
5095	8/20/96	17.40:23	298.08	0.245
5094	8/20/96	17:40:21	298.10	0.251
5093	8/20/96	17.40:19	298.12	0.245
5092	8/20/96	17 40.17	298.14	0 238
5091	8/20/96	17:40:15	298.16	0.252
5090	8/20/96	17:40:13	298.18	0.265
5089	8/20/96	17·40:11	298.20	0 278
5088	8/20/96	17 40·09	298.22	0 293
5087	8/20/96	17·40.07	298.24	0 305
5086	8/20/96	17·40:05	298.26	0.319
5085	8/20/96	17.40.03	298.27	0.33
5084	8/20/96	17.40 01	298.29	0 324
5083	8/20/96	17 39:59	298.31	0.316
5082	8/20/96	17:39:57	298.33	0 319
5081	8/20/96	17·39.55	298.35	0.321
5080	8/20/96	17.39:53	298.37	0.313
5079	8/20/96	17·39:51	298.39	0.31
5078	8/20/96	17·39:49	298.41	0 291
5077	8/20/96	17 39:47	298.43	0.274
5076	8/20/96	17·39:45	298.44	0 296
5075	8/20/96	17.39:43	298.46	0.301
5074	8/20/96	17·39:41	298.48	0.318
5073	8/20/96	17 39.39	298.50	0 351
5072	8/20/96	17 39 37	298.52	0 328
5071	8/20/96	17 39 35	298.54	0.281
5070	8/20/96	17 39 33	298.56	0 247
5069	8/20/96	17 39 31	298.58	0.195
5068	8/20/96	17 39 29	298 60	0.17
5067	8/20/96	17 39:27	298.62	0 175
5066	8/20/96	17 39 25	298.63	0.193
5065	8/20/96	17 39:23	298.65	0.236
5064	8/20/96	17 39 21	298.67	0 278
5063	8/20/96	17·39 19	298.69	0.294
5062	8/20/96	17 39.17	298 71	0.294
5061	8/20/96	17·39 15	298.73	0.348
5060	8/20/96	17 39 13	298.75	0.381
5059	8/20/96	17·39.11	298:77	0 344
5058	8/20/96	17 39 09	298.79	0 338
5057	8/20/96	17 39 07	298 81	0.33
5056	8/20/96	17.39 05	298 82	0 29
5055	8/20/96	17·39:03	298.84	0 272
5054	8/20/96	17 39:01	298.86	0 278
5053	8/20/96	17 38.59	298 88	0 282
5052	8/20/96	17 38 57	298.90	0.27
5051	8/20/96	17 38 55	298 92	0.27
5050	8/20/96	17.38 53	298.94	0.291
5049	8/20/96	17 38:51	298.96	0.343
5048	8/20/96	17·38·49	298.98	0 387
5047	8/20/96	17·38:47	299.00	0.36
5046	8/20/96	17·38:45	299.02	0.305
5045	8/20/96	17 38:43	299.04	0.254

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5472	8/20/96	17.52:49	299.17	0.447
5473	8/20/96	17:52:51	299.19	0.402
5474	8/20/96	17:52:53	299.21	0.346
5475	8/20/96	17:52:55	299.23	0.296
5476	8/20/96	17:52:57	299.25	0.303
5477	8/20/96	17:52:59	299.27	0.416
5478	8/20/96	17:53:01	299.29	0.562
5479	8/20/96	17:53:03	299.31	0.648
5480	8/20/96	17:53:05	299.33	0.69
5481	8/20/96	17:53:07	299.35	0.712
5482	8/20/96	17 53:09	299.37	0.719
5483	8/20/96	17.53:11	299.39	0 708
5484	8/20/96	17:53:13	299.41	0 681
5485	8/20/96	17:53:15	299.43	0 655
5486	8/20/96	17:53:17	299.45	0 647
5487	8/20/96	17:53:19	299.47	0.664
5488	8/20/96	17 53:21	299.49	0.682
5489	8/20/96	17.53:23	299.51	0 685
5490	8/20/96	17 53:25	299.53	0.708
5491	8/20/96	17 53.27	299.55	0.744
5492	8/20/96	17:53:29	299.57	0.745
5493	8/20/96	17:53:31	299.59	0.743
5494	8/20/96	17:53:33	299.61	0.747
5495	8/20/96	17.53:35	299.63	0.726
5496	8/20/96	17:53:37	299.65	0 708
5497	8/20/96	17:53:39	299.67	0.706
5498	8/20/96	17:53:41	299.69	0.699
5499	8/20/96	17.53:43	299.71	0.676
5500	8/20/96	17.53:45	299.73	0.685
5501	8/20/96	17.53:47	299.75	0.72
5502	8/20/96	17:53:49	299.77	0 754
5503	8/20/96	17:53:51	299.79	0 786
5504	8/20/96	17:53:53	299.81	0.79
5505	8/20/96	17:53:55	299.83	0.778
5506	8/20/96	17 53.57	299.85	0 771
5507	8/20/96	17:53.59	299.87	0 745
5508	8/20/96	17:54:01	299.89	0 713
5509	8/20/96	17:54:03	299.91	0 676
5510	8/20/96	17:54:05	299 93	0 65
5511	8/20/96	17:54:07	299.95	0.624
5512	8/20/96	17.54:09	299.97	0 592
5513	8/20/96	17.54:11	299.99	0 586
5514	8/20/96	17:54:12	300.00	0.584
5515	8/20/96	17:54:13	300.01	0 576
5516	8/20/96	17:54:15	300.02	0 557
5517	8/20/96	17.54:17	300.04	0 564
5518	8/20/96	17:54:19	300.06	0.56
5519	8/20/96	17 54:21	300.07	0.563
5520	8/20/96	17 54:23	300.09	0.569
5521	8/20/96	17:54:25	300.11	0.518
5522	8/20/96	17 54.27	300.12	0.482
5523	8/20/96	17 54:29	300.14	0 525
5524	8/20/96	17:54:31	300.15	0.532
5525	8/20/96	17:54:33	300.17	0.504
5526	8/20/96	17:54:35	300.19	0.542
5527	8/20/96	17:54:37	300.20	0.57
5528	8/20/96	17:54:39	300.22	0 553
5529	8/20/96	17.54:41	300.24	0 553
5530	8/20/96	17:54:43	300 25	0 585

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5044	8/20/96	17.38:41	299.06	0.174
5043	8/20/96	17:38:39	299.08	0.106
5042	8/20/96	17.38:37	299.10	0.093
5041	8/20/96	17:38:35	299.12	0.096
5040	8/20/96	17:38:33	299.14	0.089
5039	8/20/96	17:38:31	299.16	0.086
5038	8/20/96	17:38:29	299.17	0.109
5037	8/20/96	17:38:27	299.19	0.153
5036	8/20/96	17:38:25	299.21	0.192
5035	8/20/96	17:38:23	299.23	0.225
5034	8/20/96	17 38:21	299.25	0.25
5033	8/20/96	17:38:19	299.27	0.282
5032	8/20/96	17:38:17	299.29	0.319
5031	8/20/96	17.38:15	299.31	0.372
5030	8/20/96	17.38:13	299.33	0.44
5029	8/20/96	17:38:11	299.35	0.461
5028	8/20/96	17:38:09	299.37	0.424
5027	8/20/96	17.38:07	299.39	0.369
5026	8/20/96	17:38:05	299.41	0.318
5025	8/20/96	17:38:03	299.43	0.24
5024	8/20/96	17:38:01	299.45	0.153
5023	8/20/96	17:37:59	299.47	0.124
5022	8/20/96	17:37:57	299.49	0.143
5021	8/20/96	17:37:55	299.51	0.202
5020	8/20/96	17:37:53	299.53	0.265
5019	8/20/96	17:37:51	299.55	0.311
5018	8/20/96	17:37:49	299.57	0.364
5017	8/20/96	17:37:47	299.59	0.383
5016	8/20/96	17:37:45	299.61	0.384
5015	8/20/96	17:37:43	299.63	0.397
5014	8/20/96	17:37:41	299.65	0.409
5013	8/20/96	17:37:39	299.67	0.434
5012	8/20/96	17:37:37	299.69	0.494
5011	8/20/96	17.37:35	299.71	0.545
5010	8/20/96	17:37:33	299.72	0.543
5009	8/20/96	17:37:31	299.74	0.529
5008	8/20/96	17:37:29	299.76	0 534
5007	8/20/96	17:37:27	299 78	0.541
5006	8/20/96	17:37:25	299.80	0.559
5005	8/20/96	17:37:23	299.82	0.572
5004	8/20/96	17:37:21	299.84	0.566
5003	8/20/96	17:37:19	299.86	0.561
5002	8/20/96	17:37:17	299.88	0.559
5001	8/20/96	17 37:15	299.90	0.553
5000	8/20/96	17.37:13	299.92	0 549
4999	8/20/96	17 37:11	299.94	0 549
4998	8/20/96	17:37:09	299.96	0 547
4997	8/20/96	17:37:07	299.98	0 559
4996	8/20/96	17:37:05	300.00	0.576
4995	8/20/96	17:37:03	300.02	0.574
4994	8/20/96	17:37:01	300.03	0.562
4993	8/20/96	17 36:59	300.05	0.559
4992	8/20/96	17:36:57	300.06	0.564
4991	8/20/96	17:36:55	300.08	0.566
4990	8/20/96	17:36:53	300.10	0.569
4989	8/20/96	17:36:51	300.11	0.569
4988	8/20/96	17:36:49	300.13	0.561
4987	8/20/96	17 36:47	300.14	0 557
4986	8/20/96	17:36:45	300.16	0.557

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5531	8/20/96	17:54:45	300.27	0.634
5532	8/20/96	17:54:47	300.28	0.683
5533	8/20/96	17:54:49	300.30	0 724
5534	8/20/96	17:54:51	300.32	0 749
5535	8/20/96	17:54:53	300.33	0.759
5536	8/20/96	17:54:55	300.35	0.758
5537	8/20/96	17:54:57	300.37	0.729
5538	8/20/96	17:54:59	300.38	0.681
5539	8/20/96	17:55:01	300.40	0.663
5540	8/20/96	17.55:03	300.41	0 684
5541	8/20/96	17:55:05	300.43	0.69
5542	8/20/96	17.55:07	300.45	0.673
5543	8/20/96	17:55:09	300.46	0 612
5544	8/20/96	17.55:11	300.48	0.54
5545	8/20/96	17.55:13	300.50	0.438
5546	8/20/96	17.55:15	300.51	0 445
5547	8/20/96	17 55:17	300.53	0.469
5548	8/20/96	17·55.19	300.54	0.493
5549	8/20/96	17·55:21	300.56	0.573
5550	8/20/96	17·55:23	300.58	0.635
5551	8/20/96	17 55:25	300.59	0.642
5552	8/20/96	17 55:27	300.61	0.558
5553	8/20/96	17.55:29	300.63	0 498
5554	8/20/96	17.55:31	300.64	0.576
5555	8/20/96	17:55:33	300.66	0.698
5556	8/20/96	17:55:35	300.67	0.761
5557	8/20/96	17·55:37	300.69	0.776
5558	8/20/96	17 55:39	300.71	0.782
5559	8/20/96	17·55:41	300.72	0 784
5560	8/20/96	17:55:43	300.74	0.764
5561	8/20/96	17:55:45	300.76	0 687
5562	8/20/96	17.55:47	300.77	0.563
5563	8/20/96	17:55:49	300.79	0.475
5564	8/20/96	17·55.51	300 80	0 486
5565	8/20/96	17 55:53	300.82	0 568
5566	8/20/96	17 55.55	300.84	0 585
5567	8/20/96	17·55:57	300.85	0.52
5568	8/20/96	17.55:59	300.87	0 55
5569	8/20/96	17.56:01	300.89	0.641
5570	8/20/96	17·56:03	300.90	0 701
5571	8/20/96	17:56:05	300.92	0 745
5572	8/20/96	17:56:07	300.93	0 756
5573	8/20/96	17 56:09	300.95	0.754
5574	8/20/96	17 56.11	300 97	0 756
5575	8/20/96	17 56.13	300.98	0 761
5576	8/20/96	17·56:15	301.00	0.749
5577	8/20/96	17·56·17	301 02	0 722
5578	8/20/96	17.56:19	301 05	0 699
5579	8/20/96	17.56:21	301.07	0 653
5580	8/20/96	17 56.23	301 10	0 61
5581	8/20/96	17 56·25	301.12	0 633
5582	8/20/96	17.56:27	301.15	0 669
5583	8/20/96	17:56·29	301.17	0 678
5584	8/20/96	17·56·31	301 20	0 665
5585	8/20/96	17:56 33	301.22	0 633
5586	8/20/96	17.56·35	301.24	0 62
5587	8/20/96	17.56:37	301.27	0 624
5588	8/20/96	17:56:39	301 29	0 606
5589	8/20/96	17·56:41	301.32	0 577

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4985	8/20/96	17:36:43	300.18	0.559
4984	8/20/96	17.36:41	300.19	0.564
4983	8/20/96	17:36:39	300.21	0.565
4982	8/20/96	17:36:37	300.22	0.563
4981	8/20/96	17:36:35	300.24	0.562
4980	8/20/96	17:36:33	300.26	0.569
4979	8/20/96	17:36:31	300.27	0.574
4978	8/20/96	17:36:29	300.29	0.568
4977	8/20/96	17:36:27	300.30	0.566
4976	8/20/96	17 36:25	300.32	0.568
4975	8/20/96	17:36:23	300.34	0.569
4974	8/20/96	17:36:21	300.35	0.567
4973	8/20/96	17:36:19	300.37	0.56
4972	8/20/96	17:36:17	300.38	0.56
4971	8/20/96	17·36:15	300.40	0.565
4970	8/20/96	17 36:13	300.42	0 568
4969	8/20/96	17·36:11	300.43	0 566
4968	8/20/96	17.36:09	300.45	0.555
4967	8/20/96	17:36:07	300.46	0.55
4966	8/20/96	17.36:05	300.48	0.557
4965	8/20/96	17.36:03	300.50	0.557
4964	8/20/96	17:36:01	300.51	0.552
4963	8/20/96	17·35:59	300.53	0 552
4962	8/20/96	17.35:57	300.54	0 549
4961	8/20/96	17:35:55	300.56	0 544
4960	8/20/96	17.35:53	300.58	0.531
4959	8/20/96	17:35:51	300.59	0.513
4958	8/20/96	17.35:49	300.61	0 506
4957	8/20/96	17 35.47	300.62	0.513
4956	8/20/96	17 35:45	300.64	0.511
4955	8/20/96	17 35:43	300 66	0.498
4954	8/20/96	17·35:41	300 67	0 506
4953	8/20/96	17 35:39	300 69	0 509
4952	8/20/96	17.35:37	300 70	0.493
4951	8/20/96	17·35:35	300.72	0.49
4950	8/20/96	17.35:33	300.74	0 499
4949	8/20/96	17 35.31	300.75	0.507
4948	8/20/96	17·35:29	300.77	0.505
4947	8/20/96	17 35:27	300.78	0.492
4946	8/20/96	17 35:25	300.80	0 49
4945	8/20/96	17 35:23	300.82	0.495
4944	8/20/96	17·35:21	300.83	0.493
4943	8/20/96	17·35:19	300.85	0 494
4942	8/20/96	17·35:17	300.86	0 489
4941	8/20/96	17:35.15	300 88	0.479
4940	8/20/96	17 35.13	300.90	0.491
4939	8/20/96	17 35:11	300.91	0.514
4938	8/20/96	17 35:09	300.93	0 51
4937	8/20/96	17 35:07	300.94	0.481
4936	8/20/96	17·35·05	300 96	0 464
4935	8/20/96	17.35 03	300.98	0.476
4934	8/20/96	17·35 01	300.99	0.5
4933	8/20/96	17 35:00	301.00	0.505
4932	8/20/96	17 34.59	301.01	0.508
4931	8/20/96	17·34:57	301.04	0.511
4930	8/20/96	17:34·55	301.07	0.519
4929	8/20/96	17·34.53	301.10	0.529
4928	8/20/96	17·34:51	301.13	0.542
4927	8/20/96	17 34·49	301.16	0.548

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5590	8/20/96	17:56:43	301.34	0.599
5591	8/20/96	17:56:45	301.37	0.631
5592	8/20/96	17:56:47	301.39	0.632
5593	8/20/96	17:56:49	301.41	0.65
5594	8/20/96	17:56:51	301.44	0.658
5595	8/20/96	17:56:53	301.46	0.663
5596	8/20/96	17:56:55	301.49	0.687
5597	8/20/96	17:56:57	301.51	0.711
5598	8/20/96	17:56:59	301.54	0.731
5599	8/20/96	17:57:01	301.56	0.729
5600	8/20/96	17:57:03	301.59	0.692
5601	8/20/96	17:57:05	301.61	0.649
5602	8/20/96	17:57:07	301.63	0.642
5603	8/20/96	17:57:09	301 66	0 655
5604	8/20/96	17:57:11	301 68	0 667
5605	8/20/96	17:57:13	301.71	0 67
5606	8/20/96	17:57:15	301.73	0 668
5607	8/20/96	17:57:17	301.76	0.686
5608	8/20/96	17:57:19	301.78	0.729
5609	8/20/96	17:57:21	301.80	0.771
5610	8/20/96	17.57:23	301.83	0.807
5611	8/20/96	17 57:25	301 85	0.843
5612	8/20/96	17:57:27	301.88	0.868
5613	8/20/96	17.57:29	301.90	0.882
5614	8/20/96	17:57:31	301.93	0 892
5615	8/20/96	17:57:33	301.95	0.901
5616	8/20/96	17:57:35	301.98	0.905
5617	8/20/96	17:57:37	302.00	0.91
5618	8/20/96	17:57:39	302.01	0 914
5619	8/20/96	17:57:41	302.03	0 919
5620	8/20/96	17:57:43	302.04	0 923
5621	8/20/96	17:57:45	302.05	0.921
5622	8/20/96	17.57.47	302.07	0.92
5623	8/20/96	17.57:49	302.08	0.918
5624	8/20/96	17:57:51	302.09	0.903
5625	8/20/96	17:57:53	302.11	0.879
5626	8/20/96	17:57.55	302.12	0.87
5627	8/20/96	17:57:57	302.13	0 876
5628	8/20/96	17:57:59	302 15	0 883
5629	8/20/96	17 58:01	302.16	0 894
5630	8/20/96	17:58:03	302.17	0 908
5631	8/20/96	17:58:05	302.19	0.93
5632	8/20/96	17 58:07	302.20	0 951
5633	8/20/96	17:58:09	302 22	0.965
5634	8/20/96	17.58:11	302.23	0 981
5635	8/20/96	17 58:13	302.24	0.988
5636	8/20/96	17:58:15	302.26	0 993
5637	8/20/96	17 58:17	302.27	0 997
5638	8/20/96	17:58:19	302.28	0.999
5639	8/20/96	17:58:21	302.30	1.004
5640	8/20/96	17.58.23	302.31	1.003
5641	8/20/96	17:58:25	302.32	1.003
5642	8/20/96	17 58:27	302.34	1.009
5643	8/20/96	17:58:29	302.35	1.011
5644	8/20/96	17 58:31	302.36	1 013
5645	8/20/96	17:58.33	302.38	1.019
5646	8/20/96	17:58:35	302.39	1.023
5647	8/20/96	17:58:37	302.40	1.019
5648	8/20/96	17.58:39	302.42	1.013

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4926	8/20/96	17:34:47	301.19	0.549
4925	8/20/96	17:34:45	301.22	0.549
4924	8/20/96	17:34:43	301.25	0.559
4923	8/20/96	17:34:41	301.28	0.572
4922	8/20/96	17:34:39	301.31	0.573
4921	8/20/96	17.34:37	301.34	0.579
4920	8/20/96	17:34:35	301.37	0.577
4919	8/20/96	17:34:33	301.40	0.559
4918	8/20/96	17:34:31	301.43	0.545
4917	8/20/96	17:34:29	301.46	0.537
4916	8/20/96	17:34:27	301.49	0.54
4915	8/20/96	17.34:25	301.52	0.543
4914	8/20/96	17:34:23	301.55	0.548
4913	8/20/96	17:34:21	301 58	0.557
4912	8/20/96	17:34:19	301.61	0.562
4911	8/20/96	17:34:17	301.64	0.531
4910	8/20/96	17:34:15	301.67	0.504
4909	8/20/96	17:34:13	301.70	0.509
4908	8/20/96	17:34:11	301.73	0.501
4907	8/20/96	17:34:09	301.76	0.493
4906	8/20/96	17:34:07	301.79	0.503
4905	8/20/96	17:34:05	301.82	0.507
4904	8/20/96	17:34:03	301.85	0.501
4903	8/20/96	17:34:01	301.88	0.507
4902	8/20/96	17:33:59	301.91	0.528
4901	8/20/96	17:33:57	301.94	0.558
4900	8/20/96	17:33:55	301.97	0.593
4899	8/20/96	17:33:53	302.00	0.565
4898	8/20/96	17:33:51	302.01	0.536
4897	8/20/96	17:33:49	302.03	0.551
4896	8/20/96	17.33:47	302 04	0.535
4895	8/20/96	17 33.45	302.05	0.53
4894	8/20/96	17 33:43	302.06	0.541
4893	8/20/96	17:33.41	302.08	0.542
4892	8/20/96	17 33.39	302.09	0.553
4891	8/20/96	17 33:37	302.10	0.568
4890	8/20/96	17:33:35	302.11	0 589
4889	8/20/96	17.33:33	302.13	0.641
4888	8/20/96	17 33:31	302.14	0.687
4887	8/20/96	17:33 29	302.15	0 708
4886	8/20/96	17 33:27	302.17	0.73
4885	8/20/96	17 33:25	302.18	0.754
4884	8/20/96	17.33:23	302.19	0.803
4883	8/20/96	17.33:21	302.20	0.857
4882	8/20/96	17.33.19	302.22	0.878
4881	8/20/96	17.33.17	302.23	0.863
4880	8/20/96	17:33:15	302.24	0.826
4879	8/20/96	17:33:13	302.25	0.797
4878	8/20/96	17:33:11	302.27	0.782
4877	8/20/96	17:33:09	302.28	0.752
4876	8/20/96	17 33 07	302.29	0.756
4875	8/20/96	17.33:05	302.30	0.828
4874	8/20/96	17:33:03	302.32	0.861
4873	8/20/96	17 33:01	302.33	0.847
4872	8/20/96	17 32:59	302.34	0.857
4871	8/20/96	17.32:57	302.36	0.833
4870	8/20/96	17:32:55	302.37	0.793
4869	8/20/96	17.32.53	302.38	0.801
4868	8/20/96	17:32:51	302.39	0.823

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5649	8/20/96	17:58:41	302.43	1 018
5650	8/20/96	17:58:43	302.44	1.025
5651	8/20/96	17:58:45	302.46	1.02
5652	8/20/96	17 58:47	302.47	1 02
5653	8/20/96	17:58:49	302.48	1.005
5654	8/20/96	17.58:51	302.50	0 969
5655	8/20/96	17:58:53	302.51	0.957
5656	8/20/96	17:58:55	302.52	0.951
5657	8/20/96	17:58:57	302.54	0.944
5658	8/20/96	17:58:59	302.55	0.902
5659	8/20/96	17:59:01	302.56	0.857
5660	8/20/96	17:59:03	302.58	0.818
5661	8/20/96	17 59:05	302.59	0.776
5662	8/20/96	17:59.07	302.60	0.773
5663	8/20/96	17 59:09	302.62	0.766
5664	8/20/96	17 59.11	302.63	0.754
5665	8/20/96	17:59.13	302.65	0.767
5666	8/20/96	17:59:15	302.66	0 781
5667	8/20/96	17 59:17	302.67	0.779
5668	8/20/96	17 59:19	302.69	0.761
5669	8/20/96	17:59.21	302.70	0 732
5670	8/20/96	17 59:23	302.71	0 692
5671	8/20/96	17 59:25	302.73	0.65
5672	8/20/96	17 59:27	302.74	0 625
5673	8/20/96	17:59:29	302.75	0 619
5674	8/20/96	17:59:31	302.77	0.667
5675	8/20/96	17:59:33	302.78	0.705
5676	8/20/96	17 59:35	302.79	0.69
5677	8/20/96	17:59:36	302.80	0.665
5678	8/20/96	17 59:37	302.81	0 645
5679	8/20/96	17 59:39	302.83	0.667
5680	8/20/96	17 59:41	302.84	0.783
5681	8/20/96	17 59:43	302.86	0.876
5682	8/20/96	17 59.45	302.88	0 932
5683	8/20/96	17 59.47	302.90	0 959
5684	8/20/96	17 59.49	302.91	0 977
5685	8/20/96	17 59:51	302.93	0.998
5686	8/20/96	17:59:53	302.95	0.999
5687	8/20/96	17 59:55	302.97	0.964
5688	8/20/96	17.59:57	302.98	0 884
5689	8/20/96	17 59:59	303.00	0 842
5690	8/20/96	18 00:01	303.02	0.77
5691	8/20/96	18 00:03	303.03	0.635
5692	8/20/96	18:00:05	303.05	0.584
5693	8/20/96	18.00.07	303.07	0 635
5694	8/20/96	18 00.09	303.09	0.78
5695	8/20/96	18 00:11	303.10	0 913
5696	8/20/96	18 00:13	303.12	0 966
5697	8/20/96	18 00:15	303 14	1 008
5698	8/20/96	18 00.17	303.16	1 006
5699	8/20/96	18 00:19	303.17	0.856
5700	8/20/96	18 00:21	303.19	0.647
5701	8/20/96	18 00:23	303.21	0 562
5702	8/20/96	18 00:25	303.23	0 584
5703	8/20/96	18 00:27	303.24	0.626
5704	8/20/96	18 00:29	303 26	0 657
5705	8/20/96	18.00:31	303.28	0.685
5706	8/20/96	18 00:33	303.30	0 679
5707	8/20/96	18.00:35	303.31	0 7

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4867	8/20/96	17:32:49	302.41	0.835
4866	8/20/96	17:32:47	302.42	0.834
4865	8/20/96	17:32:45	302.43	0.835
4864	8/20/96	17:32:43	302.44	0.842
4863	8/20/96	17:32:41	302.46	0.824
4862	8/20/96	17.32:39	302.47	0.792
4861	8/20/96	17:32:37	302.48	0.774
4860	8/20/96	17:32:35	302.50	0.792
4859	8/20/96	17.32:33	302.51	0.815
4858	8/20/96	17:32:31	302.52	0.838
4857	8/20/96	17:32:29	302.53	0.817
4856	8/20/96	17:32:27	302.55	0.728
4855	8/20/96	17.32:25	302.56	0 68
4854	8/20/96	17 32:23	302.57	0.695
4853	8/20/96	17.32:21	302.58	0.726
4852	8/20/96	17 32:19	302.60	0.778
4851	8/20/96	17 32:17	302.61	0.804
4850	8/20/96	17 32:15	302.62	0 806
4849	8/20/96	17.32:13	302.63	0.839
4848	8/20/96	17:32:11	302.65	0.914
4847	8/20/96	17:32.09	302.66	0.989
4846	8/20/96	17 32 07	302.67	1.017
4845	8/20/96	17.32:05	302.69	1.02
4844	8/20/96	17:32:03	302.70	1.03
4843	8/20/96	17:32:01	302.71	1.047
4842	8/20/96	17 31:59	302.72	1.054
4841	8/20/96	17:31:57	302.74	1.052
4840	8/20/96	17:31:55	302.75	1.044
4839	8/20/96	17:31:53	302.76	1.043
4838	8/20/96	17:31:51	302.77	1.035
4837	8/20/96	17 31:49	302.79	1.027
4836	8/20/96	17:31:47	302.80	1 036
4835	8/20/96	17:31.45	302.82	1 045
4834	8/20/96	17 31 43	302.83	1.044
4833	8/20/96	17 31 41	302.85	1 045
4832	8/20/96	17 31:39	302.86	1 028
4831	8/20/96	17:31:37	302.88	0 963
4830	8/20/96	17 31:35	302.90	0 915
4829	8/20/96	17.31:33	302.91	0 943
4828	8/20/96	17:31:31	302.93	1
4827	8/20/96	17 31:29	302.94	1.035
4826	8/20/96	17 31:27	302 96	1 059
4825	8/20/96	17.31:25	302.98	1 079
4824	8/20/96	17:31:23	302.99	1 075
4823	8/20/96	17:31:21	303.01	1.068
4822	8/20/96	17 31:19	303.03	1 082
4821	8/20/96	17 31:17	303.04	1.107
4820	8/20/96	17:31:15	303.06	1.115
4819	8/20/96	17 31:13	303.07	1 115
4818	8/20/96	17 31:11	303.09	1.134
4817	8/20/96	17 31.09	303.11	1 157
4816	8/20/96	17:31.07	303.12	1.17
4815	8/20/96	17 31:05	303 14	1 162
4814	8/20/96	17:31.03	303.15	1 126
4813	8/20/96	17 31:01	303.17	1.083
4812	8/20/96	17:30:59	303.19	1 09
4811	8/20/96	17:30:57	303.20	1.154
4810	8/20/96	17.30:55	303.22	1.196
4809	8/20/96	17 30:53	303.23	1 209

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5708	8/20/96	18:00:37	303.33	0.795
5709	8/20/96	18:00:39	303.35	0.832
5710	8/20/96	18:00:41	303.37	0.863
5711	8/20/96	18:00:43	303.38	0.921
5712	8/20/96	18:00:45	303.40	0.923
5713	8/20/96	18:00:47	303.42	0.927
5714	8/20/96	18:00:49	303.43	0.969
5715	8/20/96	18:00:51	303.45	0.998
5716	8/20/96	18:00:53	303.47	1 004
5717	8/20/96	18:00:55	303.49	1 008
5718	8/20/96	18:00:57	303.50	1 017
5719	8/20/96	18:00:59	303.52	1 031
5720	8/20/96	18:01:01	303.54	1 045
5721	8/20/96	18:01:03	303.56	1 056
5722	8/20/96	18 01:05	303.57	1 083
5723	8/20/96	18.01:07	303.59	1.099
5724	8/20/96	18 01:09	303.61	1 101
5725	8/20/96	18 01:11	303.63	1.109
5726	8/20/96	18:01:13	303.64	1 095
5727	8/20/96	18.01:15	303.66	1 059
5728	8/20/96	18 01:17	303.68	1.064
5729	8/20/96	18:01:19	303.70	1 098
5730	8/20/96	18:01:21	303.71	1 091
5731	8/20/96	18.01:23	303.73	1.083
5732	8/20/96	18:01:25	303.75	1.055
5733	8/20/96	18.01:27	303.77	0.99
5734	8/20/96	18:01.29	303.78	0.934
5735	8/20/96	18:01:31	303.80	0.879
5736	8/20/96	18:01:33	303.82	0 787
5737	8/20/96	18:01:35	303.83	0 651
5738	8/20/96	18.01:37	303 85	0 557
5739	8/20/96	18:01:39	303.87	0 484
5740	8/20/96	18:01:41	303.89	0.449
5741	8/20/96	18.01:43	303.90	0.483
5742	8/20/96	18:01:45	303.92	0 613
5743	8/20/96	18:01:47	303.94	0.587
5744	8/20/96	18:01:49	303 96	0 591
5745	8/20/96	18:01:51	303.97	0 706
5746	8/20/96	18.01:53	303.99	0 745
5747	8/20/96	18:01:55	304 01	0 747
5748	8/20/96	18 01:57	304.03	0 733
5749	8/20/96	18:01:59	304.04	0 744
5750	8/20/96	18:02.01	304.06	0 827
5751	8/20/96	18:02:03	304.08	0 889
5752	8/20/96	18 02:05	304.10	0 911
5753	8/20/96	18:02:07	304.11	0 933
5754	8/20/96	18.02:09	304.13	0.916
5755	8/20/96	18 02:11	304.15	0 873
5756	8/20/96	18 02.13	304 17	0 831
5757	8/20/96	18.02:15	304 18	0 795
5758	8/20/96	18:02:17	304 20	0 784
5759	8/20/96	18.02:19	304 22	0 786
5760	8/20/96	18.02:21	304.24	0 803
5761	8/20/96	18:02.23	304.26	0.797
5762	8/20/96	18 02:25	304 28	0.876
5763	8/20/96	18.02:27	304.30	1 028
5764	8/20/96	18.02.29	304.32	1.084
5765	8/20/96	18.02:31	304.33	1.124
5766	8/20/96	18.02:33	304.35	1.218

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4808	8/20/96	17:30:51	303.25	1.21
4807	8/20/96	17:30:49	303.27	1 222
4806	8/20/96	17:30:47	303.28	1.262
4805	8/20/96	17:30:45	303.30	1.284
4804	8/20/96	17:30:43	303.31	1.285
4803	8/20/96	17:30:41	303.33	1.276
4802	8/20/96	17:30:39	303.35	1.243
4801	8/20/96	17:30:37	303.36	1.213
4800	8/20/96	17:30:35	303.38	1.218
4799	8/20/96	17:30:33	303.40	1.209
4798	8/20/96	17:30:31	303.41	1 181
4797	8/20/96	17:30:29	303.43	1.165
4796	8/20/96	17 30:27	303.44	1 13
4795	8/20/96	17:30:25	303.46	1.097
4794	8/20/96	17.30:23	303.48	1.095
4793	8/20/96	17.30:21	303.49	1.102
4792	8/20/96	17:30:19	303.51	1.104
4791	8/20/96	17:30.17	303.52	1.128
4790	8/20/96	17 30:15	303.54	1.134
4789	8/20/96	17 30:13	303.56	1.105
4788	8/20/96	17:30:11	303.57	1 099
4787	8/20/96	17:30:09	303.59	1.14
4786	8/20/96	17 30:07	303.60	1.194
4785	8/20/96	17:30:05	303.62	1.245
4784	8/20/96	17:30:03	303.64	1.294
4783	8/20/96	17:30:01	303.65	1.315
4782	8/20/96	17:29:59	303.67	1.34
4781	8/20/96	17:29:57	303.69	1.357
4780	8/20/96	17:29:55	303.70	1 351
4779	8/20/96	17:29:53	303.72	1.374
4778	8/20/96	17:29:51	303.73	1 398
4777	8/20/96	17:29:49	303.75	1.39
4776	8/20/96	17.29:47	303.77	1.369
4775	8/20/96	17:29:45	303.78	1.343
4774	8/20/96	17:29:43	303.80	1.275
4773	8/20/96	17:29:41	303.81	1 231
4772	8/20/96	17 29:39	303.83	1 235
4771	8/20/96	17 29:37	303.85	1 234
4770	8/20/96	17.29:35	303.86	1.195
4769	8/20/96	17.29:33	303.88	1.038
4768	8/20/96	17:29:31	303.89	0 962
4767	8/20/96	17.29:29	303.91	1 028
4766	8/20/96	17:29:27	303.93	1.06
4765	8/20/96	17 29:25	303.94	1 123
4764	8/20/96	17 29:23	303.96	1.205
4763	8/20/96	17:29:21	303.97	1.193
4762	8/20/96	17:29:19	303.99	1 145
4761	8/20/96	17 29:17	304.01	1.128
4760	8/20/96	17 29:15	304.02	1.077
4759	8/20/96	17 29:13	304.04	1.052
4758	8/20/96	17 29:11	304.06	1 099
4757	8/20/96	17 29.09	304.07	1.114
4756	8/20/96	17:29:07	304.09	1.103
4755	8/20/96	17:29:05	304.10	1.093
4754	8/20/96	17 29.03	304.12	1.048
4753	8/20/96	17:29:01	304.14	0.983
4752	8/20/96	17:28:59	304.15	0.981
4751	8/20/96	17 28:57	304.17	1.008
4750	8/20/96	17:28:55	304.18	1.025

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5767	8/20/96	18:02:35	304.37	1 289
5768	8/20/96	18:02:37	304.39	1 325
5769	8/20/96	18:02:39	304.41	1.346
5770	8/20/96	18:02:41	304.43	1.303
5771	8/20/96	18:02:43	304.45	1.118
5772	8/20/96	18:02:45	304.47	0.834
5773	8/20/96	18:02:47	304.49	0.687
5774	8/20/96	18:02:49	304.51	0.797
5775	8/20/96	18:02.51	304.53	1.026
5776	8/20/96	18:02:53	304.55	1 198
5777	8/20/96	18:02:55	304 56	1.381
5778	8/20/96	18:02:57	304.58	1 562
5779	8/20/96	18:02:59	304.60	1 681
5780	8/20/96	18:03:01	304.62	1 728
5781	8/20/96	18.03:03	304 64	1 678
5782	8/20/96	18:03:05	304.66	1 531
5783	8/20/96	18.03.07	304.68	1 298
5784	8/20/96	18 03:09	304.70	1 292
5785	8/20/96	18:03:11	304 72	1.582
5786	8/20/96	18:03:13	304.74	1 858
5787	8/20/96	18 03:15	304.76	1 968
5788	8/20/96	18 03:17	304.78	1 989
5789	8/20/96	18:03.19	304.79	2.002
5790	8/20/96	18:03:21	304 81	1 974
5791	8/20/96	18:03:23	304.83	1.943
5792	8/20/96	18:03:25	304.85	1 908
5793	8/20/96	18:03:27	304.87	1 789
5794	8/20/96	18:03:29	304 89	1 701
5795	8/20/96	18:03:30	304.90	1.66
5796	8/20/96	18:03:31	304.91	1 526
5797	8/20/96	18.03:33	304.93	0 996
5798	8/20/96	18:03:35	304.95	0.51
5799	8/20/96	18.03.37	304.96	0.521
5800	8/20/96	18:03:39	304.98	0.794
5801	8/20/96	18:03:41	305.00	1 019
5802	8/20/96	18:03:43	305.02	1 156
5803	8/20/96	18 03:45	305.04	1 255
5804	8/20/96	18 03:47	305.05	1 314
5805	8/20/96	18:03:49	305 07	1 394
5806	8/20/96	18:03.51	305.09	1 539
5807	8/20/96	18 03:53	305.11	1.601
5808	8/20/96	18:03:55	305.13	1.738
5809	8/20/96	18 03:57	305.14	1 791
5810	8/20/96	18:03.59	305.16	1.792
5811	8/20/96	18 04:01	305 18	1 814
5812	8/20/96	18:04:03	305.20	1 865
5813	8/20/96	18.04:05	305.22	1 908
5814	8/20/96	18 04:07	305.23	1.91
5815	8/20/96	18 04:09	305.25	1 88
5816	8/20/96	18:04.11	305.27	1 876
5817	8/20/96	18 04.13	305.29	1 859
5818	8/20/96	18:04:15	305.31	1.777
5819	8/20/96	18 04:17	305.32	1.675
5820	8/20/96	18.04.19	305.34	1 484
5821	8/20/96	18:04:21	305.36	1 383
5822	8/20/96	18:04:23	305.38	1.348
5823	8/20/96	18:04:25	305.40	1 445
5824	8/20/96	18.04:27	305.41	1.552
5825	8/20/96	18:04:29	305.43	1 521

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4749	8/20/96	17:28:53	304.20	1.093
4748	8/20/96	17:28:51	304.22	1.193
4747	8/20/96	17:28:49	304.24	1 254
4746	8/20/96	17:28:47	304.27	1.254
4745	8/20/96	17:28:45	304.29	1.241
4744	8/20/96	17:28:43	304.31	1.223
4743	8/20/96	17:28:41	304.33	1.183
4742	8/20/96	17:28:39	304.35	1.107
4741	8/20/96	17:28:37	304.38	1.036
4740	8/20/96	17:28:35	304.40	1.005
4739	8/20/96	17:28:33	304.42	1.013
4738	8/20/96	17:28:31	304.44	1.076
4737	8/20/96	17.28:29	304.46	1 174
4736	8/20/96	17:28:27	304.48	1.231
4735	8/20/96	17 28:25	304.51	1 28
4734	8/20/96	17 28:23	304.53	1.428
4733	8/20/96	17 28:21	304.55	1.588
4732	8/20/96	17:28:19	304.57	1.702
4731	8/20/96	17:28:17	304.59	1.752
4730	8/20/96	17:28:15	304.62	1.724
4729	8/20/96	17.28.13	304.64	1.644
4728	8/20/96	17 28:11	304 66	1 558
4727	8/20/96	17:28:09	304.68	1.402
4726	8/20/96	17.28.07	304.70	1.167
4725	8/20/96	17:28:05	304.73	0.984
4724	8/20/96	17.28:03	304.75	0.861
4723	8/20/96	17:28:01	304.77	0.794
4722	8/20/96	17.27:59	304.79	0.771
4721	8/20/96	17 27:57	304.81	0.78
4720	8/20/96	17 27:55	304 83	0.887
4719	8/20/96	17:27:53	304.86	1 047
4718	8/20/96	17.27.51	304.88	1 157
4717	8/20/96	17 27.49	304.90	1.31
4716	8/20/96	17 27:47	304.91	1.566
4715	8/20/96	17.27.45	304.93	1 76
4714	8/20/96	17 27:43	304.94	1 8
4713	8/20/96	17 27:41	304 96	1.732
4712	8/20/96	17 27:39	304.97	1.581
4711	8/20/96	17 27:37	304.99	1.416
4710	8/20/96	17 27.35	305.00	1 247
4709	8/20/96	17:27:33	305.02	1 069
4708	8/20/96	17.27:31	305.03	0.892
4707	8/20/96	17 27:29	305.04	0.727
4706	8/20/96	17.27:27	305.06	0.543
4705	8/20/96	17.27:25	305.07	0.414
4704	8/20/96	17.27:23	305 09	0.412
4703	8/20/96	17.27 21	305.10	0.445
4702	8/20/96	17 27:19	305.12	0.478
4701	8/20/96	17:27:17	305.13	0.509
4700	8/20/96	17.27:15	305.15	0 558
4699	8/20/96	17 27:13	305.16	0.579
4698	8/20/96	17.27:11	305.17	0.538
4697	8/20/96	17:27:09	305.19	0.495
4696	8/20/96	17:27:07	305.20	0.475
4695	8/20/96	17 27:05	305.22	0.438
4694	8/20/96	17:27:03	305.23	0.364
4693	8/20/96	17:27:01	305.25	0 241
4692	8/20/96	17 26:59	305.26	0 108
4691	8/20/96	17:26:57	305.28	0.064

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5826	8/20/96	18:04:31	305.45	1.212
5827	8/20/96	18:04:33	305.47	0.809
5828	8/20/96	18:04:35	305.49	0.5
5829	8/20/96	18:04:37	305.50	0.294
5830	8/20/96	18.04:39	305.52	0.2
5831	8/20/96	18:04:41	305.54	0.186
5832	8/20/96	18:04:43	305.56	0.161
5833	8/20/96	18:04:45	305.58	0.141
5834	8/20/96	18:04:47	305.59	0 146
5835	8/20/96	18:04:49	305.61	0.192
5836	8/20/96	18:04:51	305.63	0 224
5837	8/20/96	18:04:53	305.65	0.329
5838	8/20/96	18:04:55	305.67	0 596
5839	8/20/96	18 04.57	305.69	0 93
5840	8/20/96	18.04:59	305.70	1.108
5841	8/20/96	18 05:01	305.72	1 049
5842	8/20/96	18 05:03	305.74	0 969
5843	8/20/96	18 05:05	305.76	0 936
5844	8/20/96	18.05:07	305.78	0 883
5845	8/20/96	18:05.09	305 79	0 852
5846	8/20/96	18:05:11	305.81	0.807
5847	8/20/96	18.05:13	305 83	0.697
5848	8/20/96	18.05:15	305.85	0.572
5849	8/20/96	18:05:17	305.87	0.43
5850	8/20/96	18:05:19	305.88	0 283
5851	8/20/96	18:05:21	305.90	0.195
5852	8/20/96	18:05:23	305.92	0.219
5853	8/20/96	18:05:25	305.94	0.286
5854	8/20/96	18:05:27	305.96	0.325
5855	8/20/96	18.05:29	305 97	0.293
5856	8/20/96	18:05:31	305.99	0.131
5857	8/20/96	18:05:33	306.01	0.06
5858	8/20/96	18 05:35	306.03	0.144
5859	8/20/96	18:05:37	306.05	0.26
5860	8/20/96	18.05:39	306.06	0.366
5861	8/20/96	18:05:41	306.08	0.467
5862	8/20/96	18:05:43	306.10	0 626
5863	8/20/96	18:05:45	306.12	0 788
5864	8/20/96	18 05:47	306.14	0 851
5865	8/20/96	18 05:49	306 16	0 9
5866	8/20/96	18 05:51	306.18	0 94
5867	8/20/96	18 05:53	306.21	0 84
5868	8/20/96	18 05:55	306.23	0 639
5869	8/20/96	18.05:57	306.25	0 407
5870	8/20/96	18.05:59	306.27	0 238
5871	8/20/96	18 06.01	306.29	0 184
5872	8/20/96	18 06:03	306.31	0.155
5873	8/20/96	18 06:05	306.33	0 136
5874	8/20/96	18 06:07	306.35	0.148
5875	8/20/96	18 06:09	306.37	0.145
5876	8/20/96	18 06.11	306.39	0 158
5877	8/20/96	18.06:13	306.42	0 168
5878	8/20/96	18:06:15	306.44	0.149
5879	8/20/96	18:06:17	306.46	0.041
5880	8/20/96	18 06:19	306 48	ND
5881	8/20/96	18:06:21	306.50	ND
5882	8/20/96	18.06:23	306.52	ND
5883	8/20/96	18 06:25	306.54	ND
5884	8/20/96	18:06:27	306.56	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4690	8/20/96	17:26:55	305.29	0.088
4689	8/20/96	17:26:53	305.30	0.08
4688	8/20/96	17:26:51	305.32	0.051
4687	8/20/96	17:26:49	305.33	0.026
4686	8/20/96	17.26:47	305.35	0
4685	8/20/96	17:26:45	305.36	ND
4684	8/20/96	17:26:43	305.38	ND
4683	8/20/96	17:26:41	305.39	ND
4682	8/20/96	17:26:39	305.41	ND
4681	8/20/96	17:26:37	305.42	ND
4680	8/20/96	17:26:35	305.43	ND
4679	8/20/96	17 26:33	305.45	ND
4678	8/20/96	17:26:31	305.46	ND
4677	8/20/96	17:26:29	305.48	ND
4676	8/20/96	17 26:27	305.49	ND
4675	8/20/96	17 26:25	305.51	ND
4674	8/20/96	17 26:23	305.52	ND
4673	8/20/96	17.26:21	305.54	ND
4672	8/20/96	17:26:19	305.55	0.014
4671	8/20/96	17 26:17	305.57	0.062
4670	8/20/96	17.26:15	305.58	0.113
4669	8/20/96	17:26:13	305.59	0.139
4668	8/20/96	17:26.11	305.61	0.138
4667	8/20/96	17:26:09	305.62	0.108
4666	8/20/96	17:26:07	305.64	0.034
4665	8/20/96	17:26:05	305.65	ND
4664	8/20/96	17 26:03	305.67	ND
4663	8/20/96	17:26:01	305.68	ND
4662	8/20/96	17 25:59	305.70	ND
4661	8/20/96	17:25:57	305.71	ND
4660	8/20/96	17.25:55	305.72	ND
4659	8/20/96	17.25:53	305.74	ND
4658	8/20/96	17.25.51	305.75	ND
4657	8/20/96	17.25:49	305.77	ND
4656	8/20/96	17:25:47	305.78	ND
4655	8/20/96	17:25:45	305.80	ND
4654	8/20/96	17:25:43	305.81	ND
4653	8/20/96	17 25:41	305.83	ND
4652	8/20/96	17 25:39	305.84	ND
4651	8/20/96	17 25:37	305 85	ND
4650	8/20/96	17:25:35	305.87	ND
4649	8/20/96	17 25.33	305.88	ND
4648	8/20/96	17 25:31	305.90	ND
4647	8/20/96	17 25:29	305.91	ND
4646	8/20/96	17.25:27	305.93	ND
4645	8/20/96	17 25.25	305.94	ND
4644	8/20/96	17 25:23	305.96	ND
4643	8/20/96	17:25:21	305.97	0.077
4642	8/20/96	17.25:19	305.98	0 062
4641	8/20/96	17:25:17	306.00	ND
4640	8/20/96	17.25.15	306.01	ND
4639	8/20/96	17:25:13	306.03	ND
4638	8/20/96	17:25:11	306.04	ND
4637	8/20/96	17:25:09	306.06	ND
4636	8/20/96	17 25.07	306.07	ND
4635	8/20/96	17:25:05	306.09	ND
4634	8/20/96	17:25:03	306.10	ND
4633	8/20/96	17 25:01	306.12	ND
4632	8/20/96	17:24:59	306.14	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
August 20, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5885	8/20/96	18:06:29	306.58	ND
5886	8/20/96	18:06:31	306.61	ND
5887	8/20/96	18:06:33	306.63	ND
5888	8/20/96	18:06:35	306.65	ND
5889	8/20/96	18:06:37	306.67	ND
5890	8/20/96	18.06:39	306.69	ND
5891	8/20/96	18:06:41	306.71	ND
5892	8/20/96	18:06:43	306.73	ND
5893	8/20/96	18.06:45	306.75	ND
5894	8/20/96	18:06:47	306.77	ND
5895	8/20/96	18:06:49	306.79	ND
5896	8/20/96	18:06:51	306.82	ND
5897	8/20/96	18:06:53	306.84	ND
5898	8/20/96	18:06:55	306.86	ND
5899	8/20/96	18:06:57	306.88	ND
5900	8/20/96	18:06:59	306.90	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4631	8/20/96	17:24:57	306.16	ND
4630	8/20/96	17:24:55	306.17	ND
4629	8/20/96	17:24:53	306.19	ND
4628	8/20/96	17:24:51	306.21	ND
4627	8/20/96	17:24:49	306.23	ND
4626	8/20/96	17:24:47	306.25	ND
4625	8/20/96	17:24:45	306.27	ND
4624	8/20/96	17:24:43	306.29	ND
4623	8/20/96	17:24:41	306.30	ND
4622	8/20/96	17:24:39	306 32	ND
4621	8/20/96	17:24:37	306.34	ND
4620	8/20/96	17:24:35	306.36	ND
4619	8/20/96	17:24:33	306.38	ND
4618	8/20/96	17:24:31	306.40	ND
4617	8/20/96	17:24:29	306.42	ND
4616	8/20/96	17 24:27	306.43	ND
4615	8/20/96	17.24:25	306 45	ND
4614	8/20/96	17.24:23	306.47	ND
4613	8/20/96	17:24:21	306.49	ND
4612	8/20/96	17:24:19	306.51	ND
4611	8/20/96	17:24:17	306.53	ND
4610	8/20/96	17 24:15	306.55	ND
4609	8/20/96	17:24:13	306.57	ND
4608	8/20/96	17:24:11	306 58	ND
4607	8/20/96	17:24 09	306.60	ND
4606	8/20/96	17:24:07	306.62	ND
4605	8/20/96	17:24:05	306.64	ND
4604	8/20/96	17:24:03	306.66	ND
4603	8/20/96	17:24.01	306.68	ND
4602	8/20/96	17 23:59	306.70	ND
4601	8/20/96	17.23:57	306.71	ND
4600	8/20/96	17:23:55	306.73	ND
4599	8/20/96	17 23:53	306.75	ND
4598	8/20/96	17 23.51	306.77	ND
4597	8/20/96	17 23 49	306.79	ND
4596	8/20/96	17.23.47	306.81	ND
4595	8/20/96	17:23:45	306 83	ND
4594	8/20/96	17.23:43	306 84	ND
4593	8/20/96	17 23 41	306.86	ND
4592	8/20/96	17 23 39	306.88	ND
4591	8/20/96	17.23:37	306.90	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7384	8/21/96	11:03:15	304.90	ND
7385	8/21/96	11:03:16	304.91	ND
7386	8/21/96	11:03:18	304.93	ND
7387	8/21/96	11:03:20	304.94	ND
7388	8/21/96	11:03:22	304.96	ND
7389	8/21/96	11:03:24	304.98	ND
7390	8/21/96	11:03:26	304.99	ND
7391	8/21/96	11:03:28	305.01	ND
7392	8/21/96	11:03:30	305.03	ND
7393	8/21/96	11:03:32	305.04	ND
7394	8/21/96	11:03:34	305.06	ND
7395	8/21/96	11.03:36	305.08	ND
7396	8/21/96	11:03:38	305.09	ND
7397	8/21/96	11:03:40	305.11	ND
7398	8/21/96	11.03:42	305.13	ND
7399	8/21/96	11 03:44	305.15	ND
7400	8/21/96	11:03:46	305.16	ND
7401	8/21/96	11 03.48	305.18	ND
7402	8/21/96	11:03:50	305.20	ND
7403	8/21/96	11 03:52	305.21	ND
7404	8/21/96	11:03:54	305.23	ND
7405	8/21/96	11 03:56	305.25	ND
7406	8/21/96	11.03:58	305.26	ND
7407	8/21/96	11:04:00	305.28	ND
7408	8/21/96	11:04:02	305.30	ND
7409	8/21/96	11:04:04	305.31	ND
7410	8/21/96	11:04:06	305.33	ND
7411	8/21/96	11:04:08	305.35	ND
7412	8/21/96	11:04:10	305.36	ND
7413	8/21/96	11:04:12	305.38	ND
7414	8/21/96	11 04:14	305.40	ND
7415	8/21/96	11 04:16	305.42	ND
7416	8/21/96	11:04:18	305.43	ND
7417	8/21/96	11 04:20	305.45	ND
7418	8/21/96	11 04.22	305.47	ND
7419	8/21/96	11 04:24	305.48	ND
7420	8/21/96	11:04:26	305.50	ND
7421	8/21/96	11:04:28	305.52	ND
7422	8/21/96	11.04:30	305.53	ND
7423	8/21/96	11:04:32	305.55	ND
7424	8/21/96	11 04:34	305.57	ND
7425	8/21/96	11 04:36	305.58	ND
7426	8/21/96	11.04:38	305.60	ND
7427	8/21/96	11.04:40	305.62	ND
7428	8/21/96	11:04:42	305.64	ND
7429	8/21/96	11 04:44	305.65	ND
7430	8/21/96	11:04:46	305 67	ND
7431	8/21/96	11 04:48	305.69	ND
7432	8/21/96	11.04 50	305.70	ND
7433	8/21/96	11.04:52	305.72	ND
7434	8/21/96	11:04:54	305.74	ND
7435	8/21/96	11:04:56	305.75	ND
7436	8/21/96	11:04:58	305.77	ND
7437	8/21/96	11 05:00	305.79	ND
7438	8/21/96	11:05:02	305.80	ND
7439	8/21/96	11 05:04	305.82	ND
7440	8/21/96	11:05.06	305.84	ND
7441	8/21/96	11:05:08	305.85	ND
7442	8/21/96	11 05.10	305 87	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8815	8/21/96	11:50:31	304.90	ND
8814	8/21/96	11:50:30	304.91	ND
8813	8/21/96	11:50:28	304.92	ND
8812	8/21/96	11:50:26	304.94	ND
8811	8/21/96	11:50:24	304.96	ND
8810	8/21/96	11:50:22	304.97	ND
8809	8/21/96	11:50:20	304.99	ND
8808	8/21/96	11:50:18	305.00	ND
8807	8/21/96	11:50:16	305.02	ND
8806	8/21/96	11:50:14	305.04	ND
8805	8/21/96	11:50:12	305.05	ND
8804	8/21/96	11:50:10	305.07	ND
8803	8/21/96	11:50:08	305.08	ND
8802	8/21/96	11:50:06	305.10	ND
8801	8/21/96	11:50:04	305.12	ND
8800	8/21/96	11:50:02	305.13	ND
8799	8/21/96	11:50:00	305.15	ND
8798	8/21/96	11:49:58	305.16	ND
8797	8/21/96	11:49:56	305.18	ND
8796	8/21/96	11:49:54	305.20	ND
8795	8/21/96	11:49:52	305.21	ND
8794	8/21/96	11:49:50	305.23	ND
8793	8/21/96	11:49:48	305.24	ND
8792	8/21/96	11:49:46	305.26	ND
8791	8/21/96	11:49:44	305.28	ND
8790	8/21/96	11:49:42	305.29	ND
8789	8/21/96	11:49:40	305.31	ND
8788	8/21/96	11:49:38	305.32	ND
8787	8/21/96	11:49:36	305.34	ND
8786	8/21/96	11:49:34	305.36	ND
8785	8/21/96	11 49.32	305.37	ND
8784	8/21/96	11:49:30	305.39	ND
8783	8/21/96	11:49:28	305.40	ND
8782	8/21/96	11:49:26	305.42	ND
8781	8/21/96	11:49:24	305.44	ND
8780	8/21/96	11:49:22	305.45	ND
8779	8/21/96	11:49:20	305.47	ND
8778	8/21/96	11:49.18	305.48	ND
8777	8/21/96	11:49:16	305.50	ND
8776	8/21/96	11:49:14	305.52	ND
8775	8/21/96	11:49:12	305.53	ND
8774	8/21/96	11 49:10	305.55	ND
8773	8/21/96	11.49:08	305.56	ND
8772	8/21/96	11:49.06	305.58	ND
8771	8/21/96	11:49:04	305.60	ND
8770	8/21/96	11:49:02	305.61	ND
8769	8/21/96	11 49 00	305.63	ND
8768	8/21/96	11:48:58	305 64	ND
8767	8/21/96	11 48:56	305.66	ND
8766	8/21/96	11 48.54	305.68	ND
8765	8/21/96	11 48 52	305.69	ND
8764	8/21/96	11 48:50	305.71	ND
8763	8/21/96	11:48:48	305.72	ND
8762	8/21/96	11 48:46	305 74	ND
8761	8/21/96	11:48:44	305.76	ND
8760	8/21/96	11.48:42	305.77	ND
8759	8/21/96	11:48:40	305.79	ND
8758	8/21/96	11:48:38	305.80	ND
8757	8/21/96	11:48:36	305.82	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7443	8/21/96	11:05:12	305.89	ND
7444	8/21/96	11:05:14	305.91	ND
7445	8/21/96	11:05:16	305.92	ND
7446	8/21/96	11:05:18	305.94	ND
7447	8/21/96	11:05:20	305.96	ND
7448	8/21/96	11:05:22	305.97	ND
7449	8/21/96	11:05:24	305.99	ND
7450	8/21/96	11:05:26	306.01	ND
7451	8/21/96	11:05:28	306.02	ND
7452	8/21/96	11:05:30	306.04	ND
7453	8/21/96	11:05:32	306.06	0 011
7454	8/21/96	11:05:34	306.07	0.026
7455	8/21/96	11:05:36	306.09	0.013
7456	8/21/96	11:05:37	306.10	0.007
7457	8/21/96	11 05:38	306.11	0.006
7458	8/21/96	11 05:40	306.13	0.017
7459	8/21/96	11:05:42	306.15	0.026
7460	8/21/96	11.05:44	306.17	0 021
7461	8/21/96	11 05.46	306.19	0.026
7462	8/21/96	11:05:48	306 22	0 046
7463	8/21/96	11 05:50	306.24	0.061
7464	8/21/96	11:05:52	306.26	0.078
7465	8/21/96	11:05.54	306.28	0 092
7466	8/21/96	11:05:56	306.30	0.103
7467	8/21/96	11:05:58	306.32	0.115
7468	8/21/96	11:06:00	306.34	0.124
7469	8/21/96	11:06:02	306.36	0.127
7470	8/21/96	11:06:04	306.38	0.126
7471	8/21/96	11:06:06	306.41	0.121
7472	8/21/96	11:06:08	306.43	0.111
7473	8/21/96	11:06:10	306.45	0.06
7474	8/21/96	11:06:12	306.47	ND
7475	8/21/96	11:06:14	306.49	ND
7476	8/21/96	11:06:16	306.51	0 079
7477	8/21/96	11 06:18	306.53	0 168
7478	8/21/96	11 06:20	306.55	0.212
7479	8/21/96	11 06.22	306 57	0.231
7480	8/21/96	11:06:24	306.59	0.231
7481	8/21/96	11.06:26	306.62	0.226
7482	8/21/96	11:06.28	306.64	0 239
7483	8/21/96	11.06:30	306.66	0.241
7484	8/21/96	11:06:32	306.68	0 229
7485	8/21/96	11.06:34	306.70	0.229
7486	8/21/96	11:06:36	306.72	0.23
7487	8/21/96	11:06:38	306.74	0.233
7488	8/21/96	11:06:40	306.76	0 243
7489	8/21/96	11 06:42	306.78	0.266
7490	8/21/96	11.06:44	306.81	0.289
7491	8/21/96	11.06:46	306 83	0 295
7492	8/21/96	11:06.48	306.85	0 294
7493	8/21/96	11:06:50	306.87	0 29
7494	8/21/96	11 06 52	306.89	0.276
7495	8/21/96	11:06.53	306.90	0.271
7496	8/21/96	11:06:54	306.91	0 27
7497	8/21/96	11 06:56	306.92	0 272
7498	8/21/96	11:06:58	306.93	0.274
7499	8/21/96	11:07:00	306.95	0.261
7500	8/21/96	11:07:02	306.96	0.207
7501	8/21/96	11:07:04	306.98	0.135

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8756	8/21/96	11:48:34	305.84	ND
8755	8/21/96	11:48:32	305.85	ND
8754	8/21/96	11:48:30	305.87	ND
8753	8/21/96	11:48:28	305.88	ND
8752	8/21/96	11:48:26	305.90	ND
8751	8/21/96	11:48:24	305.92	ND
8750	8/21/96	11:48:22	305.93	ND
8749	8/21/96	11:48:20	305.95	ND
8748	8/21/96	11:48:18	305.96	ND
8747	8/21/96	11:48:16	305.98	ND
8746	8/21/96	11:48:14	306.00	ND
8745	8/21/96	11:48:12	306.01	ND
8744	8/21/96	11:48:10	306.03	ND
8743	8/21/96	11:48:08	306.04	ND
8742	8/21/96	11:48:06	306.06	ND
8741	8/21/96	11:48:04	306 08	ND
8740	8/21/96	11 48:02	306.09	ND
8739	8/21/96	11:48:01	306.10	ND
8738	8/21/96	11:48:00	306.11	ND
8737	8/21/96	11:47.58	306.13	ND
8736	8/21/96	11:47:56	306.15	ND
8735	8/21/96	11:47:54	306.17	ND
8734	8/21/96	11:47:52	306.19	ND
8733	8/21/96	11:47:50	306.21	ND
8732	8/21/96	11:47.48	306.23	ND
8731	8/21/96	11:47:46	306.25	ND
8730	8/21/96	11:47:44	306.27	ND
8729	8/21/96	11:47:42	306.29	ND
8728	8/21/96	11:47:40	306.30	ND
8727	8/21/96	11:47:38	306.32	ND
8726	8/21/96	11:47:36	306.34	ND
8725	8/21/96	11:47:34	306.36	ND
8724	8/21/96	11:47:32	306.38	ND
8723	8/21/96	11:47:30	306 40	ND
8722	8/21/96	11:47:28	306.42	ND
8721	8/21/96	11:47:26	306.44	ND
8720	8/21/96	11.47.24	306.46	ND
8719	8/21/96	11:47:22	306.48	ND
8718	8/21/96	11:47:20	306.50	ND
8717	8/21/96	11.47:18	306.52	ND
8716	8/21/96	11:47:16	306.54	ND
8715	8/21/96	11:47:14	306.56	ND
8714	8/21/96	11:47:12	306.58	ND
8713	8/21/96	11:47:10	306.60	ND
8712	8/21/96	11.47:08	306 62	ND
8711	8/21/96	11:47 06	306.64	ND
8710	8/21/96	11 47:04	306 66	ND
8709	8/21/96	11:47:02	306.68	ND
8708	8/21/96	11.47:00	306.70	ND
8707	8/21/96	11:46:58	306.71	ND
8706	8/21/96	11:46:56	306.73	ND
8705	8/21/96	11:46:54	306.75	ND
8704	8/21/96	11:46:52	306.77	ND
8703	8/21/96	11 46:50	306.79	0.008
8702	8/21/96	11.46:48	306.81	0 014
8701	8/21/96	11:46:46	306.83	0.015
8700	8/21/96	11:46:44	306.85	0.011
8699	8/21/96	11:46:42	306.87	0.003
8698	8/21/96	11:46:40	306.89	0.011

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7502	8/21/96	11:07:06	306.99	0.114
7503	8/21/96	11:07:08	307.00	0.123
7504	8/21/96	11:07:10	307.02	0.149
7505	8/21/96	11:07:12	307.03	0.112
7506	8/21/96	11:07:14	307.05	0.112
7507	8/21/96	11:07:16	307.06	0 193
7508	8/21/96	11:07:18	307.07	0.238
7509	8/21/96	11:07:20	307.09	0.22
7510	8/21/96	11:07:22	307.10	0.193
7511	8/21/96	11:07:24	307.12	0 167
7512	8/21/96	11:07:26	307.13	0 139
7513	8/21/96	11:07:28	307 14	0 119
7514	8/21/96	11:07:30	307.16	0 106
7515	8/21/96	11.07:32	307.17	0 097
7516	8/21/96	11:07:34	307.19	0.087
7517	8/21/96	11:07.36	307.20	0.071
7518	8/21/96	11 07:38	307.21	0 042
7519	8/21/96	11 07.40	307.23	0.031
7520	8/21/96	11:07:42	307.24	0.061
7521	8/21/96	11:07:44	307.25	0.133
7522	8/21/96	11.07:46	307.27	0.195
7523	8/21/96	11:07:48	307.28	0.187
7524	8/21/96	11:07:50	307.30	0.142
7525	8/21/96	11 07:52	307.31	0.116
7526	8/21/96	11.07:54	307.32	0.112
7527	8/21/96	11:07:56	307.34	0.106
7528	8/21/96	11:07:58	307.35	0.09
7529	8/21/96	11:08:00	307.37	0.085
7530	8/21/96	11:08:02	307.38	0.074
7531	8/21/96	11:08:04	307.39	0.064
7532	8/21/96	11.08:06	307.41	0 053
7533	8/21/96	11.08:08	307.42	0.047
7534	8/21/96	11:08:10	307 44	0 036
7535	8/21/96	11:08:12	307.45	0 032
7536	8/21/96	11.08:14	307.46	0 041
7537	8/21/96	11:08:16	307.48	0 039
7538	8/21/96	11:08:18	307.49	0 034
7539	8/21/96	11:08:20	307.51	0.04
7540	8/21/96	11:08:22	307.52	0 053
7541	8/21/96	11 08:24	307.53	0.074
7542	8/21/96	11.08:26	307.55	0.087
7543	8/21/96	11:08:28	307.56	0.093
7544	8/21/96	11:08:30	307 58	0 08
7545	8/21/96	11:08:32	307 59	0 055
7546	8/21/96	11:08:34	307.60	0 042
7547	8/21/96	11:08:36	307.62	0.039
7548	8/21/96	11:08:38	307 63	0.05
7549	8/21/96	11:08:40	307.64	0.057
7550	8/21/96	11 08:42	307.66	0 063
7551	8/21/96	11.08:44	307.67	0.063
7552	8/21/96	11 08:46	307 69	0 055
7553	8/21/96	11:08:48	307.70	0.064
7554	8/21/96	11.08:50	307.71	0 071
7555	8/21/96	11 08:52	307.73	0 068
7556	8/21/96	11.08:54	307.74	0.065
7557	8/21/96	11:08:56	307.76	0.068
7558	8/21/96	11:08:58	307.77	0.071
7559	8/21/96	11:09:00	307.78	0.064
7560	8/21/96	11:09:02	307.80	0 063

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8697	8/21/96	11:46:39	306.90	0.02
8696	8/21/96	11:46:38	306.91	0.033
8695	8/21/96	11:46:36	306.92	0.042
8694	8/21/96	11:46:34	306.93	0.032
8693	8/21/96	11:46:32	306.95	0.01
8692	8/21/96	11:46:30	306.96	ND
8691	8/21/96	11:46:28	306.97	0.006
8690	8/21/96	11:46:26	306.99	0.034
8689	8/21/96	11:46:24	307.00	0.069
8688	8/21/96	11:46:22	307.02	0.071
8687	8/21/96	11:46:20	307.03	0.051
8686	8/21/96	11:46:18	307.04	0.038
8685	8/21/96	11:46:16	307.06	0.031
8684	8/21/96	11:46:14	307.07	0.02
8683	8/21/96	11:46:12	307.08	0.004
8682	8/21/96	11:46:10	307.10	0.012
8681	8/21/96	11:46:08	307.11	0.031
8680	8/21/96	11:46:06	307.12	0.041
8679	8/21/96	11:46:04	307.14	0.05
8678	8/21/96	11:46:02	307.15	0.06
8677	8/21/96	11:46:00	307.16	0.054
8676	8/21/96	11:45:58	307.18	0.051
8675	8/21/96	11:45:56	307.19	0.059
8674	8/21/96	11:45:54	307.21	0.058
8673	8/21/96	11:45:52	307.22	0.054
8672	8/21/96	11:45:50	307.23	0.058
8671	8/21/96	11:45:48	307.25	0.059
8670	8/21/96	11:45:46	307.26	0.053
8669	8/21/96	11:45:44	307.27	0.048
8668	8/21/96	11:45:42	307.29	0.044
8667	8/21/96	11 45:40	307.30	0.047
8666	8/21/96	11:45:38	307.31	0.049
8665	8/21/96	11 45:36	307 33	0.05
8664	8/21/96	11.45.34	307.34	0.053
8663	8/21/96	11:45:32	307.35	0.049
8662	8/21/96	11 45:30	307.37	0.054
8661	8/21/96	11:45:28	307.38	0.06
8660	8/21/96	11:45.26	307.40	0.058
8659	8/21/96	11:45:24	307.41	0 058
8658	8/21/96	11:45:22	307.42	0 056
8657	8/21/96	11 45:20	307.44	0.058
8656	8/21/96	11.45:18	307.45	0.078
8655	8/21/96	11:45:16	307.46	0.083
8654	8/21/96	11:45:14	307.48	0 093
8653	8/21/96	11:45:12	307.49	0.099
8652	8/21/96	11:45:10	307.50	0.099
8651	8/21/96	11:45:08	307.52	0.094
8650	8/21/96	11:45:06	307.53	0.092
8649	8/21/96	11:45:04	307.55	0.081
8648	8/21/96	11:45:02	307.56	0.067
8647	8/21/96	11:45:00	307 57	0 059
8646	8/21/96	11:44:58	307.59	0.054
8645	8/21/96	11:44:56	307.60	0.054
8644	8/21/96	11:44 54	307 61	0.066
8643	8/21/96	11:44:52	307.63	0.087
8642	8/21/96	11:44:50	307 64	0.1
8641	8/21/96	11:44:48	307.65	0.111
8640	8/21/96	11:44:46	307.67	0.122
8639	8/21/96	11:44:44	307.68	0.123

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7561	8/21/96	11:09:04	307.81	0.065
7562	8/21/96	11:09:06	307.83	0.067
7563	8/21/96	11:09:08	307.84	0.082
7564	8/21/96	11:09:10	307.85	0.094
7565	8/21/96	11:09:12	307.87	0.095
7566	8/21/96	11:09:14	307.88	0.104
7567	8/21/96	11:09:16	307.90	0.115
7568	8/21/96	11:09:18	307.91	0.118
7569	8/21/96	11:09:20	307.92	0.117
7570	8/21/96	11:09:22	307.94	0.114
7571	8/21/96	11:09:24	307.95	0.115
7572	8/21/96	11:09:26	307.96	0.117
7573	8/21/96	11:09:28	307.98	0.118
7574	8/21/96	11:09:30	307.99	0.125
7575	8/21/96	11:09:31	308.00	0 144
7576	8/21/96	11:09:32	308.01	0 17
7577	8/21/96	11 09:34	308.04	0 196
7578	8/21/96	11:09:36	308.06	0 192
7579	8/21/96	11:09:38	308.08	0.194
7580	8/21/96	11.09:40	308.11	0.186
7581	8/21/96	11:09.42	308.13	0.187
7582	8/21/96	11:09:44	308.16	0 197
7583	8/21/96	11:09:46	308.18	0.2
7584	8/21/96	11:09:48	308.20	0 189
7585	8/21/96	11:09:50	308 23	0.174
7586	8/21/96	11:09:52	308.25	0 186
7587	8/21/96	11:09:54	308.28	0.203
7588	8/21/96	11:09:56	308.30	0.192
7589	8/21/96	11:09:58	308.32	0.193
7590	8/21/96	11:10:00	308.35	0.212
7591	8/21/96	11:10:02	308.37	0.192
7592	8/21/96	11:10:04	308.40	0 17
7593	8/21/96	11:10:06	308.42	0.189
7594	8/21/96	11:10:08	308.44	0 235
7595	8/21/96	11:10:10	308.47	0.246
7596	8/21/96	11:10:12	308.49	0.193
7597	8/21/96	11:10:14	308.52	0.178
7598	8/21/96	11:10:16	308.54	0 169
7599	8/21/96	11:10:18	308.56	0.19
7600	8/21/96	11:10:20	308 59	0 219
7601	8/21/96	11:10:22	308 61	0.251
7602	8/21/96	11:10:24	308.64	0 291
7603	8/21/96	11:10 26	308.66	0 31
7604	8/21/96	11:10:28	308.68	0 303
7605	8/21/96	11:10:30	308.71	0 273
7606	8/21/96	11:10:32	308.73	0 231
7607	8/21/96	11:10:34	308.76	0 21
7608	8/21/96	11:10:36	308.78	0.206
7609	8/21/96	11:10:38	308.80	0.193
7610	8/21/96	11:10:40	308.83	0.183
7611	8/21/96	11:10 42	308.85	0 183
7612	8/21/96	11:10:44	308.88	0 187
7613	8/21/96	11:10:46	308.90	0.194
7614	8/21/96	11.10.48	308.92	0.201
7615	8/21/96	11:10:50	308.94	0 203
7616	8/21/96	11:10:52	308.95	0 205
7617	8/21/96	11:10:54	308.97	0.215
7618	8/21/96	11:10:56	308.99	0 237
7619	8/21/96	11:10:58	309.01	0 24

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8638	8/21/96	11:44:42	307.69	0.125
8637	8/21/96	11:44:40	307.71	0.133
8636	8/21/96	11:44:38	307.72	0.132
8635	8/21/96	11:44:36	307.74	0.109
8634	8/21/96	11:44:34	307.75	0.106
8633	8/21/96	11:44:32	307.76	0.121
8632	8/21/96	11:44:30	307.78	0.144
8631	8/21/96	11:44:28	307.79	0.162
8630	8/21/96	11:44:26	307.80	0.149
8629	8/21/96	11:44:24	307.82	0.126
8628	8/21/96	11:44.22	307.83	0.121
8627	8/21/96	11:44:20	307.84	0.127
8626	8/21/96	11:44:18	307.86	0.131
8625	8/21/96	11:44:16	307 87	0.131
8624	8/21/96	11:44:14	307.88	0.127
8623	8/21/96	11:44:12	307.90	0.126
8622	8/21/96	11:44:10	307.91	0.138
8621	8/21/96	11:44:08	307.93	0.16
8620	8/21/96	11:44:06	307.94	0.174
8619	8/21/96	11:44:04	307.95	0.187
8618	8/21/96	11:44:02	307.97	0 2
8617	8/21/96	11:44:00	307.98	0.203
8616	8/21/96	11:43:58	307.99	0.208
8615	8/21/96	11:43:57	308.00	0.209
8614	8/21/96	11:43:56	308.01	0.211
8613	8/21/96	11:43:54	308.03	0.206
8612	8/21/96	11:43:52	308.05	0.196
8611	8/21/96	11:43:50	308.06	0.198
8610	8/21/96	11:43:48	308.08	0.195
8609	8/21/96	11:43:46	308.10	0.187
8608	8/21/96	11:43:44	308.12	0.186
8607	8/21/96	11:43:42	308.14	0.194
8606	8/21/96	11:43:40	308.15	0.209
8605	8/21/96	11:43:38	308.17	0.231
8604	8/21/96	11:43:36	308.19	0.264
8603	8/21/96	11.43:34	308.21	0 279
8602	8/21/96	11:43:32	308.23	0.279
8601	8/21/96	11:43:30	308.25	0 289
8600	8/21/96	11:43:28	308.26	0.287
8599	8/21/96	11:43:26	308.28	0.259
8598	8/21/96	11:43:24	308.30	0.217
8597	8/21/96	11:43:22	308.32	0.198
8596	8/21/96	11:43:20	308.34	0.197
8595	8/21/96	11:43:18	308.35	0.19
8594	8/21/96	11:43:16	308.37	0.183
8593	8/21/96	11:43:14	308.39	0.178
8592	8/21/96	11:43:12	308.41	0.172
8591	8/21/96	11:43:10	308 43	0 173
8590	8/21/96	11:43.08	308.45	0.171
8589	8/21/96	11:43:06	308.46	0.169
8588	8/21/96	11 43 04	308.48	0 173
8587	8/21/96	11.43:02	308.50	0 186
8586	8/21/96	11:43.00	308.52	0.193
8585	8/21/96	11:42:58	308.54	0 202
8584	8/21/96	11:42 56	308.55	0 214
8583	8/21/96	11:42.54	308.57	0.229
8582	8/21/96	11:42.52	308.59	0.252
8581	8/21/96	11:42.50	308.61	0.262
8580	8/21/96	11:42:48	308.63	0.264

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7620	8/21/96	11:11:00	309.03	0.237
7621	8/21/96	11:11:02	309.05	0 253
-7622	8/21/96	11:11:04	309.06	0.295
7623	8/21/96	11:11:06	309.08	0.324
7624	8/21/96	11:11:08	309.10	0.316
7625	8/21/96	11:11:10	309.12	0.3
7626	8/21/96	11:11:12	309.14	0.294
7627	8/21/96	11:11:14	309.15	0 293
7628	8/21/96	11:11:16	309.17	0.31
7629	8/21/96	11:11:18	309.19	0.326
7630	8/21/96	11:11:20	309.21	0.323
7631	8/21/96	11:11:22	309.23	0.301
7632	8/21/96	11:11:24	309.25	0 294
7633	8/21/96	11 11:26	309.26	0 286
7634	8/21/96	11:11:28	309.28	0 265
7635	8/21/96	11:11:30	309.30	0.24
7636	8/21/96	11:11:32	309.32	0 227
7637	8/21/96	11:11:34	309.34	0.232
7638	8/21/96	11:11:36	309.35	0.241
7639	8/21/96	11 11:38	309.37	0.273
7640	8/21/96	11:11:40	309.39	0 333
7641	8/21/96	11:11:42	309.41	0.394
7642	8/21/96	11:11:44	309.43	0.423
7643	8/21/96	11:11:46	309.45	0.413
7644	8/21/96	11:11:48	309.46	0.418
7645	8/21/96	11:11:50	309.48	0 426
7646	8/21/96	11:11:52	309.50	0 423
7647	8/21/96	11:11:54	309.52	0.445
7648	8/21/96	11:11:56	309.54	0 485
7649	8/21/96	11:11:58	309.55	0.492
7650	8/21/96	11.12.00	309.57	0 487
7651	8/21/96	11.12:02	309.59	0 502
7652	8/21/96	11.12:04	309.61	0.475
7653	8/21/96	11:12 06	309 63	0 424
7654	8/21/96	11:12.08	309.65	0 412
7655	8/21/96	11:12:10	309.66	0.431
7656	8/21/96	11:12:12	309.68	0.466
7657	8/21/96	11 12:14	309.70	0 5
7658	8/21/96	11 12:16	309.72	0.521
7659	8/21/96	11.12:18	309.74	0 527
7660	8/21/96	11.12:20	309.75	0 522
7661	8/21/96	11.12:22	309.77	0.5
7662	8/21/96	11 12:24	309.79	0.465
7663	8/21/96	11:12:26	309.81	0.45
7664	8/21/96	11 12:28	309 83	0.457
7665	8/21/96	11:12.30	309.85	0.467
7666	8/21/96	11:12:32	309 86	0 464
7667	8/21/96	11 12:34	309.88	0.441
7668	8/21/96	11:12:36	309.90	0.415
7669	8/21/96	11 12:38	309.92	0 404
7670	8/21/96	11:12 40	309.94	0 41
7671	8/21/96	11 12:42	309.95	0.408
7672	8/21/96	11:12:44	309.97	0 41
7673	8/21/96	11:12:46	309.99	0 43
7674	8/21/96	11.12:48	310.01	0 46
7675	8/21/96	11:12:50	310 03	0.501
7676	8/21/96	11.12.52	310.05	0.524
7677	8/21/96	11:12:54	310.06	0.561
7678	8/21/96	11.12:56	310.08	0 572

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8579	8/21/96	11:42:46	308.65	0.265
8578	8/21/96	11:42:44	308.66	0.242
8577	8/21/96	11:42:42	308.68	0.208
8576	8/21/96	11:42:40	308.70	0.192
8575	8/21/96	11:42:38	308.72	0.19
8574	8/21/96	11:42:36	308.74	0.184
8573	8/21/96	11:42:34	308.75	0.18
8572	8/21/96	11:42:32	308.77	0.187
8571	8/21/96	11:42:30	308.79	0.197
8570	8/21/96	11:42:28	308.81	0.201
8569	8/21/96	11:42:26	308.83	0.211
8568	8/21/96	11:42:24	308.85	0.219
8567	8/21/96	11:42:22	308.86	0.228
8566	8/21/96	11:42:20	308.88	0.236
8565	8/21/96	11:42:18	308.90	0.241
8564	8/21/96	11.42:16	308.92	0 237
8563	8/21/96	11.42:14	308.94	0.226
8562	8/21/96	11:42:12	308 96	0.223
8561	8/21/96	11:42:10	308.98	0 229
8560	8/21/96	11:42:08	309.00	0.229
8559	8/21/96	11:42:06	309.01	0.22
8558	8/21/96	11:42:04	309.03	0.233
8557	8/21/96	11:42:02	309.05	0.258
8556	8/21/96	11:42:00	309.07	0.273
8555	8/21/96	11:41:58	309.09	0.277
8554	8/21/96	11:41:56	309.11	0.264
8553	8/21/96	11:41:54	309.13	0.256
8552	8/21/96	11:41:52	309.15	0.254
8551	8/21/96	11:41:50	309.17	0 245
8550	8/21/96	11:41:48	309.19	0.251
8549	8/21/96	11:41:46	309.20	0.261
8548	8/21/96	11:41:44	309.22	0.276
8547	8/21/96	11:41:42	309.24	0.294
8546	8/21/96	11:41:40	309.26	0 305
8545	8/21/96	11 41:38	309 28	0.314
8544	8/21/96	11:41:36	309.30	0 303
8543	8/21/96	11.41:34	309.32	0.291
8542	8/21/96	11:41:32	309.34	0 292
8541	8/21/96	11 41:30	309 36	0.313
8540	8/21/96	11:41:28	309 38	0.349
8539	8/21/96	11:41 26	309.39	0 365
8538	8/21/96	11:41:24	309.41	0.367
8537	8/21/96	11:41:22	309.43	0.371
8536	8/21/96	11:41:20	309.45	0 37
8535	8/21/96	11:41:18	309.47	0.386
8534	8/21/96	11 41:16	309.49	0.407
8533	8/21/96	11:41:14	309.51	0 405
8532	8/21/96	11:41:12	309.53	0.388
8531	8/21/96	11:41:10	309.55	0.374
8530	8/21/96	11.41:08	309.57	0.364
8529	8/21/96	11.41 06	309.58	0 344
8528	8/21/96	11 41:04	309.60	0.336
8527	8/21/96	11:41:02	309.62	0.355
8526	8/21/96	11 41:00	309.64	0.393
8525	8/21/96	11:40 58	309.66	0.412
8524	8/21/96	11:40:56	309.68	0.426
8523	8/21/96	11:40:54	309.70	0.424
8522	8/21/96	11:40:52	309.72	0.418
8521	8/21/96	11.40:50	309.74	0.403

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7679	8/21/96	11:12:58	310.10	0.566
7680	8/21/96	11:13:00	310.12	0.564
7681	8/21/96	11:13:02	310.14	0.565
7682	8/21/96	11:13:04	310.15	0.552
7683	8/21/96	11:13:06	310.17	0.523
7684	8/21/96	11:13:08	310.19	0.514
7685	8/21/96	11:13:10	310.21	0.523
7686	8/21/96	11:13:12	310.23	0.513
7687	8/21/96	11:13:14	310.25	0.487
7688	8/21/96	11:13:16	310.26	0.488
7689	8/21/96	11:13:18	310.28	0.505
7690	8/21/96	11:13:20	310.30	0.513
7691	8/21/96	11:13:22	310.32	0.508
7692	8/21/96	11:13:24	310.34	0 507
7693	8/21/96	11 13 26	310.35	0 517
7694	8/21/96	11:13:28	310.37	0 527
7695	8/21/96	11:13:30	310.39	0.535
7696	8/21/96	11:13:32	310.41	0.539
7697	8/21/96	11:13:34	310.43	0.545
7698	8/21/96	11:13:36	310.45	0.55
7699	8/21/96	11:13:38	310.46	0 549
7700	8/21/96	11:13:40	310.48	0 548
7701	8/21/96	11:13:42	310.50	0.572
7702	8/21/96	11:13:44	310.52	0.606
7703	8/21/96	11:13:46	310.54	0.614
7704	8/21/96	11:13:48	310.55	0.605
7705	8/21/96	11:13:50	310.57	0.599
7706	8/21/96	11:13:52	310.59	0 587
7707	8/21/96	11:13:54	310.61	0.579
7708	8/21/96	11:13:56	310.63	0.57
7709	8/21/96	11:13:58	310.65	0.571
7710	8/21/96	11:14:00	310.66	0.568
7711	8/21/96	11:14:02	310.68	0.529
7712	8/21/96	11:14:04	310.70	0 497
7713	8/21/96	11:14:06	310.72	0.495
7714	8/21/96	11 14:08	310.74	0 5
7715	8/21/96	11:14 10	310.75	0.503
7716	8/21/96	11:14:12	310.77	0.502
7717	8/21/96	11:14:14	310.79	0 515
7718	8/21/96	11:14:15	310.80	0.522
7719	8/21/96	11:14:16	310.81	0 528
7720	8/21/96	11 14:18	310.83	0.525
7721	8/21/96	11.14.20	310.84	0.526
7722	8/21/96	11:14:22	310.86	0.529
7723	8/21/96	11:14:24	310.88	0.529
7724	8/21/96	11 14:26	310.89	0.534
7725	8/21/96	11.14:28	310.91	0 527
7726	8/21/96	11:14:30	310.93	0 525
7727	8/21/96	11 14:32	310 94	0.534
7728	8/21/96	11:14:34	310.96	0.567
7729	8/21/96	11 14:36	310 98	0 613
7730	8/21/96	11 14:38	310.99	0.626
7731	8/21/96	11:14:40	311.01	0.628
7732	8/21/96	11 14:42	311 03	0 613
7733	8/21/96	11:14:44	311 04	0.62
7734	8/21/96	11:14:46	311.06	0 622
7735	8/21/96	11:14:48	311.08	0.623
7736	8/21/96	11:14:50	311.09	0.617
7737	8/21/96	11:14:52	311.11	0.62

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8520	8/21/96	11:40:48	309.76	0.399
8519	8/21/96	11:40:46	309.77	0 4
8518	8/21/96	11:40:44	309.79	0.399
8517	8/21/96	11:40:42	309.81	0.398
8516	8/21/96	11:40:40	309.83	0.393
8515	8/21/96	11:40:38	309.85	0.388
8514	8/21/96	11:40:36	309.87	0.384
8513	8/21/96	11:40:34	309.89	0.381
8512	8/21/96	11:40:32	309.91	0.378
8511	8/21/96	11:40:30	309.93	0.374
8510	8/21/96	11:40:28	309.95	0 378
8509	8/21/96	11:40:26	309.96	0.373
8508	8/21/96	11:40:24	309.98	0.373
8507	8/21/96	11:40:22	310.00	0.379
8506	8/21/96	11:40:20	310.02	0.379
8505	8/21/96	11:40:18	310.04	0.386
8504	8/21/96	11:40:16	310.06	0.399
8503	8/21/96	11:40:14	310.08	0.431
8502	8/21/96	11 40:12	310.10	0.478
8501	8/21/96	11:40:10	310.12	0.51
8500	8/21/96	11:40:08	310.14	0.516
8499	8/21/96	11:40:06	310.15	0.518
8498	8/21/96	11:40:04	310.17	0 529
8497	8/21/96	11:40:02	310.19	0.538
8496	8/21/96	11:40:00	310.21	0.552
8495	8/21/96	11:39.58	310 23	0.58
8494	8/21/96	11:39:56	310.25	0.601
8493	8/21/96	11:39:54	310.27	0.597
8492	8/21/96	11:39:52	310.29	0.581
8491	8/21/96	11:39.50	310 31	0.57
8490	8/21/96	11 39:48	310.33	0.577
8489	8/21/96	11:39:46	310.34	0.577
8488	8/21/96	11:39:44	310.36	0.561
8487	8/21/96	11 39:42	310.38	0.55
8486	8/21/96	11 39:40	310.40	0 543
8485	8/21/96	11 39:38	310 42	0.553
8484	8/21/96	11:39.36	310 44	0.571
8483	8/21/96	11:39:34	310.46	0 598
8482	8/21/96	11 39:32	310.48	0.622
8481	8/21/96	11:39.30	310.50	0.64
8480	8/21/96	11 39:28	310.52	0.66
8479	8/21/96	11:39:26	310.53	0.672
8478	8/21/96	11:39:24	310.55	0 671
8477	8/21/96	11:39:22	310.57	0 656
8476	8/21/96	11 39:20	310.59	0.65
8475	8/21/96	11:39:18	310.61	0.635
8474	8/21/96	11:39:16	310.63	0.649
8473	8/21/96	11:39:14	310.65	0.672
8472	8/21/96	11:39:12	310.67	0.685
8471	8/21/96	11:39:10	310.69	0.697
8470	8/21/96	11:39.08	310.71	0.722
8469	8/21/96	11:39:06	310.72	0.754
8468	8/21/96	11.39.04	310.74	0.759
8467	8/21/96	11.39:02	310.76	0.711
8466	8/21/96	11:39 00	310.78	0.645
8465	8/21/96	11:38:58	310.80	0.62
8464	8/21/96	11 38:56	310.82	0.661
8463	8/21/96	11:38:54	310.83	0.732
8462	8/21/96	11:38:52	310.85	0.771

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7738	8/21/96	11:14:54	311.13	0.634
7739	8/21/96	11:14:56	311.14	0.649
7740	8/21/96	11:14:58	311.16	0.662
7741	8/21/96	11:15:00	311.18	0.668
7742	8/21/96	11:15:02	311.19	0.661
7743	8/21/96	11:15:04	311.21	0.647
7744	8/21/96	11:15:06	311.23	0.652
7745	8/21/96	11:15:08	311.25	0.65
7746	8/21/96	11:15:10	311.26	0.637
7747	8/21/96	11:15:12	311.28	0 642
7748	8/21/96	11:15:14	311 30	0.647
7749	8/21/96	11:15:16	311.31	0.652
7750	8/21/96	11:15:18	311.33	0 67
7751	8/21/96	11:15:20	311.35	0 699
7752	8/21/96	11:15:22	311 36	0.725
7753	8/21/96	11:15.24	311 38	0 735
7754	8/21/96	11 15:26	311 40	0 746
7755	8/21/96	11:15.28	311.41	0 76
7756	8/21/96	11:15.30	311.43	0.771
7757	8/21/96	11:15:32	311.45	0 785
7758	8/21/96	11:15:34	311.46	0 79
7759	8/21/96	11:15:36	311.48	0 785
7760	8/21/96	11:15:38	311.50	0.787
7761	8/21/96	11:15:40	311.51	0 797
7762	8/21/96	11:15:42	311.53	0.797
7763	8/21/96	11:15:44	311.55	0.792
7764	8/21/96	11:15:46	311 56	0.793
7765	8/21/96	11:15:48	311.58	0.793
7766	8/21/96	11:15:50	311.60	0 784
7767	8/21/96	11:15:52	311.61	0.777
7768	8/21/96	11:15:54	311 63	0.783
7769	8/21/96	11:15:56	311.65	0.78
7770	8/21/96	11:15:58	311 67	0 783
7771	8/21/96	11:16:00	311.68	0 788
7772	8/21/96	11:16:02	311.70	0 788
7773	8/21/96	11.16.04	311.72	0 802
7774	8/21/96	11:16:06	311.73	0.827
7775	8/21/96	11:16:08	311.75	0.837
7776	8/21/96	11:16:10	311.77	0.847
7777	8/21/96	11.16:12	311 78	0 855
7778	8/21/96	11:16:14	311.80	0.878
7779	8/21/96	11:16:16	311.82	0 88
7780	8/21/96	11:16:18	311.83	0 886
7781	8/21/96	11:16:20	311.85	0.902
7782	8/21/96	11:16:22	311.87	0 915
7783	8/21/96	11.16:24	311.88	0.909
7784	8/21/96	11:16:26	311 90	0.915
7785	8/21/96	11:16:28	311.92	0.917
7786	8/21/96	11:16:30	311.93	0.893
7787	8/21/96	11:16:32	311.95	0.896
7788	8/21/96	11:16.34	311.96	0 931
7789	8/21/96	11:16:36	311.98	0.95
7790	8/21/96	11.16:38	312.00	0 941
7791	8/21/96	11 16:40	312.01	0 953
7792	8/21/96	11:16:42	312.03	0 99
7793	8/21/96	11.16:44	312.05	1.005
7794	8/21/96	11:16:46	312.06	1 019
7795	8/21/96	11:16:48	312.08	1.017
7796	8/21/96	11:16:50	312.10	0 983

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8461	8/21/96	11:38:50	310.87	0.801
8460	8/21/96	11:38:48	310.88	0.819
8459	8/21/96	11:38:46	310.90	0.819
8458	8/21/96	11:38:44	310.92	0.815
8457	8/21/96	11:38:42	310.93	0.805
8456	8/21/96	11:38:40	310.95	0.801
8455	8/21/96	11:38:38	310.97	0.802
8454	8/21/96	11:38:36	310.98	0.793
8453	8/21/96	11:38:34	311.00	0.77
8452	8/21/96	11.38:32	311.01	0.76
8451	8/21/96	11:38:30	311.03	0.759
8450	8/21/96	11:38:28	311.05	0.755
8449	8/21/96	11:38.26	311.06	0.774
8448	8/21/96	11:38:24	311.08	0.812
8447	8/21/96	11:38:22	311.10	0.818
8446	8/21/96	11:38:20	311.11	0.812
8445	8/21/96	11.38:18	311.13	0.828
8444	8/21/96	11:38:16	311.15	0.849
8443	8/21/96	11:38:14	311.16	0.857
8442	8/21/96	11:38:12	311.18	0.851
8441	8/21/96	11:38:10	311.20	0.846
8440	8/21/96	11:38:08	311.21	0.84
8439	8/21/96	11:38:06	311.23	0 834
8438	8/21/96	11:38:04	311.25	0.84
8437	8/21/96	11:38:02	311.26	0.861
8436	8/21/96	11:38:00	311.28	0.884
8435	8/21/96	11:37:58	311.30	0.898
8434	8/21/96	11:37:56	311.31	0.907
8433	8/21/96	11:37:54	311 33	0.924
8432	8/21/96	11:37:52	311 35	0.948
8431	8/21/96	11 37:50	311 36	0 962
8430	8/21/96	11:37:48	311.38	0 964
8429	8/21/96	11:37:46	311.39	0.975
8428	8/21/96	11:37 44	311.41	0.989
8427	8/21/96	11:37.42	311 43	0.996
8426	8/21/96	11:37:40	311.44	0.998
8425	8/21/96	11 37:38	311.46	0 995
8424	8/21/96	11:37:36	311.48	0.987
8423	8/21/96	11 37:34	311.49	0.993
8422	8/21/96	11 37.32	311.51	1.003
8421	8/21/96	11.37:30	311.53	0.999
8420	8/21/96	11:37:28	311.54	0.99
8419	8/21/96	11:37:26	311 56	0.981
8418	8/21/96	11:37:24	311.58	0.976
8417	8/21/96	11:37:22	311.59	0.986
8416	8/21/96	11:37:20	311.61	1.001
8415	8/21/96	11 37:18	311 63	1.006
8414	8/21/96	11 37:16	311.64	1 01
8413	8/21/96	11:37.14	311 66	1.024
8412	8/21/96	11:37:12	311.68	1.044
8411	8/21/96	11:37:10	311 69	1 066
8410	8/21/96	11:37.08	311.71	1 078
8409	8/21/96	11:37.06	311.73	1.091
8408	8/21/96	11 37:04	311 74	1 105
8407	8/21/96	11:37.02	311.76	1.11
8406	8/21/96	11:37 00	311.77	1.12
8405	8/21/96	11:36:58	311.79	1.117
8404	8/21/96	11:36:57	311.80	1.107
8403	8/21/96	11 36:56	311.81	1.095

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7797	8/21/96	11:16:52	312.11	0.957
7798	8/21/96	11:16:54	312.13	0.958
7799	8/21/96	11:16:56	312.15	0.973
7800	8/21/96	11:16:58	312.16	0.991
7801	8/21/96	11:17:00	312.18	1.004
7802	8/21/96	11:17:02	312.20	1
7803	8/21/96	11:17:04	312.21	1.011
7804	8/21/96	11:17:06	312.23	1.03
7805	8/21/96	11:17:08	312.24	1.009
7806	8/21/96	11:17:10	312.26	0.961
7807	8/21/96	11:17:12	312.28	0.932
7808	8/21/96	11.17:14	312.29	0.93
7809	8/21/96	11:17:16	312.31	0.94
7810	8/21/96	11:17:18	312.33	0.952
7811	8/21/96	11:17:20	312.34	0.974
7812	8/21/96	11.17.22	312.36	1 011
7813	8/21/96	11 17:24	312.38	1.039
7814	8/21/96	11.17:26	312 39	1 047
7815	8/21/96	11:17:28	312.41	1.034
7816	8/21/96	11:17:30	312.43	1 01
7817	8/21/96	11:17:32	312.44	0.999
7818	8/21/96	11:17:34	312.46	0.973
7819	8/21/96	11:17:36	312.48	0.974
7820	8/21/96	11:17:38	312.49	0.999
7821	8/21/96	11:17:40	312.51	1.004
7822	8/21/96	11:17:42	312.53	1.008
7823	8/21/96	11:17:44	312.54	1.032
7824	8/21/96	11:17:46	312.56	1.045
7825	8/21/96	11:17:48	312.57	1 012
7826	8/21/96	11:17:50	312.59	0.948
7827	8/21/96	11:17.52	312.61	0 909
7828	8/21/96	11:17:54	312.62	0 932
7829	8/21/96	11:17:56	312.64	0.966
7830	8/21/96	11:17:58	312.66	0 949
7831	8/21/96	11:18:00	312.67	0.926
7832	8/21/96	11:18:02	312.69	0 951
7833	8/21/96	11:18:04	312.71	1.041
7834	8/21/96	11:18:06	312.72	1 13
7835	8/21/96	11:18:08	312.74	1.176
7836	8/21/96	11:18:10	312.76	1.2
7837	8/21/96	11 18.12	312.77	1 203
7838	8/21/96	11 18:14	312.79	1 188
7839	8/21/96	11:18:16	312.81	1 166
7840	8/21/96	11.18:18	312.82	1.141
7841	8/21/96	11.18:20	312.84	1 097
7842	8/21/96	11:18:22	312 85	1 072
7843	8/21/96	11 18.24	312.87	1 103
7844	8/21/96	11 18:26	312.89	1.142
7845	8/21/96	11:18:28	312.90	1 186
7846	8/21/96	11:18:30	312.92	1.21
7847	8/21/96	11 18 32	312.94	1 255
7848	8/21/96	11 18:34	312.95	1.288
7849	8/21/96	11.18:36	312.97	1 323
7850	8/21/96	11 18:38	312.99	1.338
7851	8/21/96	11 18:40	313.00	1 329
7852	8/21/96	11:18:42	313.02	1 336
7853	8/21/96	11.18:44	313.04	1 349
7854	8/21/96	11:18:46	313.05	1.368
7855	8/21/96	11:18:48	313.07	1.381

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8402	8/21/96	11:36:54	311.82	1.085
8401	8/21/96	11:36:52	311.84	1.087
8400	8/21/96	11:36:50	311.86	1.066
8399	8/21/96	11:36:48	311.87	1.03
8398	8/21/96	11:36:46	311.89	1.006
8397	8/21/96	11:36:44	311.90	0.988
8396	8/21/96	11:36:42	311.92	0.994
8395	8/21/96	11:36:40	311.94	1.038
8394	8/21/96	11:36:38	311.95	1.089
8393	8/21/96	11:36:36	311.97	1.117
8392	8/21/96	11:36:34	311.99	1.125
8391	8/21/96	11:36:32	312 00	1.12
8390	8/21/96	11:36:30	312.02	1.112
8389	8/21/96	11:36:28	312.03	1.107
8388	8/21/96	11:36:26	312.05	1.107
8387	8/21/96	11 36:24	312.07	1.103
8386	8/21/96	11:36:22	312.08	1.091
8385	8/21/96	11:36:20	312.10	1 04
8384	8/21/96	11:36:18	312.11	0 98
8383	8/21/96	11:36:16	312.13	0.977
8382	8/21/96	11:36:14	312.15	1 01
8381	8/21/96	11:36:12	312.16	1.049
8380	8/21/96	11:36:10	312.18	1.081
8379	8/21/96	11:36:08	312.19	1.088
8378	8/21/96	11:36:06	312.21	1 085
8377	8/21/96	11:36:04	312.23	1.071
8376	8/21/96	11:36:02	312.24	1.039
8375	8/21/96	11:36.00	312.26	1 004
8374	8/21/96	11:35:58	312.28	0.974
8373	8/21/96	11 35:56	312.29	0.956
8372	8/21/96	11:35:54	312.31	0.959
8371	8/21/96	11.35:52	312.32	1.002
8370	8/21/96	11:35.50	312.34	1.076
8369	8/21/96	11:35:48	312.36	1.039
8368	8/21/96	11:35:46	312.37	1.006
8367	8/21/96	11 35:44	312.39	0 939
8366	8/21/96	11:35:42	312.40	0 891
8365	8/21/96	11 35:40	312.42	0.882
8364	8/21/96	11:35:38	312.44	0.832
8363	8/21/96	11:35:36	312.45	0.725
8362	8/21/96	11 35.34	312.47	0.654
8361	8/21/96	11 35:32	312.49	0.618
8360	8/21/96	11:35:30	312.50	0.6
8359	8/21/96	11:35:28	312.52	0.633
8358	8/21/96	11:35:26	312.53	0.724
8357	8/21/96	11 35:24	312.55	0 85
8356	8/21/96	11:35:22	312.57	0.935
8355	8/21/96	11:35:20	312.58	0.931
8354	8/21/96	11:35:18	312.60	0.868
8353	8/21/96	11:35:16	312.61	0.787
8352	8/21/96	11:35:14	312.63	0.712
8351	8/21/96	11:35:12	312.65	0.664
8350	8/21/96	11:35:10	312.66	0.635
8349	8/21/96	11:35.08	312 68	0 621
8348	8/21/96	11:35:06	312.69	0 628
8347	8/21/96	11:35:04	312.71	0 627
8346	8/21/96	11:35:02	312.73	0.615
8345	8/21/96	11:35:00	312.74	0.593
8344	8/21/96	11.34:58	312 76	0.57

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7856	8/21/96	11:18:50	313.09	1 373
7857	8/21/96	11.18:52	313.10	1.357
7858	8/21/96	11:18:54	313.12	1.345
7859	8/21/96	11:18:56	313.13	1.318
7860	8/21/96	11:18:58	313.15	1.282
7861	8/21/96	11.19:00	313.17	1.252
7862	8/21/96	11:19:02	313.18	1.234
7863	8/21/96	11:19.04	313.20	1.236
7864	8/21/96	11:19:06	313.22	1.263
7865	8/21/96	11:19:08	313.23	1 281
7866	8/21/96	11:19:10	313.25	1 272
7867	8/21/96	11:19:12	313.27	1.245
7868	8/21/96	11.19:14	313.28	1.214
7869	8/21/96	11:19 16	313.30	1 199
7870	8/21/96	11:19:18	313.32	1 189
7871	8/21/96	11 19:20	313.33	1.125
7872	8/21/96	11:19:22	313.35	0.988
7873	8/21/96	11:19:24	313 36	0 846
7874	8/21/96	11:19:26	313.38	0.737
7875	8/21/96	11 19:28	313.40	0.729
7876	8/21/96	11.19:30	313.41	0 828
7877	8/21/96	11:19:32	313.43	0.922
7878	8/21/96	11:19:34	313.44	0.965
7879	8/21/96	11:19:36	313.46	0 972
7880	8/21/96	11:19:38	313.48	0.96
7881	8/21/96	11:19:40	313.49	0.918
7882	8/21/96	11:19:42	313.51	0 823
7883	8/21/96	11:19:44	313.53	0.706
7884	8/21/96	11:19:46	313.54	0.637
7885	8/21/96	11:19:48	313 56	0 618
7886	8/21/96	11:19.50	313.57	0 635
7887	8/21/96	11:19:52	313.59	0.669
7888	8/21/96	11 19:54	313.61	0.699
7889	8/21/96	11:19 56	313 62	0 672
7890	8/21/96	11 19.58	313 64	0.608
7891	8/21/96	11:20:00	313.65	0.573
7892	8/21/96	11:20:02	313.67	0 551
7893	8/21/96	11:20.04	313.69	0 52
7894	8/21/96	11 20:06	313.70	0 497
7895	8/21/96	11:20:08	313.72	0.492
7896	8/21/96	11:20:10	313.73	0.474
7897	8/21/96	11 20:12	313.75	0 447
7898	8/21/96	11 20.14	313 77	0.435
7899	8/21/96	11:20:16	313.78	0.432
7900	8/21/96	11:20:18	313.80	0.447
7901	8/21/96	11:20:20	313 82	0 498
7902	8/21/96	11:20:22	313.83	0 567
7903	8/21/96	11:20.24	313.85	0.609
7904	8/21/96	11.20:26	313.86	0 62
7905	8/21/96	11:20.28	313 88	0 616
7906	8/21/96	11 20 30	313 90	0 612
7907	8/21/96	11.20:32	313.91	0 607
7908	8/21/96	11.20:34	313.93	0 591
7909	8/21/96	11 20.36	313.94	0 509
7910	8/21/96	11.20:38	313.96	0 369
7911	8/21/96	11 20.40	313.98	0 332
7912	8/21/96	11:20.42	313.99	0.35
7913	8/21/96	11:20:44	314.01	0.387
7914	8/21/96	11:20:46	314.02	0 384

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8343	8/21/96	11:34:56	312.78	0.546
8342	8/21/96	11:34:54	312.79	0.508
8341	8/21/96	11:34:52	312.81	0 451
8340	8/21/96	11:34:50	312.82	0.405
8339	8/21/96	11:34:48	312.84	0.389
8338	8/21/96	11:34:46	312.86	0.345
8337	8/21/96	11:34:44	312.87	0 286
8336	8/21/96	11:34:42	312.89	0.256
8335	8/21/96	11:34:40	312.90	0.233
8334	8/21/96	11:34:38	312.92	0.206
8333	8/21/96	11:34:36	312.94	0 217
8332	8/21/96	11:34:34	312.95	0.286
8331	8/21/96	11:34:32	312.97	0.367
8330	8/21/96	11:34:30	312.98	0.407
8329	8/21/96	11:34:28	313.00	0.429
8328	8/21/96	11 34:26	313.02	0.418
8327	8/21/96	11:34:24	313.03	0.366
8326	8/21/96	11:34:22	313.05	0.359
8325	8/21/96	11:34:20	313.07	0.398
8324	8/21/96	11:34:18	313.08	0.419
8323	8/21/96	11:34:16	313.10	0.37
8322	8/21/96	11:34:14	313.11	0.279
8321	8/21/96	11:34:12	313.13	0.196
8320	8/21/96	11:34:10	313.15	0.125
8319	8/21/96	11:34:08	313.16	0.075
8318	8/21/96	11:34:06	313.18	0.027
8317	8/21/96	11:34:04	313.19	ND
8316	8/21/96	11:34:02	313.21	ND
8315	8/21/96	11:34:00	313.23	ND
8314	8/21/96	11:33:58	313.24	ND
8313	8/21/96	11 33:56	313.26	ND
8312	8/21/96	11:33.54	313.27	ND
8311	8/21/96	11:33:52	313 29	ND
8310	8/21/96	11:33:51	313.30	ND
8309	8/21/96	11:33:50	313.31	ND
8308	8/21/96	11:33.48	313.33	ND
8307	8/21/96	11:33:46	313.34	ND
8306	8/21/96	11:33:44	313.36	ND
8305	8/21/96	11.33:42	313.38	ND
8304	8/21/96	11 33.40	313.40	ND
8303	8/21/96	11:33:38	313.42	ND
8302	8/21/96	11.33:36	313 43	ND
8301	8/21/96	11:33:34	313.45	ND
8300	8/21/96	11:33:32	313.47	ND
8299	8/21/96	11:33:30	313 49	ND
8298	8/21/96	11:33:28	313.51	ND
8297	8/21/96	11 33:26	313.52	ND
8296	8/21/96	11:33.24	313.54	ND
8295	8/21/96	11:33:22	313.56	ND
8294	8/21/96	11:33:20	313.58	ND
8293	8/21/96	11:33:18	313.60	ND
8292	8/21/96	11:33:16	313 61	ND
8291	8/21/96	11 33:14	313.63	ND
8290	8/21/96	11:33.12	313.65	ND
8289	8/21/96	11:33:10	313.67	ND
8288	8/21/96	11 33.08	313.69	ND
8287	8/21/96	11:33:06	313.70	ND
8286	8/21/96	11:33:04	313.72	ND
8285	8/21/96	11:33:02	313.74	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
7915	8/21/96	11:20:48	314.04	0.189
7916	8/21/96	11:20.50	314.06	0.049
7917	8/21/96	11:20:52	314.07	0.19
589	8/21/96	11:20:53	314.08	0.252
590	8/21/96	11:20:55	314.10	0 289
591	8/21/96	11:20:57	314.11	0.321
592	8/21/96	11:20:59	314.13	0.368
593	8/21/96	11:21:01	314.15	0.379
594	8/21/96	11:21:03	314.16	0.377
595	8/21/96	11:21:05	314.18	0.351
596	8/21/96	11:21.07	314.19	0 3
597	8/21/96	11:21:09	314.21	0.254
598	8/21/96	11:21:11	314.23	0.245
599	8/21/96	11:21:13	314 24	0.28
600	8/21/96	11:21:15	314 26	0 275
601	8/21/96	11:21:17	314 27	0.125
602	8/21/96	11 21:19	314 29	0 035
603	8/21/96	11.21:21	314.31	0 093
604	8/21/96	11:21:23	314.32	0.086
605	8/21/96	11.21:25	314.34	0.018
606	8/21/96	11:21:27	314.35	ND
607	8/21/96	11:21:29	314.37	0.012
608	8/21/96	11:21:31	314.39	0.027
609	8/21/96	11:21:33	314.40	0.01
610	8/21/96	11:21.35	314.42	ND
611	8/21/96	11:21:37	314.44	ND
612	8/21/96	11:21:39	314.45	ND
613	8/21/96	11:21:41	314.47	ND
614	8/21/96	11:21:43	314.48	ND
615	8/21/96	11:21:45	314.50	ND
616	8/21/96	11:21:47	314.52	ND
617	8/21/96	11:21:49	314.54	ND
618	8/21/96	11:21.51	314 56	ND
619	8/21/96	11:21:53	314.58	ND
620	8/21/96	11:21:55	314 59	ND
621	8/21/96	11:21:57	314 61	ND
622	8/21/96	11:21.59	314.63	ND
623	8/21/96	11.22.01	314 65	ND
624	8/21/96	11:22.03	314 67	ND
625	8/21/96	11:22.05	314.69	ND
626	8/21/96	11:22:07	314.71	ND
627	8/21/96	11.22.09	314 73	ND
628	8/21/96	11:22:11	314 74	ND
629	8/21/96	11:22:13	314.76	ND
630	8/21/96	11:22:15	314.78	ND
631	8/21/96	11 22:17	314.80	ND
632	8/21/96	11 22:19	314 82	ND
633	8/21/96	11.22:21	314 84	ND
634	8/21/96	11 22:23	314 86	ND
635	8/21/96	11 22:25	314 88	ND
636	8/21/96	11 22.27	314 89	ND
637	8/21/96	11:22.29	314.91	ND
638	8/21/96	11:22:31	314.93	ND
639	8/21/96	11.22:33	314.95	ND
640	8/21/96	11.22.35	314 97	ND
641	8/21/96	11:22:37	314.99	ND
642	8/21/96	11.22:39	315.01	ND
643	8/21/96	11:22:41	315.03	ND
644	8/21/96	11:22.43	315.04	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8284	8/21/96	11:33:00	313.76	ND
8283	8/21/96	11:32:58	313.77	ND
8282	8/21/96	11:32:56	313.79	ND
8281	8/21/96	11:32:54	313.81	ND
8280	8/21/96	11:32:52	313.83	ND
8279	8/21/96	11:32:50	313.85	ND
8278	8/21/96	11:32:48	313.86	ND
8277	8/21/96	11:32:46	313.88	ND
8276	8/21/96	11:32:44	313.90	ND
8275	8/21/96	11:32:42	313.92	ND
8274	8/21/96	11:32:40	313.94	ND
8273	8/21/96	11:32:38	313.95	ND
8272	8/21/96	11:32:36	313.97	ND
8271	8/21/96	11.32:34	313.99	ND
8270	8/21/96	11:32:32	314.01	ND
8269	8/21/96	11:32:30	314 03	ND
8268	8/21/96	11:32:28	314 04	ND
8267	8/21/96	11:32:26	314 06	ND
8266	8/21/96	11:32:24	314.08	ND
8265	8/21/96	11:32:22	314.10	ND
8264	8/21/96	11:32:20	314.12	ND
8263	8/21/96	11:32:18	314.13	ND
8262	8/21/96	11:32:16	314.15	ND
8261	8/21/96	11:32:14	314.17	ND
8260	8/21/96	11:32:12	314.19	ND
8259	8/21/96	11:32:10	314.20	ND
8258	8/21/96	11:32:08	314.22	ND
8257	8/21/96	11:32:06	314.24	ND
8256	8/21/96	11:32:04	314.26	ND
8255	8/21/96	11:32.02	314.28	ND
8254	8/21/96	11:32:00	314.29	ND
8253	8/21/96	11.31:58	314 31	ND
8252	8/21/96	11:31:56	314 33	ND
8251	8/21/96	11:31:54	314 35	ND
8250	8/21/96	11:31:52	314.37	ND
8249	8/21/96	11.31:50	314.38	ND
8248	8/21/96	11 31:48	314.40	ND
8247	8/21/96	11:31:46	314.42	ND
8246	8/21/96	11:31:44	314.44	ND
8245	8/21/96	11:31:42	314.46	ND
8244	8/21/96	11:31:40	314.47	ND
8243	8/21/96	11:31:38	314.49	ND
8242	8/21/96	11 31:37	314 50	ND
8241	8/21/96	11:31:36	314.51	ND
8240	8/21/96	11:31:34	314 53	ND
8239	8/21/96	11:31.32	314.54	ND
8238	8/21/96	11:31:30	314 56	ND
8237	8/21/96	11:31:28	314.58	ND
8236	8/21/96	11:31:26	314.59	ND
8235	8/21/96	11:31:24	314.61	ND
8234	8/21/96	11.31 22	314.63	ND
8233	8/21/96	11:31:20	314 64	ND
8232	8/21/96	11:31:18	314.66	ND
8231	8/21/96	11.31:16	314.68	ND
8230	8/21/96	11:31:14	314.70	ND
8229	8/21/96	11 31:12	314.71	ND
8228	8/21/96	11.31:10	314.73	ND
8227	8/21/96	11:31:08	314.75	ND
8226	8/21/96	11:31.06	314.76	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
645	8/21/96	11:22:45	315.06	ND
646	8/21/96	11:22:47	315.08	ND
647	8/21/96	11:22:49	315.10	ND
648	8/21/96	11:22:51	315.12	ND
649	8/21/96	11:22:53	315.14	ND
650	8/21/96	11:22:55	315.16	ND
651	8/21/96	11:22:57	315.18	ND
652	8/21/96	11:22:59	315.19	ND
653	8/21/96	11:23:01	315.21	ND
654	8/21/96	11:23:03	315.23	ND
655	8/21/96	11:23:05	315.25	ND
656	8/21/96	11:23:07	315.27	ND
657	8/21/96	11:23:09	315.29	ND
658	8/21/96	11:23:11	315.31	ND
659	8/21/96	11:23:13	315.33	ND
660	8/21/96	11:23:15	315.34	ND
661	8/21/96	11:23:17	315.36	ND
662	8/21/96	11 23 19	315.38	ND
663	8/21/96	11:23:21	315 40	ND
664	8/21/96	11.23:23	315.42	ND
665	8/21/96	11:23:25	315.44	ND
666	8/21/96	11:23:27	315.46	ND
667	8/21/96	11:23.29	315.48	ND
668	8/21/96	11:23:31	315.49	ND
669	8/21/96	11:23:33	315.51	ND
670	8/21/96	11:23:35	315.53	ND
671	8/21/96	11:23:37	315.55	ND
672	8/21/96	11:23:39	315.57	ND
673	8/21/96	11:23:41	315.59	ND
674	8/21/96	11:23:43	315.61	ND
8004	8/21/96	11:23.44	315.62	ND
8005	8/21/96	11:23:46	315.63	ND
8006	8/21/96	11:23:48	315.65	ND
8007	8/21/96	11 23:50	315 67	ND
8008	8/21/96	11 23:52	315 69	ND
8009	8/21/96	11:23:53	315.70	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8225	8/21/96	11:31:04	314.78	ND
8224	8/21/96	11:31:02	314.80	ND
8223	8/21/96	11:31:00	314.81	ND
8222	8/21/96	11:30:58	314.83	ND
8221	8/21/96	11:30:56	314.85	ND
8220	8/21/96	11:30:54	314.87	ND
8219	8/21/96	11:30:52	314.88	ND
8218	8/21/96	11:30:50	314.90	ND
8217	8/21/96	11:30:48	314.92	ND
8216	8/21/96	11:30:46	314.93	ND
8215	8/21/96	11:30:44	314.95	ND
8214	8/21/96	11:30:42	314.97	ND
8213	8/21/96	11:30:40	314.99	ND
8212	8/21/96	11:30:38	315.00	ND
8211	8/21/96	11:30:36	315 02	ND
8210	8/21/96	11 30:34	315.04	ND
8209	8/21/96	11:30:32	315.05	ND
8208	8/21/96	11:30:30	315.07	ND
8207	8/21/96	11 30:28	315.09	ND
8206	8/21/96	11:30:26	315.10	ND
8205	8/21/96	11:30:24	315.12	ND
8204	8/21/96	11:30:22	315.14	ND
8203	8/21/96	11:30:20	315.16	ND
8202	8/21/96	11:30:18	315.17	ND
8201	8/21/96	11:30:16	315.19	ND
8200	8/21/96	11:30:14	315.21	ND
8199	8/21/96	11.30:12	315.22	ND
8198	8/21/96	11:30:10	315.24	ND
8197	8/21/96	11:30:08	315.26	ND
8196	8/21/96	11:30:06	315.27	ND
8195	8/21/96	11:30:04	315.29	ND
8194	8/21/96	11:30:02	315.31	ND
8193	8/21/96	11 30:00	315.33	ND
8192	8/21/96	11:29:58	315.34	ND
8191	8/21/96	11:29:56	315.36	ND
8190	8/21/96	11:29:54	315.38	ND
8189	8/21/96	11:29.52	315.39	ND
8188	8/21/96	11:29:50	315.41	ND
8187	8/21/96	11:29:48	315.43	ND
8186	8/21/96	11:29:46	315.44	ND
8185	8/21/96	11.29:44	315.46	ND
8184	8/21/96	11:29:42	315.48	ND
8183	8/21/96	11:29:40	315.50	ND
8182	8/21/96	11:29:38	315.51	ND
8181	8/21/96	11:29:36	315.53	ND
8180	8/21/96	11:29:34	315 55	ND
8179	8/21/96	11 29:32	315 56	ND
8178	8/21/96	11:29:30	315.58	ND
8177	8/21/96	11 29.28	315 60	ND
8176	8/21/96	11:29:26	315.61	ND
8175	8/21/96	11.29:24	315 63	ND
8174	8/21/96	11:29:22	315.65	ND
8173	8/21/96	11:29:20	315.67	ND
8172	8/21/96	11:29:18	315.68	ND
8171	8/21/96	11:29.16	315.70	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6201	8/21/96	16:55:05	310.20	0.265
6202	8/21/96	16:55:07	310.22	0.282
6203	8/21/96	16:55:09	310.24	0.291
6204	8/21/96	16:55:11	310.26	0.28
6205	8/21/96	16:55:13	310.27	0.258
6206	8/21/96	16:55:15	310.29	0.237
6207	8/21/96	16:55:17	310.31	0.214
6208	8/21/96	16:55:19	310.33	0.19
6209	8/21/96	16:55:21	310.35	0.18
6210	8/21/96	16:55:23	310.36	0.169
6211	8/21/96	16:55:25	310.38	0.157
6212	8/21/96	16:55:27	310.40	0.159
6213	8/21/96	16:55:29	310.42	0.175
6214	8/21/96	16:55:31	310.43	0.194
6215	8/21/96	16:55:33	310.45	0.197
6216	8/21/96	16:55:35	310.47	0.194
6217	8/21/96	16:55:37	310.49	0.201
6218	8/21/96	16:55:39	310.51	0.217
6219	8/21/96	16:55:41	310.52	0.224
6220	8/21/96	16:55:43	310.54	0.226
6221	8/21/96	16:55:45	310.56	0.215
6222	8/21/96	16:55:47	310.58	0.209
6223	8/21/96	16:55:49	310.59	0.198
6224	8/21/96	16:55:51	310.61	0.197
6225	8/21/96	16:55:53	310.63	0.216
6226	8/21/96	16:55:55	310.65	0.238
6227	8/21/96	16:55:57	310.67	0.243
6228	8/21/96	16:55:59	310.68	0.232
6229	8/21/96	16:56:01	310.70	0.214
6230	8/21/96	16:56:03	310.72	0.207
6231	8/21/96	16:56:05	310.74	0.217
6232	8/21/96	16:56:07	310.76	0.235
6233	8/21/96	16:56:09	310.77	0.235
6234	8/21/96	16:56:11	310.79	0.221
6235	8/21/96	16:56:12	310.80	0.217
6236	8/21/96	16:56:13	310.81	0.217
6237	8/21/96	16:56:15	310.82	0.219
6238	8/21/96	16:56:17	310.84	0.216
6239	8/21/96	16:56:19	310.86	0.217
6240	8/21/96	16:56:21	310.87	0.22
6241	8/21/96	16:56:23	310.89	0.219
6242	8/21/96	16:56:25	310.91	0.224
6243	8/21/96	16:56:27	310.92	0.228
6244	8/21/96	16:56:29	310.94	0.226
6245	8/21/96	16:56:31	310.95	0.237
6246	8/21/96	16:56:33	310.97	0.246
6247	8/21/96	16:56:35	310.99	0.271
6248	8/21/96	16:56:37	311.00	0.271
6249	8/21/96	16:56:39	311.02	0.259
6250	8/21/96	16:56:41	311.04	0.26
6251	8/21/96	16:56:43	311.05	0.26
6252	8/21/96	16:56:45	311.07	0.247
6253	8/21/96	16:56:47	311.08	0.235
6254	8/21/96	16:56:49	311.10	0.27
6255	8/21/96	16:56:51	311.12	0.339
6256	8/21/96	16:56:53	311.13	0.384

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5930	8/21/96	16:46:05	310.14	0.119
5929	8/21/96	16:46:03	310.15	0.127
5928	8/21/96	16:46:01	310.17	0.133
5927	8/21/96	16:45:59	310.19	0.139
5926	8/21/96	16:45:57	310.20	0.158
5925	8/21/96	16:45:55	310.22	0.163
5924	8/21/96	16:45:53	310.24	0.177
5923	8/21/96	16:45:51	310.26	0.172
5922	8/21/96	16:45:49	310.27	0.16
5921	8/21/96	16:45:47	310.29	0.161
5920	8/21/96	16:45:45	310.31	0.156
5919	8/21/96	16:45:43	310.33	0.155
5918	8/21/96	16:45:41	310.34	0.145
5917	8/21/96	16:45:39	310.36	0.143
5916	8/21/96	16:45:37	310.38	0.141
5915	8/21/96	16:45:35	310.39	0.126
5914	8/21/96	16:45:33	310.41	0.126
5913	8/21/96	16:45:31	310.43	0.139
5912	8/21/96	16:45:29	310.45	0.153
5911	8/21/96	16:45:27	310.46	0.164
5910	8/21/96	16:45:25	310.48	0.168
5909	8/21/96	16:45:23	310.50	0.178
5908	8/21/96	16:45:21	310.52	0.19
5907	8/21/96	16:45:19	310.53	0.193
5906	8/21/96	16:45:17	310.55	0.196
5905	8/21/96	16:45:15	310.57	0.186
5904	8/21/96	16:45:13	310.58	0.187
5903	8/21/96	16:45:11	310.60	0.198
5902	8/21/96	16:45:09	310.62	0.199
5901	8/21/96	16:45:07	310.64	0.205
5900	8/21/96	16:45:05	310.65	0.202
5899	8/21/96	16:45:03	310.67	0.187
5898	8/21/96	16:45:01	310.69	0.183
5897	8/21/96	16:44:59	310.71	0.193
5896	8/21/96	16:44:57	310.72	0.206
5895	8/21/96	16:44:55	310.74	0.21
5894	8/21/96	16:44:53	310.76	0.205
5893	8/21/96	16:44:51	310.77	0.207
5892	8/21/96	16:44:49	310.79	0.226
5891	8/21/96	16:44:48	310.80	0.23
5890	8/21/96	16:44:47	310.81	0.232
5889	8/21/96	16:44:45	310.82	0.23
5888	8/21/96	16:44:43	310.84	0.234
5887	8/21/96	16:44:41	310.86	0.247
5886	8/21/96	16:44:39	310.87	0.262
5885	8/21/96	16:44:37	310.89	0.269
5884	8/21/96	16:44:35	310.91	0.276
5883	8/21/96	16:44:33	310.92	0.274
5882	8/21/96	16:44:31	310.94	0.272
5881	8/21/96	16:44:29	310.95	0.276
5880	8/21/96	16:44:27	310.97	0.27
5879	8/21/96	16:44:25	310.99	0.269
5878	8/21/96	16:44:23	311.00	0.27
5877	8/21/96	16:44:21	311.02	0.266
5876	8/21/96	16:44:19	311.04	0.271
5875	8/21/96	16:44:17	311.05	0.282

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6257	8/21/96	16:56:55	311.15	0.418
6258	8/21/96	16:56:57	311.17	0.442
6259	8/21/96	16:56:59	311.18	0.444
6260	8/21/96	16:57:01	311.20	0.45
6261	8/21/96	16:57:03	311.21	0.459
6262	8/21/96	16:57:05	311.23	0.458
6263	8/21/96	16:57:07	311.25	0.438
6264	8/21/96	16:57:09	311.26	0.403
6265	8/21/96	16:57:11	311.28	0.369
6266	8/21/96	16:57:13	311.30	0.344
6267	8/21/96	16:57:15	311.31	0.331
6268	8/21/96	16:57:17	311.33	0.341
6269	8/21/96	16:57:19	311.34	0.356
6270	8/21/96	16:57:21	311.36	0.359
6271	8/21/96	16:57:23	311.38	0.343
6272	8/21/96	16:57:25	311.39	0.328
6273	8/21/96	16:57:27	311.41	0.316
6274	8/21/96	16:57:29	311.43	0.355
6275	8/21/96	16:57:31	311.44	0.383
6276	8/21/96	16:57:33	311.46	0.386
6277	8/21/96	16:57:35	311.47	0.37
6278	8/21/96	16:57:37	311.49	0.356
6279	8/21/96	16:57:39	311.51	0.346
6280	8/21/96	16:57:41	311.52	0.32
6281	8/21/96	16:57:43	311.54	0.288
6282	8/21/96	16:57:45	311.56	0.27
6283	8/21/96	16:57:47	311.57	0.27
6284	8/21/96	16:57:49	311.59	0.271
6285	8/21/96	16:57:51	311.60	0.274
6286	8/21/96	16:57:53	311.62	0.302
6287	8/21/96	16:57:55	311.64	0.365
6288	8/21/96	16:57:57	311.65	0.438
6289	8/21/96	16:57:59	311.67	0.473
6290	8/21/96	16:58:01	311.69	0.468
6291	8/21/96	16:58:03	311.70	0.437
6292	8/21/96	16:58:05	311.72	0.41
6293	8/21/96	16:58:07	311.73	0.404
6294	8/21/96	16:58:09	311.75	0.4
6295	8/21/96	16:58:11	311.77	0 4
6296	8/21/96	16:58:13	311.78	0.403
6297	8/21/96	16:58:15	311.80	0.409
6298	8/21/96	16:58:17	311.82	0.419
6299	8/21/96	16:58:19	311.83	0.419
6300	8/21/96	16:58:21	311.85	0.408
6301	8/21/96	16:58:23	311.86	0.394
6302	8/21/96	16:58:25	311.88	0.39
6303	8/21/96	16:58:27	311.90	0.385
6304	8/21/96	16:58:29	311.91	0.396
6305	8/21/96	16:58:31	311.93	0.417
6306	8/21/96	16:58:33	311.94	0.437
6307	8/21/96	16.58:35	311.96	0.462
6308	8/21/96	16:58:37	311.97	0.469
6309	8/21/96	16:58:39	311.99	0.453
6310	8/21/96	16:58:41	312.01	0.432
6311	8/21/96	16:58:43	312.02	0.429
6312	8/21/96	16:58:45	312.04	0.438

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5874	8/21/96	16:44:15	311.07	0.281
5873	8/21/96	16:44:13	311.08	0.267
5872	8/21/96	16:44:11	311.10	0.274
5871	8/21/96	16:44:09	311.12	0.29
5870	8/21/96	16:44:07	311.13	0.3
5869	8/21/96	16:44:05	311.15	0.303
5868	8/21/96	16:44:03	311.17	0.298
5867	8/21/96	16:44:01	311.18	0.302
5866	8/21/96	16:43:59	311.20	0.283
5865	8/21/96	16:43:57	311.21	0.258
5864	8/21/96	16:43:55	311.23	0.264
5863	8/21/96	16:43:53	311.25	0.268
5862	8/21/96	16:43:51	311.26	0.266
5861	8/21/96	16:43:49	311.28	0.269
5860	8/21/96	16:43:47	311.30	0.272
5859	8/21/96	16:43:45	311.31	0.274
5858	8/21/96	16:43:43	311.33	0.284
5857	8/21/96	16:43:41	311.34	0.282
5856	8/21/96	16:43:39	311.36	0.273
5855	8/21/96	16:43:37	311.38	0.278
5854	8/21/96	16:43:35	311.39	0.277
5853	8/21/96	16:43:33	311.41	0.284
5852	8/21/96	16:43:31	311.43	0.305
5851	8/21/96	16:43:29	311.44	0.32
5850	8/21/96	16:43:27	311.46	0.312
5849	8/21/96	16:43:25	311.47	0.309
5848	8/21/96	16:43:23	311.49	0.306
5847	8/21/96	16:43:21	311.51	0.296
5846	8/21/96	16:43:19	311.52	0.314
5845	8/21/96	16:43:17	311.54	0.316
5844	8/21/96	16:43:15	311.56	0.306
5843	8/21/96	16:43:13	311.57	0.327
5842	8/21/96	16:43:11	311.59	0.352
5841	8/21/96	16:43:09	311.60	0.356
5840	8/21/96	16:43:07	311.62	0.361
5839	8/21/96	16:43:05	311.64	0.381
5838	8/21/96	16.43:03	311.65	0.396
5837	8/21/96	16:43:01	311.67	0.405
5836	8/21/96	16:42:59	311.69	0.405
5835	8/21/96	16:42:57	311.70	0.392
5834	8/21/96	16:42:55	311.72	0.377
5833	8/21/96	16:42:53	311.73	0.371
5832	8/21/96	16:42:51	311.75	0.368
5831	8/21/96	16:42:49	311.77	0.358
5830	8/21/96	16:42:47	311.78	0.348
5829	8/21/96	16:42:45	311.80	0.35
5828	8/21/96	16:42:43	311.82	0.359
5827	8/21/96	16:42:41	311.83	0.374
5826	8/21/96	16:42:39	311.85	0.406
5825	8/21/96	16:42:37	311.86	0.469
5824	8/21/96	16:42:35	311.88	0.532
5823	8/21/96	16:42:33	311.90	0.576
5822	8/21/96	16:42:31	311.91	0.606
5821	8/21/96	16:42:29	311.93	0.603
5820	8/21/96	16:42:27	311.94	0.581
5819	8/21/96	16:42:25	311.96	0.556

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6313	8/21/96	16:58:47	312.05	0.439
6314	8/21/96	16:58:49	312.07	0.44
6315	8/21/96	16:58:51	312.09	0.448
6316	8/21/96	16:58:53	312.10	0.438
6317	8/21/96	16:58:55	312.12	0.432
6318	8/21/96	16:58:57	312.13	0.439
6319	8/21/96	16:58:59	312.15	0.438
6320	8/21/96	16:59:01	312.17	0.452
6321	8/21/96	16:59:03	312.18	0.46
6322	8/21/96	16:59:05	312.20	0.46
6323	8/21/96	16:59:07	312.21	0.454
6324	8/21/96	16:59:09	312.23	0.446
6325	8/21/96	16:59:11	312.24	0 451
6326	8/21/96	16:59:13	312.26	0.452
6327	8/21/96	16:59:15	312.28	0.474
6328	8/21/96	16:59:17	312.29	0.508
6329	8/21/96	16:59:19	312.31	0.518
6330	8/21/96	16:59:21	312.32	0.514
6331	8/21/96	16:59:23	312.34	0.508
6332	8/21/96	16:59:25	312.36	0.489
6333	8/21/96	16:59:27	312.37	0.486
6334	8/21/96	16:59:29	312.39	0.482
6335	8/21/96	16:59:31	312.40	0.476
6336	8/21/96	16:59:33	312.42	0.463
6337	8/21/96	16:59:35	312.43	0.458
6338	8/21/96	16:59:37	312.45	0.465
6339	8/21/96	16:59:39	312.47	0.475
6340	8/21/96	16:59:41	312.48	0.48
6341	8/21/96	16:59:43	312.50	0.48
6342	8/21/96	16:59:45	312.51	0.486
6343	8/21/96	16:59:47	312.53	0.501
6344	8/21/96	16:59:49	312.55	0.511
6345	8/21/96	16:59:51	312.56	0.508
6346	8/21/96	16:59:53	312.58	0.501
6347	8/21/96	16:59:55	312.59	0.488
6348	8/21/96	16:59:57	312.61	0.485
6349	8/21/96	16:59:59	312.63	0.49
6350	8/21/96	17:00:01	312.64	0.487
6351	8/21/96	17:00:03	312.66	0.495
6352	8/21/96	17:00:05	312.67	0.512
6353	8/21/96	17:00:07	312.69	0.513
6354	8/21/96	17:00:09	312.70	0.512
6355	8/21/96	17:00:11	312.72	0.514
6356	8/21/96	17:00:13	312.74	0.52
6357	8/21/96	17:00:15	312.75	0 525
6358	8/21/96	17:00:17	312.77	0.521
6359	8/21/96	17:00:19	312.78	0.516
6360	8/21/96	17:00:21	312.80	0.514
6361	8/21/96	17:00:23	312.82	0.522
6362	8/21/96	17.00:25	312.83	0.527
6363	8/21/96	17:00:27	312.85	0.53
6364	8/21/96	17:00:29	312.86	0 554
6365	8/21/96	17:00:31	312.88	0.579
6366	8/21/96	17:00:33	312.90	0.577
6367	8/21/96	17:00:35	312.91	0.579
6368	8/21/96	17:00:37	312.93	0.587

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5818	8/21/96	16:42:23	311.98	0.538
5817	8/21/96	16:42:21	311.99	0.538
5816	8/21/96	16:42:19	312.01	0.528
5815	8/21/96	16:42:17	312.02	0.506
5814	8/21/96	16:42:15	312.04	0.512
5813	8/21/96	16:42:13	312.06	0.528
5812	8/21/96	16:42:11	312.07	0.539
5811	8/21/96	16:42:09	312.09	0.552
5810	8/21/96	16:42:07	312.10	0.568
5809	8/21/96	16:42:05	312.12	0.578
5808	8/21/96	16:42:03	312.14	0.576
5807	8/21/96	16:42:01	312.15	0.566
5806	8/21/96	16:41:59	312.17	0.542
5805	8/21/96	16:41:57	312.18	0.517
5804	8/21/96	16:41:55	312.20	0.509
5803	8/21/96	16:41:53	312.21	0.524
5802	8/21/96	16:41:51	312.23	0.556
5801	8/21/96	16:41:49	312.25	0.579
5800	8/21/96	16:41:47	312.26	0.579
5799	8/21/96	16:41:45	312.28	0.584
5798	8/21/96	16:41:43	312.29	0.584
5797	8/21/96	16:41:41	312.31	0.573
5796	8/21/96	16:41:39	312.33	0.569
5795	8/21/96	16:41:37	312.34	0.568
5794	8/21/96	16:41:35	312.36	0.569
5793	8/21/96	16:41:33	312.37	0.576
5792	8/21/96	16:41:31	312.39	0.575
5791	8/21/96	16:41:29	312.41	0.572
5790	8/21/96	16:41:27	312.42	0.567
5789	8/21/96	16:41:25	312.44	0.561
5788	8/21/96	16:41:23	312.45	0.563
5787	8/21/96	16:41:21	312.47	0.575
5786	8/21/96	16:41:19	312.49	0.584
5785	8/21/96	16:41:17	312.50	0.579
5784	8/21/96	16:41:15	312.52	0.572
5783	8/21/96	16:41:13	312.53	0.571
5782	8/21/96	16:41:11	312.55	0.571
5781	8/21/96	16:41:09	312.57	0.568
5780	8/21/96	16:41:07	312.58	0.555
5779	8/21/96	16:41:05	312.60	0.546
5778	8/21/96	16:41:03	312.61	0.543
5777	8/21/96	16:41:01	312.63	0.544
5776	8/21/96	16:40:59	312.65	0.553
5775	8/21/96	16:40:57	312.66	0.556
5774	8/21/96	16:40:55	312.68	0.557
5773	8/21/96	16:40:53	312.69	0.571
5772	8/21/96	16:40:51	312.71	0.594
5771	8/21/96	16:40:49	312.73	0.615
5770	8/21/96	16:40:47	312.74	0.621
5769	8/21/96	16:40:45	312.76	0.624
5768	8/21/96	16:40:43	312.77	0.619
5767	8/21/96	16:40:41	312.79	0.609
5766	8/21/96	16:40:39	312.81	0.596
5765	8/21/96	16:40:37	312.82	0.578
5764	8/21/96	16:40:35	312.84	0.569
5763	8/21/96	16:40:33	312.85	0.57

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6369	8/21/96	17:00:39	312.94	0.59
6370	8/21/96	17:00:41	312.96	0.585
6371	8/21/96	17:00:43	312.97	0.58
6372	8/21/96	17:00:45	312.99	0.58
6373	8/21/96	17:00:47	313.01	0.583
6374	8/21/96	17:00:49	313.02	0.591
6375	8/21/96	17:00:51	313.04	0.59
6376	8/21/96	17:00:53	313.05	0.586
6377	8/21/96	17:00:55	313.07	0.593
6378	8/21/96	17:00:57	313.09	0.611
6379	8/21/96	17:00:59	313.10	0.622
6380	8/21/96	17:01:01	313.12	0.622
6381	8/21/96	17:01:03	313.13	0.623
6382	8/21/96	17:01:05	313.15	0.63
6383	8/21/96	17:01:07	313.17	0.644
6384	8/21/96	17:01:09	313.18	0.641
6385	8/21/96	17:01:11	313.20	0.621
6386	8/21/96	17:01:13	313.21	0.623
6387	8/21/96	17:01:15	313.23	0.628
6388	8/21/96	17:01:17	313.24	0.642
6389	8/21/96	17:01:19	313.26	0.651
6390	8/21/96	17:01:21	313.28	0.647
6391	8/21/96	17:01:23	313.29	0.648
6392	8/21/96	17:01:24	313.30	0.65
6393	8/21/96	17:01:25	313.31	0.647
6394	8/21/96	17:01:27	313.33	0.64
6395	8/21/96	17:01:29	313.34	0.632
6396	8/21/96	17:01:31	313.36	0.639
6397	8/21/96	17:01:33	313.38	0.657
6398	8/21/96	17:01:35	313.40	0.667
6399	8/21/96	17:01:37	313.41	0.673
6400	8/21/96	17:01:39	313.43	0.688
6401	8/21/96	17:01:41	313.45	0.69
6402	8/21/96	17:01:43	313.47	0.682
6403	8/21/96	17:01:45	313.48	0.683
6404	8/21/96	17:01:47	313.50	0.689
6405	8/21/96	17:01:49	313.52	0.691
6406	8/21/96	17:01:51	313.54	0.708
6407	8/21/96	17:01:53	313.55	0.737
6408	8/21/96	17:01:55	313.57	0.736
6409	8/21/96	17:01:57	313.59	0.721
6410	8/21/96	17:01:59	313.61	0.725
6411	8/21/96	17:02:01	313.62	0.747
6412	8/21/96	17:02:03	313.64	0.761
6413	8/21/96	17:02:05	313.66	0.75
6414	8/21/96	17:02:07	313.68	0.734
6415	8/21/96	17:02:09	313.69	0.733
6416	8/21/96	17:02:11	313.71	0.736
6417	8/21/96	17:02:13	313.73	0.735
6418	8/21/96	17:02:15	313.75	0.738
6419	8/21/96	17:02:17	313.76	0.753
6420	8/21/96	17:02:19	313.78	0.786
6421	8/21/96	17:02:21	313.80	0.804
6422	8/21/96	17:02:23	313.82	0.788
6423	8/21/96	17:02:25	313.83	0.759
6424	8/21/96	17:02:27	313.85	0.754

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5762	8/21/96	16:40:31	312.87	0.587
5761	8/21/96	16:40:29	312.89	0.605
5760	8/21/96	16:40:27	312.90	0.619
5759	8/21/96	16:40:25	312.92	0.626
5758	8/21/96	16:40:23	312.93	0.619
5757	8/21/96	16:40:21	312.95	0.618
5756	8/21/96	16:40:19	312.97	0.625
5755	8/21/96	16:40:17	312.98	0.631
5754	8/21/96	16:40:15	313.00	0.628
5753	8/21/96	16:40:13	313.01	0.641
5752	8/21/96	16:40:11	313.03	0.653
5751	8/21/96	16:40:09	313.04	0.646
5750	8/21/96	16:40:07	313.06	0.643
5749	8/21/96	16:40:05	313.08	0.644
5748	8/21/96	16:40:03	313.09	0.642
5747	8/21/96	16:40:01	313.11	0.641
5746	8/21/96	16:39:59	313.12	0.646
5745	8/21/96	16:39:57	313.14	0.657
5744	8/21/96	16:39:55	313.16	0.654
5743	8/21/96	16:39:53	313.17	0.643
5742	8/21/96	16:39:51	313.19	0.639
5741	8/21/96	16:39:49	313.20	0.635
5740	8/21/96	16:39:47	313.22	0.638
5739	8/21/96	16:39:45	313.24	0.658
5738	8/21/96	16:39:43	313.25	0.678
5737	8/21/96	16:39:41	313.27	0.686
5736	8/21/96	16:39:39	313.28	0.695
5735	8/21/96	16:39:37	313.30	0.701
5734	8/21/96	16:39:35	313.32	0.722
5733	8/21/96	16:39:33	313.34	0.751
5732	8/21/96	16:39:31	313.35	0.766
5731	8/21/96	16:39:29	313.37	0.77
5730	8/21/96	16:39:27	313.39	0.751
5729	8/21/96	16:39:25	313.41	0.729
5728	8/21/96	16:39:23	313.42	0.734
5727	8/21/96	16:39:21	313.44	0.755
5726	8/21/96	16:39:19	313.46	0.761
5725	8/21/96	16:39:17	313.48	0.742
5724	8/21/96	16:39:15	313.49	0.726
5723	8/21/96	16:39:13	313.51	0.707
5722	8/21/96	16:39:11	313.53	0.685
5721	8/21/96	16:39:09	313.55	0.7
5720	8/21/96	16:39:07	313.56	0.727
5719	8/21/96	16:39:05	313.58	0.733
5718	8/21/96	16:39:03	313.60	0.734
5717	8/21/96	16:39:01	313.62	0.73
5716	8/21/96	16:38:59	313.64	0.728
5715	8/21/96	16:38:57	313.65	0.736
5714	8/21/96	16:38:55	313.67	0.757
5713	8/21/96	16:38:53	313.69	0.786
5712	8/21/96	16:38:51	313.71	0.807
5711	8/21/96	16:38:49	313.72	0.82
5710	8/21/96	16:38:47	313.74	0.816
5709	8/21/96	16:38:45	313.76	0.814
5708	8/21/96	16:38:43	313.78	0.826
5707	8/21/96	16:38:41	313.79	0.836

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6425	8/21/96	17:02:29	313.87	0.758
6426	8/21/96	17:02:31	313.89	0.763
6427	8/21/96	17:02:33	313.90	0.788
6428	8/21/96	17:02:35	313.92	0.788
6429	8/21/96	17:02:37	313.94	0.775
6430	8/21/96	17:02:39	313.96	0.787
6431	8/21/96	17:02:41	313.97	0.799
6432	8/21/96	17:02:43	313.99	0.817
6433	8/21/96	17:02:45	314.01	0.836
6434	8/21/96	17:02:47	314.03	0.842
6435	8/21/96	17:02:49	314.04	0.837
6436	8/21/96	17:02:51	314.06	0.827
6437	8/21/96	17:02:53	314.08	0.838
6438	8/21/96	17:02:55	314.10	0.855
6439	8/21/96	17:02:57	314.11	0.853
6440	8/21/96	17:02:59	314.13	0.853
6441	8/21/96	17:03:01	314.15	0.856
6442	8/21/96	17:03:03	314.17	0.87
6443	8/21/96	17:03:05	314.18	0.886
6444	8/21/96	17:03:07	314.20	0.885
6445	8/21/96	17:03:09	314.22	0.876
6446	8/21/96	17:03:11	314.24	0.881
6447	8/21/96	17:03:13	314.25	0.92
6448	8/21/96	17:03:15	314.27	0.936
6449	8/21/96	17:03:17	314.29	0.932
6450	8/21/96	17:03:19	314.31	0.952
6451	8/21/96	17:03:21	314.32	0.96
6452	8/21/96	17:03:23	314.34	0.944
6453	8/21/96	17:03:25	314.36	0.94
6454	8/21/96	17:03:27	314.38	0.949
6455	8/21/96	17:03:29	314.39	0 948
6456	8/21/96	17:03:31	314.41	0.953
6457	8/21/96	17:03:33	314.43	0.969
6458	8/21/96	17:03:35	314.45	0.977
6459	8/21/96	17:03:37	314.46	0.968
6460	8/21/96	17:03:39	314.48	0.973
6461	8/21/96	17:03:41	314.50	0.983
6462	8/21/96	17:03:43	314.52	0.962
6463	8/21/96	17:03:45	314.53	0.947
6464	8/21/96	17:03:47	314.55	0.965
6465	8/21/96	17:03:49	314.56	0.971
6466	8/21/96	17:03:51	314.58	0 956
6467	8/21/96	17:03:53	314.60	0.926
6468	8/21/96	17:03:55	314.61	0.894
6469	8/21/96	17:03:57	314.63	0.902
6470	8/21/96	17:03:59	314.64	0.936
6471	8/21/96	17:04:01	314.66	0.95
6472	8/21/96	17:04:03	314.68	0.957
6473	8/21/96	17:04:05	314.69	0.962
6474	8/21/96	17:04:07	314.71	0.958
6475	8/21/96	17:04:09	314.72	0.947
6476	8/21/96	17:04:11	314.74	0.938
6477	8/21/96	17:04:13	314.76	0.92
6478	8/21/96	17:04:15	314.77	0.889
6479	8/21/96	17:04:17	314.79	0.873
6480	8/21/96	17:04:19	314.80	0.867

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5706	8/21/96	16:38:39	313.81	0.832
5705	8/21/96	16:38:37	313.83	0.795
5704	8/21/96	16:38:35	313.85	0.755
5703	8/21/96	16:38:33	313.86	0.75
5702	8/21/96	16:38:31	313.88	0.746
5701	8/21/96	16:38:29	313.90	0.735
5700	8/21/96	16:38:27	313.92	0.725
5699	8/21/96	16:38:25	313.94	0.718
5698	8/21/96	16:38:23	313.95	0.721
5697	8/21/96	16:38:21	313.97	0.732
5696	8/21/96	16:38:19	313.99	0.754
5695	8/21/96	16:38:17	314.01	0.772
5694	8/21/96	16:38:15	314.02	0.778
5693	8/21/96	16:38:13	314.04	0.782
5692	8/21/96	16:38:11	314.06	0.783
5691	8/21/96	16:38:09	314.08	0.775
5690	8/21/96	16:38:07	314.09	0.76
5689	8/21/96	16:38:05	314.11	0.763
5688	8/21/96	16:38:03	314.13	0.783
5687	8/21/96	16:38:01	314.15	0.793
5686	8/21/96	16:37:59	314.16	0.796
5685	8/21/96	16:37:57	314.18	0.81
5684	8/21/96	16:37:55	314.20	0.833
5683	8/21/96	16:37:53	314.22	0.853
5682	8/21/96	16:37:51	314.24	0.861
5681	8/21/96	16:37:49	314.25	0.855
5680	8/21/96	16:37:47	314.27	0.839
5679	8/21/96	16:37:45	314.29	0.839
5678	8/21/96	16:37:43	314.31	0.85
5677	8/21/96	16:37:41	314.32	0.85
5676	8/21/96	16:37:39	314.34	0.848
5675	8/21/96	16:37:37	314.36	0.859
5674	8/21/96	16:37:35	314.38	0.874
5673	8/21/96	16:37:33	314.39	0.884
5672	8/21/96	16:37:31	314.41	0.873
5671	8/21/96	16:37:29	314.43	0.846
5670	8/21/96	16:37:27	314.45	0.821
5669	8/21/96	16:37:25	314.47	0.792
5668	8/21/96	16:37:23	314.48	0.757
5667	8/21/96	16:37:21	314.50	0.727
5666	8/21/96	16:37:19	314.52	0.691
5665	8/21/96	16:37:17	314.53	0.641
5664	8/21/96	16:37:15	314.55	0.607
5663	8/21/96	16:37:13	314.57	0.603
5662	8/21/96	16:37:11	314.59	0.59
5661	8/21/96	16:37:09	314.60	0.57
5660	8/21/96	16:37:07	314.62	0.582
5659	8/21/96	16:37:05	314.64	0.595
5658	8/21/96	16:37:03	314.66	0.581
5657	8/21/96	16:37:01	314.67	0.583
5656	8/21/96	16:36:59	314.69	0.607
5655	8/21/96	16:36:57	314.71	0.611
5654	8/21/96	16:36:55	314.73	0.618
5653	8/21/96	16:36:53	314.74	0.64
5652	8/21/96	16:36:51	314.76	0.699
5651	8/21/96	16:36:49	314.78	0.785

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6481	8/21/96	17:04:21	314.82	0.859
6482	8/21/96	17:04:23	314.84	0.867
6483	8/21/96	17:04:25	314.85	0.917
6484	8/21/96	17:04:27	314.87	0.96
6485	8/21/96	17:04:29	314.88	0.959
6486	8/21/96	17:04:31	314.90	0.943
6487	8/21/96	17:04:33	314.92	0.937
6488	8/21/96	17:04:35	314.93	0.937
6489	8/21/96	17:04:37	314.95	0.94
6490	8/21/96	17:04:39	314.96	0.917
6491	8/21/96	17:04:41	314.98	0.863
6492	8/21/96	17:04:43	315.00	0.846
6493	8/21/96	17:04:45	315.01	0.835
6494	8/21/96	17:04:47	315.03	0.836
6495	8/21/96	17:04:49	315.04	0.899
6496	8/21/96	17:04:51	315.06	0.881
6497	8/21/96	17:04:53	315.08	0.873
6498	8/21/96	17:04:55	315.09	0.891
6499	8/21/96	17:04:57	315.11	0.875
6500	8/21/96	17:04:59	315.12	0.817
6501	8/21/96	17:05:01	315.14	0.778
6502	8/21/96	17:05:03	315.16	0.811
6503	8/21/96	17:05:05	315.17	0.839
6504	8/21/96	17:05:07	315.19	0.892
6505	8/21/96	17:05:09	315.20	0.9
6506	8/21/96	17:05:11	315.22	0.881
6507	8/21/96	17:05:13	315.24	0.855
6508	8/21/96	17:05:15	315.25	0.864
6509	8/21/96	17:05:17	315.27	0.888
6510	8/21/96	17:05:19	315.28	0.855
6511	8/21/96	17:05:21	315.30	0.794
6512	8/21/96	17:05:23	315.32	0.736
6513	8/21/96	17:05:25	315.33	0.645
6514	8/21/96	17:05:27	315.35	0.561
6515	8/21/96	17:05:29	315.36	0.535
6516	8/21/96	17:05:31	315.38	0.543
6517	8/21/96	17:05:33	315.40	0.559
6518	8/21/96	17:05:35	315.41	0.552
6519	8/21/96	17:05:37	315.43	0.523
6520	8/21/96	17:05:39	315.44	0.503
6521	8/21/96	17:05:41	315.46	0.492
6522	8/21/96	17:05:43	315.48	0.485
6523	8/21/96	17:05:45	315.49	0.474
6524	8/21/96	17:05:47	315.51	0.477
6525	8/21/96	17:05:49	315.52	0.519
6526	8/21/96	17:05:51	315.54	0.548
6527	8/21/96	17:05:53	315.56	0.559
6528	8/21/96	17:05:55	315.57	0.562
6529	8/21/96	17:05:57	315.59	0.548
6530	8/21/96	17:05:59	315.60	0.544
6531	8/21/96	17:06:01	315.62	0.551
6532	8/21/96	17:06:03	315.64	0.549
6533	8/21/96	17:06:05	315.65	0.521
6534	8/21/96	17:06:07	315.67	0.491
6535	8/21/96	17:06:09	315.68	0.484
6536	8/21/96	17:06:11	315.70	0.501

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5650	8/21/96	16:36:47	314.80	0.781
5649	8/21/96	16:36:45	314.81	0.694
5648	8/21/96	16:36:43	314.83	0.641
5647	8/21/96	16:36:41	314.85	0.6
5646	8/21/96	16:36:39	314.87	0.557
5645	8/21/96	16:36:37	314.88	0.564
5644	8/21/96	16:36:35	314.90	0.579
5643	8/21/96	16:36:33	314.92	0.541
5642	8/21/96	16:36:31	314.94	0.48
5641	8/21/96	16:36:29	314.95	0.402
5640	8/21/96	16:36:27	314.97	0.492
5639	8/21/96	16:36:25	314.99	0.584
5638	8/21/96	16:36:23	315.00	0.605
5637	8/21/96	16:36:21	315.02	0.617
5636	8/21/96	16:36:19	315.04	0.608
5635	8/21/96	16:36:17	315.06	0.558
5634	8/21/96	16:36:15	315.07	0.519
5633	8/21/96	16:36:13	315.09	0.458
5632	8/21/96	16:36:11	315.11	0.366
5631	8/21/96	16:36:09	315.13	0.24
5630	8/21/96	16:36:07	315.14	0.155
5629	8/21/96	16:36:05	315.16	0.178
5628	8/21/96	16:36:03	315.18	0.186
5627	8/21/96	16:36:01	315.20	0.207
5626	8/21/96	16:35:59	315.21	0.316
5625	8/21/96	16:35:57	315.23	0.431
5624	8/21/96	16:35:55	315.25	0.474
5623	8/21/96	16:35:53	315.27	0.513
5622	8/21/96	16:35:51	315.28	0.585
5621	8/21/96	16:35:49	315.30	0.652
5620	8/21/96	16:35:47	315.32	0.646
5619	8/21/96	16:35:45	315.34	0.547
5618	8/21/96	16:35:43	315.35	0.487
5617	8/21/96	16:35:41	315.37	0.416
5616	8/21/96	16:35:39	315.39	0.208
5615	8/21/96	16:35:37	315.40	ND
5614	8/21/96	16:35:35	315.42	ND
5613	8/21/96	16:35:33	315.44	ND
5612	8/21/96	16:35:31	315.46	ND
5611	8/21/96	16:35:29	315.47	0.046
5610	8/21/96	16:35:27	315.49	0.11
5609	8/21/96	16:35:25	315.51	0.197
5608	8/21/96	16:35:23	315.53	0.264
5607	8/21/96	16:35:21	315.54	0.293
5606	8/21/96	16:35:19	315.56	0.346
5605	8/21/96	16:35:17	315.58	0.437
5604	8/21/96	16:35:15	315.60	0.476
5603	8/21/96	16:35:13	315.61	0.427
5602	8/21/96	16:35:11	315.63	0.269
5601	8/21/96	16:35:09	315.65	0.119
5600	8/21/96	16:35:07	315.67	0.043
5599	8/21/96	16:35:05	315.68	ND
5598	8/21/96	16:35:03	315.70	ND
5597	8/21/96	16:35:01	315.72	ND
5596	8/21/96	16:34:59	315.73	ND
5595	8/21/96	16:34:57	315.75	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6537	8/21/96	17:06:13	315.72	0.454
6538	8/21/96	17:06:15	315.74	0.345
6539	8/21/96	17:06:17	315.75	0.29
6540	8/21/96	17:06:19	315.77	0.289
6541	8/21/96	17:06:21	315.79	0.296
6542	8/21/96	17:06:23	315.81	0.316
6543	8/21/96	17:06:25	315.83	0.369
6544	8/21/96	17:06:27	315.85	0.434
6545	8/21/96	17:06:29	315.86	0.46
6546	8/21/96	17:06:31	315.88	0.454
6547	8/21/96	17:06:33	315.90	0.44
6548	8/21/96	17:06:35	315.92	0.426
6549	8/21/96	17:06:37	315.94	0.384
6550	8/21/96	17:06:39	315.95	0.312
6551	8/21/96	17:06:41	315.97	0.24
6552	8/21/96	17:06:43	315.99	0.22
6553	8/21/96	17:06:45	316.01	0.255
6554	8/21/96	17:06:47	316.03	0.277
6555	8/21/96	17:06:49	316.05	0.275
6556	8/21/96	17:06:51	316.06	0.273
6557	8/21/96	17:06:53	316.08	0.301
6558	8/21/96	17:06:55	316.10	0.348
6559	8/21/96	17:06:57	316.12	0.383
6560	8/21/96	17:06:59	316.14	0.393
6561	8/21/96	17:07:01	316.15	0.393
6562	8/21/96	17:07:03	316.17	0.368
6563	8/21/96	17:07:05	316.19	0.303
6564	8/21/96	17:07:07	316.21	0.269
6565	8/21/96	17:07:09	316.23	0.261
6566	8/21/96	17:07:11	316.25	0.241
6567	8/21/96	17:07:13	316.26	0.242
6568	8/21/96	17:07:15	316.28	0.24
6569	8/21/96	17:07:17	316.30	0.206
6570	8/21/96	17:07:19	316.32	0.175
6571	8/21/96	17:07:21	316.34	0.178
6572	8/21/96	17:07:23	316.35	0.199
6573	8/21/96	17:07:25	316.37	0.193
6574	8/21/96	17:07:27	316.39	0.142
6575	8/21/96	17:07:29	316.41	0.106
6576	8/21/96	17:07:31	316.43	0.129
6577	8/21/96	17:07:33	316.45	0.149
6578	8/21/96	17:07:35	316.46	0.157
6579	8/21/96	17:07:37	316.48	0.169
6580	8/21/96	17:07:39	316.50	0.171
6581	8/21/96	17:07:41	316.52	0.171
6582	8/21/96	17:07:43	316.54	0.148
6583	8/21/96	17:07:45	316.55	0.106
6584	8/21/96	17:07:47	316.57	0.085
6585	8/21/96	17:07:49	316.59	0.093
6586	8/21/96	17:07:51	316.61	0.087
6587	8/21/96	17:07:53	316.63	0.066
6588	8/21/96	17:07:55	316.65	0.059
6589	8/21/96	17:07:57	316.66	0.053
6590	8/21/96	17:07:59	316.68	0.038
6591	8/21/96	17:08:01	316.70	0.012
6592	8/21/96	17:08:03	316.72	0.014

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5594	8/21/96	16:34:55	315.76	ND
5593	8/21/96	16:34:53	315.78	ND
5592	8/21/96	16:34:51	315.80	ND
5591	8/21/96	16:34:49	315.81	ND
5590	8/21/96	16:34:47	315.83	ND
5589	8/21/96	16:34:45	315.84	ND
5588	8/21/96	16:34:43	315.86	ND
5587	8/21/96	16:34:41	315.87	ND
5586	8/21/96	16:34:39	315.89	ND
5585	8/21/96	16:34:37	315.91	ND
5584	8/21/96	16:34:35	315.92	ND
5583	8/21/96	16:34:33	315.94	ND
5582	8/21/96	16:34:31	315.95	ND
5581	8/21/96	16:34:29	315.97	ND
5580	8/21/96	16:34:27	315.99	ND
5579	8/21/96	16:34:25	316.00	ND
5578	8/21/96	16:34:23	316.02	ND
5577	8/21/96	16:34:21	316.03	ND
5576	8/21/96	16:34:19	316.05	ND
5575	8/21/96	16:34:17	316.06	ND
5574	8/21/96	16:34:15	316.08	ND
5573	8/21/96	16:34:13	316.10	ND
5572	8/21/96	16:34:11	316.11	ND
5571	8/21/96	16:34:09	316.13	ND
5570	8/21/96	16:34:07	316.14	0.005
5569	8/21/96	16:34:05	316.16	0.009
5568	8/21/96	16:34:03	316.18	0.008
5567	8/21/96	16:34:01	316.19	0.01
5566	8/21/96	16:33:59	316.21	0.011
5565	8/21/96	16:33:57	316.22	0.015
5564	8/21/96	16:33:55	316.24	ND
5563	8/21/96	16:33:53	316.26	ND
5562	8/21/96	16:33:51	316.27	ND
5561	8/21/96	16:33:49	316.29	ND
5560	8/21/96	16:33:47	316.30	ND
5559	8/21/96	16:33:45	316.32	ND
5558	8/21/96	16:33:43	316.33	ND
5557	8/21/96	16:33:41	316.35	ND
5556	8/21/96	16:33:39	316.37	ND
5555	8/21/96	16:33:37	316.38	ND
5554	8/21/96	16:33:35	316.40	ND
5553	8/21/96	16:33:33	316.41	ND
5552	8/21/96	16:33:31	316.43	ND
5551	8/21/96	16:33:29	316.45	ND
5550	8/21/96	16:33:27	316.46	ND
5549	8/21/96	16:33:25	316.48	ND
5548	8/21/96	16:33:23	316.49	ND
5547	8/21/96	16:33:21	316.51	ND
5546	8/21/96	16:33:19	316.52	ND
5545	8/21/96	16:33:17	316.54	ND
5544	8/21/96	16:33:15	316.56	ND
5543	8/21/96	16:33:13	316.57	ND
5542	8/21/96	16:33:11	316.59	ND
5541	8/21/96	16:33:09	316.60	ND
5540	8/21/96	16:33:07	316.62	ND
5539	8/21/96	16:33:05	316.64	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL #5
August 21, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
6593	8/21/96	17:08:05	316.74	0.05
6594	8/21/96	17:08:07	316.75	0.059
6595	8/21/96	17:08:09	316.77	0.015
6596	8/21/96	17:08:11	316.79	ND
6597	8/21/96	17:08:13	316.81	ND
6598	8/21/96	17:08:15	316.83	ND
6599	8/21/96	17:08:17	316.85	ND
6600	8/21/96	17:08:19	316.86	ND
6601	8/21/96	17:08:21	316.88	ND
6602	8/21/96	17:08:23	316.90	ND
6603	8/21/96	17:08:25	316.92	ND
6604	8/21/96	17:08:27	316.94	ND
6605	8/21/96	17:08:29	316.95	ND
6606	8/21/96	17:08:31	316.97	ND
6607	8/21/96	17:08:33	316.99	ND
6608	8/21/96	17:08:34	317.00	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5538	8/21/96	16:33:03	316.65	ND
5537	8/21/96	16:33:01	316.67	ND
5536	8/21/96	16:32:59	316.68	ND
5535	8/21/96	16:32:57	316.70	ND
5534	8/21/96	16:32:55	316.72	ND
5533	8/21/96	16:32:53	316.73	ND
5532	8/21/96	16:32:51	316.75	ND
5531	8/21/96	16:32:49	316.76	ND
5530	8/21/96	16:32:47	316.78	ND
5529	8/21/96	16:32:45	316.79	ND
5528	8/21/96	16:32:43	316.81	ND
5527	8/21/96	16:32:41	316.83	ND
5526	8/21/96	16:32:39	316.84	ND
5525	8/21/96	16:32:37	316.86	ND
5524	8/21/96	16:32:35	316.87	ND
5523	8/21/96	16:32:33	316.89	ND
5522	8/21/96	16:32:31	316.91	ND
5521	8/21/96	16:32:29	316.92	ND
5520	8/21/96	16:32:27	316.94	ND
5519	8/21/96	16:32:25	316.95	ND
5518	8/21/96	16:32:23	316.97	ND
5517	8/21/96	16:32:21	316.98	ND
5516	8/21/96	16:32:19	317.00	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8853	8/22/96	16:36:53	319.70	ND
8854	8/22/96	16:36:54	319.71	ND
8855	8/22/96	16:36:56	319.73	ND
8856	8/22/96	16:36:58	319.75	ND
8857	8/22/96	16:37:00	319.77	ND
8858	8/22/96	16:37:02	319.79	ND
8859	8/22/96	16:37:04	319.81	ND
8860	8/22/96	16:37:06	319.83	ND
8861	8/22/96	16:37:08	319.85	ND
8862	8/22/96	16:37:10	319.87	ND
8863	8/22/96	16:37:12	319.89	ND
8864	8/22/96	16:37:14	319.91	ND
8865	8/22/96	16:37:16	319.92	ND
8866	8/22/96	16:37:18	319.94	ND
8867	8/22/96	16:37:20	319.96	ND
8868	8/22/96	16:37:22	319.98	ND
8869	8/22/96	16:37:24	320.00	ND
8870	8/22/96	16:37:26	320.02	ND
8871	8/22/96	16:37:28	320.04	ND
8872	8/22/96	16:37:30	320.06	ND
8873	8/22/96	16:37:32	320.08	0.005
8874	8/22/96	16:37:34	320.10	0.006
8875	8/22/96	16:37:36	320.12	0.005
8876	8/22/96	16:37:38	320.14	0.007
8877	8/22/96	16:37:40	320.16	0.011
8878	8/22/96	16:37:42	320.18	0.022
8879	8/22/96	16:37:44	320.20	0.026
8880	8/22/96	16:37:46	320.22	0.026
8881	8/22/96	16:37:48	320.24	0.027
8882	8/22/96	16:37:50	320.26	0.023
8883	8/22/96	16:37:52	320.28	0.02
8884	8/22/96	16:37:54	320.30	0.021
8885	8/22/96	16:37:56	320.32	0.015
8886	8/22/96	16:37:58	320.34	0.004
8887	8/22/96	16:38:00	320.35	ND
8888	8/22/96	16:38:02	320.37	ND
8889	8/22/96	16:38:04	320.39	ND
8890	8/22/96	16:38:06	320.41	0.003
8891	8/22/96	16:38:08	320.43	ND
8892	8/22/96	16:38:10	320.45	ND
8893	8/22/96	16:38:12	320.47	0.009
8894	8/22/96	16:38:14	320.49	0.017
8895	8/22/96	16:38:16	320.51	0.01
8896	8/22/96	16:38:18	320.53	ND
8897	8/22/96	16:38:20	320.55	ND
8898	8/22/96	16:38:22	320.57	ND
8899	8/22/96	16:38:24	320.59	0.015
8900	8/22/96	16:38:26	320.61	0.051
8901	8/22/96	16:38:28	320.63	0.078
8902	8/22/96	16:38:30	320.65	0.091
8903	8/22/96	16:38:32	320.67	0.082
8904	8/22/96	16:38:34	320.69	0.053
8905	8/22/96	16:38:36	320.71	0.031
8906	8/22/96	16:38:38	320.73	0.028
8907	8/22/96	16:38:40	320.75	0.033
8908	8/22/96	16:38:42	320.76	0.046
8909	8/22/96	16:38:44	320.78	0.088

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8794	8/22/96	16:34:56	319.70	ND
8793	8/22/96	16:34:54	319.72	ND
8792	8/22/96	16:34:52	319.74	ND
8791	8/22/96	16:34:50	319.76	ND
8790	8/22/96	16:34:48	319.77	ND
8789	8/22/96	16:34:46	319.79	ND
8788	8/22/96	16:34:44	319.81	ND
8787	8/22/96	16:34:42	319.83	ND
8786	8/22/96	16:34:40	319.85	ND
8785	8/22/96	16:34:38	319.87	ND
8784	8/22/96	16:34:36	319.89	ND
8783	8/22/96	16:34:34	319.91	ND
8782	8/22/96	16:34:32	319.92	ND
8781	8/22/96	16:34:30	319.94	ND
8780	8/22/96	16:34:28	319.96	ND
8779	8/22/96	16:34:26	319.98	ND
8778	8/22/96	16:34:24	320.00	ND
8777	8/22/96	16:34:22	320.02	ND
8776	8/22/96	16:34:20	320.04	ND
8775	8/22/96	16:34:18	320.06	ND
8774	8/22/96	16:34:16	320.07	ND
8773	8/22/96	16:34:14	320.09	ND
8772	8/22/96	16:34:12	320.11	ND
8771	8/22/96	16:34:10	320.13	ND
8770	8/22/96	16:34:08	320.15	ND
8769	8/22/96	16:34:06	320.17	ND
8768	8/22/96	16:34:04	320.19	ND
8767	8/22/96	16:34:02	320.20	ND
8766	8/22/96	16:34:00	320.22	ND
8765	8/22/96	16:33:58	320.24	ND
8764	8/22/96	16:33:56	320.26	ND
8763	8/22/96	16:33:54	320.28	ND
8762	8/22/96	16:33:52	320.30	ND
8761	8/22/96	16:33:50	320.32	ND
8760	8/22/96	16:33:48	320.34	ND
8759	8/22/96	16:33:46	320.35	ND
8758	8/22/96	16:33:44	320.37	ND
8757	8/22/96	16:33:42	320.39	ND
8756	8/22/96	16:33:40	320.41	ND
8755	8/22/96	16:33:38	320.43	ND
8754	8/22/96	16:33:36	320.45	ND
8753	8/22/96	16:33:34	320.47	ND
8752	8/22/96	16:33:32	320.49	ND
8751	8/22/96	16:33:30	320.50	ND
8750	8/22/96	16:33:28	320.52	ND
8749	8/22/96	16:33:26	320.54	ND
8748	8/22/96	16:33:24	320.56	ND
8747	8/22/96	16:33:22	320.58	ND
8746	8/22/96	16:33:20	320.60	ND
8745	8/22/96	16:33:18	320.62	0.004
8744	8/22/96	16:33:16	320.64	ND
8743	8/22/96	16:33:14	320.65	ND
8742	8/22/96	16:33:12	320.67	ND
8741	8/22/96	16:33:10	320.69	ND
8740	8/22/96	16:33:08	320.71	ND
8739	8/22/96	16:33:06	320.73	ND
8738	8/22/96	16:33:04	320.75	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8910	8/22/96	16:38:46	320.80	0.131
8911	8/22/96	16:38:48	320.82	0.143
8912	8/22/96	16:38:50	320.84	0.135
8913	8/22/96	16:38:52	320.86	0.127
8914	8/22/96	16:38:54	320.88	0.13
8915	8/22/96	16:38:56	320.90	0.129
8916	8/22/96	16:38:58	320.92	0.124
8917	8/22/96	16:39:00	320.94	0.121
8918	8/22/96	16:39:02	320.96	0.11
8919	8/22/96	16:39:04	320.98	0.102
8920	8/22/96	16:39:06	321.00	0.094
8921	8/22/96	16:39:08	321.02	0.097
8922	8/22/96	16:39:10	321.05	0.109
8923	8/22/96	16:39:12	321.07	0.125
8924	8/22/96	16:39:14	321.10	0.146
8925	8/22/96	16:39:16	321.12	0.175
8926	8/22/96	16:39:18	321.14	0.193
8927	8/22/96	16:39:20	321.17	0.19
8928	8/22/96	16:39:22	321.19	0.188
8929	8/22/96	16:39:24	321.22	0.185
8930	8/22/96	16:39:26	321.24	0.173
8931	8/22/96	16:39:28	321.27	0.154
8932	8/22/96	16:39:30	321.29	0.129
8933	8/22/96	16:39:32	321.31	0.126
8934	8/22/96	16:39:34	321.34	0.144
8935	8/22/96	16:39:36	321.36	0.156
8936	8/22/96	16:39:38	321.39	0.152
8937	8/22/96	16:39:40	321.41	0.137
8938	8/22/96	16:39:42	321.43	0.131
8939	8/22/96	16:39:44	321.46	0.151
8940	8/22/96	16:39:46	321.48	0.17
8941	8/22/96	16:39:48	321.51	0.181
8942	8/22/96	16:39:50	321.53	0.208
8943	8/22/96	16:39:52	321.55	0.221
8944	8/22/96	16:39:54	321.58	0.192
8945	8/22/96	16:39:56	321.60	0.138
8946	8/22/96	16:39:58	321.63	0.113
8947	8/22/96	16:40:00	321.65	0.127
8948	8/22/96	16:40:02	321.67	0.174
8949	8/22/96	16:40:04	321.70	0.186
8950	8/22/96	16:40:06	321.72	0.13
8951	8/22/96	16:40:08	321.75	0.11
8952	8/22/96	16:40:10	321.77	0.084
8953	8/22/96	16:40:12	321.80	0.076
8954	8/22/96	16:40:14	321.82	0.081
8955	8/22/96	16:40:16	321.84	0.095
8956	8/22/96	16:40:18	321.87	0.114
8957	8/22/96	16:40:20	321.89	0.117
8958	8/22/96	16:40:22	321.92	0.126
8959	8/22/96	16:40:24	321.94	0.136
8960	8/22/96	16:40:26	321.96	0.156
8961	8/22/96	16:40:28	321.99	0.203
8962	8/22/96	16:40:29	322.00	0.225
8963	8/22/96	16:40:30	322.01	0.224
8964	8/22/96	16:40:32	322.02	0.183
8965	8/22/96	16:40:34	322.03	0.14
8966	8/22/96	16:40:36	322.05	0.122

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8737	8/22/96	16:33:02	320.77	ND
8736	8/22/96	16:33:00	320.78	ND
8735	8/22/96	16:32:58	320.80	ND
8734	8/22/96	16:32:56	320.82	ND
8733	8/22/96	16:32:54	320.84	ND
8732	8/22/96	16:32:52	320.86	ND
8731	8/22/96	16:32:50	320.88	ND
8730	8/22/96	16:32:48	320.90	ND
8729	8/22/96	16:32:46	320.92	ND
8728	8/22/96	16:32:44	320.93	ND
8727	8/22/96	16:32:42	320.95	ND
8726	8/22/96	16:32:40	320.97	ND
8725	8/22/96	16:32:38	320.99	ND
8724	8/22/96	16:32:37	321.00	ND
8723	8/22/96	16:32:36	321.01	ND
8722	8/22/96	16:32:34	321.04	ND
8721	8/22/96	16:32:32	321.06	ND
8720	8/22/96	16:32:30	321.08	0.003
8719	8/22/96	16:32:28	321.11	0.003
8718	8/22/96	16:32:26	321.13	0.004
8717	8/22/96	16:32:24	321.15	0.013
8716	8/22/96	16:32:22	321.18	0.018
8715	8/22/96	16:32:20	321.20	0.019
8714	8/22/96	16:32:18	321.23	0.018
8713	8/22/96	16:32:16	321.25	0.019
8712	8/22/96	16:32:14	321.27	0.019
8711	8/22/96	16:32:12	321.30	0.017
8710	8/22/96	16:32:10	321.32	0.018
8709	8/22/96	16:32:08	321.35	0.019
8708	8/22/96	16:32:06	321.37	0.025
8707	8/22/96	16:32:04	321.39	0.031
8706	8/22/96	16:32:02	321.42	0.031
8705	8/22/96	16:32:00	321.44	0.031
8704	8/22/96	16:31:58	321.46	0.035
8703	8/22/96	16:31:56	321.49	0.043
8702	8/22/96	16:31:54	321.51	0.046
8701	8/22/96	16:31:52	321.54	0.047
8700	8/22/96	16:31:50	321.56	0.047
8699	8/22/96	16:31:48	321.58	0.04
8698	8/22/96	16:31:46	321.61	0.044
8697	8/22/96	16:31:44	321.63	0.062
8696	8/22/96	16:31:42	321.65	0.06
8695	8/22/96	16:31:40	321.68	0.052
8694	8/22/96	16:31:38	321.70	0.064
8693	8/22/96	16:31:36	321.73	0.063
8692	8/22/96	16:31:34	321.75	0.05
8691	8/22/96	16:31:32	321.77	0.056
8690	8/22/96	16:31:30	321.80	0.07
8689	8/22/96	16:31:28	321.82	0.075
8688	8/22/96	16:31:26	321.84	0.078
8687	8/22/96	16:31:24	321.87	0.064
8686	8/22/96	16:31:22	321.89	0.059
8685	8/22/96	16:31:20	321.92	0.063
8684	8/22/96	16:31:18	321.94	0.071
8683	8/22/96	16:31:16	321.96	0.087
8682	8/22/96	16:31:14	321.99	0.104
8681	8/22/96	16:31:13	322.00	0.103

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8967	8/22/96	16:40:38	322.06	0.127
8968	8/22/96	16:40:40	322.08	0.149
8969	8/22/96	16:40:42	322.09	0.146
8970	8/22/96	16:40:44	322.10	0.113
8971	8/22/96	16:40:46	322.12	0.09
8972	8/22/96	16:40:48	322.13	0.087
8973	8/22/96	16:40:50	322.15	0.08
8974	8/22/96	16:40:52	322.16	0.072
8975	8/22/96	16:40:54	322.17	0.076
8976	8/22/96	16:40:56	322.19	0.08
8977	8/22/96	16:40:58	322.20	0.076
8978	8/22/96	16:41:00	322.22	0.073
8979	8/22/96	16:41:02	322.23	0.075
8980	8/22/96	16:41:04	322.24	0.079
8981	8/22/96	16:41:06	322.26	0.085
8982	8/22/96	16:41:08	322.27	0.085
8983	8/22/96	16:41:10	322.29	0.084
8984	8/22/96	16:41:12	322.30	0.094
8985	8/22/96	16:41:14	322.31	0.104
8986	8/22/96	16:41:16	322.33	0.112
8987	8/22/96	16:41:18	322.34	0.116
8988	8/22/96	16:41:20	322.35	0.12
8989	8/22/96	16:41:22	322.37	0.139
8990	8/22/96	16:41:24	322.38	0.169
8991	8/22/96	16:41:26	322.40	0.188
8992	8/22/96	16:41:28	322.41	0.218
8993	8/22/96	16:41:30	322.42	0.255
8994	8/22/96	16:41:32	322.44	0.243
8995	8/22/96	16:41:34	322.45	0.211
8996	8/22/96	16:41:36	322.47	0.197
8997	8/22/96	16:41:38	322.48	0.197
8998	8/22/96	16:41:40	322.49	0.192
8999	8/22/96	16:41:42	322.51	0.168
9000	8/22/96	16:41:44	322.52	0.15
9001	8/22/96	16:41:46	322.54	0 134
9002	8/22/96	16:41:48	322.55	0.123
9003	8/22/96	16:41:50	322.56	0.124
9004	8/22/96	16:41:52	322.58	0.123
9005	8/22/96	16:41:54	322.59	0.123
9006	8/22/96	16:41:56	322.61	0.123
9007	8/22/96	16:41:58	322.62	0.121
9008	8/22/96	16:42:00	322.63	0.119
9009	8/22/96	16:42:02	322.65	0.121
9010	8/22/96	16:42:04	322.66	0.122
9011	8/22/96	16:42:06	322.68	0.123
9012	8/22/96	16:42:08	322.69	0.125
9013	8/22/96	16:42:10	322.70	0.13
9014	8/22/96	16:42:12	322.72	0.158
9015	8/22/96	16:42:14	322.73	0.193
9016	8/22/96	16:42:16	322.74	0.201
9017	8/22/96	16.42:18	322.76	0.183
9018	8/22/96	16:42:20	322.77	0.158
9019	8/22/96	16:42:22	322.79	0.153
9020	8/22/96	16:42:24	322.80	0.159
9021	8/22/96	16:42:26	322.82	0.166
9022	8/22/96	16:42:28	322.84	0.173
9023	8/22/96	16:42:30	322.86	0.178

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8680	8/22/96	16:31:12	322.01	0.1
8679	8/22/96	16:31:10	322.02	0.102
8678	8/22/96	16:31:08	322.03	0.099
8677	8/22/96	16:31:06	322.04	0.091
8676	8/22/96	16:31:04	322.05	0.1
8675	8/22/96	16:31:02	322.07	0.121
8674	8/22/96	16:31:00	322.08	0.137
8673	8/22/96	16:30:58	322.09	0.155
8672	8/22/96	16:30:56	322.10	0.157
8671	8/22/96	16:30:54	322.11	0.147
8670	8/22/96	16:30:52	322.13	0.16
8669	8/22/96	16:30:50	322.14	0.164
8668	8/22/96	16:30:48	322.15	0.164
8667	8/22/96	16:30:46	322.16	0.168
8666	8/22/96	16:30:44	322.17	0.163
8665	8/22/96	16:30:42	322.19	0.154
8664	8/22/96	16:30:40	322.20	0.141
8663	8/22/96	16:30:38	322.21	0.136
8662	8/22/96	16:30:36	322.22	0.132
8661	8/22/96	16:30:34	322.23	0.119
8660	8/22/96	16:30:32	322.24	0.11
8659	8/22/96	16:30:30	322.26	0.103
8658	8/22/96	16:30:28	322.27	0.099
8657	8/22/96	16:30:26	322.28	0.094
8656	8/22/96	16:30:24	322.29	0.092
8655	8/22/96	16:30:22	322.30	0.109
8654	8/22/96	16:30:20	322.32	0.129
8653	8/22/96	16:30:18	322.33	0.135
8652	8/22/96	16:30:16	322.34	0.13
8651	8/22/96	16:30:14	322.35	0.132
8650	8/22/96	16:30:12	322.36	0.141
8649	8/22/96	16:30:10	322.38	0.138
8648	8/22/96	16:30:08	322.39	0.137
8647	8/22/96	16:30:06	322.40	0.141
8646	8/22/96	16:30:04	322.41	0.146
8645	8/22/96	16:30:02	322.42	0.147
8644	8/22/96	16:30:00	322.44	0.158
8643	8/22/96	16:29:58	322.45	0.19
8642	8/22/96	16:29:56	322.46	0.202
8641	8/22/96	16:29:54	322.47	0.199
8640	8/22/96	16:29:52	322.48	0.208
8639	8/22/96	16:29:50	322.50	0.21
8638	8/22/96	16:29:48	322.51	0.203
8637	8/22/96	16:29:46	322.52	0.197
8636	8/22/96	16:29:44	322.53	0.194
8635	8/22/96	16:29:42	322.54	0.207
8634	8/22/96	16:29:40	322.56	0.226
8633	8/22/96	16:29:38	322.57	0.233
8632	8/22/96	16:29:36	322.58	0.234
8631	8/22/96	16:29:34	322.59	0.246
8630	8/22/96	16:29:32	322.60	0.258
8629	8/22/96	16:29:30	322.61	0.262
8628	8/22/96	16:29:28	322.63	0.27
8627	8/22/96	16:29:26	322.64	0.282
8626	8/22/96	16:29:24	322.65	0.292
8625	8/22/96	16:29:22	322.66	0.295
8624	8/22/96	16:29:20	322.67	0.293

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9024	8/22/96	16:42:32	322.88	0.181
9025	8/22/96	16:42:34	322.89	0.178
9026	8/22/96	16:42:36	322.91	0.177
9027	8/22/96	16:42:38	322.93	0.185
9028	8/22/96	16:42:40	322.95	0.194
9029	8/22/96	16:42:42	322.97	0.205
9030	8/22/96	16:42:44	322.99	0.213
9031	8/22/96	16:42:46	323.01	0.21
9032	8/22/96	16:42:48	323.03	0.211
9033	8/22/96	16:42:50	323.04	0.216
9034	8/22/96	16:42:52	323.06	0.217
9035	8/22/96	16:42:54	323.08	0.214
9036	8/22/96	16:42:56	323.10	0.219
9037	8/22/96	16:42:58	323.12	0.224
9038	8/22/96	16:43:00	323.14	0.221
9039	8/22/96	16:43:02	323.16	0.219
9040	8/22/96	16:43:04	323.18	0.215
9041	8/22/96	16:43:06	323.19	0.208
9042	8/22/96	16:43:08	323.21	0.208
9043	8/22/96	16:43:10	323.23	0.208
9044	8/22/96	16:43:12	323.25	0.208
9045	8/22/96	16:43:14	323.27	0.201
9046	8/22/96	16:43:16	323.29	0.203
9047	8/22/96	16:43:18	323.31	0.211
9048	8/22/96	16:43:20	323.33	0.21
9049	8/22/96	16:43:22	323.34	0.205
9050	8/22/96	16:43:24	323.36	0.21
9051	8/22/96	16:43:26	323.38	0.216
9052	8/22/96	16:43:28	323.40	0.216
9053	8/22/96	16:43:30	323.42	0.212
9054	8/22/96	16:43:32	323.44	0.215
9055	8/22/96	16:43:34	323.46	0.219
9056	8/22/96	16:43:36	323.48	0.214
9057	8/22/96	16:43:38	323.49	0.215
9058	8/22/96	16:43:40	323.51	0.244
9059	8/22/96	16:43:42	323.53	0.253
9060	8/22/96	16:43:44	323.55	0.232
9061	8/22/96	16:43:46	323.57	0.22
9062	8/22/96	16:43:48	323.59	0.217
9063	8/22/96	16:43:50	323.61	0.224
9064	8/22/96	16:43:52	323.63	0.226
9065	8/22/96	16:43:54	323.64	0.224
9066	8/22/96	16:43:56	323.66	0.237
9067	8/22/96	16:43:58	323.68	0.24
9068	8/22/96	16:44:00	323.70	0.248
9069	8/22/96	16:44:02	323.72	0.274
9070	8/22/96	16:44:04	323.74	0.283
9071	8/22/96	16:44:06	323.76	0.275
9072	8/22/96	16:44:08	323.78	0.272
9073	8/22/96	16:44:10	323.79	0.276
9074	8/22/96	16:44:12	323.81	0.273
9075	8/22/96	16:44:14	323.83	0.263
9076	8/22/96	16:44:16	323.85	0.263
9077	8/22/96	16:44:18	323.87	0.26
9078	8/22/96	16:44:20	323.89	0.256
9079	8/22/96	16:44:22	323.91	0.264
9080	8/22/96	16:44:24	323.93	0.27

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8623	8/22/96	16:29:18	322.69	0.291
8622	8/22/96	16:29:16	322.70	0.294
8621	8/22/96	16:29:14	322.71	0.291
8620	8/22/96	16:29:12	322.72	0.287
8619	8/22/96	16:29:10	322.73	0.287
8618	8/22/96	16:29:08	322.75	0.284
8617	8/22/96	16:29:06	322.76	0.282
8616	8/22/96	16:29:04	322.77	0.281
8615	8/22/96	16:29:02	322.78	0.276
8614	8/22/96	16:29:00	322.79	0.273
8613	8/22/96	16:28:59	322.80	0.269
8612	8/22/96	16:28:58	322.81	0.269
8611	8/22/96	16:28:56	322.83	0.269
8610	8/22/96	16:28:54	322.84	0.277
8609	8/22/96	16:28:52	322.86	0.288
8608	8/22/96	16:28:50	322.88	0.295
8607	8/22/96	16:28:48	322.90	0.304
8606	8/22/96	16:28:46	322.92	0.313
8605	8/22/96	16:28:44	322.93	0.316
8604	8/22/96	16:28:42	322.95	0.31
8603	8/22/96	16:28:40	322.97	0.304
8602	8/22/96	16:28:38	322.99	0.307
8601	8/22/96	16:28:36	323.01	0.316
8600	8/22/96	16:28:34	323.02	0.319
8599	8/22/96	16:28:32	323.04	0.314
8598	8/22/96	16:28:30	323.06	0.313
8597	8/22/96	16:28:28	323.08	0.318
8596	8/22/96	16:28:26	323.10	0.318
8595	8/22/96	16:28:24	323.11	0.307
8594	8/22/96	16:28:22	323.13	0.312
8593	8/22/96	16:28:20	323.15	0.352
8592	8/22/96	16:28:18	323.17	0.39
8591	8/22/96	16:28:16	323.19	0.407
8590	8/22/96	16:28:14	323.20	0.419
8589	8/22/96	16:28:12	323.22	0.42
8588	8/22/96	16:28:10	323.24	0.401
8587	8/22/96	16:28:08	323.26	0.383
8586	8/22/96	16:28:06	323.27	0.392
8585	8/22/96	16:28:04	323.29	0.406
8584	8/22/96	16:28:02	323.31	0.425
8583	8/22/96	16:28:00	323.33	0.428
8582	8/22/96	16:27:58	323.35	0.42
8581	8/22/96	16:27:56	323.36	0.417
8580	8/22/96	16:27:54	323.38	0.422
8579	8/22/96	16:27:52	323.40	0.405
8578	8/22/96	16:27:50	323.42	0.388
8577	8/22/96	16:27:48	323.44	0.4
8576	8/22/96	16:27:46	323.45	0.419
8575	8/22/96	16:27:44	323.47	0.444
8574	8/22/96	16:27:42	323.49	0.468
8573	8/22/96	16:27:40	323.51	0.475
8572	8/22/96	16:27:38	323.53	0.476
8571	8/22/96	16:27:36	323.54	0.474
8570	8/22/96	16:27:34	323.56	0.473
8569	8/22/96	16:27:32	323.58	0.477
8568	8/22/96	16:27:30	323.60	0.475
8567	8/22/96	16:27:28	323.61	0.472

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9081	8/22/96	16:44:26	323.94	0.272
9082	8/22/96	16:44:28	323.96	0.279
9083	8/22/96	16:44:30	323.98	0.28
9084	8/22/96	16:44:32	324.00	0.278
9085	8/22/96	16:44:34	324.02	0.286
9086	8/22/96	16:44:36	324.04	0.294
9087	8/22/96	16:44:38	324.05	0.295
9088	8/22/96	16:44:40	324.07	0.303
9089	8/22/96	16:44:42	324.09	0.322
9090	8/22/96	16:44:44	324.11	0.331
9091	8/22/96	16:44:46	324.13	0.336
9092	8/22/96	16:44:48	324.14	0.347
9093	8/22/96	16:44:50	324.16	0.34
9094	8/22/96	16:44:52	324.18	0.321
9095	8/22/96	16:44:54	324.20	0.314
9096	8/22/96	16:44:56	324.22	0.359
9097	8/22/96	16:44:58	324.23	0.42
9098	8/22/96	16:45:00	324.25	0.428
9099	8/22/96	16:45:02	324.27	0.429
9100	8/22/96	16:45:04	324.29	0.432
9101	8/22/96	16:45:06	324.31	0.424
9102	8/22/96	16:45:08	324.32	0.415
9103	8/22/96	16:45:10	324.34	0.4
9104	8/22/96	16:45:12	324.36	0.39
9105	8/22/96	16:45:14	324.38	0.391
9106	8/22/96	16:45:16	324.40	0.391
9107	8/22/96	16:45:18	324.41	0.384
9108	8/22/96	16:45:20	324.43	0.379
9109	8/22/96	16:45:22	324.45	0.385
9110	8/22/96	16:45:24	324.47	0.401
9111	8/22/96	16:45:26	324.49	0.417
9112	8/22/96	16:45:28	324.50	0.418
9113	8/22/96	16:45:30	324.52	0.407
9114	8/22/96	16:45:32	324.54	0.404
9115	8/22/96	16:45:34	324.56	0.406
9116	8/22/96	16:45:36	324.58	0.409
9117	8/22/96	16:45:38	324.59	0.415
9118	8/22/96	16:45:40	324.61	0.418
9119	8/22/96	16:45:42	324.63	0 406
9120	8/22/96	16:45:44	324.65	0.391
9121	8/22/96	16:45:46	324.67	0.395
9122	8/22/96	16:45:48	324.68	0.416
9123	8/22/96	16:45:50	324.70	0.433
9124	8/22/96	16:45:52	324.72	0.432
9125	8/22/96	16:45:54	324.74	0.432
9126	8/22/96	16:45:56	324.76	0.429
9127	8/22/96	16:45:58	324.77	0.424
9128	8/22/96	16:46:00	324.79	0.42
9129	8/22/96	16:46:02	324.81	0.421
9130	8/22/96	16:46:04	324.83	0.42
9131	8/22/96	16:46:06	324.85	0.417
9132	8/22/96	16:46:08	324.86	0.417
9133	8/22/96	16:46:10	324.88	0 412
9134	8/22/96	16:46:12	324.90	0.403
9135	8/22/96	16:46:14	324.92	0.403
9136	8/22/96	16:46:16	324.93	0.407
9137	8/22/96	16:46:18	324.95	0.412

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8566	8/22/96	16:27:26	323.63	0.471
8565	8/22/96	16:27:24	323.65	0.483
8564	8/22/96	16:27:22	323.67	0.502
8563	8/22/96	16:27:20	323.69	0.518
8562	8/22/96	16:27:18	323.70	0.526
8561	8/22/96	16:27:16	323.72	0.522
8560	8/22/96	16:27:14	323.74	0.519
8559	8/22/96	16:27:12	323.76	0.527
8558	8/22/96	16:27:10	323.78	0.535
8557	8/22/96	16:27:08	323.79	0.534
8556	8/22/96	16:27:06	323.81	0.524
8555	8/22/96	16:27:04	323.83	0.515
8554	8/22/96	16:27:02	323.85	0.515
8553	8/22/96	16:27:00	323.87	0.518
8552	8/22/96	16:26:58	323.88	0.513
8551	8/22/96	16:26:56	323.90	0.515
8550	8/22/96	16:26:54	323.92	0.512
8549	8/22/96	16:26:52	323.94	0.511
8548	8/22/96	16:26:50	323.96	0.505
8547	8/22/96	16:26:48	323.97	0.488
8546	8/22/96	16:26:46	323.99	0.489
8545	8/22/96	16:26:45	324.00	0.501
8544	8/22/96	16:26:44	324.01	0.512
8543	8/22/96	16:26:42	324.03	0.53
8542	8/22/96	16:26:40	324.04	0.533
8541	8/22/96	16:26:38	324.06	0.542
8540	8/22/96	16:26:36	324.08	0.547
8539	8/22/96	16:26:34	324.10	0.542
8538	8/22/96	16:26:32	324.12	0.539
8537	8/22/96	16:26:30	324.13	0.539
8536	8/22/96	16:26:28	324.15	0.539
8535	8/22/96	16:26:26	324.17	0.538
8534	8/22/96	16:26:24	324.19	0.534
8533	8/22/96	16:26:22	324.20	0.531
8532	8/22/96	16:26:20	324.22	0.533
8531	8/22/96	16:26:18	324.24	0.53
8530	8/22/96	16:26:16	324.26	0.528
8529	8/22/96	16:26:14	324.28	0.527
8528	8/22/96	16:26:12	324.29	0.522
8527	8/22/96	16:26:10	324.31	0.516
8526	8/22/96	16:26:08	324.33	0.517
8525	8/22/96	16:26:06	324.35	0.508
8524	8/22/96	16:26:04	324.36	0.498
8523	8/22/96	16:26:02	324.38	0.506
8522	8/22/96	16:26:00	324.40	0.511
8521	8/22/96	16:25:58	324.42	0.503
8520	8/22/96	16:25:56	324.44	0.5
8519	8/22/96	16:25:54	324.45	0.496
8518	8/22/96	16:25:52	324.47	0.485
8517	8/22/96	16:25:50	324.49	0.477
8516	8/22/96	16:25:48	324.51	0.47
8515	8/22/96	16:25:46	324.52	0.466
8514	8/22/96	16:25:44	324.54	0.474
8513	8/22/96	16:25:42	324.56	0.476
8512	8/22/96	16:25:40	324.58	0.468
8511	8/22/96	16:25:38	324.60	0.466
8510	8/22/96	16:25:36	324.61	0.466

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9138	8/22/96	16:46:20	324.97	0.415
9139	8/22/96	16:46:22	324.99	0.411
9140	8/22/96	16:46:24	325.01	0.411
9141	8/22/96	16:46:26	325.02	0.412
9142	8/22/96	16:46:28	325.04	0.416
9143	8/22/96	16:46:30	325.06	0.424
9144	8/22/96	16:46:32	325.08	0.425
9145	8/22/96	16:46:34	325.10	0.416
9146	8/22/96	16:46:36	325.11	0.413
9147	8/22/96	16:46:38	325.13	0.417
9148	8/22/96	16:46:40	325.15	0.425
9149	8/22/96	16:46:42	325.17	0.43
9150	8/22/96	16:46:44	325.19	0.429
9151	8/22/96	16:46:46	325.20	0.431
9152	8/22/96	16:46:48	325.22	0.436
9153	8/22/96	16:46:50	325.24	0.438
9154	8/22/96	16:46:52	325.26	0.435
9155	8/22/96	16:46:54	325.28	0.433
9156	8/22/96	16:46:56	325.29	0.435
9157	8/22/96	16:46:58	325.31	0.437
9158	8/22/96	16:47:00	325.33	0.445
9159	8/22/96	16:47:02	325.35	0.448
9160	8/22/96	16:47:04	325.37	0.446
9161	8/22/96	16:47:06	325.38	0.439
9162	8/22/96	16:47:08	325.40	0.434
9163	8/22/96	16:47:10	325.42	0.436
9164	8/22/96	16:47:12	325.44	0.431
9165	8/22/96	16:47:14	325.46	0.42
9166	8/22/96	16:47:16	325.47	0.416
9167	8/22/96	16:47:18	325.49	0.422
9168	8/22/96	16:47:20	325.51	0.429
9169	8/22/96	16:47:22	325.53	0.43
9170	8/22/96	16:47:24	325.55	0.427
9171	8/22/96	16:47:26	325.56	0.421
9172	8/22/96	16:47:28	325.58	0.419
9173	8/22/96	16:47:30	325.60	0.419
9174	8/22/96	16:47:32	325.62	0.418
9175	8/22/96	16:47:34	325.64	0.419
9176	8/22/96	16:47:36	325.66	0.413
9177	8/22/96	16:47:38	325.67	0.408
9178	8/22/96	16:47:40	325.69	0.392
9179	8/22/96	16:47:42	325.71	0.376
9180	8/22/96	16:47:44	325.73	0.38
9181	8/22/96	16:47:46	325.75	0.379
9182	8/22/96	16:47:48	325.77	0.379
9183	8/22/96	16:47:50	325.79	0.374
9184	8/22/96	16:47:52	325.81	0.359
9185	8/22/96	16:47:54	325.82	0.355
9186	8/22/96	16:47:56	325.84	0.356
9187	8/22/96	16:47:58	325.86	0.352
9188	8/22/96	16:48:00	325.88	0.351
9189	8/22/96	16:48:02	325.90	0.348
9190	8/22/96	16:48:04	325.92	0.352
9191	8/22/96	16:48:06	325.94	0.362
9192	8/22/96	16:48:08	325.95	0.371
9193	8/22/96	16:48:10	325.97	0.389
9194	8/22/96	16:48:12	325.99	0.436

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8509	8/22/96	16:25:34	324.63	0.45
8508	8/22/96	16:25:32	324.65	0.432
8507	8/22/96	16:25:30	324.67	0.449
8506	8/22/96	16:25:28	324.68	0.483
8505	8/22/96	16:25:26	324.70	0.501
8504	8/22/96	16:25:24	324.72	0.484
8503	8/22/96	16:25:22	324.74	0.439
8502	8/22/96	16:25:20	324.76	0.415
8501	8/22/96	16:25:18	324.77	0.424
8500	8/22/96	16:25:16	324.79	0.429
8499	8/22/96	16:25:14	324.81	0.424
8498	8/22/96	16:25:12	324.83	0.431
8497	8/22/96	16:25:10	324.84	0.446
8496	8/22/96	16:25:08	324.86	0.466
8495	8/22/96	16:25:06	324.88	0.485
8494	8/22/96	16:25:04	324.90	0.489
8493	8/22/96	16:25:02	324.92	0.484
8492	8/22/96	16:25:00	324.93	0.47
8491	8/22/96	16:24:58	324.95	0.466
8490	8/22/96	16:24:56	324.97	0.464
8489	8/22/96	16:24:54	324.99	0.461
8488	8/22/96	16:24:52	325.00	0.459
8487	8/22/96	16:24:50	325.02	0.451
8486	8/22/96	16:24:48	325.04	0.451
8485	8/22/96	16:24:46	325.06	0.442
8484	8/22/96	16:24:44	325.08	0.43
8483	8/22/96	16:24:42	325.09	0.431
8482	8/22/96	16:24:40	325.11	0.437
8481	8/22/96	16:24:38	325.13	0.458
8480	8/22/96	16:24:36	325.15	0.482
8479	8/22/96	16:24:34	325.16	0.492
8478	8/22/96	16:24:32	325.18	0.495
8477	8/22/96	16:24:30	325.20	0.494
8476	8/22/96	16:24:28	325.22	0.494
8475	8/22/96	16:24:26	325.24	0.493
8474	8/22/96	16:24:24	325.25	0.489
8473	8/22/96	16:24:22	325.27	0.489
8472	8/22/96	16:24:20	325.29	0.484
8471	8/22/96	16:24:18	325.31	0.477
8470	8/22/96	16:24:16	325.32	0.479
8469	8/22/96	16:24:14	325.34	0.515
8468	8/22/96	16:24:12	325.36	0.528
8467	8/22/96	16:24:10	325.38	0.533
8466	8/22/96	16:24:08	325.40	0.534
8465	8/22/96	16:24:06	325.41	0.532
8464	8/22/96	16:24:04	325.43	0.528
8463	8/22/96	16:24:02	325.45	0.522
8462	8/22/96	16:24:00	325.47	0.492
8461	8/22/96	16:23:58	325.48	0.487
8460	8/22/96	16:23:56	325.50	0.489
8459	8/22/96	16:23:54	325.52	0.488
8458	8/22/96	16:23:52	325.54	0.485
8457	8/22/96	16:23:50	325.56	0.477
8456	8/22/96	16:23:48	325.57	0.464
8455	8/22/96	16:23:46	325.59	0.448
8454	8/22/96	16:23:45	325.60	0.446
8453	8/22/96	16:23:44	325.61	0.448

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9195	8/22/96	16:48:14	326.01	0.434
9196	8/22/96	16:48:16	326.03	0.388
9197	8/22/96	16:48:18	326.05	0.367
9198	8/22/96	16:48:20	326.07	0.367
9199	8/22/96	16:48:22	326.09	0.366
9200	8/22/96	16:48:24	326.10	0.355
9201	8/22/96	16:48:26	326.12	0.356
9202	8/22/96	16:48:28	326.14	0.367
9203	8/22/96	16:48:30	326.16	0.37
9204	8/22/96	16:48:32	326.18	0.366
9205	8/22/96	16:48:34	326.20	0.361
9206	8/22/96	16:48:36	326.22	0.365
9207	8/22/96	16:48:38	326.23	0.372
9208	8/22/96	16:48:40	326.25	0.351
9209	8/22/96	16:48:42	326.27	0.314
9210	8/22/96	16:48:44	326.29	0.313
9211	8/22/96	16:48:46	326.31	0.323
9212	8/22/96	16:48:48	326.33	0.313
9213	8/22/96	16:48:50	326.35	0.292
9214	8/22/96	16:48:52	326.37	0.277
9215	8/22/96	16:48:54	326.38	0.256
9216	8/22/96	16:48:56	326.40	0.245
9217	8/22/96	16:48:58	326.42	0.269
9218	8/22/96	16:49:00	326.44	0.298
9219	8/22/96	16:49:02	326.46	0.321
9220	8/22/96	16:49:04	326.48	0.328
9221	8/22/96	16:49:06	326.50	0.34
9222	8/22/96	16:49:08	326.51	0.356
9223	8/22/96	16:49:10	326.53	0.334
9224	8/22/96	16:49:12	326.55	0.286
9225	8/22/96	16:49:14	326.57	0.261
9226	8/22/96	16:49:16	326.59	0.262
9227	8/22/96	16:49:18	326.61	0.271
9228	8/22/96	16:49:20	326.63	0.284
9229	8/22/96	16:49:22	326.64	0.299
9230	8/22/96	16:49:24	326.66	0.306
9231	8/22/96	16:49:26	326.68	0.289
9232	8/22/96	16:49:28	326.70	0.253
9233	8/22/96	16:49:30	326.72	0.235
9234	8/22/96	16:49:32	326.74	0.258
9235	8/22/96	16:49:34	326.76	0.273
9236	8/22/96	16:49:36	326.78	0.259
9237	8/22/96	16:49:38	326.79	0.254
9238	8/22/96	16:49:40	326.81	0.253
9239	8/22/96	16:49:42	326.83	0.232
9240	8/22/96	16:49:44	326.85	0.209
9241	8/22/96	16:49:46	326.87	0.209
9242	8/22/96	16:49:48	326.89	0.193
9243	8/22/96	16:49:50	326.91	0.142
9244	8/22/96	16:49:52	326.92	0.125
9245	8/22/96	16:49:54	326.94	0.117
9246	8/22/96	16:49:56	326.96	0.113
9247	8/22/96	16:49:58	326.98	0.12
9248	8/22/96	16:50:00	327.00	0.137
9249	8/22/96	16:50:02	327.02	0.142
9250	8/22/96	16:50:04	327.04	0.112
9251	8/22/96	16:50:06	327.05	0.058

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8452	8/22/96	16:23:42	325.63	0.45
8451	8/22/96	16:23:40	325.65	0.435
8450	8/22/96	16:23:38	325.66	0.424
8449	8/22/96	16:23:36	325.68	0.422
8448	8/22/96	16:23:34	325.70	0.424
8447	8/22/96	16:23:32	325.72	0.429
8446	8/22/96	16:23:30	325.74	0.441
8445	8/22/96	16:23:28	325.75	0.458
8444	8/22/96	16:23:26	325.77	0.459
8443	8/22/96	16:23:24	325.79	0.452
8442	8/22/96	16:23:22	325.81	0.427
8441	8/22/96	16:23:20	325.83	0.361
8440	8/22/96	16:23:18	325.84	0.309
8439	8/22/96	16:23:16	325.86	0.302
8438	8/22/96	16:23:14	325.88	0.308
8437	8/22/96	16:23:12	325.90	0.322
8436	8/22/96	16:23:10	325.92	0.312
8435	8/22/96	16:23:08	325.93	0.305
8434	8/22/96	16:23:06	325.95	0.333
8433	8/22/96	16:23:04	325.97	0.347
8432	8/22/96	16:23:02	325.99	0.343
8431	8/22/96	16:23:00	326.01	0.35
8430	8/22/96	16:22:58	326.02	0.363
8429	8/22/96	16:22:56	326.04	0.374
8428	8/22/96	16:22:54	326.06	0.383
8427	8/22/96	16:22:52	326.08	0.386
8426	8/22/96	16:22:50	326.10	0.387
8425	8/22/96	16:22:48	326.11	0.396
8424	8/22/96	16:22:46	326.13	0.386
8423	8/22/96	16:22:44	326.15	0.344
8422	8/22/96	16:22:42	326.17	0.297
8421	8/22/96	16:22:40	326.19	0.296
8420	8/22/96	16:22:38	326.21	0.34
8419	8/22/96	16:22:36	326.22	0.373
8418	8/22/96	16:22:34	326.24	0.397
8417	8/22/96	16:22:32	326.26	0.417
8416	8/22/96	16:22:30	326.28	0.425
8415	8/22/96	16:22:28	326.30	0.433
8414	8/22/96	16:22:26	326.31	0.445
8413	8/22/96	16:22:24	326.33	0.468
8412	8/22/96	16:22:22	326.35	0.496
8411	8/22/96	16:22:20	326.37	0.511
8410	8/22/96	16:22:18	326.39	0.512
8409	8/22/96	16:22:16	326.40	0.504
8408	8/22/96	16:22:14	326.42	0.488
8407	8/22/96	16:22:12	326.44	0.481
8406	8/22/96	16:22:10	326.46	0.483
8405	8/22/96	16:22:08	326.48	0.458
8404	8/22/96	16:22:06	326.49	0.397
8403	8/22/96	16:22:04	326.51	0.365
8402	8/22/96	16:22:02	326.53	0.375
8401	8/22/96	16:22:00	326.55	0.391
8400	8/22/96	16:21:58	326.57	0.399
8399	8/22/96	16:21:56	326.58	0.404
8398	8/22/96	16:21:54	326.60	0.392
8397	8/22/96	16:21:52	326.62	0.359
8396	8/22/96	16:21:50	326.64	0.335

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9252	8/22/96	16:50:08	327.07	0.03
9253	8/22/96	16:50:10	327.09	0.032
9254	8/22/96	16:50:12	327.11	0.037
9255	8/22/96	16:50:14	327.12	0.043
9256	8/22/96	16:50:16	327.14	0.054
9257	8/22/96	16:50:18	327.16	0.066
9258	8/22/96	16:50:20	327.18	0.076
9259	8/22/96	16:50:22	327.19	0.079
9260	8/22/96	16:50:24	327.21	0.084
9261	8/22/96	16:50:26	327.23	0.096
9262	8/22/96	16:50:28	327.25	0.082
9263	8/22/96	16:50:30	327.26	0.041
9264	8/22/96	16:50:32	327.28	0.003
9265	8/22/96	16:50:34	327.30	-0.005
9266	8/22/96	16:50:36	327.32	0.032
9267	8/22/96	16:50:38	327.33	0.063
9268	8/22/96	16:50:40	327.35	0.052
9269	8/22/96	16:50:42	327.37	0.03
9270	8/22/96	16:50:44	327.39	0.028
9271	8/22/96	16:50:46	327.40	0.016
9272	8/22/96	16:50:48	327.42	0.009
9273	8/22/96	16:50:50	327.44	0.025
9274	8/22/96	16:50:52	327.46	0.023
9275	8/22/96	16:50:54	327.47	0.021
9276	8/22/96	16:50:56	327.49	0.025
9277	8/22/96	16:50:58	327.51	0.029
9278	8/22/96	16:51:00	327.53	0.029
9279	8/22/96	16:51:02	327.54	0.009
9280	8/22/96	16:51:04	327.56	ND
9281	8/22/96	16:51:06	327.58	0.004
9282	8/22/96	16:51:08	327.60	0.012
9283	8/22/96	16:51:10	327.61	0.021
9284	8/22/96	16:51:12	327.63	0.024
9285	8/22/96	16:51:14	327.65	0.02
9286	8/22/96	16:51:16	327.67	0.016
9287	8/22/96	16:51:18	327.68	0.013
9288	8/22/96	16.51:20	327.70	ND
9289	8/22/96	16:51:22	327.72	ND
9290	8/22/96	16:51:24	327.74	ND
9291	8/22/96	16:51:26	327.75	ND
9292	8/22/96	16:51:28	327.77	ND
9293	8/22/96	16:51:30	327.79	ND
9294	8/22/96	16:51:32	327.81	ND
9295	8/22/96	16:51:34	327.82	ND
9296	8/22/96	16:51:36	327.84	ND
9297	8/22/96	16:51:38	327.86	ND
9298	8/22/96	16:51:40	327.88	ND
9299	8/22/96	16:51:42	327.89	ND
9300	8/22/96	16:51:44	327.91	ND
9301	8/22/96	16:51:46	327.93	ND
9302	8/22/96	16:51:48	327.95	ND
9303	8/22/96	16:51:50	327.96	ND
9304	8/22/96	16:51:52	327.98	ND
9305	8/22/96	16:51:54	328.00	ND
9306	8/22/96	16:51:56	328.02	ND
9307	8/22/96	16:51:58	328.04	ND
9308	8/22/96	16:52:00	328.06	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8395	8/22/96	16:21:48	326.66	0.323
8394	8/22/96	16:21:46	326.67	0.315
8393	8/22/96	16:21:44	326.69	0.318
8392	8/22/96	16:21:42	326.71	0.346
8391	8/22/96	16:21:40	326.73	0.383
8390	8/22/96	16:21:38	326.75	0.418
8389	8/22/96	16:21:36	326.76	0.409
8388	8/22/96	16:21:34	326.78	0.356
8387	8/22/96	16:21:32	326.80	0.332
8386	8/22/96	16:21:30	326.82	0.301
8385	8/22/96	16:21:28	326.84	0.234
8384	8/22/96	16:21:26	326.86	0.19
8383	8/22/96	16:21:24	326.87	0.188
8382	8/22/96	16:21:22	326.89	0.215
8381	8/22/96	16:21:20	326.91	0.246
8380	8/22/96	16:21:18	326.93	0.264
8379	8/22/96	16:21:16	326.95	0.264
8378	8/22/96	16:21:14	326.96	0.266
8377	8/22/96	16:21:12	326.98	0.298
8376	8/22/96	16:21:10	327.00	0.337
8375	8/22/96	16:21:08	327.02	0.336
8374	8/22/96	16:21:06	327.03	0.339
8373	8/22/96	16:21:04	327.05	0.367
8372	8/22/96	16:21:02	327.06	0.376
8371	8/22/96	16:21:00	327.08	0.371
8370	8/22/96	16:20:58	327.10	0.368
8369	8/22/96	16:20:56	327.11	0.375
8368	8/22/96	16:20:54	327.13	0.381
8367	8/22/96	16:20:52	327.14	0.351
8366	8/22/96	16:20:50	327.16	0.324
8365	8/22/96	16:20:48	327.17	0.333
8364	8/22/96	16:20:46	327.19	0.356
8363	8/22/96	16:20:44	327.21	0.38
8362	8/22/96	16:20:42	327.22	0.391
8361	8/22/96	16:20:40	327.24	0.359
8360	8/22/96	16:20:38	327.25	0.287
8359	8/22/96	16:20:36	327.27	0.225
8358	8/22/96	16:20:34	327.29	0.198
8357	8/22/96	16:20:32	327.30	0.207
8356	8/22/96	16:20:30	327.32	0.231
8355	8/22/96	16:20:28	327.33	0.246
8354	8/22/96	16:20:26	327.35	0.254
8353	8/22/96	16:20:24	327.37	0.256
8352	8/22/96	16:20:22	327.38	0.218
8351	8/22/96	16:20:20	327.40	0.163
8350	8/22/96	16:20:18	327.41	0.147
8349	8/22/96	16:20:16	327.43	0.164
8348	8/22/96	16:20:14	327.44	0.174
8347	8/22/96	16:20:12	327.46	0.212
8346	8/22/96	16:20:10	327.48	0.25
8345	8/22/96	16:20:08	327.49	0.253
8344	8/22/96	16:20:06	327.51	0.241
8343	8/22/96	16:20:04	327.52	0.253
8342	8/22/96	16:20:02	327.54	0.318
8341	8/22/96	16:20:00	327.56	0.33
8340	8/22/96	16:19:58	327.57	0.326
8339	8/22/96	16:19:56	327.59	0.317

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9309	8/22/96	16:52:02	328.08	ND
9310	8/22/96	16:52:04	328.10	ND
9311	8/22/96	16:52:06	328.12	ND
9312	8/22/96	16:52:08	328.14	ND
9313	8/22/96	16:52:10	328.16	ND
9314	8/22/96	16:52:12	328.18	ND
9315	8/22/96	16:52:14	328.20	ND
9316	8/22/96	16:52:16	328.22	ND
9317	8/22/96	16:52:18	328.24	ND
9318	8/22/96	16:52:20	328.26	ND
9319	8/22/96	16:52:22	328.28	ND
9320	8/22/96	16:52:24	328.30	ND
9321	8/22/96	16:52:26	328.32	ND
9322	8/22/96	16:52:28	328.34	ND
9323	8/22/96	16:52:30	328.36	ND
9324	8/22/96	16:52:32	328.38	ND
9325	8/22/96	16:52:34	328.40	ND
9326	8/22/96	16:52:36	328.42	ND
9327	8/22/96	16:52:38	328.44	ND
9328	8/22/96	16:52:40	328.46	ND
9329	8/22/96	16:52:42	328.48	ND
9330	8/22/96	16:52:44	328.50	ND
9331	8/22/96	16:52:46	328.52	ND
9332	8/22/96	16:52:48	328.54	ND
9333	8/22/96	16:52:50	328.56	ND
9334	8/22/96	16:52:52	328.58	ND
9335	8/22/96	16:52:54	328.60	ND
9336	8/22/96	16:52:56	328.62	ND
9337	8/22/96	16:52:58	328.64	ND
9338	8/22/96	16:53:00	328.66	ND
9339	8/22/96	16:53:02	328.68	ND
9340	8/22/96	16:53:04	328.70	ND
9341	8/22/96	16:53:06	328.72	ND
9342	8/22/96	16:53:08	328.74	ND
9343	8/22/96	16:53:10	328.76	ND
9344	8/22/96	16:53:12	328.78	ND
9345	8/22/96	16:53:14	328.80	ND
9346	8/22/96	16:53:16	328.81	ND
9347	8/22/96	16:53:18	328.83	ND
9348	8/22/96	16:53:20	328.85	ND
9349	8/22/96	16:53:22	328.87	ND
9350	8/22/96	16:53:24	328.89	ND
9351	8/22/96	16:53:26	328.91	ND
9352	8/22/96	16:53:28	328.93	ND
9353	8/22/96	16:53:30	328.95	ND
9354	8/22/96	16:53:32	328.97	ND
9355	8/22/96	16:53:34	328.99	ND
9356	8/22/96	16:53:36	329.00	ND
9357	8/22/96	16:53:38	329.02	ND
9358	8/22/96	16:53:40	329.04	ND
9359	8/22/96	16:53:42	329.06	ND
9360	8/22/96	16:53:44	329.08	ND
9361	8/22/96	16:53:46	329.10	ND
9362	8/22/96	16:53:48	329.12	ND
9363	8/22/96	16:53:50	329.14	ND
9364	8/22/96	16:53:52	329.16	ND
9365	8/22/96	16:53:54	329.18	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8338	8/22/96	16:19:54	327.60	0.301
8337	8/22/96	16:19:52	327.62	0.247
8336	8/22/96	16:19:50	327.64	0.22
8335	8/22/96	16:19:48	327.65	0.247
8334	8/22/96	16:19:46	327.67	0.298
8333	8/22/96	16:19:44	327.68	0.324
8332	8/22/96	16:19:42	327.70	0.317
8331	8/22/96	16:19:40	327.71	0.282
8330	8/22/96	16:19:38	327.73	0.238
8329	8/22/96	16:19:36	327.75	0.234
8328	8/22/96	16:19:34	327.76	0.244
8327	8/22/96	16:19:32	327.78	0.242
8326	8/22/96	16:19:30	327.79	0.238
8325	8/22/96	16:19:28	327.81	0.229
8324	8/22/96	16:19:26	327.83	0.185
8323	8/22/96	16:19:24	327.84	0.128
8322	8/22/96	16:19:22	327.86	0.099
8321	8/22/96	16:19:20	327.87	0.055
8320	8/22/96	16:19:18	327.89	0.047
8319	8/22/96	16:19:16	327.91	0.046
8318	8/22/96	16:19:14	327.92	0.047
8317	8/22/96	16:19:12	327.94	0.063
8316	8/22/96	16:19:10	327.95	0.043
8315	8/22/96	16:19:08	327.97	ND
8314	8/22/96	16:19:06	327.98	ND
8313	8/22/96	16:19:04	328.00	ND
8312	8/22/96	16:19:02	328.02	0.015
8311	8/22/96	16:19:00	328.04	0.029
8310	8/22/96	16:18:58	328.06	0.054
8309	8/22/96	16:18:56	328.08	0.067
8308	8/22/96	16:18:54	328.09	0.075
8307	8/22/96	16:18:52	328.11	0.046
8306	8/22/96	16:18:50	328.13	0.008
8305	8/22/96	16:18:48	328.15	ND
8304	8/22/96	16:18:46	328.17	ND
8303	8/22/96	16:18:44	328.19	0.01
8302	8/22/96	16:18:42	328.21	0.029
8301	8/22/96	16:18:40	328.23	0.065
8300	8/22/96	16:18:38	328.25	0.087
8299	8/22/96	16:18:36	328.26	0.123
8298	8/22/96	16:18:34	328.28	0.127
8297	8/22/96	16:18:32	328.30	0.134
8296	8/22/96	16:18:30	328.32	0.137
8295	8/22/96	16:18:28	328.34	0.134
8294	8/22/96	16:18:26	328.36	0.114
8293	8/22/96	16:18:24	328.38	0.058
8292	8/22/96	16:18:22	328.40	ND
8291	8/22/96	16:18:20	328.42	ND
8290	8/22/96	16:18:18	328.44	ND
8289	8/22/96	16:18:16	328.45	ND
8288	8/22/96	16:18:14	328.47	ND
8287	8/22/96	16:18:12	328.49	ND
8286	8/22/96	16:18:10	328.51	ND
8285	8/22/96	16:18:08	328.53	ND
8284	8/22/96	16:18:06	328.55	ND
8283	8/22/96	16:18:04	328.57	ND
8282	8/22/96	16:18:02	328.59	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
August 22, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
9366	8/22/96	16:53:56	329.20	ND
9367	8/22/96	16:53:58	329.21	ND
9368	8/22/96	16:54:00	329.23	ND
9369	8/22/96	16:54:02	329.25	ND
9370	8/22/96	16:54:04	329.27	ND
9371	8/22/96	16:54:06	329.29	ND
9372	8/22/96	16:54:08	329.31	ND
9373	8/22/96	16:54:10	329.33	ND
9374	8/22/96	16:54:12	329.35	ND
9375	8/22/96	16:54:14	329.37	ND
9376	8/22/96	16:54:16	329.39	ND
9377	8/22/96	16:54:18	329.40	ND
9378	8/22/96	16:54:20	329.42	ND
9379	8/22/96	16:54:22	329.44	ND
9380	8/22/96	16:54:24	329.46	ND
9381	8/22/96	16:54:26	329.48	ND
9382	8/22/96	16:54:28	329.50	ND
9383	8/22/96	16:54:30	329.52	ND
9384	8/22/96	16:54:32	329.54	ND
9385	8/22/96	16:54:34	329.56	ND
9386	8/22/96	16:54:36	329.58	ND
9387	8/22/96	16:54:38	329.59	ND
9388	8/22/96	16:54:40	329.61	ND
9389	8/22/96	16:54:42	329.63	ND
9390	8/22/96	16:54:44	329.65	ND
9391	8/22/96	16:54:46	329.67	ND
9392	8/22/96	16:54:48	329.69	ND
9393	8/22/96	16:54:49	329.70	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
8281	8/22/96	16:18:00	328.61	ND
8280	8/22/96	16:17:58	328.62	ND
8279	8/22/96	16:17:56	328.64	ND
8278	8/22/96	16:17:54	328.66	ND
8277	8/22/96	16:17:52	328.68	ND
8276	8/22/96	16:17:50	328.70	ND
8275	8/22/96	16:17:48	328.72	ND
8274	8/22/96	16:17:46	328.74	ND
8273	8/22/96	16:17:44	328.76	ND
8272	8/22/96	16:17:42	328.78	ND
8271	8/22/96	16:17:40	328.80	ND
8270	8/22/96	16:17:38	328.82	ND
8269	8/22/96	16:17:36	328.84	ND
8268	8/22/96	16:17:34	328.86	ND
8267	8/22/96	16:17:32	328.88	ND
8266	8/22/96	16:17:30	328.90	ND
8265	8/22/96	16:17:28	328.92	ND
8264	8/22/96	16:17:26	328.94	ND
8263	8/22/96	16:17:24	328.96	ND
8262	8/22/96	16:17:22	328.98	ND
8261	8/22/96	16:17:20	329.00	ND
8260	8/22/96	16:17:18	329.02	ND
8259	8/22/96	16:17:16	329.04	ND
8258	8/22/96	16:17:14	329.06	ND
8257	8/22/96	16:17:12	329.08	ND
8256	8/22/96	16:17:10	329.10	ND
8255	8/22/96	16:17:08	329.12	ND
8254	8/22/96	16:17:06	329.14	ND
8253	8/22/96	16:17:04	329.16	ND
8252	8/22/96	16:17:02	329.18	ND
8251	8/22/96	16:17:00	329.20	ND
8250	8/22/96	16:16:58	329.22	ND
8249	8/22/96	16:16:56	329.24	ND
8248	8/22/96	16:16:54	329.26	ND
8247	8/22/96	16:16:52	329.28	ND
8246	8/22/96	16:16:50	329.30	ND
8245	8/22/96	16:16:48	329.32	ND
8244	8/22/96	16:16:46	329.34	ND
8243	8/22/96	16:16:44	329.36	ND
8242	8/22/96	16:16:42	329.38	ND
8241	8/22/96	16:16:40	329.40	ND
8240	8/22/96	16:16:38	329.42	ND
8239	8/22/96	16:16:36	329.44	ND
8238	8/22/96	16:16:34	329.46	ND
8237	8/22/96	16:16:32	329.48	ND
8236	8/22/96	16:16:30	329.50	ND
8235	8/22/96	16:16:28	329.52	ND
8234	8/22/96	16:16:26	329.54	ND
8233	8/22/96	16:16:24	329.56	ND
8232	8/22/96	16:16:22	329.58	ND
8231	8/22/96	16:16:20	329.60	ND
8230	8/22/96	16:16:18	329.62	ND
8229	8/22/96	16:16:16	329.64	ND
8228	8/22/96	16:16:14	329.66	ND
8227	8/22/96	16:16:12	329.68	ND
8226	8/22/96	16:16:10	329.70	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4693	8/23/96	12:11:55	330.90	0.008
4694	8/23/96	12:11:56	330.91	0.008
4695	8/23/96	12:11:58	330.93	0.011
4696	8/23/96	12:12:00	330.94	0.008
4697	8/23/96	12:12:02	330.96	0.011
4698	8/23/96	12:12:04	330.98	0.02
4699	8/23/96	12:12:06	331.00	0.024
4700	8/23/96	12:12:08	331.01	0.022
4701	8/23/96	12:12:10	331.03	0.019
4702	8/23/96	12:12:12	331.05	0.025
4703	8/23/96	12:12:14	331.07	0.028
4704	8/23/96	12:12:16	331.08	0.035
4705	8/23/96	12:12:18	331.10	0.042
4706	8/23/96	12:12:20	331.12	0.033
4707	8/23/96	12:12:22	331.13	0.024
4708	8/23/96	12:12:24	331.15	0.032
4709	8/23/96	12:12:26	331.17	0.046
4710	8/23/96	12:12:28	331.19	0.065
4711	8/23/96	12:12:30	331.20	0.076
4712	8/23/96	12:12:32	331.22	0.08
4713	8/23/96	12:12:34	331.24	0.09
4714	8/23/96	12:12:36	331.26	0.1
4715	8/23/96	12:12:38	331.27	0.105
4716	8/23/96	12:12:40	331.29	0.113
4717	8/23/96	12:12:42	331.31	0.121
4718	8/23/96	12:12:44	331.33	0.122
4719	8/23/96	12:12:46	331.34	0.121
4720	8/23/96	12:12:48	331.36	0.121
4721	8/23/96	12:12:50	331.38	0.118
4722	8/23/96	12:12:52	331.40	0.117
4723	8/23/96	12:12:54	331.41	0.118
4724	8/23/96	12:12:56	331.43	0.122
4725	8/23/96	12:12:58	331.45	0.121
4726	8/23/96	12:13:00	331.47	0.119
4727	8/23/96	12:13:02	331.48	0.122
4728	8/23/96	12:13:04	331.50	0.129
4729	8/23/96	12:13:06	331.52	0.129
4730	8/23/96	12:13:08	331.53	0.119
4731	8/23/96	12:13:10	331.55	0.112
4732	8/23/96	12:13:12	331.57	0.111
4733	8/23/96	12:13:14	331.59	0 108
4734	8/23/96	12:13:16	331.60	0.11
4735	8/23/96	12:13:18	331.62	0.112
4736	8/23/96	12:13:20	331.64	0.107
4737	8/23/96	12:13:22	331.66	0.105
4738	8/23/96	12:13:24	331.67	0.105
4739	8/23/96	12:13:26	331.69	0.111
4740	8/23/96	12:13:28	331.71	0.12
4741	8/23/96	12:13:30	331.73	0.122
4742	8/23/96	12:13:32	331.74	0.119
4743	8/23/96	12:13:34	331.76	0.114
4744	8/23/96	12:13:36	331.78	0.112
4745	8/23/96	12:13:38	331.80	0.111
4746	8/23/96	12:13:40	331.81	0.113
4747	8/23/96	12:13:42	331.83	0.108
4748	8/23/96	12:13:44	331.85	0.103
4749	8/23/96	12:13:46	331.87	0.103
4750	8/23/96	12:13:48	331.88	0.106
4751	8/23/96	12:13:50	331.90	0.109

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4646	8/23/96	12:10:23	330.90	ND
4645	8/23/96	12:10:22	330.91	ND
4644	8/23/96	12:10:20	330.93	ND
4643	8/23/96	12:10:18	330.95	ND
4642	8/23/96	12:10:16	330.98	ND
4641	8/23/96	12:10:14	331.00	ND
4640	8/23/96	12:10:12	331.02	ND
4639	8/23/96	12:10:10	331.04	ND
4638	8/23/96	12:10:08	331.06	ND
4637	8/23/96	12:10:06	331.09	ND
4636	8/23/96	12:10:04	331.11	ND
4635	8/23/96	12:10:02	331.13	ND
4634	8/23/96	12:10:00	331.15	ND
4633	8/23/96	12:09:58	331.17	ND
4632	8/23/96	12:09:56	331.20	ND
4631	8/23/96	12:09:54	331.22	ND
4630	8/23/96	12:09:52	331.24	ND
4629	8/23/96	12:09:50	331.26	ND
4628	8/23/96	12:09:48	331.28	ND
4627	8/23/96	12:09:46	331.31	ND
4626	8/23/96	12:09:44	331.33	ND
4625	8/23/96	12:09:42	331.35	ND
4624	8/23/96	12:09:40	331.37	ND
4623	8/23/96	12:09:38	331.39	ND
4622	8/23/96	12:09:36	331.42	ND
4621	8/23/96	12:09:34	331.44	ND
4620	8/23/96	12:09:32	331.46	0.021
4619	8/23/96	12:09:30	331.48	0.008
4618	8/23/96	12:09:28	331.50	ND
4617	8/23/96	12:09:26	331.53	ND
4616	8/23/96	12:09:24	331.55	ND
4615	8/23/96	12:09:22	331.57	0.004
4614	8/23/96	12:09:20	331.59	0.004
4613	8/23/96	12:09:18	331.61	0.009
4612	8/23/96	12:09:16	331.64	0.012
4611	8/23/96	12:09:14	331.66	0.016
4610	8/23/96	12:09:12	331.68	0.023
4609	8/23/96	12:09:10	331.70	0.033
4608	8/23/96	12:09:08	331.72	0.045
4607	8/23/96	12:09:06	331.75	0.054
4606	8/23/96	12:09:04	331.77	0.052
4605	8/23/96	12.09:02	331.79	0.042
4604	8/23/96	12:09:00	331.81	0.043
4603	8/23/96	12:08:58	331.83	0.058
4602	8/23/96	12:08:56	331.86	0.074
4601	8/23/96	12:08:54	331.88	0.084
4600	8/23/96	12:08:52	331.90	0.088
4599	8/23/96	12:08:50	331.92	0.087
4598	8/23/96	12:08:48	331.94	0.079
4597	8/23/96	12:08:46	331.95	0.075
4596	8/23/96	12:08:44	331.97	0.082
4595	8/23/96	12:08:42	331.99	0.094
4594	8/23/96	12:08:40	332.01	0.1
4593	8/23/96	12:08:38	332.02	0.098
4592	8/23/96	12:08:36	332.04	0.092
4591	8/23/96	12:08:34	332.06	0.086
4590	8/23/96	12:08:32	332.08	0.083
4589	8/23/96	12:08:30	332.09	0.091
4588	8/23/96	12:08:28	332.11	0.097

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4752	8/23/96	12:13:52	331.92	0.108
4753	8/23/96	12:13:54	331.94	0.103
4754	8/23/96	12:13:56	331.96	0.095
4755	8/23/96	12:13:58	331.98	0.09
4756	8/23/96	12:14:00	332.00	0.088
4757	8/23/96	12:14:02	332.02	0.084
4758	8/23/96	12:14:04	332.04	0.085
4759	8/23/96	12:14:06	332.06	0.084
4760	8/23/96	12:14:08	332.08	0.078
4761	8/23/96	12:14:10	332.10	0.079
4762	8/23/96	12:14:12	332.12	0.083
4763	8/23/96	12:14:14	332.14	0.081
4764	8/23/96	12:14:16	332.16	0.08
4765	8/23/96	12:14:18	332.18	0.084
4766	8/23/96	12:14:20	332.20	0.084
4767	8/23/96	12:14:22	332.22	0.104
4768	8/23/96	12:14:24	332.24	0.121
4769	8/23/96	12:14:26	332.26	0.113
4770	8/23/96	12:14:28	332.28	0.112
4771	8/23/96	12:14:30	332.30	0.116
4772	8/23/96	12:14:32	332.32	0.118
4773	8/23/96	12:14:34	332.34	0.125
4774	8/23/96	12:14:36	332.36	0.134
4775	8/23/96	12:14:38	332.38	0.141
4776	8/23/96	12:14:40	332.40	0.146
4777	8/23/96	12:14:42	332.42	0.154
4778	8/23/96	12:14:44	332.44	0.164
4779	8/23/96	12:14:46	332.46	0.173
4780	8/23/96	12:14:48	332.48	0.175
4781	8/23/96	12:14:50	332.50	0.178
4782	8/23/96	12:14:52	332.52	0.183
4783	8/23/96	12:14:54	332.54	0.187
4784	8/23/96	12:14:56	332.57	0.187
4785	8/23/96	12:14:58	332.59	0.181
4786	8/23/96	12:15:00	332.61	0.177
4787	8/23/96	12:15:02	332.63	0.174
4788	8/23/96	12:15:04	332.65	0.172
4789	8/23/96	12:15:06	332.67	0.165
4790	8/23/96	12:15:08	332.69	0.154
4791	8/23/96	12:15:10	332.71	0.144
4792	8/23/96	12:15:12	332.73	0.135
4793	8/23/96	12:15:14	332.75	0.127
4794	8/23/96	12:15:16	332.77	0.122
4795	8/23/96	12:15:18	332.79	0.124
4796	8/23/96	12:15:20	332.81	0.128
4797	8/23/96	12:15:22	332.83	0.125
4798	8/23/96	12:15:24	332.85	0.117
4799	8/23/96	12:15:26	332.87	0.111
4800	8/23/96	12:15:28	332.89	0.106
4801	8/23/96	12:15:30	332.91	0.104
4802	8/23/96	12:15:32	332.93	0.104
4803	8/23/96	12:15:34	332.95	0.106
4804	8/23/96	12:15:36	332.97	0.11
4805	8/23/96	12:15:38	332.99	0.115
4806	8/23/96	12:15:40	333.01	0.121
4807	8/23/96	12:15:42	333.03	0.121
4808	8/23/96	12:15:44	333.05	0.121
4809	8/23/96	12:15:46	333.07	0.118
4810	8/23/96	12:15:48	333.09	0.122

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4587	8/23/96	12:08:26	332.13	0.098
4586	8/23/96	12:08:24	332.15	0.096
4585	8/23/96	12:08:22	332.16	0.095
4584	8/23/96	12:08:20	332.18	0.092
4583	8/23/96	12:08:18	332.20	0.086
4582	8/23/96	12:08:16	332.22	0.085
4581	8/23/96	12:08:14	332.23	0.092
4580	8/23/96	12:08:12	332.25	0.107
4579	8/23/96	12:08:10	332.27	0.124
4578	8/23/96	12:08:08	332.29	0.162
4577	8/23/96	12:08:06	332.30	0.199
4576	8/23/96	12:08:04	332.32	0.199
4575	8/23/96	12:08:02	332.34	0.188
4574	8/23/96	12:08:00	332.36	0.172
4573	8/23/96	12:07:58	332.37	0.143
4572	8/23/96	12:07:56	332.39	0.113
4571	8/23/96	12:07:54	332.41	0.103
4570	8/23/96	12:07:52	332.43	0.104
4569	8/23/96	12:07:50	332.44	0.106
4568	8/23/96	12:07:48	332.46	0.108
4567	8/23/96	12:07:46	332.48	0.106
4566	8/23/96	12:07:44	332.50	0.11
4565	8/23/96	12:07:42	332.51	0.114
4564	8/23/96	12:07:40	332.53	0.114
4563	8/23/96	12:07:38	332.55	0.111
4562	8/23/96	12:07:36	332.57	0.112
4561	8/23/96	12:07:34	332.58	0.121
4560	8/23/96	12:07:32	332.60	0.137
4559	8/23/96	12:07:30	332.62	0.156
4558	8/23/96	12:07:28	332.64	0.166
4557	8/23/96	12:07:26	332.66	0.157
4556	8/23/96	12:07:24	332.67	0.155
4555	8/23/96	12:07:22	332.69	0.182
4554	8/23/96	12:07:20	332.71	0.216
4553	8/23/96	12:07:18	332.73	0.241
4552	8/23/96	12:07:16	332.74	0.251
4551	8/23/96	12:07:14	332.76	0.251
4550	8/23/96	12:07:12	332.78	0.253
4549	8/23/96	12:07:10	332.80	0.253
4548	8/23/96	12:07:08	332.81	0.249
4547	8/23/96	12:07:06	332.83	0.252
4546	8/23/96	12:07:04	332.85	0.258
4545	8/23/96	12:07:02	332.87	0.268
4544	8/23/96	12:07:00	332.88	0.28
4543	8/23/96	12:06:58	332.90	0.292
4542	8/23/96	12:06:56	332.92	0.299
4541	8/23/96	12:06:54	332.94	0.306
4540	8/23/96	12:06:52	332.95	0.32
4539	8/23/96	12:06:50	332.97	0.333
4538	8/23/96	12:06:48	332.99	0.338
4537	8/23/96	12:06:46	333.01	0.335
4536	8/23/96	12:06:44	333.02	0.339
4535	8/23/96	12:06:42	333.04	0.345
4534	8/23/96	12:06:40	333.06	0.341
4533	8/23/96	12:06:38	333.08	0.342
4532	8/23/96	12:06:36	333.09	0.343
4531	8/23/96	12:06:34	333.11	0.342
4530	8/23/96	12:06:32	333.13	0.337
4529	8/23/96	12:06:30	333.15	0.325

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4811	8/23/96	12:15:50	333.11	0.127
4812	8/23/96	12:15:52	333.13	0.132
4813	8/23/96	12:15:54	333.15	0.142
4814	8/23/96	12:15:56	333.17	0.142
4815	8/23/96	12:15:58	333.19	0.133
4816	8/23/96	12:15:59	333.20	0.127
4817	8/23/96	12:16:00	333.21	0.125
4818	8/23/96	12:16:02	333.23	0.136
4819	8/23/96	12:16:04	333.24	0.155
4820	8/23/96	12:16:06	333.26	0.174
4821	8/23/96	12:16:08	333.28	0.2
4822	8/23/96	12:16:10	333.30	0.213
4823	8/23/96	12:16:12	333.31	0.208
4824	8/23/96	12:16:14	333.33	0.206
4825	8/23/96	12:16:16	333.35	0.21
4826	8/23/96	12:16:18	333.37	0.199
4827	8/23/96	12:16:20	333.39	0.182
4828	8/23/96	12:16:22	333.40	0.177
4829	8/23/96	12:16:24	333.42	0.19
4830	8/23/96	12:16:26	333.44	0.203
4831	8/23/96	12:16:28	333.46	0.207
4832	8/23/96	12:16:30	333.47	0.21
4833	8/23/96	12:16:32	333.49	0.213
4834	8/23/96	12:16:34	333.51	0.221
4835	8/23/96	12:16:36	333.53	0.226
4836	8/23/96	12:16:38	333.54	0.222
4837	8/23/96	12:16:40	333.56	0.222
4838	8/23/96	12:16:42	333.58	0.226
4839	8/23/96	12:16:44	333.60	0.225
4840	8/23/96	12:16:46	333.61	0.226
4841	8/23/96	12:16:48	333.63	0.226
4842	8/23/96	12:16:50	333.65	0.223
4843	8/23/96	12:16:52	333.67	0.222
4844	8/23/96	12:16:54	333.69	0.222
4845	8/23/96	12:16:56	333.70	0.221
4846	8/23/96	12:16:58	333.72	0.214
4847	8/23/96	12:17:00	333.74	0.213
4848	8/23/96	12:17:02	333.76	0.226
4849	8/23/96	12:17:04	333.77	0.241
4850	8/23/96	12:17:06	333.79	0.242
4851	8/23/96	12:17:08	333.81	0.24
4852	8/23/96	12:17:10	333.83	0.238
4853	8/23/96	12:17:12	333.84	0.227
4854	8/23/96	12:17:14	333.86	0.22
4855	8/23/96	12:17:16	333.88	0.22
4856	8/23/96	12:17:18	333.90	0.218
4857	8/23/96	12:17:20	333.91	0.217
4858	8/23/96	12:17:22	333.93	0.217
4859	8/23/96	12:17:24	333.95	0.226
4860	8/23/96	12:17:26	333.97	0.243
4861	8/23/96	12:17:28	333.99	0.252
4862	8/23/96	12:17:30	334.00	0.26
4863	8/23/96	12:17:32	334.02	0.273
4864	8/23/96	12:17:34	334.04	0.283
4865	8/23/96	12:17:36	334.06	0.288
4866	8/23/96	12:17:38	334.07	0.29
4867	8/23/96	12:17:40	334.09	0.29
4868	8/23/96	12:17:42	334.11	0.281
4869	8/23/96	12:17:44	334.13	0.261

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4528	8/23/96	12:06:28	333.16	0.322
4527	8/23/96	12:06:26	333.18	0.329
4526	8/23/96	12:06:24	333.20	0.335
4525	8/23/96	12:06:22	333.22	0.337
4524	8/23/96	12:06:20	333.24	0.34
4523	8/23/96	12:06:18	333.26	0.347
4522	8/23/96	12:06:16	333.28	0.348
4521	8/23/96	12:06:14	333.31	0.346
4520	8/23/96	12:06:12	333.33	0.345
4519	8/23/96	12:06:10	333.35	0.344
4518	8/23/96	12:06:08	333.37	0.343
4517	8/23/96	12:06:06	333.39	0.345
4516	8/23/96	12:06:04	333.41	0.349
4515	8/23/96	12:06:02	333.43	0.351
4514	8/23/96	12:06:00	333.45	0.353
4513	8/23/96	12:05:58	333.47	0.348
4512	8/23/96	12:05:56	333.50	0.344
4511	8/23/96	12:05:54	333.52	0.346
4510	8/23/96	12:05:52	333.54	0.348
4509	8/23/96	12:05:50	333.56	0.345
4508	8/23/96	12:05:48	333.58	0.34
4507	8/23/96	12:05:46	333.60	0.347
4506	8/23/96	12:05:44	333.62	0.348
4505	8/23/96	12:05:42	333.64	0.346
4504	8/23/96	12:05:40	333.66	0.35
4503	8/23/96	12:05:38	333.69	0.354
4502	8/23/96	12:05:36	333.71	0.359
4501	8/23/96	12:05:34	333.73	0.361
4500	8/23/96	12:05:32	333.75	0.361
4499	8/23/96	12:05:30	333.77	0.362
4498	8/23/96	12:05:28	333.79	0.369
4497	8/23/96	12:05:26	333.81	0.376
4496	8/23/96	12:05:24	333.83	0.374
4495	8/23/96	12:05:22	333.85	0.366
4494	8/23/96	12:05:20	333.88	0.369
4493	8/23/96	12:05:18	333.90	0.377
4492	8/23/96	12:05:16	333.92	0.378
4491	8/23/96	12:05:14	333.94	0.369
4490	8/23/96	12:05:12	333.96	0.363
4489	8/23/96	12:05:10	333.98	0.364
4488	8/23/96	12:05:08	334.00	0.364
4487	8/23/96	12:05:06	334.02	0.361
4486	8/23/96	12:05:04	334.04	0.359
4485	8/23/96	12:05:02	334.07	0.36
4484	8/23/96	12:05:00	334.09	0.356
4483	8/23/96	12:04:58	334.11	0 36
4482	8/23/96	12:04:56	334.13	0.359
4481	8/23/96	12:04:54	334.15	0.358
4480	8/23/96	12:04:52	334.17	0.363
4479	8/23/96	12:04:50	334.19	0.362
4478	8/23/96	12:04:48	334.21	0.366
4477	8/23/96	12:04:46	334.23	0.374
4476	8/23/96	12:04:44	334.26	0.374
4475	8/23/96	12:04:42	334.28	0.373
4474	8/23/96	12:04:40	334.30	0.375
4473	8/23/96	12:04:38	334.32	0.373
4472	8/23/96	12:04:36	334.34	0.372
4471	8/23/96	12:04:34	334.36	0.368
4470	8/23/96	12:04:32	334.38	0.366

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4870	8/23/96	12:17:46	334.14	0.255
4871	8/23/96	12:17:48	334.16	0.276
4872	8/23/96	12:17:50	334.18	0.288
4873	8/23/96	12:17:52	334.20	0.281
4874	8/23/96	12:17:54	334.21	0.274
4875	8/23/96	12:17:56	334.23	0.276
4876	8/23/96	12:17:58	334.25	0.278
4877	8/23/96	12:18:00	334.27	0.292
4878	8/23/96	12:18:02	334.29	0.312
4879	8/23/96	12:18:04	334.30	0.308
4880	8/23/96	12:18:06	334.32	0.289
4881	8/23/96	12:18:08	334.34	0.278
4882	8/23/96	12:18:10	334.36	0.273
4883	8/23/96	12:18:12	334.37	0.272
4884	8/23/96	12:18:14	334.39	0.278
4885	8/23/96	12:18:16	334.41	0.28
4886	8/23/96	12:18:18	334.43	0.281
4887	8/23/96	12:18:20	334.44	0.283
4888	8/23/96	12:18:22	334.46	0.288
4889	8/23/96	12:18:24	334.48	0.292
4890	8/23/96	12:18:26	334.50	0.292
4891	8/23/96	12:18:28	334.51	0.297
4892	8/23/96	12:18:30	334.53	0.296
4893	8/23/96	12:18:32	334.55	0.292
4894	8/23/96	12:18:34	334.57	0.29
4895	8/23/96	12:18:36	334.59	0.284
4896	8/23/96	12:18:38	334.60	0.274
4897	8/23/96	12:18:40	334.62	0.275
4898	8/23/96	12:18:42	334.64	0.284
4899	8/23/96	12:18:44	334.66	0.288
4900	8/23/96	12:18:46	334.67	0.29
4901	8/23/96	12:18:48	334.69	0.286
4902	8/23/96	12:18:49	334.70	0.281
4903	8/23/96	12:18:50	334.71	0.278
4904	8/23/96	12:18:52	334.73	0.287
4905	8/23/96	12:18:54	334.74	0.306
4906	8/23/96	12:18:56	334.76	0.316
4907	8/23/96	12:18:58	334.78	0.31
4908	8/23/96	12:19:00	334.79	0.311
4909	8/23/96	12:19:02	334.81	0.324
4910	8/23/96	12:19:04	334.83	0.339
4911	8/23/96	12:19:06	334.85	0.353
4912	8/23/96	12:19:08	334.86	0.357
4913	8/23/96	12:19:10	334.88	0.361
4914	8/23/96	12:19:12	334.90	0.356
4915	8/23/96	12:19:14	334.91	0.341
4916	8/23/96	12:19:16	334.93	0.328
4917	8/23/96	12:19:18	334.95	0.327
4918	8/23/96	12:19:20	334.96	0.334
4919	8/23/96	12:19:22	334.98	0.339
4920	8/23/96	12:19:24	335.00	0.339
4921	8/23/96	12:19:26	335.02	0.335
4922	8/23/96	12:19:28	335.03	0.329
4923	8/23/96	12:19:30	335.05	0.327
4924	8/23/96	12:19:32	335.07	0.328
4925	8/23/96	12:19:34	335.08	0.325
4926	8/23/96	12:19:36	335.10	0.325
4927	8/23/96	12:19:38	335.12	0.326
4928	8/23/96	12:19:40	335.14	0.325

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4469	8/23/96	12:04:30	334.40	0.365
4468	8/23/96	12:04:28	334.42	0.367
4467	8/23/96	12:04:26	334.45	0.364
4466	8/23/96	12:04:24	334.47	0.362
4465	8/23/96	12:04:22	334.49	0.363
4464	8/23/96	12:04:20	334.51	0.363
4463	8/23/96	12:04:18	334.53	0.371
4462	8/23/96	12:04:16	334.55	0.374
4461	8/23/96	12:04:14	334.57	0.374
4460	8/23/96	12:04:12	334.59	0.374
4459	8/23/96	12:04:10	334.62	0.368
4458	8/23/96	12:04:08	334.64	0.361
4457	8/23/96	12:04:06	334.66	0.365
4456	8/23/96	12:04:04	334.68	0.369
4455	8/23/96	12:04:02	334.70	0.367
4454	8/23/96	12:04:00	334.71	0.367
4453	8/23/96	12:03:58	334.73	0.367
4452	8/23/96	12:03:56	334.74	0.364
4451	8/23/96	12:03:54	334.76	0.361
4450	8/23/96	12:03:52	334.77	0.362
4449	8/23/96	12:03:50	334.79	0.362
4448	8/23/96	12:03:48	334.80	0.361
4447	8/23/96	12:03:46	334.82	0.359
4446	8/23/96	12:03:44	334.83	0.356
4445	8/23/96	12:03:42	334.85	0.358
4444	8/23/96	12:03:40	334.86	0.362
4443	8/23/96	12:03:38	334.88	0.362
4442	8/23/96	12:03:36	334.89	0.365
4441	8/23/96	12:03:34	334.91	0.366
4440	8/23/96	12:03:32	334.92	0.361
4439	8/23/96	12:03:30	334.94	0.363
4438	8/23/96	12:03:28	334.95	0.367
4437	8/23/96	12:03:26	334.97	0.365
4436	8/23/96	12:03:24	334.98	0.362
4435	8/23/96	12:03:22	335.00	0.366
4434	8/23/96	12:03:20	335.01	0.364
4433	8/23/96	12:03:18	335.03	0.361
4432	8/23/96	12:03:16	335.04	0.359
4431	8/23/96	12:03:14	335.06	0.354
4430	8/23/96	12:03:12	335.07	0.36
4429	8/23/96	12:03:10	335.09	0.363
4428	8/23/96	12:03:08	335.10	0.359
4427	8/23/96	12:03:06	335.11	0.361
4426	8/23/96	12:03:04	335.13	0.366
4425	8/23/96	12:03:02	335.14	0.366
4424	8/23/96	12:03:00	335.16	0.364
4423	8/23/96	12:02:58	335.17	0.367
4422	8/23/96	12:02:56	335.19	0.375
4421	8/23/96	12:02:54	335.20	0.38
4420	8/23/96	12:02:52	335.22	0.38
4419	8/23/96	12:02:50	335.23	0.376
4418	8/23/96	12:02:48	335.25	0.371
4417	8/23/96	12:02:46	335.26	0.376
4416	8/23/96	12:02:44	335.28	0.382
4415	8/23/96	12:02:42	335.29	0.383
4414	8/23/96	12:02:40	335.31	0.382
4413	8/23/96	12:02:38	335.32	0.379
4412	8/23/96	12:02:36	335.34	0.374
4411	8/23/96	12:02:34	335.35	0.366

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4929	8/23/96	12:19:42	335.15	0.326
4930	8/23/96	12:19:44	335.17	0.328
4931	8/23/96	12:19:46	335.19	0.332
4932	8/23/96	12:19:48	335.20	0.345
4933	8/23/96	12:19:50	335.22	0.349
4934	8/23/96	12:19:52	335.24	0.346
4935	8/23/96	12:19:54	335.26	0.348
4936	8/23/96	12:19:56	335.27	0.354
4937	8/23/96	12:19:58	335.29	0.356
4938	8/23/96	12:20:00	335.31	0.352
4939	8/23/96	12:20:02	335.32	0.349
4940	8/23/96	12:20:04	335.34	0.346
4941	8/23/96	12:20:06	335.36	0.347
4942	8/23/96	12:20:08	335.38	0.353
4943	8/23/96	12:20:10	335.39	0.353
4944	8/23/96	12:20:12	335.41	0.349
4945	8/23/96	12:20:14	335.43	0.346
4946	8/23/96	12:20:16	335.44	0.35
4947	8/23/96	12:20:18	335.46	0.356
4948	8/23/96	12:20:20	335.48	0.357
4949	8/23/96	12:20:22	335.49	0.355
4950	8/23/96	12:20:24	335.51	0.354
4951	8/23/96	12:20:26	335.53	0.356
4952	8/23/96	12:20:28	335.55	0.357
4953	8/23/96	12:20:30	335.56	0.359
4954	8/23/96	12:20:32	335.58	0.363
4955	8/23/96	12:20:34	335.60	0.363
4956	8/23/96	12:20:36	335.61	0.364
4957	8/23/96	12:20:38	335.63	0.367
4958	8/23/96	12:20:40	335.65	0.366
4959	8/23/96	12:20:42	335.67	0.363
4960	8/23/96	12:20:44	335.68	0.361
4961	8/23/96	12:20:46	335.70	0.361
4962	8/23/96	12:20:48	335.72	0.359
4963	8/23/96	12:20:50	335.73	0.355
4964	8/23/96	12:20:52	335.75	0.348
4965	8/23/96	12:20:54	335.77	0.344
4966	8/23/96	12:20:56	335.78	0.353
4967	8/23/96	12:20:58	335.80	0.358
4968	8/23/96	12:21:00	335.82	0.357
4969	8/23/96	12:21:02	335.83	0.359
4970	8/23/96	12:21:04	335.85	0.359
4971	8/23/96	12:21:06	335.87	0.363
4972	8/23/96	12:21:08	335.88	0.365
4973	8/23/96	12:21:10	335.90	0.358
4974	8/23/96	12:21:12	335.92	0.36
4975	8/23/96	12:21:14	335.93	0.371
4976	8/23/96	12:21:16	335.95	0.375
4977	8/23/96	12:21:18	335.97	0.377
4978	8/23/96	12:21:20	335.99	0.381
4979	8/23/96	12:21:22	336.00	0.382
4980	8/23/96	12:21:24	336.02	0.375
4981	8/23/96	12:21:26	336.04	0.37
4982	8/23/96	12:21:28	336.05	0.364
4983	8/23/96	12:21:30	336.07	0.356
4984	8/23/96	12:21:32	336.09	0.349
4985	8/23/96	12:21:34	336.10	0.343
4986	8/23/96	12:21:36	336.12	0.338
4987	8/23/96	12:21:38	336.14	0 331

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4410	8/23/96	12:02:32	335.37	0.37
4409	8/23/96	12:02:30	335.38	0.37
4408	8/23/96	12:02:28	335.40	0.362
4407	8/23/96	12:02:26	335.41	0.358
4406	8/23/96	12:02:24	335.43	0.348
4405	8/23/96	12:02:22	335.44	0.344
4404	8/23/96	12:02:20	335.46	0.349
4403	8/23/96	12:02:18	335.47	0.348
4402	8/23/96	12:02:16	335.49	0.332
4401	8/23/96	12:02:14	335.50	0.312
4400	8/23/96	12:02:12	335.52	0.312
4399	8/23/96	12:02:10	335.53	0.328
4398	8/23/96	12:02:08	335.54	0.341
4397	8/23/96	12:02:06	335.56	0.349
4396	8/23/96	12:02:04	335.57	0.353
4395	8/23/96	12:02:02	335.59	0.357
4394	8/23/96	12:02:00	335.60	0.363
4393	8/23/96	12:01:58	335.62	0.365
4392	8/23/96	12:01:56	335.63	0.364
4391	8/23/96	12:01:54	335.65	0.367
4390	8/23/96	12:01:52	335.66	0.362
4389	8/23/96	12:01:50	335.68	0.351
4388	8/23/96	12:01:48	335.69	0.342
4387	8/23/96	12:01:47	335.70	0.341
4386	8/23/96	12:01:46	335.71	0.335
4385	8/23/96	12:01:44	335.73	0.334
4384	8/23/96	12:01:42	335.74	0.341
4383	8/23/96	12:01:40	335.76	0.348
4382	8/23/96	12:01:38	335.78	0.348
4381	8/23/96	12:01:36	335.80	0.349
4380	8/23/96	12:01:34	335.82	0.351
4379	8/23/96	12:01:32	335.83	0.348
4378	8/23/96	12.01:30	335.85	0.348
4377	8/23/96	12:01:28	335.87	0.347
4376	8/23/96	12:01:26	335.89	0.345
4375	8/23/96	12:01:24	335.91	0.351
4374	8/23/96	12:01:22	335.92	0.36
4373	8/23/96	12:01:20	335.94	0.36
4372	8/23/96	12:01:18	335.96	0.354
4371	8/23/96	12:01:16	335.98	0.35
4370	8/23/96	12:01:14	335.99	0.345
4369	8/23/96	12:01:12	336.01	0.344
4368	8/23/96	12:01:10	336.03	0.341
4367	8/23/96	12:01:08	336.05	0.323
4366	8/23/96	12:01:06	336.07	0.301
4365	8/23/96	12:01:04	336.08	0.289
4364	8/23/96	12:01:02	336.10	0.289
4363	8/23/96	12:01:00	336.12	0.295
4362	8/23/96	12:00:58	336.14	0.303
4361	8/23/96	12:00:56	336.15	0.311
4360	8/23/96	12:00:54	336.17	0.325
4359	8/23/96	12:00:52	336.19	0.347
4358	8/23/96	12:00:50	336.21	0.363
4357	8/23/96	12:00:48	336.23	0.361
4356	8/23/96	12:00:46	336.24	0.353
4355	8/23/96	12:00:44	336.26	0.349
4354	8/23/96	12:00:42	336.28	0.353
4353	8/23/96	12:00:40	336.30	0.349
4352	8/23/96	12:00:38	336.32	0.338

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4988	8/23/96	12:21:40	336.15	0.321
4989	8/23/96	12:21:42	336.17	0.315
4990	8/23/96	12:21:44	336.19	0.324
4991	8/23/96	12:21:46	336.20	0.323
4992	8/23/96	12:21:48	336.22	0.321
4993	8/23/96	12:21:50	336.24	0.321
4994	8/23/96	12:21:52	336.25	0.315
4995	8/23/96	12:21:54	336.27	0.314
4996	8/23/96	12:21:56	336.29	0.311
4997	8/23/96	12:21:58	336.30	0.304
4998	8/23/96	12:22:00	336.32	0.29
4999	8/23/96	12:22:02	336.34	0.27
5000	8/23/96	12:22:04	336.35	0.256
5001	8/23/96	12:22:06	336.37	0.254
5002	8/23/96	12:22:08	336.39	0.254
5003	8/23/96	12:22:10	336.40	0.253
5004	8/23/96	12:22:12	336.42	0.26
5005	8/23/96	12:22:14	336.44	0.276
5006	8/23/96	12:22:16	336.45	0.294
5007	8/23/96	12:22:18	336.47	0.298
5008	8/23/96	12:22:20	336.49	0.3
5009	8/23/96	12:22:22	336.50	0.309
5010	8/23/96	12:22:24	336.52	0.315
5011	8/23/96	12:22:26	336.54	0.316
5012	8/23/96	12:22:28	336.56	0.307
5013	8/23/96	12:22:30	336.57	0.286
5014	8/23/96	12:22:32	336.59	0.257
5015	8/23/96	12:22:34	336.61	0.246
5016	8/23/96	12:22:36	336.62	0.258
5017	8/23/96	12:22:38	336.64	0.266
5018	8/23/96	12:22:40	336.66	0.272
5019	8/23/96	12:22:42	336.67	0.284
5020	8/23/96	12:22:44	336.69	0.289
5021	8/23/96	12:22:46	336.71	0.29
5022	8/23/96	12:22:48	336.72	0.292
5023	8/23/96	12:22:50	336.74	0.298
5024	8/23/96	12:22:52	336.76	0.302
5025	8/23/96	12:22:54	336.77	0.307
5026	8/23/96	12:22:56	336.79	0.318
5027	8/23/96	12:22:58	336.81	0.324
5028	8/23/96	12:23:00	336.82	0.329
5029	8/23/96	12:23:02	336.84	0.339
5030	8/23/96	12:23:04	336.86	0.351
5031	8/23/96	12:23:06	336.87	0.353
5032	8/23/96	12:23:08	336.89	0.349
5033	8/23/96	12:23:10	336.91	0.348
5034	8/23/96	12:23:12	336.92	0.344
5035	8/23/96	12:23:14	336.94	0.34
5036	8/23/96	12:23:16	336.96	0.33
5037	8/23/96	12:23:18	336.97	0.306
5038	8/23/96	12:23:20	336.99	0.27
5039	8/23/96	12:23:22	337.01	0.24
5040	8/23/96	12:23:24	337.02	0.231
5041	8/23/96	12:23:26	337.04	0.237
5042	8/23/96	12:23:28	337.06	0.242
5043	8/23/96	12:23:30	337.07	0.232
5044	8/23/96	12:23:32	337.09	0.219
5045	8/23/96	12:23:33	337.10	0.212
5046	8/23/96	12:23:34	337.11	0.211

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4351	8/23/96	12:00:36	336.33	0.326
4350	8/23/96	12:00:34	336.35	0.313
4349	8/23/96	12:00:32	336.37	0.305
4348	8/23/96	12:00:30	336.39	0.3
4347	8/23/96	12:00:28	336.40	0.291
4346	8/23/96	12:00:26	336.42	0.28
4345	8/23/96	12:00:24	336.44	0.283
4344	8/23/96	12:00:22	336.46	0.286
4343	8/23/96	12:00:20	336.48	0.285
4342	8/23/96	12:00:18	336.49	0.289
4341	8/23/96	12:00:16	336.51	0.289
4340	8/23/96	12:00:14	336.53	0.281
4339	8/23/96	12:00:12	336.55	0.283
4338	8/23/96	12:00:10	336.57	0.286
4337	8/23/96	12:00:08	336.58	0.276
4336	8/23/96	12:00:06	336.60	0.267
4335	8/23/96	12:00:04	336.62	0.254
4334	8/23/96	12:00:02	336.64	0.222
4333	8/23/96	12:00:00	336.65	0.192
4332	8/23/96	11:59:58	336.67	0.162
4331	8/23/96	11:59:56	336.69	0.135
4330	8/23/96	11:59:54	336.71	0.124
4329	8/23/96	11:59:52	336.73	0.119
4328	8/23/96	11:59:50	336.74	0.117
4327	8/23/96	11:59:48	336.76	0.123
4326	8/23/96	11:59:46	336.78	0.138
4325	8/23/96	11:59:44	336.80	0.15
4324	8/23/96	11:59:42	336.82	0.15
4323	8/23/96	11:59:40	336.83	0.149
4322	8/23/96	11:59:38	336.85	0.169
4321	8/23/96	11:59:36	336.87	0.191
4320	8/23/96	11:59:34	336.89	0.197
4319	8/23/96	11:59:32	336.90	0.195
4318	8/23/96	11:59:30	336.92	0.187
4317	8/23/96	11:59:28	336.94	0.184
4316	8/23/96	11:59:26	336.96	0.176
4315	8/23/96	11:59:24	336.98	0.165
4314	8/23/96	11:59:22	336.99	0.15
4313	8/23/96	11:59:20	337.01	0.137
4312	8/23/96	11:59:18	337.03	0.139
4311	8/23/96	11:59:16	337.05	0.153
4310	8/23/96	11:59:14	337.06	0.173
4309	8/23/96	11:59:12	337.08	0.187
4308	8/23/96	11:59:10	337.10	0.194
4307	8/23/96	11:59:08	337.12	0.195
4306	8/23/96	11:59:06	337.14	0.195
4305	8/23/96	11:59:04	337.16	0.183
4304	8/23/96	11:59:02	337.18	0.168
4303	8/23/96	11:59:00	337.19	0.153
4302	8/23/96	11:58:58	337.21	0.145
4301	8/23/96	11:58:56	337.23	0.147
4300	8/23/96	11:58:54	337.25	0.147
4299	8/23/96	11:58:52	337.27	0.137
4298	8/23/96	11:58:50	337.29	0.123
4297	8/23/96	11:58:48	337.31	0.116
4296	8/23/96	11:58:46	337.33	0.121
4295	8/23/96	11:58:44	337.34	0.119
4294	8/23/96	11:58:42	337.36	0.114
4293	8/23/96	11:58:40	337.38	0.117

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5047	8/23/96	12:23:36	337.13	0.207
5048	8/23/96	12:23:38	337.15	0.201
5049	8/23/96	12:23:40	337.17	0.187
5050	8/23/96	12:23:42	337.19	0.171
5051	8/23/96	12:23:44	337.21	0.167
5052	8/23/96	12:23:46	337.22	0.172
5053	8/23/96	12:23:48	337.24	0.179
5054	8/23/96	12:23:50	337.26	0.184
5055	8/23/96	12:23:52	337.28	0.179
5056	8/23/96	12:23:54	337.30	0.173
5057	8/23/96	12:23:56	337.32	0.162
5058	8/23/96	12:23:58	337.34	0.13
5059	8/23/96	12:24:00	337.36	0.11
5060	8/23/96	12:24:02	337.38	0.082
5061	8/23/96	12:24:04	337.40	0.089
5062	8/23/96	12:24:06	337.42	0.097
5063	8/23/96	12:24:08	337.43	0.104
5064	8/23/96	12:24:10	337.45	0.115
5065	8/23/96	12:24:12	337.47	0.129
5066	8/23/96	12:24:14	337.49	0.137
5067	8/23/96	12:24:16	337.51	0.138
5068	8/23/96	12:24:18	337.53	0.127
5069	8/23/96	12:24:20	337.55	0.117
5070	8/23/96	12:24:22	337.57	0.114
5071	8/23/96	12:24:24	337.59	0.1
5072	8/23/96	12:24:26	337.61	0.09
5073	8/23/96	12:24:28	337.63	0.096
5074	8/23/96	12:24:30	337.65	0.11
5075	8/23/96	12:24:32	337.66	0.142
5076	8/23/96	12:24:34	337.68	0.179
5077	8/23/96	12:24:36	337.70	0.191
5078	8/23/96	12:24:38	337.72	0.193
5079	8/23/96	12:24:40	337.74	0.189
5080	8/23/96	12:24:42	337.76	0.158
5081	8/23/96	12:24:44	337.78	0.127
5082	8/23/96	12:24:46	337.80	0.127
5083	8/23/96	12:24:48	337.82	0.124
5084	8/23/96	12:24:50	337.84	0.1
5085	8/23/96	12:24:52	337.86	0.088
5086	8/23/96	12:24:54	337.87	0.09
5087	8/23/96	12:24:56	337.89	0.09
5088	8/23/96	12:24:58	337.91	0.099
5089	8/23/96	12:25:00	337.93	0.107
5090	8/23/96	12:25:02	337.95	0.107
5091	8/23/96	12:25:04	337.97	0.102
5092	8/23/96	12:25:06	337.99	0.105
5093	8/23/96	12:25:08	338.01	0.108
5094	8/23/96	12:25:10	338.03	0.105
5095	8/23/96	12:25:12	338.05	0.106
5096	8/23/96	12:25:14	338.07	0 104
5097	8/23/96	12:25:16	338.09	0.1
5098	8/23/96	12:25:18	338.10	0.097
5099	8/23/96	12:25:20	338.12	0.089
5100	8/23/96	12:25:22	338.14	0.083
5101	8/23/96	12:25:24	338.16	0.075
5102	8/23/96	12:25:26	338.18	0.062
5103	8/23/96	12:25:28	338.20	0.056
5104	8/23/96	12:25:30	338.22	0.061

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
4292	8/23/96	11:58:38	337.40	0.13
4291	8/23/96	11:58:36	337.42	0.135
4290	8/23/96	11:58:34	337.44	0.13
4289	8/23/96	11:58:32	337.46	0.13
4288	8/23/96	11:58:30	337.48	0.13
4287	8/23/96	11:58:28	337.49	0.135
4286	8/23/96	11:58:26	337.51	0.144
4285	8/23/96	11:58:24	337.53	0.142
4284	8/23/96	11:58:22	337.55	0.14
4283	8/23/96	11:58:20	337.57	0.138
4282	8/23/96	11:58:18	337.59	0.137
4281	8/23/96	11:58:16	337.61	0.144
4280	8/23/96	11:58:14	337.63	0.148
4279	8/23/96	11:58:12	337.65	0.139
4278	8/23/96	11:58:10	337.66	0.134
4277	8/23/96	11:58:08	337.68	0.133
4276	8/23/96	11:58:06	337.70	0.129
4275	8/23/96	11:58:04	337.72	0.13
4274	8/23/96	11:58:02	337.74	0.127
4273	8/23/96	11:58:00	337.76	0.12
4272	8/23/96	11:57:58	337.78	0.115
4271	8/23/96	11:57:56	337.80	0.11
4270	8/23/96	11:57:54	337.81	0.104
4269	8/23/96	11:57:52	337.83	0.106
4268	8/23/96	11:57:50	337.85	0.109
4267	8/23/96	11:57:48	337.87	0.108
4266	8/23/96	11:57:46	337.89	0.107
4265	8/23/96	11:57:44	337.91	0.109
4264	8/23/96	11:57:42	337.93	0.108
4263	8/23/96	11:57:40	337.95	0.108
4262	8/23/96	11:57:38	337.96	0.107
4261	8/23/96	11:57:36	337.98	0.103
4260	8/23/96	11:57:34	338.00	0.098
4259	8/23/96	11:57:32	338.02	0.089
4258	8/23/96	11:57:30	338.04	0.08
4257	8/23/96	11:57:28	338.06	0.065
4256	8/23/96	11:57:26	338.08	0.049
4255	8/23/96	11:57:24	338.10	0.045
4254	8/23/96	11:57:22	338.12	0.04
4253	8/23/96	11:57:20	338.13	0.034
4252	8/23/96	11:57:18	338.15	0.028
4251	8/23/96	11:57:16	338.17	0.024
4250	8/23/96	11:57:14	338.19	0.016
4249	8/23/96	11:57:13	338.20	0.01

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
August 23, 1997

LEFT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)
5105	8/23/96	12:25:32	338.24	0.067
5106	8/23/96	12:25:34	338.26	0.078
5107	8/23/96	12:25:36	338.28	0.091
5108	8/23/96	12:25:38	338.30	0.095
5109	8/23/96	12:25:40	338.32	0.094
5110	8/23/96	12:25:42	338.34	0.086
5111	8/23/96	12:25:44	338.35	0.068
5112	8/23/96	12:25:46	338.37	0.066
5113	8/23/96	12:25:48	338.39	0.09
5114	8/23/96	12:25:50	338.41	0.097
5115	8/23/96	12:25:52	338.43	0.081
5116	8/23/96	12:25:54	338.45	0.058
5117	8/23/96	12:25:56	338.47	0.039
5118	8/23/96	12:25:58	338.49	0.026
5119	8/23/96	12:26:00	338.51	0.015
5120	8/23/96	12:26:02	338.53	0.008
5121	8/23/96	12:26:04	338.55	ND
5122	8/23/96	12:26:06	338.57	ND
5123	8/23/96	12:26:08	338.59	ND
5124	8/23/96	12:26:10	338.61	ND
5125	8/23/96	12:26:12	338.62	ND
5126	8/23/96	12:26:14	338.64	ND
5127	8/23/96	12:26:16	338.66	ND
5128	8/23/96	12:26:18	338.68	ND
5129	8/23/96	12:26:20	338.70	ND
5130	8/23/96	12:26:22	338.72	ND
5131	8/23/96	12:26:24	338.74	ND
5132	8/23/96	12:26:26	338.76	ND
5133	8/23/96	12:26:28	338.78	ND
5134	8/23/96	12:26:30	338.80	ND
5135	8/23/96	12:26:32	338.82	ND
5136	8/23/96	12:26:34	338.84	ND
5137	8/23/96	12:26:36	338.86	ND
5138	8/23/96	12:26:38	338.88	ND
5139	8/23/96	12:26:40	338.89	ND
5140	8/23/96	12:26:42	338.91	ND
5141	8/23/96	12:26:44	338.93	ND
5142	8/23/96	12:26:46	338.95	ND
5143	8/23/96	12:26:48	338.97	ND
5144	8/23/96	12:26:50	338.99	ND
5145	8/23/96	12:26:52	339.01	ND
5146	8/23/96	12:26:54	339.03	ND
5147	8/23/96	12:26:56	339.05	ND
5148	8/23/96	12:26:58	339.07	ND
5149	8/23/96	12:27:00	339.09	ND
5150	8/23/96	12:27:02	339.11	ND
5151	8/23/96	12:27:04	339.13	ND
5152	8/23/96	12:27:06	339.15	ND
5153	8/23/96	12:27:08	339.16	ND
5154	8/23/96	12:27:10	339.18	ND
5155	8/23/96	12:27:12	339.20	ND
5156	8/23/96	12:27:14	339.22	ND
5157	8/23/96	12:27:16	339.24	ND
5158	8/23/96	12:27:18	339.26	ND
5159	8/23/96	12:27:20	339.28	ND
5160	8/23/96	12:27:22	339.30	ND

RIGHT DESCENDING BANK

Sample ID	Date	Time	River Mile	Concentration (ppb)

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
6014	8/23/96	14:23:00	330.90	ND
6013	8/23/96	14:22:59	330.91	ND
6012	8/23/96	14:22:57	330.94	ND
6011	8/23/96	14:22:55	330.96	ND
6010	8/23/96	14:22:53	330.99	ND
6009	8/23/96	14:22:51	331.01	ND
6008	8/23/96	14:22:49	331.04	ND
6007	8/23/96	14:22:47	331.06	ND
6006	8/23/96	14:22:45	331.09	ND
6005	8/23/96	14:22:43	331.11	ND
6004	8/23/96	14:22:41	331.14	ND
6003	8/23/96	14:22:39	331.16	ND
6002	8/23/96	14:22:37	331.19	ND
6001	8/23/96	14:22:35	331.21	ND
6000	8/23/96	14:22:33	331.24	ND
5999	8/23/96	14:22:31	331.26	ND
5998	8/23/96	14:22:29	331.29	ND
5997	8/23/96	14:22:27	331.31	ND
5996	8/23/96	14:22:25	331.34	ND
5995	8/23/96	14:22:23	331.36	ND
5994	8/23/96	14:22:21	331.39	ND
5993	8/23/96	14:22:19	331.41	ND
5992	8/23/96	14:22:17	331.44	ND
5991	8/23/96	14:22:15	331.46	ND
5990	8/23/96	14:22:13	331.49	ND
5989	8/23/96	14:22:11	331.51	ND
5988	8/23/96	14:22:09	331.54	ND
5987	8/23/96	14:22:07	331.56	ND
5986	8/23/96	14:22:05	331.59	ND
5985	8/23/96	14:22.03	331.61	ND
5984	8/23/96	14:22:01	331.64	ND
5983	8/23/96	14:21:59	331.66	ND
5982	8/23/96	14:21:57	331.69	ND
5981	8/23/96	14:21:55	331.71	ND
5980	8/23/96	14:21:53	331.74	ND
5979	8/23/96	14:21:51	331.76	ND
5978	8/23/96	14:21:49	331.79	ND
5977	8/23/96	14:21:47	331.81	ND
5976	8/23/96	14:21:45	331.84	ND
5975	8/23/96	14:21:43	331.86	ND
5974	8/23/96	14:21:41	331.89	ND
5973	8/23/96	14:21:40	331.90	ND
5972	8/23/96	14:21:39	331.91	ND
5971	8/23/96	14:21:37	331.92	ND
5970	8/23/96	14:21:35	331.94	ND
5969	8/23/96	14:21:33	331.96	ND
5968	8/23/96	14:21:31	331.97	ND
5967	8/23/96	14:21:29	331.99	ND
5966	8/23/96	14:21:27	332.00	ND
5965	8/23/96	14:21:25	332.02	ND
5964	8/23/96	14:21:23	332.04	ND
5963	8/23/96	14:21:21	332.05	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5962	8/23/96	14:21:19	332.07	ND
5961	8/23/96	14:21:17	332.08	ND
5960	8/23/96	14:21:15	332.10	ND
5959	8/23/96	14:21:13	332.12	ND
5958	8/23/96	14:21:11	332.13	ND
5957	8/23/96	14:21:09	332.15	ND
5956	8/23/96	14:21:07	332.16	ND
5955	8/23/96	14:21:05	332.18	0.007
5954	8/23/96	14:21:03	332.20	0.015
5953	8/23/96	14:21:01	332.21	0.02
5952	8/23/96	14:20:59	332.23	0.025
5951	8/23/96	14:20:57	332.24	0.037
5950	8/23/96	14:20:55	332.26	0.042
5949	8/23/96	14:20:53	332.28	0.043
5948	8/23/96	14:20:51	332.29	0.05
5947	8/23/96	14:20:49	332.31	0.053
5946	8/23/96	14:20:47	332.32	0.044
5945	8/23/96	14:20:45	332.34	0.035
5944	8/23/96	14:20:43	332.35	0.03
5943	8/23/96	14:20:41	332.37	0.024
5942	8/23/96	14:20:39	332.39	0.017
5941	8/23/96	14:20:37	332.40	0.011
5940	8/23/96	14:20:35	332.42	0.013
5939	8/23/96	14:20:33	332.43	0.016
5938	8/23/96	14:20:31	332.45	0.013
5937	8/23/96	14:20:29	332.47	0.006
5936	8/23/96	14:20:27	332.48	0.011
5935	8/23/96	14:20:25	332.50	0.019
5934	8/23/96	14:20:23	332.51	0.027
5933	8/23/96	14:20:21	332.53	0.037
5932	8/23/96	14:20:19	332.55	0.042
5931	8/23/96	14:20:17	332.56	0.046
5930	8/23/96	14:20:15	332.58	0.05
5929	8/23/96	14:20:13	332.59	0.049
5928	8/23/96	14:20:11	332.61	0.047
5927	8/23/96	14:20:09	332.63	0.048
5926	8/23/96	14:20:07	332.64	0.036
5925	8/23/96	14:20:05	332.66	0.017
5924	8/23/96	14:20:03	332.67	0.012
5923	8/23/96	14:20:01	332.69	0.012
5922	8/23/96	14:19:59	332.71	0.009
5921	8/23/96	14:19:57	332.72	0.013
5920	8/23/96	14:19:55	332.74	0.022
5919	8/23/96	14:19:53	332.75	0.03
5918	8/23/96	14:19:51	332.77	0.037
5917	8/23/96	14:19:49	332.79	0.039
5916	8/23/96	14:19:47	332.80	0.036
5915	8/23/96	14:19:45	332.82	0.036
5914	8/23/96	14:19:43	332.83	0.037
5913	8/23/96	14:19:41	332.85	0.037
5912	8/23/96	14:19:39	332.87	0.034
5911	8/23/96	14:19:37	332.88	0.033

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5910	8/23/96	14:19:35	332.90	0.033
5909	8/23/96	14:19:33	332.91	0.03
5908	8/23/96	14:19:31	332.93	0.024
5907	8/23/96	14:19:29	332.95	0.025
5906	8/23/96	14:19:27	332.96	0.033
5905	8/23/96	14:19:25	332.98	0.035
5904	8/23/96	14:19:23	332.99	0.035
5903	8/23/96	14:19:21	333.01	0.037
5902	8/23/96	14:19:19	333.03	0.04
5901	8/23/96	14:19:17	333.04	0.047
5900	8/23/96	14:19:15	333.06	0.052
5899	8/23/96	14:19:13	333.07	0.051
5898	8/23/96	14:19:11	333.09	0.048
5897	8/23/96	14:19:09	333.10	0.051
5896	8/23/96	14:19:07	333.12	0.055
5895	8/23/96	14:19:05	333.14	0.059
5894	8/23/96	14:19:03	333.15	0.058
5893	8/23/96	14:19:01	333.17	0.059
5892	8/23/96	14:18:59	333.18	0.059
5891	8/23/96	14:18:57	333.20	0.064
5890	8/23/96	14:18:55	333.22	0.077
5889	8/23/96	14:18:53	333.24	0.082
5888	8/23/96	14:18:51	333.26	0.08
5887	8/23/96	14:18:49	333.28	0.078
5886	8/23/96	14:18:47	333.29	0.076
5885	8/23/96	14:18:45	333.31	0.071
5884	8/23/96	14:18:43	333.33	0.065
5883	8/23/96	14:18:41	333.35	0.063
5882	8/23/96	14:18:39	333.37	0.068
5881	8/23/96	14:18:37	333.39	0.077
5880	8/23/96	14:18:35	333.41	0.09
5879	8/23/96	14:18:33	333.43	0.11
5878	8/23/96	14:18:31	333.45	0.118
5877	8/23/96	14:18:29	333.47	0.12
5876	8/23/96	14:18:27	333.48	0.119
5875	8/23/96	14:18:25	333.50	0.106
5874	8/23/96	14:18:23	333.52	0.097
5873	8/23/96	14:18:21	333.54	0.09
5872	8/23/96	14:18:19	333.56	0.082
5871	8/23/96	14:18:17	333.58	0.092
5870	8/23/96	14:18:15	333.60	0.118
5869	8/23/96	14:18:13	333.62	0.138
5868	8/23/96	14:18:11	333.64	0.151
5867	8/23/96	14:18:09	333.66	0.159
5866	8/23/96	14:18:07	333.67	0.165
5865	8/23/96	14:18:05	333.69	0.175
5864	8/23/96	14:18:03	333.71	0.173
5863	8/23/96	14:18:01	333.73	0.171
5862	8/23/96	14:17:59	333.75	0.188
5861	8/23/96	14:17:57	333.77	0.217
5860	8/23/96	14:17:55	333.79	0.229
5859	8/23/96	14:17:53	333.81	0.221

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5858	8/23/96	14:17:51	333.83	0.216
5857	8/23/96	14:17:49	333.85	0.218
5856	8/23/96	14:17:47	333.86	0.208
5855	8/23/96	14:17:45	333.88	0.193
5854	8/23/96	14:17:43	333.90	0.195
5853	8/23/96	14:17:41	333.92	0.198
5852	8/23/96	14:17:39	333.94	0.203
5851	8/23/96	14:17:37	333.96	0.212
5850	8/23/96	14:17:35	333.98	0.218
5849	8/23/96	14:17:33	334.00	0.219
5848	8/23/96	14:17:31	334.02	0.214
5847	8/23/96	14:17:29	334.04	0.206
5846	8/23/96	14:17:27	334.05	0.194
5845	8/23/96	14:17:25	334.07	0.184
5844	8/23/96	14:17:23	334.09	0.18
5843	8/23/96	14:17:21	334.11	0.169
5842	8/23/96	14:17:19	334.13	0.157
5841	8/23/96	14:17:17	334.15	0.155
5840	8/23/96	14:17:15	334.17	0.16
5839	8/23/96	14:17:13	334.19	0.167
5838	8/23/96	14:17:11	334.21	0.175
5837	8/23/96	14:17:09	334.23	0.169
5836	8/23/96	14:17:07	334.24	0.147
5835	8/23/96	14:17:05	334.26	0.134
5834	8/23/96	14:17:03	334.28	0.141
5833	8/23/96	14:17:01	334.30	0.154
5832	8/23/96	14:16:59	334.32	0.17
5831	8/23/96	14:16:57	334.34	0.186
5830	8/23/96	14:16:55	334.36	0.194
5829	8/23/96	14:16:53	334.38	0.2
5828	8/23/96	14:16:51	334.40	0.206
5827	8/23/96	14:16:49	334.42	0.212
5826	8/23/96	14:16:47	334.43	0.217
5825	8/23/96	14:16:45	334.45	0.217
5824	8/23/96	14:16:43	334.47	0.219
5823	8/23/96	14:16:41	334.49	0.22
5822	8/23/96	14:16:39	334.51	0.217
5821	8/23/96	14:16:37	334.53	0.213
5820	8/23/96	14:16:35	334.55	0.202
5819	8/23/96	14:16:33	334.57	0.196
5818	8/23/96	14:16:31	334.59	0.197
5817	8/23/96	14:16 29	334.61	0.206
5816	8/23/96	14:16:27	334.62	0.218
5815	8/23/96	14:16:25	334.64	0.207
5814	8/23/96	14:16:23	334.66	0.189
5813	8/23/96	14:16:21	334.68	0.185
5812	8/23/96	14:16:19	334.70	0.191
5811	8/23/96	14:16:17	334.72	0.205
5810	8/23/96	14:16:15	334.73	0.215
5809	8/23/96	14:16:13	334.75	0.214
5808	8/23/96	14:16:11	334.76	0.212
5807	8/23/96	14:16:09	334.78	0.209

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5806	8/23/96	14:16:07	334.80	0.21
5805	8/23/96	14:16:05	334.81	0.222
5804	8/23/96	14:16:03	334.83	0.234
5803	8/23/96	14:16:01	334.85	0.234
5802	8/23/96	14:15:59	334.86	0.233
5801	8/23/96	14:15:57	334.88	0.236
5800	8/23/96	14:15:55	334.89	0.242
5799	8/23/96	14:15:53	334.91	0.236
5798	8/23/96	14:15:51	334.93	0.223
5797	8/23/96	14:15:49	334.94	0.227
5796	8/23/96	14:15:47	334.96	0.247
5795	8/23/96	14:15:45	334.97	0.261
5794	8/23/96	14:15:43	334.99	0.262
5793	8/23/96	14:15:41	335.01	0.268
5792	8/23/96	14:15:39	335.02	0.269
5791	8/23/96	14:15:37	335.04	0.269
5790	8/23/96	14:15:35	335.05	0.277
5789	8/23/96	14:15:33	335.07	0.28
5788	8/23/96	14:15:31	335.09	0.282
5787	8/23/96	14:15:29	335.10	0.283
5786	8/23/96	14:15:27	335.12	0.283
5785	8/23/96	14:15:25	335.14	0.281
5784	8/23/96	14:15:23	335.15	0.282
5783	8/23/96	14:15:21	335.17	0.283
5782	8/23/96	14:15:19	335.18	0.285
5781	8/23/96	14:15:17	335.20	0.287
5780	8/23/96	14:15:15	335.22	0.287
5779	8/23/96	14:15:13	335.23	0.285
5778	8/23/96	14:15:11	335.25	0.281
5777	8/23/96	14:15:09	335.26	0.281
5776	8/23/96	14:15:07	335.28	0.289
5775	8/23/96	14:15:05	335.30	0.293
5774	8/23/96	14:15:03	335.31	0.292
5773	8/23/96	14:15:01	335.33	0.29
5772	8/23/96	14:14:59	335.35	0.294
5771	8/23/96	14:14:57	335.36	0.303
5770	8/23/96	14:14:55	335.38	0.303
5769	8/23/96	14:14:53	335.39	0.3
5768	8/23/96	14:14:51	335.41	0.302
5767	8/23/96	14:14:49	335.43	0.304
5766	8/23/96	14:14:47	335.44	0.302
5765	8/23/96	14:14:45	335.46	0.312
5764	8/23/96	14:14:43	335.47	0.318
5763	8/23/96	14:14:41	335.49	0.322
5762	8/23/96	14:14:39	335.51	0.327
5761	8/23/96	14:14:37	335.52	0.318
5760	8/23/96	14:14:35	335.54	0.318
5759	8/23/96	14:14:33	335.55	0.324
5758	8/23/96	14:14:31	335.57	0.324
5757	8/23/96	14:14:29	335.59	0.314
5756	8/23/96	14:14:27	335.60	0.306
5755	8/23/96	14:14:25	335.62	0.304

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5754	8/23/96	14:14:23	335.64	0.292
5753	8/23/96	14:14:21	335.65	0.289
5752	8/23/96	14:14:19	335.67	0.293
5751	8/23/96	14:14:17	335.68	0.311
5750	8/23/96	14:14:15	335.70	0.326
5749	8/23/96	14:14:13	335.72	0.327
5748	8/23/96	14:14:11	335.74	0.324
5747	8/23/96	14:14:09	335.75	0.325
5746	8/23/96	14:14:07	335.77	0.323
5745	8/23/96	14:14:05	335.79	0.312
5744	8/23/96	14:14:03	335.81	0.312
5743	8/23/96	14:14:01	335.83	0.317
5742	8/23/96	14:13:59	335.84	0.321
5741	8/23/96	14:13:57	335.86	0.326
5740	8/23/96	14:13:55	335.88	0.334
5739	8/23/96	14:13:53	335.90	0.34
5738	8/23/96	14:13:51	335.92	0.339
5737	8/23/96	14:13:49	335.93	0.339
5736	8/23/96	14:13:47	335.95	0.341
5735	8/23/96	14:13:45	335.97	0.337
5734	8/23/96	14:13:43	335.99	0.333
5733	8/23/96	14:13:41	336.01	0.335
5732	8/23/96	14:13:39	336.03	0.335
5731	8/23/96	14:13:37	336.04	0.335
5730	8/23/96	14:13:35	336.06	0.336
5729	8/23/96	14:13:33	336.08	0.33
5728	8/23/96	14:13:31	336.10	0.324
5727	8/23/96	14:13:29	336.12	0.329
5726	8/23/96	14:13:27	336.13	0.327
5725	8/23/96	14:13:25	336.15	0.316
5724	8/23/96	14:13:23	336.17	0.317
5723	8/23/96	14:13:21	336.19	0.323
5722	8/23/96	14:13:19	336.21	0.333
5721	8/23/96	14:13:17	336.22	0.332
5720	8/23/96	14:13:15	336.24	0.325
5719	8/23/96	14:13:13	336.26	0.333
5718	8/23/96	14:13:11	336.28	0.343
5717	8/23/96	14:13:09	336.30	0.343
5716	8/23/96	14:13:07	336.31	0.341
5715	8/23/96	14:13:05	336.33	0.339
5714	8/23/96	14:13:03	336.35	0.33
5713	8/23/96	14:13:01	336.37	0.313
5712	8/23/96	14:12:59	336.39	0.305
5711	8/23/96	14:12:57	336.40	0.31
5710	8/23/96	14:12:55	336.42	0.319
5709	8/23/96	14:12:53	336.44	0.326
5708	8/23/96	14:12:51	336.46	0.332
5707	8/23/96	14:12:49	336.48	0.333
5706	8/23/96	14:12:47	336.49	0.333
5705	8/23/96	14:12:45	336.51	0.333
5704	8/23/96	14:12:43	336.53	0.333
5703	8/23/96	14:12:41	336.55	0.336

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5702	8/23/96	14:12:39	336.57	0.338
5701	8/23/96	14:12:37	336.59	0.344
5700	8/23/96	14:12:35	336.60	0.346
5699	8/23/96	14:12:33	336.62	0.342
5698	8/23/96	14:12:31	336.64	0.348
5697	8/23/96	14:12:29	336.66	0.347
5696	8/23/96	14:12:27	336.68	0.334
5695	8/23/96	14:12:25	336.69	0.336
5694	8/23/96	14:12:23	336.71	0.344
5693	8/23/96	14:12:21	336.73	0.337
5692	8/23/96	14:12:19	336.75	0.327
5691	8/23/96	14:12:17	336.77	0.331
5690	8/23/96	14:12:15	336.78	0.335
5689	8/23/96	14:12:13	336.80	0.332
5688	8/23/96	14:12:11	336.82	0.332
5687	8/23/96	14:12:09	336.84	0.336
5686	8/23/96	14:12:07	336.86	0.342
5685	8/23/96	14:12:05	336.87	0.342
5684	8/23/96	14:12:03	336.89	0.337
5683	8/23/96	14:12:01	336.91	0.338
5682	8/23/96	14:11:59	336.93	0.334
5681	8/23/96	14:11:57	336.95	0.331
5680	8/23/96	14:11:55	336.96	0.337
5679	8/23/96	14:11:53	336.98	0.344
5678	8/23/96	14:11:51	337.00	0.346
5677	8/23/96	14:11:49	337.02	0.34
5676	8/23/96	14:11:47	337.04	0.338
5675	8/23/96	14:11:45	337.05	0.34
5674	8/23/96	14:11:43	337.07	0.339
5673	8/23/96	14:11:41	337.09	0.341
5672	8/23/96	14:11:40	337.10	0.353
5671	8/23/96	14:11:39	337.11	0.371
5670	8/23/96	14:11:37	337.13	0.353
5669	8/23/96	14:11:35	337.15	0.304
5668	8/23/96	14:11:33	337.17	0.306
5667	8/23/96	14:11:31	337.19	0.307
5666	8/23/96	14:11:29	337.20	0.307
5665	8/23/96	14:11:27	337.22	0.311
5664	8/23/96	14:11:25	337.24	0.311
5663	8/23/96	14:11:23	337.26	0.314
5662	8/23/96	14:11:21	337.28	0.324
5661	8/23/96	14:11:19	337.30	0.326
5660	8/23/96	14:11:17	337.32	0.321
5659	8/23/96	14:11:15	337.34	0.311
5658	8/23/96	14:11:13	337.36	0.309
5657	8/23/96	14.11:11	337.38	0.314
5656	8/23/96	14:11:09	337.39	0.307
5655	8/23/96	14:11:07	337.41	0.294
5654	8/23/96	14:11:05	337.43	0.295
5653	8/23/96	14:11:03	337.45	0.301
5652	8/23/96	14:11:01	337.47	0.305
5651	8/23/96	14:10:59	337.49	0.308

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5650	8/23/96	14:10:57	337.51	0.303
5649	8/23/96	14:10:55	337.53	0.304
5648	8/23/96	14:10:53	337.55	0.308
5647	8/23/96	14:10:51	337.56	0.3
5646	8/23/96	14:10:49	337.58	0.296
5645	8/23/96	14:10:47	337.60	0.291
5644	8/23/96	14:10:45	337.62	0.286
5643	8/23/96	14:10:43	337.64	0.286
5642	8/23/96	14:10:41	337.66	0.289
5641	8/23/96	14:10:39	337.68	0.287
5640	8/23/96	14:10:37	337.70	0.282
5639	8/23/96	14:10:35	337.72	0.281
5638	8/23/96	14:10:33	337.74	0.283
5637	8/23/96	14:10:31	337.75	0.283
5636	8/23/96	14:10:29	337.77	0.271
5635	8/23/96	14:10:27	337.79	0.248
5634	8/23/96	14:10:25	337.81	0.254
5633	8/23/96	14:10:23	337.83	0.278
5632	8/23/96	14:10:21	337.85	0.292
5631	8/23/96	14:10:19	337.87	0.286
5630	8/23/96	14:10:17	337.89	0.264
5629	8/23/96	14:10:15	337.91	0.239
5628	8/23/96	14:10:13	337.93	0.231
5627	8/23/96	14:10:11	337.94	0.235
5626	8/23/96	14:10:09	337.96	0.238
5625	8/23/96	14:10:07	337.98	0.238
5624	8/23/96	14:10:05	338.00	0.233
5623	8/23/96	14:10:03	338.02	0.226
5622	8/23/96	14:10:01	338.04	0.22
5621	8/23/96	14:09:59	338.06	0.209
5620	8/23/96	14:09:57	338.08	0.195
5619	8/23/96	14:09:55	338.10	0.188
5618	8/23/96	14:09:53	338.11	0.182
5617	8/23/96	14:09:51	338.13	0.172
5616	8/23/96	14:09:49	338.15	0.169
5615	8/23/96	14:09:47	338.17	0.166
5614	8/23/96	14:09:45	338.19	0.159
5613	8/23/96	14:09:44	338.20	0.152
5612	8/23/96	14:09:43	338.21	0.143
5611	8/23/96	14:09:41	338.23	0.131
5610	8/23/96	14:09:39	338.25	0.135
5609	8/23/96	14:09:37	338.27	0.137
5608	8/23/96	14:09:35	338.29	0.136
5607	8/23/96	14:09:33	338.31	0.142
5606	8/23/96	14:09:31	338.33	0.151
5605	8/23/96	14:09:29	338.36	0.134
5604	8/23/96	14:09:27	338.38	0.109
5603	8/23/96	14:09:25	338.40	0.096
5602	8/23/96	14:09:23	338.42	0.099
5601	8/23/96	14:09:21	338.44	0.111
5600	8/23/96	14:09:19	338.46	0.118
5599	8/23/96	14:09:17	338.48	0.121

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

Midstream

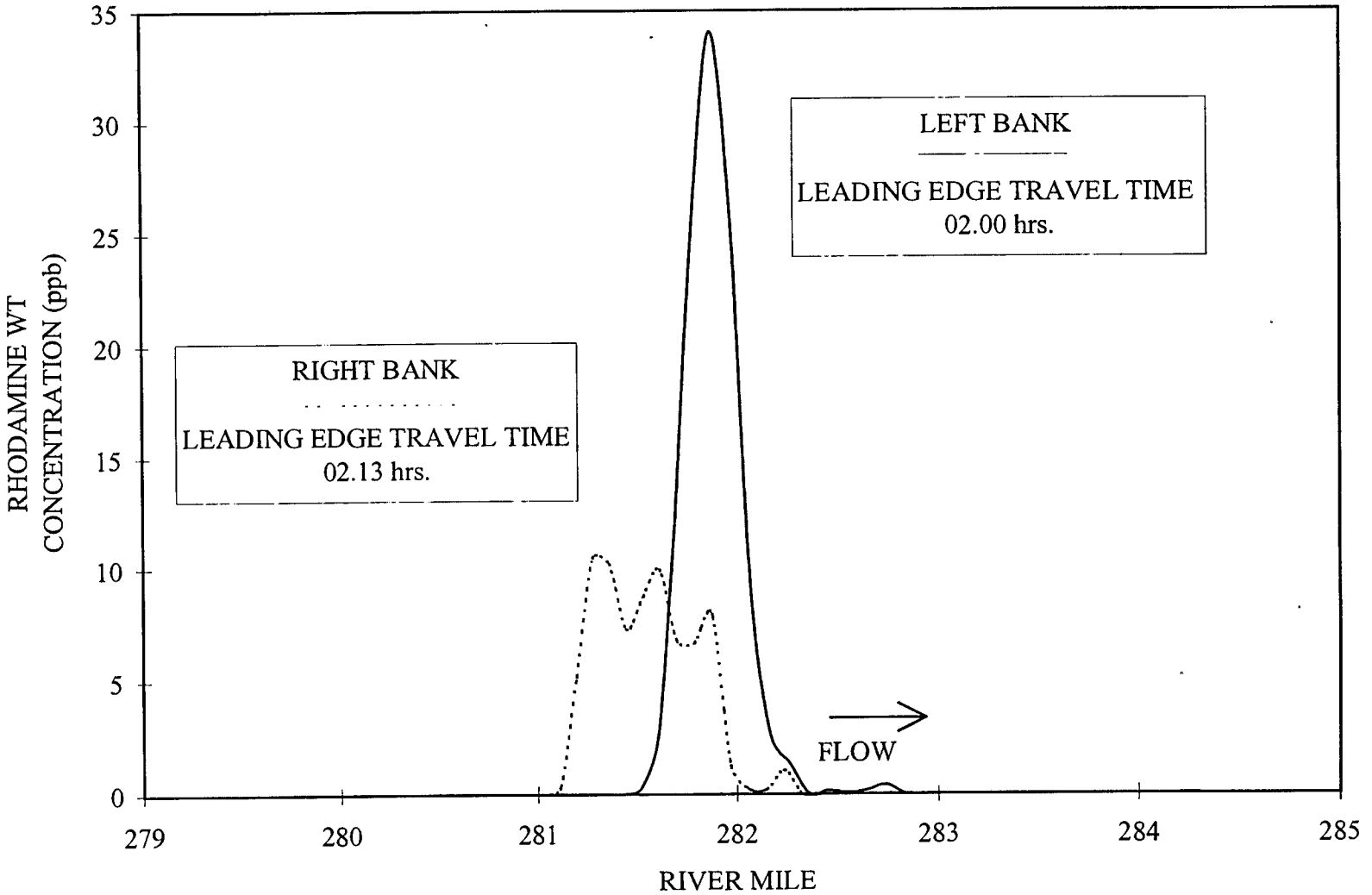
Sample ID	Date	Time	River Mile	Concentration (ppb)
5598	8/23/96	14:09:15	338.50	0.123
5597	8/23/96	14:09:13	338.52	0.123
5596	8/23/96	14:09:11	338.54	0.118
5595	8/23/96	14:09:09	338.56	0.112
5594	8/23/96	14:09:07	338.58	0.115
5593	8/23/96	14:09:05	338.60	0.119
5592	8/23/96	14:09:03	338.63	0.117
5591	8/23/96	14:09:01	338.65	0.112
5590	8/23/96	14:08:59	338.67	0.102
5589	8/23/96	14:08:57	338.69	0.087
5588	8/23/96	14:08:55	338.71	0.073
5587	8/23/96	14:08:53	338.73	0.063
5586	8/23/96	14:08:51	338.75	0.062
5585	8/23/96	14:08:49	338.77	0.068
5584	8/23/96	14:08:47	338.79	0.073
5583	8/23/96	14:08:45	338.81	0.079
5582	8/23/96	14:08:43	338.83	0.082
5581	8/23/96	14:08:41	338.85	0.08
5580	8/23/96	14:08:39	338.87	0.075
5579	8/23/96	14:08:37	338.90	0.074
5578	8/23/96	14:08:35	338.92	0.073
5577	8/23/96	14:08:33	338.94	0.061
5576	8/23/96	14:08:31	338.96	0.051
5575	8/23/96	14:08:29	338.98	0.042
5574	8/23/96	14:08:27	339.00	0.029
5573	8/23/96	14:08:25	339.02	0.015
5572	8/23/96	14:08:23	339.04	0.005
5571	8/23/96	14:08:21	339.06	ND
5570	8/23/96	14:08:19	339.08	ND
5569	8/23/96	14:08:17	339.10	ND
5568	8/23/96	14:08:15	339.12	ND
5567	8/23/96	14:08:13	339.14	ND
5566	8/23/96	14:08:11	339.17	ND
5565	8/23/96	14:08:09	339.19	ND
5564	8/23/96	14:08:07	339.21	ND
5563	8/23/96	14:08:05	339.23	ND
5562	8/23/96	14:08:03	339.25	ND
5561	8/23/96	14:08:01	339.27	ND
5560	8/23/96	14:07:59	339.29	ND
5559	8/23/96	14:07:58	339.30	ND
5558	8/23/96	14:07:57	339.31	ND
5557	8/23/96	14:07:55	339.33	ND
5556	8/23/96	14:07:53	339.35	ND
5555	8/23/96	14:07:51	339.37	ND
5554	8/23/96	14:07:49	339.39	ND
5553	8/23/96	14:07:47	339.41	ND
5552	8/23/96	14:07.45	339.43	ND
5551	8/23/96	14:07:43	339.45	ND
5550	8/23/96	14:07:41	339.47	ND
5549	8/23/96	14:07:39	339.49	ND
5548	8/23/96	14:07:37	339.51	ND
5547	8/23/96	14:07:35	339.53	ND

TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
August 23, 1997

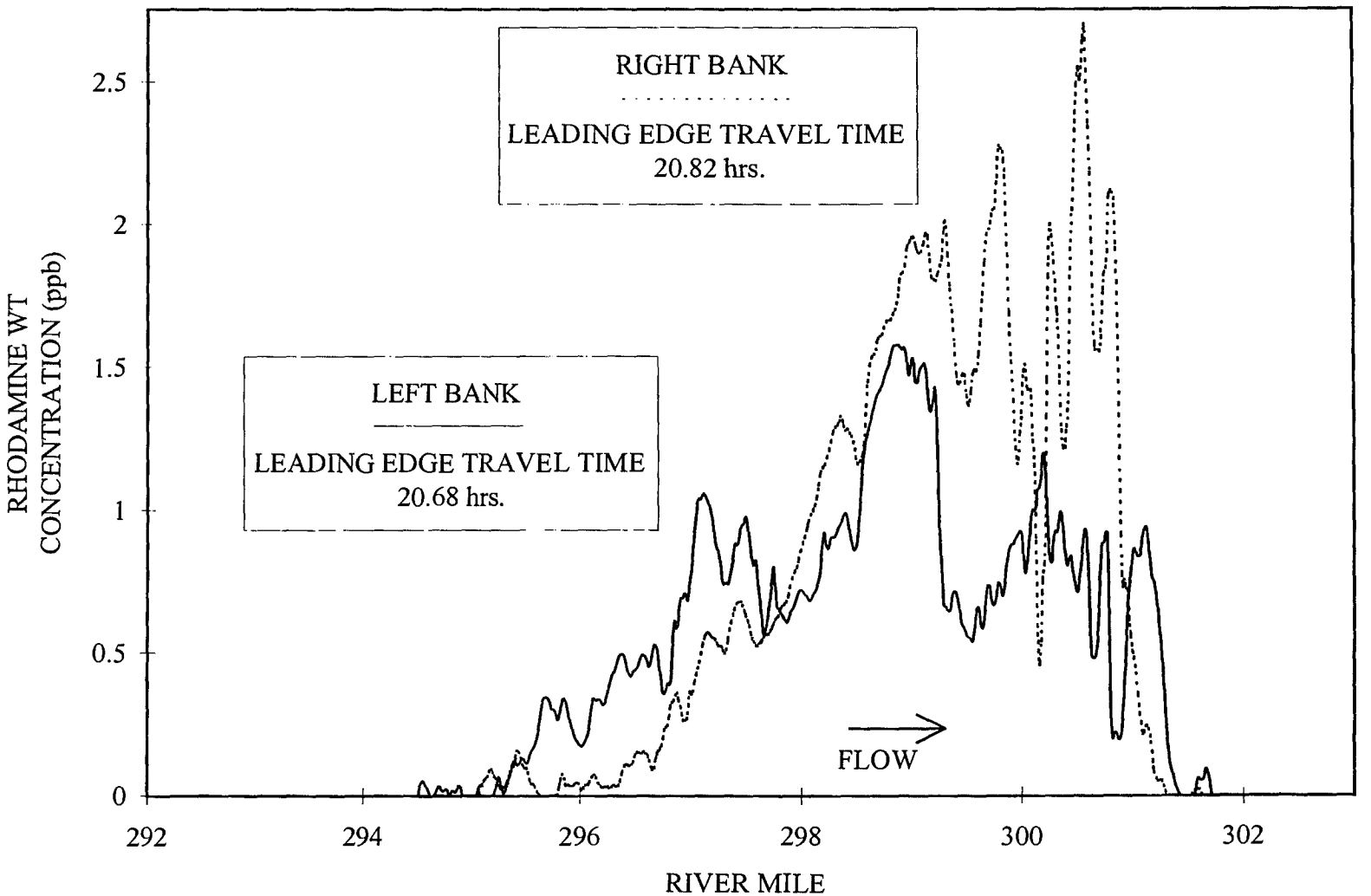
Midstream

Sample ID	Date	Time	River Mile	Concentration (ppb)
5546	8/23/96	14:07:33	339.55	ND
5545	8/23/96	14:07:31	339.57	ND
5544	8/23/96	14:07:29	339.59	ND
5543	8/23/96	14:07:27	339.62	ND
5542	8/23/96	14:07:25	339.64	ND
5541	8/23/96	14:07:23	339.66	ND
5540	8/23/96	14:07:21	339.68	ND
5539	8/23/96	14:07:19	339.70	ND
5538	8/23/96	14:07:17	339.72	ND
5537	8/23/96	14:07:15	339.74	ND
5536	8/23/96	14:07:13	339.76	ND
5535	8/23/96	14:07:11	339.78	ND
5534	8/23/96	14:07:09	339.80	ND
5533	8/23/96	14:07:07	339.82	ND
5532	8/23/96	14:07:05	339.84	ND
5531	8/23/96	14:07:03	339.86	ND
5530	8/23/96	14:07:01	339.88	ND
5529	8/23/96	14:06:59	339.90	ND
5528	8/23/96	14:06:57	339.92	ND
5527	8/23/96	14:06:55	339.94	ND
5526	8/23/96	14:06:53	339.96	ND
5525	8/23/96	14:06:51	339.98	ND
5524	8/23/96	14:06:49	340.00	ND
5523	8/23/96	14:06:47	340.02	ND
5522	8/23/96	14:06:45	340.04	ND
5521	8/23/96	14:06:43	340.06	ND
5520	8/23/96	14:06:41	340.08	ND
5519	8/23/96	14:06:39	340.10	ND
5518	8/23/96	14:06:37	340.12	ND
5517	8/23/96	14:06:35	340.14	ND
5516	8/23/96	14:06:33	340.16	ND
5515	8/23/96	14:06:31	340.18	ND
5514	8/23/96	14:06:29	340.21	ND
5513	8/23/96	14:06:27	340.23	ND
5512	8/23/96	14:06:25	340.25	ND
5511	8/23/96	14:06:23	340.27	ND
5510	8/23/96	14:06:21	340.29	ND
5509	8/23/96	14:06:19	340.31	ND
5508	8/23/96	14:06:17	340.33	ND
5507	8/23/96	14:06:15	340.35	ND
5506	8/23/96	14:06:13	340.37	ND
5505	8/23/96	14:06:11	340.39	ND
5504	8/23/96	14:06:09	340.41	ND
5503	8/23/96	14:06:07	340.43	ND
5502	8/23/96	14:06:05	340.45	ND
5501	8/23/96	14:06:03	340.47	ND
5500	8/23/96	14:06:01	340.49	ND
5499	8/23/96	14:06:00	340.50	ND

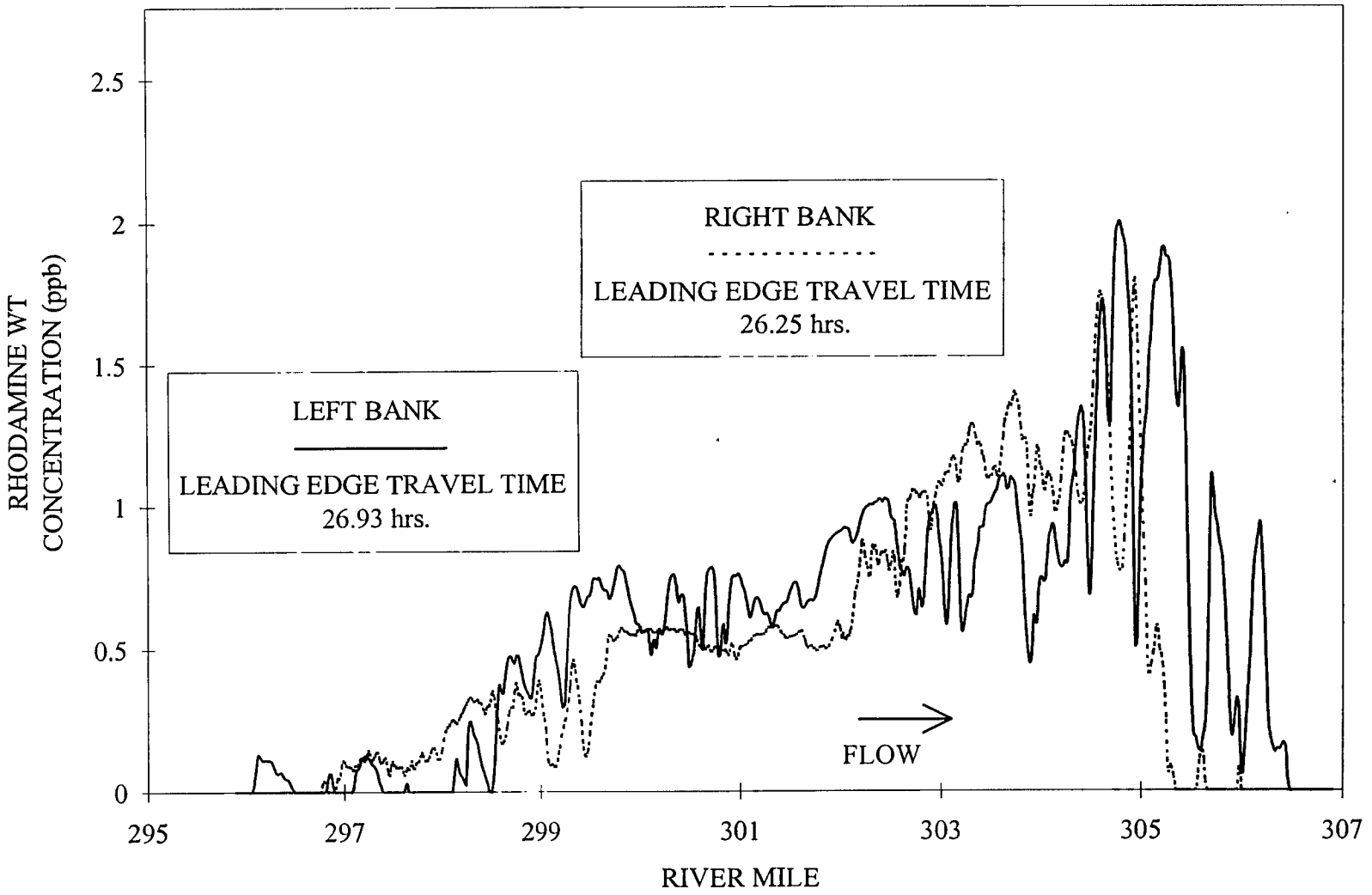
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #1
AUGUST 19, 1996



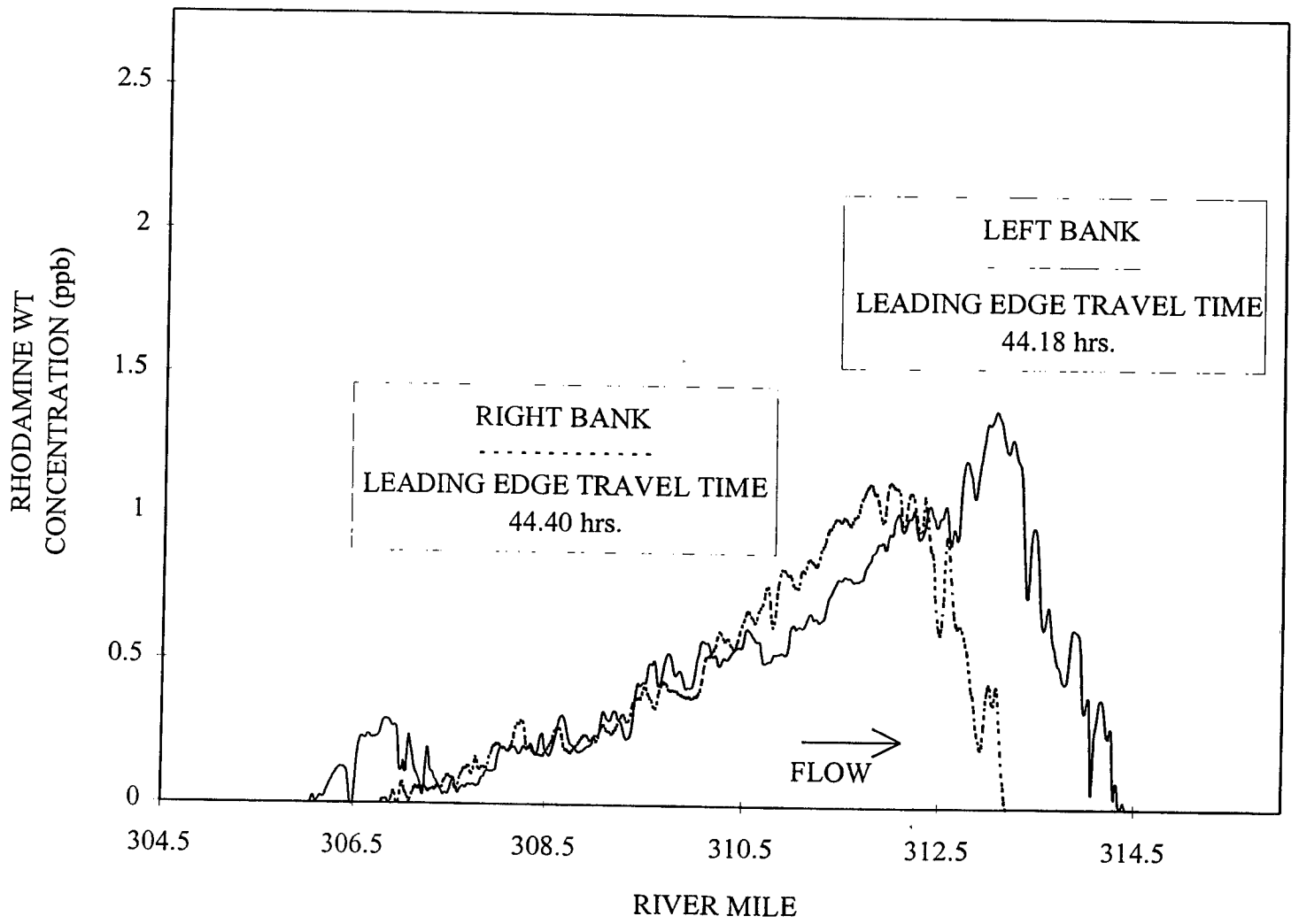
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #2
AUGUST 20, 1996



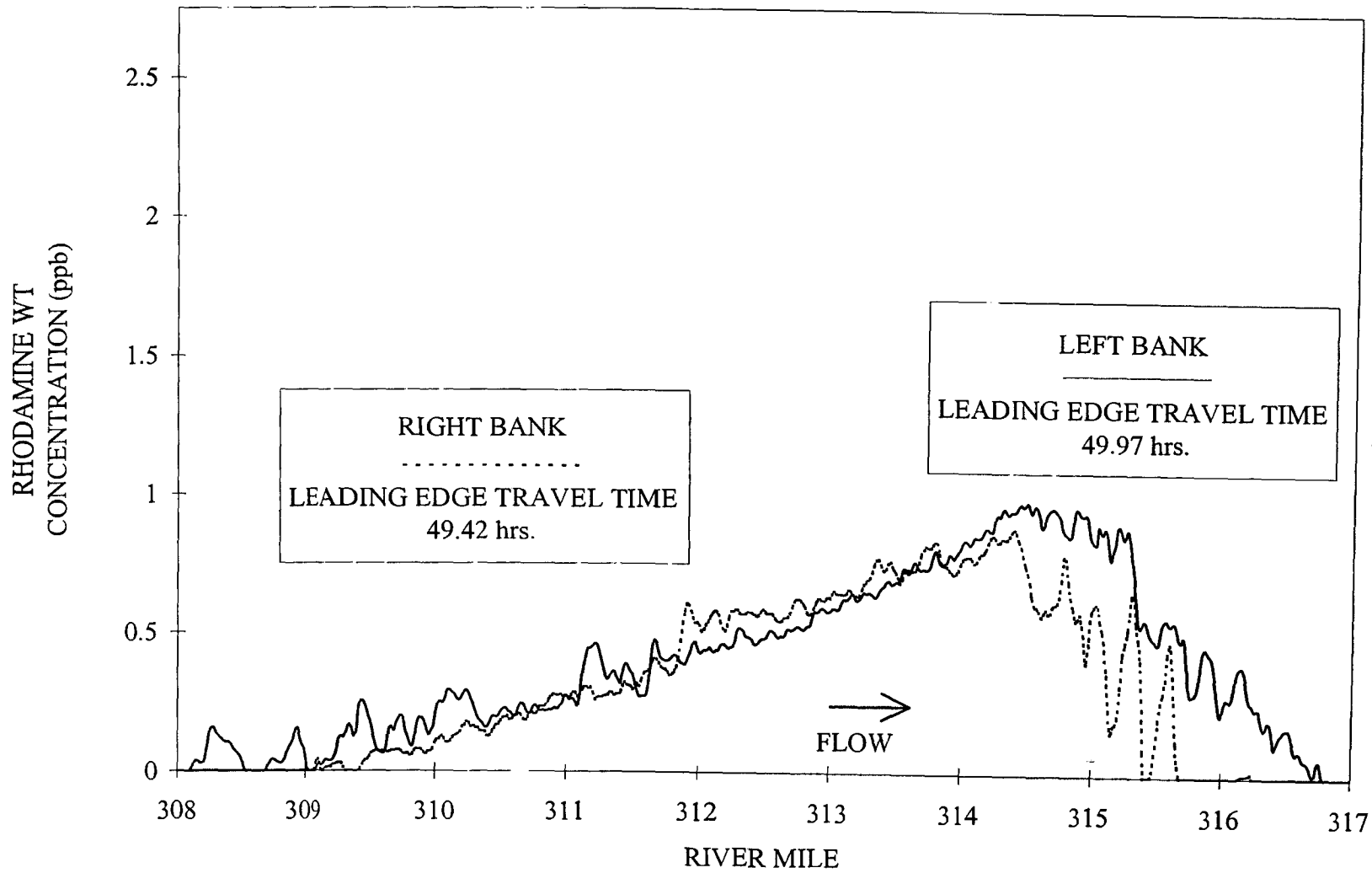
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #3
AUGUST 20, 1996



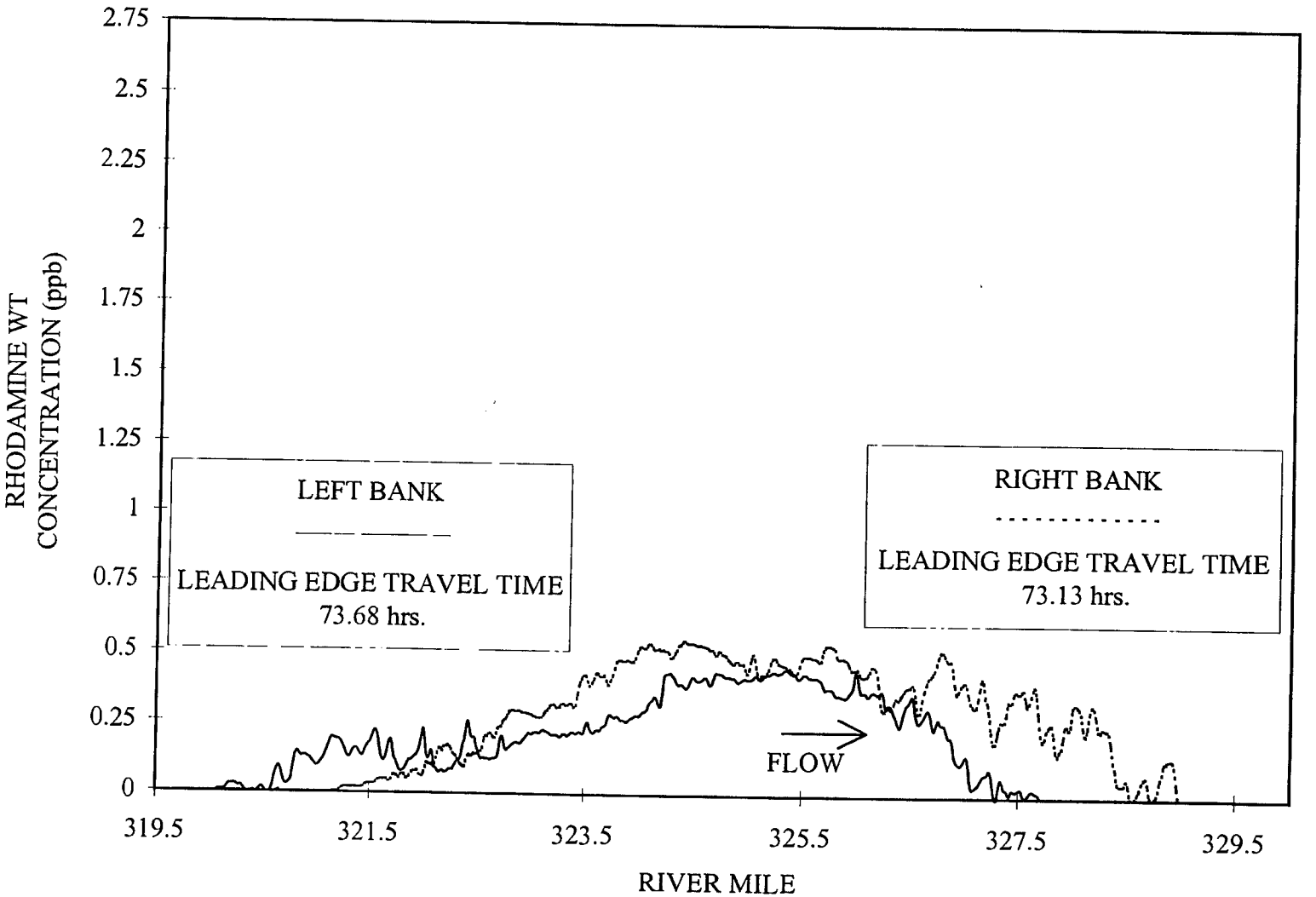
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #4
AUGUST 21, 1996



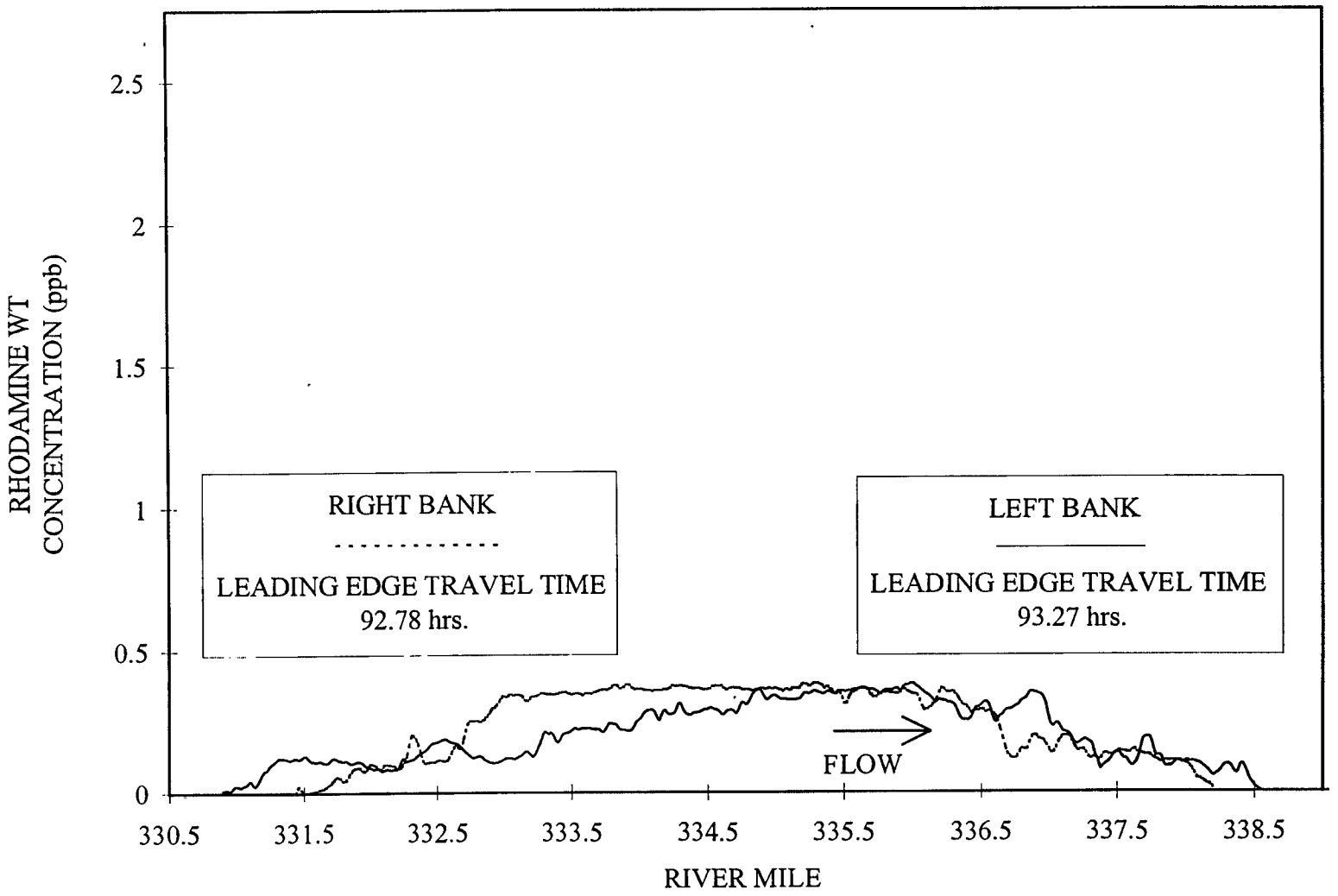
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #5
AUGUST 21, 1996



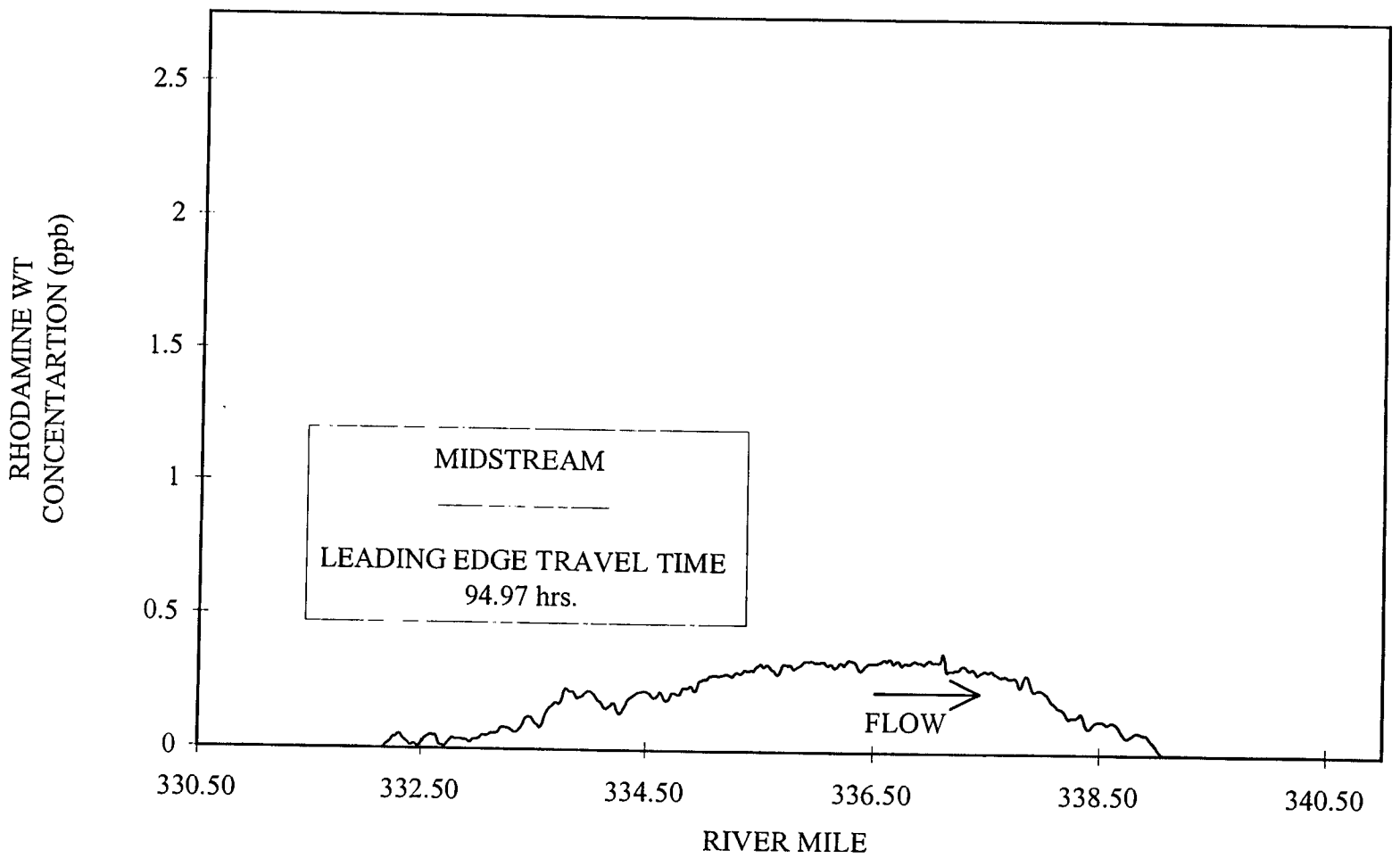
TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #6
AUGUST 22, 1996



TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #7
AUGUST 23, 1996



TIME OF TRAVEL DYE SURVEY
LONGITUDINAL RUN #8
AUGUST 23, 1996



Appendix D

Fixed Station Sampling Data
Ohio River Mile 307.7

Sample ID	Date	Time Collected	Travel Time, hrs.	Concentration (ppb)
DB1-2-1	8/20/96	20:10	29	ND
DB1-2-2	8/20/96	20:40	29.5	0.032
DB1-2-3	8/20/96	21:10	30	ND
DB1-2-4	8/20/96	21:40	30.5	0.008
DB1-2-5	8/20/96	22:10	31	0.032
DB1-2-6	8/20/96	22:40	31.5	0.316
DB1-2-7	8/20/96	23:10	32	0.288
DB1-2-8	8/20/96	23:40	32.5	0.672
DB1-2-9	8/21/96	0:10	33	0.408
DB1-2-10	8/21/96	0:40	33.5	0.344
DB1-2-11	8/21/96	1:10	34	0.404
DB1-2-12	8/21/96	1:40	34.5	0.364
DB1-2-13	8/21/96	2:10	35	0.436
DB1-2-14	8/21/96	2:40	35.5	0.252
DB1-2-15	8/21/96	3:10	36	0.424
DB1-2-17	8/21/96	4:10	36.5	0.284
DB1-2-18	8/21/96	4:40	37	0.064
DB1-2-19	8/21/96	5:10	37.5	0.204
DB1-2-20	8/21/96	5:40	38	0.156
DB1-2-21	8/21/96	6:10	38.5	0.184
DB1-2-22	8/21/96	6:40	39	0.144
DB1-2-23	8/21/96	7:10	39.5	0.096
DB1-2-24	8/21/96	7:40	40	0.1

* ND = Not Detected

Appendix E

Appendix E. Cross-Sectional Dye Data

	LEFT BANK	LEFT QUARTER	MID-STREAM	RIGHT QUARTER	RIGHT BANK
ORM 281.7, Aug-19					
SURFACE	5 37		0 035		2 952
MID-DEPTH	6 792		-0 009		4 47
BOTTOM	9 215		0 074		3 683
ORM 284.2, Aug-19					
SURFACE	1 145	5 102	8.675	6 791	-0 024
MID-DEPTH	1 024	5 95	9 133	7 285	-0 01
BOTTOM	1 35	6 618	9 049	7 454	0 017
ORM 284.5, Aug-19					
SURFACE	-0 032		0 838		-0 032
MID-DEPTH	-0 029		0 984		-0 031
BOTTOM	-0 025		1 152		-0 033
ORM 296.0, Aug-20					
SURFACE	0 839	0 422	0 092	0 356	0 858
MID-DEPTH	0 794	0 231	0 143	0 478	0 813
BOTTOM	0 773	0 258	0 145	0 508	0 78
ORM 298.2, Aug-20					
SURFACE	1 041	0 359	0 488	0 905	0 908
MID-DEPTH	1 11	0 441	0 353	0 874	0 938
BOTTOM	1 147	0 542	0 313	0 865	0 942
ORM 302.8, Aug-20					
SURFACE	-0 029	2 22	2 455	1 362	-0 028
MID-DEPTH	-0 016	1 549	2 735	1 518	-0 031
BOTTOM	-0 019	1 195	2 704	1 569	-0 016
ORM 303.6, Aug-20					
SURFACE	-0 033	0 821	2 823	0 734	-0 032
MID-DEPTH	-0 011	0 841	2 817	0 47	-0 033
BOTTOM	-0 022	0 953	2 47	0 636	-0 034
ORM 304.5, Aug-20					
SURFACE	-0 032	0 007	1 087	0 026	-0 033
MID-DEPTH	-0 033	0 008	1 512	0 113	-0 033
BOTTOM	-0 031	-0 011	1 523	0 223	-0 031

**Numerical values are dye concentrations in ug/L.

	LEFT BANK	LEFT QUARTER	MID-STREAM	RIGHT QUARTER	RIGHT BANK
ORM 307.7, Aug-21					
SURFACE	0 561	0 251	0 247	0 227	0 309
MID-DEPTH	0 589	0 256	0 284	0 283	0 424
BOTTOM	0 592	0 257	0 286	0 288	0 412
ORM 310.3, Aug-21					
SURFACE	0 773	0 652	0 421	0 487	0 609
MID-DEPTH	0 856	0 61	0 52	0 625	0 847
BOTTOM	0 852	0 601	0 5	0 645	0 794
ORM 314.0, Aug-21					
SURFACE	0 488	1 167	1 491	0 843	-0 01
MID-DEPTH	0 148	1 039	1 431	1 058	0 008
BOTTOM	0 123	0 913	1 4	0 513	0 012
ORM 314.8, Aug-21					
SURFACE	0 555	0 492	1 07	0 487	0
MID-DEPTH	0 414	0 272	0 664	0 37	-0 02
BOTTOM	0 456	0 564	0 613	0 376	-0 02
ORM 315.8, Aug-21					
SURFACE	0	0 375	0 341	0 153	-0 01
MID-DEPTH	-0 02	0 154	0 322	0 209	0 055
BOTTOM	-0 02	0 035	0 313	0 3	0 015
ORM 322.5, Aug-22					
SURFACE		0 294	0 224	0 257	
MID-DEPTH		0 304	0 228	0 259	
BOTTOM		0 327	0 221	0 252	
ORM 327, Aug-22					
SURFACE		0 535	0 771	0 722	
MID-DEPTH		0 682	0 806	0 714	
BOTTOM		0 657	0 816	0 718	
ORM 329.5, Aug-22					
SURFACE		0 166	0 521	0 258	
MID-DEPTH		0 393	0 563	0 474	
BOTTOM		0 306	0 518	0 464	