APPENDIX A. Details of Methods

A.1 Hydrodynamic and Channel Morphology Measurements

Flow and cross-section measurements were made in the main channels of the Black River. These measurements were used to define channel geometry and to estimate time of travel for use in the model. Sites were selected that are representative of typical morphology for the river and logistically feasible. Measurements were either made by wading with tape measure, staff gage and velocity meter; or by boat with a standard USGS flow measurement apparatus (graduated transect cable and velocity meter with weighted probe). Marsh-McBirney® and Swoffer® velocity meters were used.

Flows were measured in the mainstem and tributaries during the intensive surveys of September 1991 and July and August 1992. In August 1991, the morphology of the river was surveyed, and several cross-section and flow measurements were made. Flows were also measured at selected sites in June 1992.

Staff gages were installed at various locations on the Black River, and where available, gage height readings were collected. As an alternative method to measure in-stream velocities and also measure time of travel in the slow reach of the middle Black River, a drogue study was conducted. Drogue measurements were made by timing the passage of the drogue along a fixed distance. The drogue consisted of nylon vanes suspended to a depth of one meter below a shallow float.

An alternative estimate of travel time in the Black River was developed using the discharge rates and cross-sectional areas measured in 1991. The method used is the "Occupied Channel Volume" method (Velz, 1970), where the travel time is calculated from the occupied channel volume of a segment divided by the discharge for that segment. Using a spreadsheet, the Black River was divided into 0.1 mile segments, and based on field observations, a channel type was assigned to each segment. The observed cross-sections were used to estimate cross-sections for the different channel types, and observed flows were summed over the course of the river. Rough estimates of ground water inflows and outflows and surface withdrawals were made so that the summed flow balance equaled the observed flows. The segment area multiplied by segment length and divided by the flow gives the time of travel.

A.2 Physical and Chemical Field Measurements

Field measurements of the vertical profiles of water quality parameters were taken during four separate weeks during 1991, and during nine separate weeks during 1992.

This monitoring evaluated the development of stratification by the effects on temperature, conductivity, pH, and D.O. These four parameters were measured in midchannel at one or two meter intervals of depth at selected stations. Table A.1 shows the sites and dates where vertical profiles were measured.

Measurements were made with a Hydrolab® Surveyor 2, which was calibrated at the EILS wet lab in Tumwater per the manufacturer's instructions. Temperature is factory calibrated. Conductivity was calibrated monthly with a 100 μmhos/cm standard solution and the calibration confirmed with a 1000 μmhos/cm standard. Standard solutions at pH 7 and 10 were used for weekly pH calibration and post-calibration. Oxygen was calibrated and post-calibrated weekly in the laboratory with a saturated water bath using the modified Winkler iodometric azide method (EPA, 1983b). Field verification samples to be analyzed for D.O. using the Winkler method were taken each day at several sites where vertical profile measurements were taken.

Diurnal changes in water quality parameters were measured by deploying multi-parameter data-logging meters to record pH, temperature, D.O. and conductivity over a 24-hour period. A Hydrolab® Datasonde 3 (DS3) was used, calibrated by the same procedures as discussed above for the Surveyor 2. The DS3s were deployed near mid-channel at about one meter depth. Winkler DO field verification samples were taken at each DS3 deployment site at the beginning and end of the deployment period. Deployment sites were selected to evaluate various locations on the Black River, with more intensive measurements in the slow middle reach. Meters were deployed in September 1991 and May through September 1992. Readings were made by the meters once per hour for at least 24 hours. The sites and dates of DS3 deployments are also shown in Table A.1.

Grab field measurements were made during intensive surveys at various mainstem and tributary sites. Orion meters, calibrated as per manufacturer's instructions, were used to measure pH. A mercury thermometer was used to measure temperature.

Light attenuation was measured with a KAHLSICO Underwater Irradiameter. Readings were made at the surface and at one meter intervals of depth. Productivity in the mainstem Black River was evaluated in 1991 by paired light/dark bottle experiments (APHA *et al.*, 1989). This method uses paired bottles, one clear and one opaque, to measure the change in oxygen due to respiration and net productivity. The difference in DO between the two bottles is the gross primary productivity. Morning and evening DO levels were measured by the Winkler method during the intensive surveys and also in an additional survey in late August 1992.

A summary of the methods used for field measurements is provided in Table A.2.

A.3 Chemical and Biological Sampling and Laboratory Analysis

Intensive sampling was conducted on September 10-12, 1991, and on July 21 and August 5, 1992. In each survey, multiple teams of two people each sampled and collected field measurements in the study area. The dates were chosen to fall within the season of lowest flow, highest temperatures, and maximum stratification.

Sampling stations were selected based on the following criteria:

1. The mainstem Black River was sampled from Howanut Road above the mouth (RM 1.2) to the boat launch below Littlerock (RM 15.3). On one occasion additional mainstem sites were sampled upstream to the 110th Street bridge (RM 19.7).

2. Loading sources were selected for sampling from those listed in Table 1.1 based on their proximity to the mainstem Black River and their potential to discharge biochemical oxygen demand (BOD) or nutrients.

3. Tributaries were sampled near the mouths, where access was possible and no backwater effects were observed. Mima Creek is the only significant tributary to the Black River in the middle and lower part of the basin. The largest tributaries in the upper basin were sampled on one occasion.

4. Mainstem stations in the middle Black River were sampled by boat. Stations were chosen about one mile apart. Sonar was used to identify deeper areas where stratification was most likely, and some stations were placed in these locations. Where possible, stations were located to coincide with Black River Watch sampling sites. For the rest of the mainstem Black River, stations were located approximately two to three miles apart. Stations were sited at bridges and near boat launches, with additional wading stations selected where access was possible.

Sampling was conducted at two of the permitted aquaculture point source discharges during the 1991 intensive survey. This sampling was conducted as part of Class II compliance inspections. The results of the point source sampling are reported in detail in Das (1993).

Key mainstem and tributary stations were sampled for selected parameters twice a day on each sampling date. Other stations and parameters were sampled under a schedule of one sample per day for one or more days, depending on laboratory costs and capacity, equipment logistics, and the importance of the parameter to meet study

objectives. In addition, field replicate samples were taken for at least ten percent of parameters and stations. Field replicates were collected separately, sequentially, but as close together in time and location as possible.

Bridge and boat samples were collected with a Van Dorn® sampler, except for fecal coliform samples, which the boat team collected by hand and the bridge teams collected with a custom sampler. Sample bottles were rinsed before sample collection, except for bottles that were sterilized or contained preservatives. Samples were immediately labeled and stored on ice. Samples were transported by Ecology courier from the EILS Tumwater wet lab to Manchester Laboratory for analysis. All sampling, measurements, equipment calibration and Winkler method DO determinations were made by the protocols described in Ecology (1992b).

Laboratory sample containers and analyses were by EPA (1983b) or Standard Methods (APHA *et al.*, 1989). Quality Assurance/Quality Control (QA/QC) measures were taken as specified by the Manchester Laboratory (Huntamer and Hyre, 1991). A list of the parameters selected for field measurements and laboratory analysis is presented in Table A.2.

Ultimate carbonaceous BOD (UBOD) represents the theoretical "total" amount of carbonaceous BOD (CBOD) that would occur if the oxygen use of a sample were monitored for an indefinite amount of time. UBOD results are estimated from a first-order model using a time series of oxygen uptake measurements taken over a 30 to 60 day period. The program "BODFO" (NCASI, 1987b) was used for the first order fit.

Appendix Table F.5 shows the five-day CBOD value ($CBOD_5$) taken from the time series, the ratio of UBOD to $CBOD_5$, the first order rate coefficient "k", the sum of squares (SS) for the first order fit, the dilution used in the analysis, and the number of days used from the time series. The $CBOD_5$ value is based on essentially the same procedures as the standard BOD_5 laboratory analysis, except that the oxygen used by nitrification is subtracted. Since very little nitrification occurs in five days, BOD_5 and $CBOD_5$ values can generally be considered equivalent. The u/5 ratio is typically between 1 and 2, although slightly higher values would not be of concern; values below 1 and extremely high values would signal some problem with fit of the model to the time series. A high SS ($>$ 1.0E+00) indicates a relatively poor fit of the model to the data. UBOD results were mostly based on 29 or 34 days, except for a few that were based on 12 days, because part of the time series had to be discarded due to an extremely poor fit of the full time series to the first order model.

In addition to the intensive surveys, sampling was also conducted on several other occasions. Two "mini-surveys" were conducted in June and October 1992 to assess seasonal variation of parameters. A survey was also made on August 19, 1992, of 6 tributary and 3 mainstem sites in the upper basin, which investigated the water quality coming from the headwaters and from subbasins in the upper basin. The sampling

was timed to coincide with sampling being conducted by Thurston County under their grant-funded project. Selected samples were collected in replicate and exchanged to compare the sampling and laboratory variability of the data collected by the two studies.

A summary of the sampling design used for the study can be found in Table A.3, which presents sites, parameters, dates, and frequency of sampling.

Appendix A

Table A.1 Vertical and Diurnal Monitoring Sites and Dates

V = Vertical Profile
D = Diel Time Series

Site Name	RM	1991								1992									
		July	Aug	Sep					Oct	May		Jun	Jul		Aug			Sep	Oct
		23	15	3-5	5-6	10-12	12-13	25	9	5-6	26-27	18-19	8-9	20-21	5-6	17-18	18-19	10-11	1
BR @ Howanut Rd Bridge	1.2						D												
BR @ SR 12 Bridge	4.1				D														
BR @ Moon Rd Bridge	7.1				D														
BR @ the Millpond	7.9	V	V			V													
BR abv Global Aqua	9.3	V	V			V		V	V		V			V	V				
BR abv Big Dock	9.7	V	V		V,D			V	V	V	V,D	V,D	V,D	V,D	V,D	V,D		V	V
BR nr Osprey Nest	10.1							V	V										
BR @ Swecker Dock	10.6	V	V			V		V	V	V	V	V	V			V		V	V
BR abv Big Lagoon	11.1	V	V			V		V	V		V	V	V	V	V	V		V	V
BR blw Mima Ck (Wst bnd)	11.6								V										
BR blw Mima Ck (Sth bnd)	11.7							V											
BR abv Mima Ck	11.9	V	V	V,D		V		V	V	V,D	V,D	V,D	V,D	V,D	V,D	V,D		V,D	V
BR blw Dairy Drainage	12.1							V	V										
BR nr Dairy Drainage	12.2							V	V										
BR abv Dairy Drainage	12.3							V	V	V									
BR @ Narrows blw Old Trestle	12.8					V		V	V	V									
BR abv Old Trestle	13.1	V	V					V	V	V	V	V	V	V	V	V		V	V
BR blw Canoe Club	13.6							V	V	V									
BR @ Canoe Club	14.1	V	V	V,D		V		V	V	V	V	V	V	V	V	V		V	V
BR blw Ltlrck BL	14.7							V	V	V									
BR abv Littlerock BL	15.3		V	V,D	V	V		V	V	V,D	V,D	V,D	V,D	V,D	V,D	V,D	D	V,D	V
BR blw 123d St Br	17.6																D		
BR blw 110th St Br	19.6																D		

Appendix A
Table A.2 Summary of Field and Laboratory Parameters and Methods

Parameter	Abbreviation used in text	Method of Analysis	Reference
FIELD PARAMETERS			
Temperature	TEMP	Field Meter (Thermistor)	NA
		Mercury Thermometer	NA
pH	PH	Field Meter (Electrode)	NA
Dissolved Oxygen	DO	Field Meter (Polarographic Probe)	NA
		Winkler Modified Azide (EPA 360.2)	EPA (1983b)
Specific Conductance	COND	Field Meter (Conductivity bridge)	NA
Light/Dark Bottle Productivity		Light/Dark Bottles (Std Meth 17, No. 10200J.2)	APHA, et al. (1989)
LABORATORY PARAMETERS			
Total Suspended Solids	TSS	Gravimetric (EPA 160.2)	EPA (1983b)
Total Dissolved Solids	TDS	Gravimetric (EPA 160.1)	EPA (1983b)
Turbidity	TURB	Nephelometer (EPA 180.1)	EPA (1983b)
Specific Conductance	COND	Conductivity bridge (EPA 120.1)	EPA (1983b)
Chloride	CL	Ion chromatography (EPA 300.0)	EPA (1983b)
Alkalinity	ALK	Low potentiometric titration (EPA 310.1)	EPA (1983b)
Dissolved Silica	SI	Spectrophotometric (EPA 370.1)	EPA (1983b)
Total Organic Carbon	TOC	Infrared detection (EPA 415.1)	EPA (1983b)
5-day Carbonaceous BOD	BOD5	5-day incubation (EPA 405.1)	EPA (1983b)
Ultimate Carbonaceous BOD	UBOD	1st Order rate fit from 35 to 60 day incubation	NCASI (1987a)
Total Ammonia N	NH3N	Phenate (EPA 350.1)	EPA (1983b)
Total Nitrate+Nitrite N	NO23N	Cadmium reduction (EPA 353.2)	EPA (1983b)
Total Persulfate N	TN	Persulfate reduction/Autoanalyzer	Valderrama (1981)
Total Phosphorus	TP	Colorometric (EPA 365.3)	EPA (1983b)
		or Persulfate reduction/Autoanalyzer	Valderrama (1981)
Soluble Reactive P (Ortho-P)	SRP	(EPA 365.3)	EPA (1983b)
Chlorophyll a	CHLA	Fluorometer (Std Meth 17, No. 10200H.3)	APHA, et al. (1989)
		Spectrophotometer (Std Meth 17, No. 10200H.2)	APHA, et al. (1989)
Fecal Coliform Bacteria	FC	Membrane Filter (Std Meth 17, No. 9222D)	APHA, et al. (1989)
Phytoplankton Identification	PHYID	Microscopic Identification and Enumeration	Sweet (1992)

Appendix A
Table A.3 Black River Sampling Design Summary

INTENSIVE SAMPLING: SEPTEMBER 10, 1991		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR @ 128th St Br	17.2	1			1	1	1						1	1				
Beaver Ck @ SR 121 nr mouth	16.8002	1			1	1	1						1	1				
BR abv Littlerock BL	15.3	1	2	2	2	2	2	2		2		2	2	2	2	2	2	2
BR @ Canoe Club - Shallow	14.1	1	1	1	1	1	1	1		1			1	1	1	1	1	
BR @ Canoe Club - Deep	14.1	1			1	1	1	1					1	1	1			
BR abv Mima Ck - Shallow	11.9	1			1	1	1						1	1				
BR abv Mima Ck - Deep	11.9	1			1	1	1						1	1				
Mima Ck @ Mima-Gate Rd	11.8009	1			1	1	1						1	1	1			
BR abv Big Lagoon - Shallow	11.1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	1
BR abv Big Lagoon - Deep	11.1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	
Swecker Salmon Farm	10.7004	1	1	2	2	2	2			2		1	2	2	2	1	1	
BR @ Swecker Dock - Shallow	10.6	1			1	1	1						1	1				
BR @ Swecker Dock - Deep	10.6	1			1	1	1						1	1				
Rochester Slough (Steelhammer)	9.6002	1			1	1	1						1	1	1			
Br abv Global Aqua	9.3	1	1	1	1	1	1			1		1	1	1	1	1	1	
Global Aqua/BR	9.2003	1	1	2	2	2	2			2		1	2	2	2	1	1	
Springs nr Global Aqua	9.2001	1			1	1	1						1	1	1			
BR abv Schoolland BL	8.5	1	2	2	2	2	2			2			2	2	2	2	2	
BR @ the Millpond - Shallow	7.9	1			1	1	1	1					1	1				
BR @ the Millpond - Deep	7.9	1			1	1	1	1					1	1				
Springs nr Big Rock	7.7001	1			1	1	1						1	1	1			
BR @ Moon Rd Bridge	7.1	2	1	1	2	2	2			1		1	2	2	1	1	1	1
BR @ SR 12 Bridge	4.1	1	1	1	1	1	1			1			1	1	1	1	1	
BR @ Howanut Rd Bridge	1.2	2	1	1	2	2	2			1		1	2	2	1	1	1	1

INTENSIVE SAMPLING: SEPTEMBER 11, 1991		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR @ 128th St Br	17.2	1			1	1	1						1	1				
Beaver Ck @ SR 121 nr mouth	16.8002	1			1	1	1						1	1				
BR abv Littlerock BL	15.3	1	2	2	2	2	2	2		2			2	2	2	2	2	
BR @ Canoe Club - Shallow	14.1	1	1	1	1	1	1	1		1			1	1	1	1	1	
BR @ Canoe Club - Deep	14.1	1			1	1	1	1					1	1	1			
BR abv Mima Ck - Shallow	11.9	1			1	1	1						1	1				
BR abv Mima Ck - Deep	11.9	1			1	1	1						1	1				
Mima Ck @ Mima-Gate Rd	11.8009	1			1	1	1						1	1	1			
BR abv Big Lagoon - Shallow	11.1	1	1	1	1	1	1	1		1		1	1	1	1	1	1	
BR abv Big Lagoon - Deep	11.1	1	1	1	1	1	1	1		1			1	1	1	1	1	
Swecker Salmon Farm	10.7004	1	1	2	2	2	2			2			2	2	2	1	1	
BR @ Swecker Dock - Shallow	10.6	1			1	1	1						1	1				
BR @ Swecker Dock - Deep	10.6	1			1	1	1						1	1				
Rochester Slough (Steelhammer)	9.6002	1			1	1	1						1	1	1			
Br abv Global Aqua	9.3	1	1	1	1	1	1			1			1	1	1	1	1	
Global Aqua/BR	9.2003	1	1	2	2	2	2			2			2	2	2	1	1	
Springs nr Global Aqua	9.2001	1			1	1	1						1	1	1			
BR abv Schoolland BL	8.5	1	2	2	2	2	2			2			2	2	2	2	2	
BR @ the Millpond - Shallow	7.9	1			1	1	1	1					1	1				
BR @ the Millpond - Deep	7.9	1			1	1	1	1					1	1				
Springs nr Big Rock	7.7001	1			1	1	1						1	1	1			
BR @ Moon Rd Bridge	7.1	2	1	1	2	2	2			1			2	2	1	1	1	
BR @ SR 12 Bridge	4.1	1	1	1	1	1	1			1			1	1	1	1	1	
BR @ Howanut Rd Bridge	1.2	2	1	1	3	3	3			1			3	3	1	1	1	

INTENSIVE SAMPLING: SEPTEMBER 12, 1991		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR abv Littlerock BL	15.3	1			1	1	1	1		1			1	1	1	1	1	
BR @ Canoe Club - Shallow	14.1	1			1	1	1	1					1	1	1			
BR @ Canoe Club - Deep	14.1	1			1	1	1	1		1			1	1	1	1	1	
BR abv Mima Ck - Shallow	11.9	1			1	1	1						1	1				
BR abv Mima Ck - Deep	11.9	1			1	1	1						1	1				
BR abv Big Lagoon - Shallow	11.1	1			1	1	1	1		1			1	1	1	1	1	
BR abv Big Lagoon - Deep	11.1	1			1	1	1	1		1			1	1	1	1	1	
BR @ Swecker Dock - Shallow	10.6	1			1	1	1						1	1				
BR @ Swecker Dock - Deep	10.6	1			1	1	1						1	1				
Br abv Global Aqua	9.3	1			1	1	1			1			1	1	1	1	1	
BR abv Schoolland BL	8.7	1			2	2	2						2	2				
BR @ Moon Rd Bridge	7.1	2			2	2	2			1			2	2	1	1	1	
BR @ SR 12 Bridge	4.1	1			1	1	1			1			1	1	1	1	1	
BR @ Howanut Rd Bridge	1.2	2			3	3	3			1			3	3	1	1	1	

MINI-SURVEY: JUNE 18, 1992		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR abv Littlerock BL	15.3	1			1	1	1		1	1			1	1	1	1		1
BR abv Mima Ck	11.9	1			1	1	1			1			1	1	1	1		
BR abv Big Dock	9.7	1			2	2	2		2	2			2	2	2	2		1
BR @ Moon Rd Bridge	7.1	1			1	1	1		1	1			1	1	1	1		1

INTENSIVE SAMPLING: JULY 21, 1992		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR abv Littlerock BL	15.3	2	1	1	2	1	2	2	1	2	1	1	2	2	2	2	1	1
BR @ Canoe Club - Shallow	14.1	1			1		1	1		1			1	1	1	1		
BR @ Canoe Club - Deep	14.1	1					1						1	1	1			
BR abv Old Trestle - Shallow	12.8	1			1		1	1		1			1	1	1	1		
BR abv Old Trestle - Deep	12.8	1					1						1	1	1			
BR abv Mima Ck - Shallow	11.9	1	2	2	2	2	2	2		2	2	2	2	2	2	2		
BR abv Mima Ck - Deep	11.9	1	1	1	1	1	2	1		1		1	2	2	2	1		
Mima Ck @ Mima-Gate Rd	11.8009	1					1			1			1	1	1			
BR abv Big Lagoon - Shallow	11.1	1			1		1	1		1			1	1	1	1		
BR abv Big Lagoon - Deep	11.1	1					1						1	1	1			
Swecker Discharge Stream	10.7001	1	1	1	1	1	1	1		1		1	1	1	1	1	1	
BR abv Big Dock - Shallow	9.7	1			1		1	1		1			1	1	1	1		
BR abv Big Dock - Deep	9.7	1					1						1	1	1			
BR abv Global Aqua	9.3	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1
Springs nr Big Rock	7.7001	1			1		1	1		1		1	1	1	1	1		
BR @ Moon Rd Bridge	7.1	2	1	1	2	1	2	1	2	2		1	2	2	2	2	1	2
BR @ SR 12 Bridge	4.1	1					1						1	1	1			
BR @ Howanut Rd Bridge	1.2	2	2	2	2	2	2	2		2	1	1	2	2	2	2	1	

INTENSIVE SAMPLING: AUGUST 5, 1992		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR abv Littlerock BL	15.3	2	1	1	2	1	2	2	1	2	1	1	2	2	2	2	1	1
BR @ Canoe Club - Shallow	14.1	1			1		1	1		1			1	1	1	1		
BR @ Canoe Club - Deep	14.1	1					1						1	1	1			
BR abv Old Trestle - Shallow	12.8	1			1		1	1		1			1	1	1	1		
BR abv Old Trestle - Deep	12.8	1					1						1	1	1			
BR abv Mima Ck - Shallow	11.9	1	2	2	2	2	2	2		2	2		2	2	2	2		
BR abv Mima Ck - Deep	11.9	1	1	1	1	1	2	1		2	1		2	2	1	1		
Mima Ck @ Mima-Gate Rd	11.8009	1					1			1			1	1	1			
BR abv Big Lagoon - Shallow	11.1	1			1		1	1		1			1	1	1	1		
BR abv Big Lagoon - Deep	11.1	1					1						1	1	1			
Swecker Discharge Stream	10.7001	1	1	1	1	1	1	1		1	1		1	1	1	1	1	
BR abv Big Dock - Shallow	9.7	1			1		1	1		1			1	1	1	1		
BR abv Big Dock - Deep	9.7	1					1						1	1	1			
BR abv Global Aqua	9.3	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	1	1
Springs nr Big Rock	7.7001	1			1		1	1		1	1		1	1	1	1		
BR @ Moon Rd Bridge	7.1	2	1	1	2	1	2	1	1	2	1		2	2	2	1	2	1
BR @ SR 12 Bridge	4.1	1					1						1	1	1			
BR @ Howanut Rd Bridge	1.2	2	2	2	2	2	2	2		2	1	1	2	2	2	2	1	

UPPER BLACK RIVER SURVEY: AUGUST 19, 19		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
Salmon Ck @ Creekwood Dr	20.1005	1			1		1			1	1		1	1			1	
BR abv 110th St Br	19.7	1	1	1	1	1	1			1	1		1	1		1	1	
Blooms Ditch @ 110th St	19.4003	1			1		1			1	1		1	1			1	
Waddell Ck @ Waddell Ck Rd	17.3019	1			1		1			1	1		1	1			1	
BR @ 128th St Br	17.2	1	2	2	2	2	2			2	2		2	2		2	2	
Beaver Ck @ Case Rd	16.8038	1			1		1			1	1		1	1			1	
Scott Lake Ck @ SR 121	16.8023001	1			1		1			1	1		1	1			1	
Beaver Ck @ SR 121 nr mouth	16.8002	1			1		1			1	1		1	1			1	
BR abv Littlerock BL	15.3	1	1	1	1	1	1			1	1		1	1		1	1	
Sample Split w/ TCEH					2		2			2	2		2	2		1	2	

MINI SURVEY: OCTOBER 1, 1992		Parameters (See Table 2.3 for key to abbreviations)																
STATION	RM	TEMP, PH,DO	TSS	TDS	TURB	COND	CL	ALK	SI	TOC	BOD5	UBOD	NH3N NO23N	TP TN	SRP	CHLA	FC	PHYID
BR abv Littlerock BL	15.3	1			1	1	1		1	1	1		1	1	1	1		1
BR abv Mima Ck	11.9	1			1		1			1	1		1	1	1	1		
BR abv Big Dock	9.7	1			1	1	1		1	1	1		1	1	1	1		1
BR @ Moon Rd Bridge	7.1				1		1		1	1	1		1	1	1	1		1

APPENDIX B. Details of Quality Assurance/Quality Control

B.1 Flow Measurements

It was extremely difficult to measure flows in the slow reach from the boat launch south of Littlerock (RM 15.3) to RM 9.7 near Rochester. Velocities were so low, that they were below the minimum resolution of the velocity meters. Selected locations were monitored for flow where velocities appeared to be slightly higher. However, the accuracy of these measurements is suspect, and large variability in results must be assumed.

Flows measurements in the weedy stretches between RM 9.6 and RM 7.1 (Moon Road bridge) were difficult because the velocities were not uniform due to the weed growth. Also flows taken in the August 1991 survey were often made at sites selected to represent typical morphologies that were not necessary optimal for flow measurements. Velocities at these sites should be viewed as exhibiting larger variability.

The flow measurement sites in the Littlerock area, at the Route 12 and Howanut Road bridge sites, and in the tributaries were generally of good quality, and the results can be used with greater confidence.

B.2 Field Measurements

All field monitoring meters were calibrated according to manufacturer's specifications. Temperature in Hydrolab meters is factory calibrated, with a manufacturer's specification of $\pm 0.15°C$. Hydrolab® Datasonde 3 (DS3) and Surveyor 2 (S2) meters were calibrated for DO and pH at least weekly, and for conductivity at least monthly, with a few exceptions. In 1991, conductivity for the S2 was not calibrated and for the DS3 calibrated only on 9/9/91. All S2 calibrations were inadvertently not saved during August 1991; S2 data for this period were examined for measurement "drift" by evaluation of field verification and post-calibration information.

DS3 and S2 dissolved oxygen data were reviewed by comparison of meter readings and Winkler field verification measurements taken as replicate pairs. The manufacturer's specification for the meters is $\pm$ 0.2 mg/L DO. The RMSE between the meter and the field Winkler measurements was 0.33 mg/L. Although the variability of DO measurements with the meter are similar to the variability of the

Winkler method, meter readings were often observed to produce measurements that were biased high or low over the sampling period between calibrations. Therefore, it was reasonable to adjust the meter data to reduce variability due to bias.

Several methods of systematic error correction for meter DO data were evaluated. The method of correction chosen was to use the Winkler field verification data to develop a correction factor. For each replicate pair of meter and Winkler field verification measurements, a replicate residual was calculated by subtracting the Winkler value from the meter value. For each period between calibrations (typically one week) and for each meter, the average replicate residual was used as a correction factor that was subtracted from the raw field data. All DS3 and S2 dissolved oxygen data presented in this report have been corrected in this fashion. By this method, the RMSE was reduced to 0.12 mg/L for the DS3 measurements and 0.16 for the S2 measurements.

The Hydrolab manufacturer's specification for pH is $\pm$ 0.2 units. Post-calibration drift was reviewed for the meters, and with the exception of July and August 1991, the maximum difference between pre- and post- calibration pH values for any meter was 0.21 for the DS3's and 0.05 for the S2's. Because the DS2 pH data from July and August 1991 showed drift of significantly more than 0.2 units, the data for this period were corrected by subtracting from the raw data the average of the errors for the sampling period measured during pre- and post-calibration at pH 7. The error was calculated by subtracting the standard solution value from the observed value during calibration. All other pH data were acceptable and were not corrected.

The Hydrolab meter post-calibration data for conductivity indicated that precision was less than $\pm$ 5% for measurements near 100 μmhos/cm, and $\pm$10% near 1000 μmhos/cm, with the exception that conductivity for the DS3's prior to August 9, 1991 showed a precision of $\pm$ 30%. Conductivity data were not corrected.

B.3 Laboratory Sampling

All laboratory analyses were performed within specified holding times. Chlorophyll *a* data for week 35 in August 1991 are qualified due to absorbance ratios outside the normal range; data for week 37 in September 1991 are qualified due to poor precision; and data for week 32 in 1992 are qualified due to samples exceeding holding temperatures during transport. Total phosphorus data collected in 1991 with results less than 100 μg/L are qualified as reporting values that may be lower than the true value. Qualified data may be used with caution. All other data were reported by Ecology's Manchester Laboratory as usable without qualification.

The replicate precision of laboratory data can be measured in a number of ways, and two methods are used in this report. The root mean square error (RMSE) is calculated as the square root of the average squared difference between each pair of

data. The root mean square coefficient of variation (RMS-CV) of paired readings is calculated as the square root of the average squared coefficient of variation of each pair of data, where the coefficient of variation is the standard deviation of the pair divided by the mean of the pair. These two methods were chosen because they are proven statistical tools recommended in the literature and used in other EILS studies (Reckhow, *et al.*, 1986; Ecology 1992c), and because they are simple to use and understand.

The RMS-CV for field replicates was approximately 45% for chlorophyll *a* and 38% for phaeophyton-a; between 20 to 30% for fecal coliform and fecal streptococcus; between 10 to 20% for KES, total suspended solids and total dissolved solids; and less than 10% for all other parameters. These precision estimates reflect the variability and uncertainty of the data, and were taken into account in the data analysis leading to the recommendations of this report.

The replicate precision of field dissolved oxygen methods using the Winkler modified azide analytical method was less than 5% using RMS-CV of paired field replicates, and the RMSE of paired replicates was 0.33 mg/L.

APPENDIX C. Flow and Time of Travel

Appendix C

Table C.1 Flow, Cross-section, and Gage Height Measurements

Mainstem Flows

RM	Site Description	Date	Time	Discharge (cfs)	Width (ft)	Area (ft2)	Avg vel (fps)	Gage Ht (ft)	Data Quality
17.4	BR @ River Rd	08/19/92	1310	8.31	24.6	31.78	0.26		Good
17.2	BR @ 128th St BR	09/10/91		15.85	16.5	9.45	1.68		Good
		09/11/91		15.13	15.8	9.26	1.63		Good
		06/23/92	1505	13.8	20.75	8.29	1.66		Good
15.3	BR abv Littlerock BL	08/15/91	940	2.31	67	359.55	0.01		Poor
15.2	BR @ Littlerock BL	05/05/92	1230					0.53	
		05/26/92	1230					0.28	
		05/27/92	940					0.28	
		06/18/92	806					0.37	
		07/08/92	1025					0.52	
		07/20/92	1641	26.51	63.5	241.75	0.11	0.59	Fair
		08/05/92	842					0.64	
		08/06/92	1400					0.76	
		08/17/92	1130					0.75	
		08/18/92	1000	17.02	67	263.77	0.06	0.76	Fair
		09/10/92	1230					1.02	
		10/01/92	1300					0.92	
14.9	BR blw Littlerock BL	08/15/91	1030	44	157	759.3	0.06		Poor
14.2	BR abv Canoe Club	08/15/91	1130	67.3	87	677.75	0.1		Poor
14.1	BR @ Canoe Club	05/05/92	1320					3.68	
		05/27/92	950					3.44	
		06/18/92	1221					3.55	
		07/08/92	1325					3.72	
		07/20/92	1301					3.8	
		08/05/92	1550					3.9	
		08/06/92	1300					3.95	
		08/17/92	1150					3.99	
		08/18/92	1112					3.99	
		09/10/92	1155					4.26	
		10/01/92	1225					4.17	
11.8	BR blw Mima Ck	08/15/91	1230	27.1	82	617.1	0.04		Fair
		05/27/92	1030					0.65	
		06/18/92	855					0.78	
		06/24/92	1430	41.61	79.5	441.58	0.09		Fair
		07/08/92	1225					0.95	
		07/20/92	1435	32.48	75	507.75	0.06	1.03	Fair
		08/06/92	1220					1.2	
		08/17/92	1200					1.23	
		08/18/92	1215	31.87	82	543.02	0.06	1.23	Fair
		09/10/92	1115					1.5	
		10/01/92	1135					1.41	
10.6	BR @ Swecker Dock	05/05/92	1630					0.57	
		05/27/92	1110					0.37	
		06/18/92	1010					0.47	
		07/08/92	1135					0.66	
		07/20/92	1418					0.75	
		08/05/92	1240					0.84	
		08/06/92	1215					0.92	
		08/17/92	1210					0.96	
		09/10/92	1030					1.23	
9.6	BR at "3/4" Sign	08/15/91	1345	30.7	101	1023.7	0.03		Poor
9.5	BR blw Rochester Slough	08/18/92	1415	44.47	95	574.65	0.08		Fair
9.3	BR abv Global Aqua	06/25/92	1035	49	139	285.35	0.17		Fair
		07/20/92	1622	49.99	115.5	295.28	0.17		Fair
9.0	BR @ Steel Trestle	08/15/91	1450	50	91	198.95	0.025		Good
		06/24/92	1530	63.96	83	145.8	0.44		Good

8.3	BR blw Schoolland Rd BL	08/15/91	1600	31.3	98	328.45	0.1		Poor
7.4	BR abv Moon Rd (Bulkhead)	08/15/91	1633	44.9	91	135.75	0.33		Fair
7.3	BR abv Moon Rd	06/23/92	1400	62.74	101.5	211.3	0.3		Fair
		07/23/92	1100	43.32	102	154.08	0.28		Fair
		08/05/92	1530	42.8	98	124.66	0.34		Fair
7.2	BR abv Moon Rd	09/11/91	1045	48.27	100	176.3	0.27		Fair
		09/12/91	950	51.33	100.5	180.29	0.28		Fair
6.2	BR below Moon Rd	08/15/91	1740	41	42	46.75	0.88		Fair
4.8	BR above SR 12 Bridge	08/15/91	1845	38.8	74	306.62	0.13		Fair
4.1	BR @ SR 12 Bridge	09/10/91		70.43	40	28.03	2.51		Good
		09/11/91		69.87	40	27.6	2.53		Good
		09/12/91		69.04	40	26.8	2.58		Good
		05/06/92	1445					0.89	
3.0	BR below SR 12 Bridge	08/21/91	1045	40	104	444.65	0.09		Fair
2.5	BR above Howanut Rd	08/21/91	1255	65.7	55.5	94.75	0.69		Poor
1.2	BR @ Howanut Rd Bridge	08/01/91	1725					0.9	
		08/21/91	1300	66.6	86.1	160	0.42	0.83	Good
		09/10/91	1250	64.73	85.5	188.44	0.34	0.82	Good
		09/11/91	1350	68.63	85.5	208.65	0.33	0.81	Good
		09/12/91	1325	65.83	88.5	195.6	0.34	0.8	Good
		05/06/92	1430					1.22	
		06/18/92	1400					1.08	
		06/23/92	1311	74.5	84.5	179.11	0.42		Good
		07/23/92	1000	51.01	82	149.3	0.34		Good
		08/05/92	1640	44.38	78.5	141.79	0.31	0.66	Good
0.8	BR above mouth	08/21/91	1430	39.1	95	390.35	0.1		Poor

Tributary Flows

RM	Site Description	Date	Time	Discharge (cfs)	Width (ft)	Area (ft2)	Avg vel (fps)		Data Quality
17.3019	Waddell Ck @ Waddell Ck Rd	08/19/92	1400	3.03		12.03	0.25		Good
16.8023001	Scott Lake Ck @ SR 121	08/19/92	1200	3.67	8.1	15.17	0.24		Good
16.8002	Beaver Ck @ SR 121 nr mouth	09/10/91	1100	3.56		6.43	0.55		Fair
		09/11/91		3.33		4.87	0.68		Fair
		08/19/92	1125	1.14		5.39	0.21		Fair
11.8009	Mima Ck @ Mima-Gate Rd	09/10/91	1000	2.79		1.85	1.51		Good
		09/11/91		2.17		1.57	1.38		Good
		07/23/92	1155	1.98		3.04	0.65		Good
		08/05/92	1445	1.52		2.21	0.69		Good
11.8008	Mima Ck Trib @ Mima-Gate Rd	07/23/92	1140	0.33		1.7	0.19		Good
		08/05/92	1516	0.03		0.1	0.3		Good
10.7004	Swecker Salmon Farm	09/10/91		3.88					Good
10.7001	Swecker Discharge Stream	07/20/92	1320	0.77		0.93	0.83		Good
9.2003	Global Aqua/Black R	09/10/91		15.66					Good

Appendix C
Table C.2 Time of Travel Estimate, Late Summer 1991

Morphology Types (T) and Cross-sectional Areas					
	Riffle	Swift Glide	Avg Glide	Slow Glide	Pool
RM	1	2	3	4	5
0 - 9.2	25	100	150	300	400
9.3 - 15.3	250	400	600	750	1000

Groundwater Estimated Inflow and outflow	
RM	Q (cfs/.1mi)
0.0	0.03
4.1	0.75
7.2	-0.20
7.9	-0.20
8.5	-0.20
9.3	0.68
9.7	0.68
11.1	0.68
11.8	0.17
12.8	0.17
14.2	0.17
15.3	0.15
17.2	

Permitted Water Rights - River Withdrawals		
DwnstmRM	Q	UseCoeff
0.0	12.08	0.70
7.2	0.00	0.00
7.9	2.82	0.70
8.5	2.22	0.00
9.3	0.82	0.00
9.7	2.52	0.00
11.8	2.70	0.00
15.3	4.89	0.70
17.2		

Name	RM	Days per seg	Days to mouth	QOb	QSm	QTr	QGw	QCu	T	Area
	0.0		0.00		65.6		0.03	-0.12	5	400
Mouth of Black R	0.1	0.0372	0.04		65.6		0.03	-0.12	5	400
	0.2	0.0372	0.07		65.7		0.03	-0.12	5	400
	0.3	0.0371	0.11		65.8		0.03	-0.12	4	300
	0.4	0.0278	0.14		65.9		0.03	-0.12	4	300
	0.5	0.0278	0.17		66.0		0.03	-0.12	5	400
	0.6	0.0370	0.20		66.1		0.03	-0.12	4	300
	0.7	0.0277	0.23		66.2		0.03	-0.12	4	300
BR above mouth	0.8	0.0277	0.26		66.3		0.03	-0.12	5	400
	0.9	0.0368	0.30		66.3		0.03	-0.12	4	300
	1.0	0.0276	0.32		66.4		0.03	-0.12	5	400
	1.1	0.0367	0.36		66.5		0.03	-0.12	3	150
BR @ Howanut Rd	1.2	0.0137	0.37	66.4	66.6		0.03	-0.12	3	150
	1.3	0.0137	0.39		66.7		0.03	-0.12	4	300
	1.4	0.0274	0.42		66.8		0.03	-0.12	3	150
	1.5	0.0137	0.43		66.9		0.03	-0.12	4	300
	1.6	0.0274	0.46		67.0		0.03	-0.12	3	150
	1.7	0.0136	0.47		67.0		0.03	-0.12	2	100
	1.8	0.0091	0.48		67.1		0.03	-0.12	3	150

Name	RM	Days per seg	Days to mouth	QOb	QSm	QTr	QGw	QCu	T	Area
	1.9	0.0136	0.49		67.2		0.03	-0.12	4	300
	2.0	0.0272	0.52		67.3		0.03	-0.12	3	150
	2.1	0.0136	0.53		67.4		0.03	-0.12	2	100
	2.2	0.0090	0.54		67.5		0.03	-0.12	3	150
	2.3	0.0135	0.56		67.6		0.03	-0.12	4	300
	2.4	0.0271	0.58		67.7		0.03	-0.12	3	150
BR abv Howanut Rd Br	2.5	0.0135	0.60		67.7		0.03	-0.12	2	100
	2.6	0.0090	0.61		67.8		0.03	-0.12	5	400
	2.7	0.0360	0.64		67.9		0.03	-0.12	3	150
	2.8	0.0134	0.66		68.0		0.03	-0.12	1	25
	2.9	0.0022	0.66		68.1		0.03	-0.12	3	150
BR below SR 12 Bridge	3.0	0.0134	0.67		68.2		0.03	-0.12	5	400
	3.1	0.0358	0.71		68.3		0.03	-0.12	3	150
	3.2	0.0134	0.72		68.4		0.03	-0.12	1	25
	3.3	0.0022	0.72		68.4		0.03	-0.12	3	150
	3.4	0.0133	0.74		68.5		0.03	-0.12	2	100
	3.5	0.0089	0.75		68.6		0.03	-0.12	3	150
	3.6	0.0133	0.76		68.7		0.03	-0.12	1	25
	3.7	0.0022	0.76		68.8		0.03	-0.12	2	100
	3.8	0.0088	0.77		68.9		0.03	-0.12	3	150
	3.9	0.0133	0.78		69.0		0.03	-0.12	2	100
	4.0	0.0088	0.79		69.1		0.03	-0.12	1	25
BR @ SR 12 Bridge	4.1	0.0022	0.80	69.8	69.1		0.75	-0.12	4	300
	4.2	0.0265	0.82		68.5		0.75	-0.12	2	100
	4.3	0.0089	0.83		67.9		0.75	-0.12	5	400
	4.4	0.0360	0.87		67.2		0.75	-0.12	2	100
	4.5	0.0090	0.88		66.6		0.75	-0.12	3	150
	4.6	0.0137	0.89		66.0		0.75	-0.12	2	100
	4.7	0.0092	0.90		65.3		0.75	-0.12	3	150
BR abv SR 12 Br	4.8	0.0140	0.91		64.7		0.75	-0.12	4	300
	4.9	0.0283	0.94		64.1		0.75	-0.12	2	100
	5.0	0.0095	0.95		63.4		0.75	-0.12	5	400
	5.1	0.0385	0.99		62.8		0.75	-0.12	2	100
	5.2	0.0097	1.00		62.2		0.75	-0.12	1	25
	5.3	0.0024	1.00		61.5		0.75	-0.12	2	100
	5.4	0.0099	1.01		60.9		0.75	-0.12	4	300
	5.5	0.0300	1.04		60.3		0.75	-0.12	2	100
	5.6	0.0101	1.05		59.6		0.75	-0.12	2	100
	5.7	0.0102	1.06		59.0		0.75	-0.12	1	25
	5.8	0.0025	1.06		58.4		0.75	-0.12	3	150
	5.9	0.0157	1.08		57.8		0.75	-0.12	2	100
	6.0	0.0105	1.09		57.1		0.75	-0.12	2	100
	6.1	0.0106	1.10		56.5		0.75	-0.12	3	150
BR below Moon Rd	6.2	0.0162	1.12		55.9		0.75	-0.12	1	25
	6.3	0.0027	1.12		55.2		0.75	-0.12	4	300
	6.4	0.0331	1.15		54.6		0.75	-0.12	3	150

Name	RM	Days per seg	Days to mouth	QOb	QSm	QTr	QGw	QCu	T	Area
	6.5	0.0167	1.17		54.0		0.75	-0.12	2	100
	6.6	0.0113	1.18		53.3		0.75	-0.12	3	150
	6.7	0.0171	1.20		52.7		0.75	-0.12	4	300
	6.8	0.0347	1.23		52.1		0.75	-0.12	1	25
	6.9	0.0029	1.24		51.4		0.75	-0.12	2	100
	7.0	0.0118	1.25		50.8		0.75	-0.12	3	150
BR @ Moon Rd Br	7.1	0.0180	1.27		50.2		0.75	-0.12	2	100
BR abv Moon Rd Br	7.2	0.0121	1.28	49.8	49.5		-0.20	0.00	1	25
	7.3	0.0030	1.28		49.7		-0.20	0.00	2	100
BR abv Moon Rd/Blkhd	7.4	0.0122	1.29		49.9		-0.20	0.00	3	150
Springs nr Big Rock	7.5	0.0183	1.31		50.1	1.3	-0.20	0.00	2	100
Springs nr Big Rock	7.6	0.0121	1.32		49.0	1.3	-0.20	0.00	3	150
Springs nr Big Rock	7.7	0.0186	1.34		47.9	1.3	-0.20	0.00	4	300
Springs nr Big Rock	7.8	0.0382	1.38		46.8	1.3	-0.20	0.00	4	300
BR - the "Millpond"	7.9	0.0391	1.42		45.7		-0.20	-0.33	5	400
	8.0	0.0534	1.47		46.2		-0.20	-0.33	4	300
	8.1	0.0396	1.51		46.8		-0.20	-0.33	4	300
	8.2	0.0392	1.55		47.3		-0.20	-0.33	4	300
BR blw Schoolland BL	8.3	0.0387	1.59		47.8		-0.20	-0.33	4	300
BR at Schoolland Rd BL	8.4	0.0383	1.63		48.3		-0.20	-0.33	3	150
BR abv Schoolland BL	8.5	0.0189	1.65		48.9		-0.20	0.00	1	25
	8.6	0.0031	1.65		49.1		-0.20	0.00	2	100
	8.7	0.0124	1.66		49.3		-0.20	0.00	3	150
	8.8	0.0186	1.68		49.5		-0.20	0.00	1	25
	8.9	0.0030	1.69		49.7		-0.20	0.00	2	100
	9.0	0.0123	1.70		49.9		-0.20	0.00	3	150
BR under BNRR trestle	9.1	0.0183	1.72	50.0	50.1	1.3	-0.20	0.00	3	150
BR - Springs nr Global A	9.2	0.0183	1.74		49.0	1.3	-0.20	0.00	4	300
BR above Global Aqua	9.3	0.0374	1.77		47.9		0.68	0.00	5	1000
BR - at "3/4" sign	9.4	0.1276	1.90		47.2		0.68	0.00	2	400
	9.5	0.0518	1.95		46.5		0.68	0.00	3	600
Rochester Slough	9.6	0.0788	2.03		45.8	0.0	0.68	0.00	2	400
	9.7	0.0533	2.08		45.1		0.68	0.00	4	750
	9.8	0.1015	2.19		44.5		0.68	0.00	5	1000
	9.9	0.1374	2.32		43.8		0.68	0.00	4	750
	10.0	0.1047	2.43		43.1		0.68	0.00	4	750
	10.1	0.1063	2.53		42.4		0.68	0.00	4	750
	10.2	0.1080	2.64		41.7		0.68	0.00	4	750
	10.3	0.1098	2.75		41.1		0.68	0.00	4	750
	10.4	0.1116	2.86		40.4		0.68	0.00	4	750
	10.5	0.1135	2.98		39.7		0.68	0.00	4	750
BR near Swecker Dock	10.6	0.1154	3.09		39.0		0.68	0.00	4	750
Swecker Salmon Farm	10.7	0.1174	3.21		38.3	3.9	0.68	0.00	4	750
	10.8	0.1195	3.33		33.8		0.68	0.00	4	750
	10.9	0.1357	3.47		33.1		0.68	0.00	4	750
	11.0	0.1385	3.60		32.4		0.68	0.00	5	1000

Name	RM	Days per seg	Days to mouth	QOb	QSm	QTr	QGw	QCu	T	Area
BR above "the Lagoon"	11.1	0.1886	3.79		31.7		0.68	0.00	4	750
	11.2	0.1444	3.94		31.0		0.68	0.00	4	750
	11.3	0.1476	4.09		30.4		0.68	0.00	4	750
	11.4	0.1509	4.24		29.7		0.68	0.00	4	750
	11.5	0.1544	4.39		29.0		0.68	0.00	4	750
	11.6	0.1580	4.55		28.3		0.68	0.00	3	600
	11.7	0.1294	4.68		27.6		0.68	0.00	4	750
BR - below Mima Ck	11.8	0.1658	4.84	27.1	27.0	2.48	0.17	0.00	3	600
BR - Pool above Mima (	11.9	0.1359	4.98		24.3		0.17	0.00	5	1000
	12.0	0.2513	5.23		24.1		0.17	0.00	4	750
BR - below Drainage	12.1	0.1898	5.42		24.0		0.17	0.00	4	750
BR - Mima Drainage	12.2	0.1911	5.61		23.8		0.17	0.00	4	750
BR - above Drainage	12.3	0.1925	5.80		23.6		0.17	0.00	4	750
	12.4	0.1939	6.00		23.5		0.17	0.00	4	750
	12.5	0.1953	6.19		23.3		0.17	0.00	4	750
	12.6	0.1967	6.39		23.1		0.17	0.00	4	750
	12.7	0.1982	6.59		23.0		0.17	0.00	4	750
BR - Narrows blw OT	12.8	0.1996	6.79		22.8		0.17	0.00	1	250
	12.9	0.0670	6.86		22.6		0.17	0.00	4	750
	13.0	0.2026	7.06		22.4		0.17	0.00	4	750
BR - Old Steel Trestle	13.1	0.2042	7.26		22.3		0.17	0.00	5	1000
	13.2	0.2743	7.54		22.1		0.17	0.00	4	750
	13.3	0.2073	7.74		21.9		0.17	0.00	4	750
	13.4	0.2089	7.95		21.8		0.17	0.00	4	750
	13.5	0.2106	8.16		21.6		0.17	0.00	4	750
	13.6	0.2122	8.38		21.4		0.17	0.00	4	750
	13.7	0.2139	8.59		21.3		0.17	0.00	4	750
	13.8	0.2156	8.81		21.1		0.17	0.00	4	750
	13.9	0.2174	9.02		20.9		0.17	0.00	4	750
	14.0	0.2191	9.24		20.7		0.17	0.00	5	1000
BR abv Canoe Club	14.1	0.2946	9.54		20.6		0.17	0.00	4	750
	14.2	0.2227	9.76		20.4		0.17	0.00	3	600
	14.3	0.1797	9.94		20.2		0.17	0.00	4	750
	14.4	0.2265	10.17		20.1		0.17	0.00	4	750
	14.5	0.2284	10.39		19.9		0.17	0.00	4	750
	14.6	0.2304	10.63		19.7		0.17	0.00	4	750
	14.7	0.2323	10.86		19.6		0.17	0.00	4	750
	14.8	0.2344	11.09		19.4		0.17	0.00	4	750
BR blw Littlerock BL	14.9	0.2364	11.33		19.2		0.17	0.00	3	600
	15.0	0.1908	11.52		19.0		0.17	0.00	1	250
	15.1	0.0802	11.60		18.9		0.17	0.00	2	400
BR at Littlerock BL	15.2	0.1295	11.73		18.7		0.17	0.00	1	250
BR abv Littlerock BL	15.3	0.0816	11.81		18.5		0.17	0.00	2	400
	15.4	0.1319	11.94		18.4		0.15	-0.18		

APPENDIX D. Field Measurement Results

Appendix D
Table D.1 Mainstem Field Measurement Data

(BLFIELD.WK1)

					All Samples collected midstream unless noted					
RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
19.7	BR @ 110th St Br	08/19/92	1047	1						5.5
19.6	BR blw 110th St Br	08/19/92	930	0						5.6
19.6		08/20/92	933	1						6.0
17.6	BR blw 123d St Br	08/19/92	845	0						5.4
17.6		08/20/92	851	1						5.3
17.4	BR @ River Rd	08/19/92	1302	0	21.0		6.7	88	5.6	
17.4		08/19/92	1302	0.5	20.5		6.7	88	5.5	
17.2	BR @ 128th St Br	09/10/91	1015	0	15.9		7.1			5.2
17.2		09/11/91	931	0	15.2		7.1			5.5
15.3	BR abv Littlerock BL	08/15/91	1035	0	16.0		6.5	92	5.7	
15.3		08/15/91	1035	1	15.1		6.3	91	5.7	
15.3		08/15/91	1035	1.8	14.1		6.3	92	5.5	
15.3		09/03/91	935	0	13.8		6.8	98	6.3	
15.3		09/03/91	935	1	13.7		6.7	97	6.2	
15.3		09/03/91	935	2	13.7		6.8	97	6.2	
15.3		09/03/91	935	3	13.4		6.8	99	6.0	
15.3		09/03/91	1158	0						6.1
15.3		09/03/91	1158	0						6.1
15.3		09/05/91	1005	0						6.2
15.3		09/05/91	1005	0	14.7		6.8	95	6.3	6.3
15.3		09/05/91	1005	1	14.4		6.7	94	6.1	
15.3		09/05/91	1005	2	13.5		6.6	95	5.8	
15.3		09/05/91	1005	3	13.4		6.6	96	5.8	
15.3		09/05/91	1005	3.2	13.3		6.6	97	5.8	
15.3		09/06/91	931	0	14.7		6.7	95	6.3	
15.3		09/06/91	931	1	14.5		6.7	96	6.2	
15.3		09/06/91	931	2	13.8		6.6	97	5.9	
15.3		09/06/91	931	3	13.4		6.5	98	5.7	
15.3		09/06/91	931	3.2	13.3		6.5	99	5.7	
15.3		09/10/91	945	0						6.6
15.3		09/10/91	945	0	13.5		6.8	99		6.5
15.3		09/10/91	945	1	13.1		6.7	98		
15.3		09/10/91	945	2	12.8		6.6	100		
15.3		09/10/91	945	3	12.6		6.6	102		
15.3		09/11/91	1050	0	13.8		7.1	88	6.3	6.6
15.3		09/11/91	1050	1	13.5		7.1	90	6.1	
15.3		09/11/91	1050	1.7						6.5
15.3		09/11/91	1050	2	13.0		7.0	92	6.0	
15.3		09/12/91	935	0	13.7		7.3	93	6.5	
15.3		09/12/91	935	0.6						6.4
15.3		09/12/91	935	1	13.5		7.0	91	6.3	
15.3		09/12/91	935	2	13.1		6.9	91	6.1	
15.3		09/12/91	935	3	13.0		6.8	92	6.0	
15.3		09/25/91	1000	0	13.4		6.5	89	6.5	
15.3		09/25/91	1000	1	13.2		6.5	88	6.5	
15.3		09/25/91	1000	2	13.0		6.4	88	6.4	
15.3		09/25/91	1000	3	12.7		6.4	88	6.2	
15.3		10/09/91	1125	0	11.1		6.5	90	7.0	6.9
15.3		10/09/91	1125	1	10.9		6.4	90	7.0	
15.3		10/09/91	1125	2	10.9		6.3	89	7.1	
15.3		10/09/91	1125	3	10.9		6.2	89	7.1	
15.3		05/05/92	1240	0	14.6		7.0	73	7.3	7.0
15.3		05/05/92	1240	1	14.5		6.9	73	7.4	
15.3		05/05/92	1240	2	14.5		6.9	73	7.4	
15.3		05/05/92	1240	2.9	14.4		6.9	73	7.4	
15.3		05/05/92	1751	0						7.5
15.3		05/05/92	1751	0	16.5		7.1	73	7.6	7.4
15.3		05/05/92	1751	1	16.5		6.9	73	7.6	
15.3		05/05/92	1751	2	16.4		6.8	73	7.6	
15.3		05/06/92	1655							7.6

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
15.3	BR abv Littlerock BL	05/26/92	1250	0						6.7
15.3		05/26/92	1250	0						6.7
15.3		05/27/92	1320	0	14.2		6.8	76	6.9	7.0
15.3		05/27/92	1320	1	14.1		6.8	76	6.9	
15.3		05/27/92	1320	2	14.1		6.7	76	6.9	
15.3		06/18/92	821	0						6.3
15.3		06/18/92	1241	2	13.9		6.8	87	7.2	
15.3		06/18/92	1251	0	14.2		7.0	87	7.1	7.1
15.3		06/19/92	1058	0						6.4
15.3		07/08/92	1025	0	14.8		6.8	91	6.9	
15.3		07/08/92	1025	1	14.3		6.8	91	6.8	
15.3		07/08/92	1025	2	14.2		6.7	91	6.7	
15.3		07/08/92	1347	0						6.9
15.3		07/08/92	1347	0						7.0
15.3		07/09/92	1255	0						7.0
15.3		07/20/92	1717	0						6.4
15.3		07/21/92	915	0	15.0		6.8	94	5.0	5.8
15.3		07/21/92	915	1	14.9		6.7	94	4.6	
15.3		07/21/92	915	2	14.5		6.7	95	4.3	
15.3		07/21/92	915	3	13.9		6.6	94	4.1	
15.3		07/21/92	1800	0						6.6
15.3		08/05/92	859	2.1						6.2
15.3		08/05/92	908	0	13.5		6.6	95	5.9	
15.3		08/05/92	908	1	13.1		6.6	95	5.7	
15.3		08/05/92	908	2	12.8		6.6	95	5.6	
15.3		08/05/92	908	3	12.5		6.5	95	5.4	
15.3		08/05/92	1630	0	14.6		6.7	95	6.6	
15.3		08/05/92	1630	1	14.2		6.6	94	5.9	
15.3		08/05/92	1630	2	13.7		6.6	94	5.4	
15.3		08/05/92	1630	3	13.4		6.6	95	6.2	
15.3		08/05/92	1641	0						6.9
15.3		08/06/92	1020	0						6.1
15.3		08/17/92	1535	0	16.2		6.7	93	6.3	
15.3		08/17/92	1535	1	15.5		6.6	93	6.3	
15.3		08/17/92	1535	2	14.6		6.6	93	6.2	
15.3		08/17/92	1535	2.5	14.1		6.5	92	6.3	
15.3		08/17/92	1540	0						6.4
15.3		08/18/92	940	1						5.8
15.3		08/18/92	1625	1						6.3
15.3		08/19/92	1700	1						6.6
15.3		09/10/92	1221	0						6.1
15.3		09/10/92	1230	0	13.6		6.8	87	6.1	
15.3		09/10/92	1230	1	13.2		6.7	87	5.9	
15.3		09/10/92	1230	2	13.1		6.6	87	5.8	
15.3		09/10/92	1230	3	13.0		6.6	88	5.8	
15.3		09/11/92	746	0						5.9
15.3		10/01/92	1300	0	13.0		6.6	91	5.4	
15.3		10/01/92	1300	1	13.0		6.5	91	5.4	
15.3		10/01/92	1300	2	12.9		6.5	91	5.3	
15.3		10/01/92	1315	1.6						5.3
14.7	BR blw Littlerock BL	09/25/91	1020	0	13.1		6.5	87	7.0	
14.7		09/25/91	1020	1	12.9		6.4	86	7.0	
14.7		09/25/91	1020	2	12.9		6.5	87	7.0	
14.7		10/09/91	1145	0	11.2		6.6	90	7.5	
14.7		10/09/91	1145	1	10.8		6.5	89	7.4	
14.7		10/09/91	1145	1.8	10.8		6.4	89	7.5	
14.7		05/05/92	1305	0	14.8		6.9	74	7.6	7.5
14.7		05/05/92	1305	1	14.2		6.9	73	7.4	
14.7		05/05/92	1305	1.5	14.1		6.8	73	7.3	
14.1001	Clearwater Lagoon	06/18/92	1202	0	15.4		8.5	71	15.1	
14.1001		06/18/92	1202	1.4	12.5		8.0	70	14.1	
14.1001		06/19/92	905	0						15.5
14.1001		07/08/92	1305	0	17.7		8.3	73	13.9	
14.1001		07/08/92	1305	0.5	15.3		8.3	71	13.1	
14.1001		07/08/92	1305	1	13.5		9.1	73	22.5	
14.1001		07/08/92	1305	1.3	13.0		9.5	74	25.2	
14.1001		08/17/92	1453	0	21.7		8.1	76	12.8	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
14.1	BR @ Canoe Club	07/23/91	1119	0	18.5		6.6	88	7.7	8.7
14.1		07/23/91	1119	2	16.0		6.4	88	7.1	
14.1		07/23/91	1119	4	11.7		6.2	140	6.7	
14.1		08/15/91	1055	0	18.5		6.4	89	8.0	
14.1		08/15/91	1055	1	16.0		6.4	91	8.1	
14.1		08/15/91	1055	2	15.2		6.4	90	8.0	
14.1		08/15/91	1055	3	11.2		6.3	125	4.9	
14.1		08/15/91	1055	4	11.0		6.2	125	4.7	
14.1		09/03/91	1015	0	15.2		6.9	93	7.2	
14.1		09/03/91	1015	1	14.7		6.8	93	6.6	
14.1		09/03/91	1015	2	14.2		6.8	93	6.5	
14.1		09/03/91	1015	3	12.8		6.7	120	2.8	
14.1		09/03/91	1015	4	11.0		6.6	135	1.3	
14.1		09/03/91	1110	0						6.7
14.1		09/03/91	1110	0						6.8
14.1		09/05/91	1030	0	16.4		6.9	94	7.1	
14.1		09/05/91	1030	1	15.6		6.7	93	7.1	
14.1		09/05/91	1030	2	14.7		6.7	92	6.7	
14.1		09/05/91	1030	3	13.4		6.6	113	3.2	
14.1		09/05/91	1030	4	11.4		6.5	132	1.9	
14.1		09/05/91	1030	4.5	11.4		6.4	134	1.6	
14.1		09/10/91	1105	0	15.7		6.8	94		
14.1		09/10/91	1105	1	14.7		6.7	95		
14.1		09/10/91	1105	2	14.0		6.7	98		
14.1		09/10/91	1105	3	12.4		6.6	132		
14.1		09/10/91	1105	4	11.3		6.5	139		
14.1		09/11/91	1140	0	15.4		7.3	88	8.2	
14.1		09/11/91	1140	1	14.4		7.1	90	7.2	
14.1		09/11/91	1140	2	14.0		7.0	91	7.1	
14.1		09/11/91	1140	3	11.6		6.9	96	4.8	
14.1		09/11/91	1140	4	11.3		6.8	126	4.9	
14.1		09/12/91	1020	0	15.4		7.1	91	7.9	
14.1		09/12/91	1020	1	14.5		7.0	91	7.6	
14.1		09/12/91	1020	2	13.8		6.9	91	7.4	
14.1		09/12/91	1020	3	11.2		6.7	125	5.5	
14.1		09/12/91	1020	4	11.0		6.7	128	5.5	
14.1		09/25/91	1035	0	13.8		6.6	85	8.8	
14.1		09/25/91	1035	1	13.7		6.6	85	8.7	
14.1		09/25/91	1035	2	13.6		6.5	85	8.7	
14.1		09/25/91	1035	3	11.7		6.5	115	9.8	
14.1		09/25/91	1035	4	11.2		6.4	123	8.5	
14.1		10/09/91	1155	0	11.9		6.5	88	8.4	
14.1		10/09/91	1155	1	11.5		6.5	88	8.3	
14.1		10/09/91	1155	2	11.4		6.4	88	8.3	
14.1		10/09/91	1155	3	11.1		6.3	92	8.0	
14.1		10/09/91	1155	4	10.8		6.3	107	7.0	
14.1		05/05/92	1320	0	15.9		6.9	74	7.2	
14.1		05/05/92	1320	1	14.9		6.8	74	7.1	
14.1		05/05/92	1320	2	14.8		6.8	74	7.1	
14.1		05/05/92	1320	3	14.6		6.8	74	7.1	
14.1		05/05/92	1320	4	14.2		6.8	74	7.0	
14.1		05/27/92	950	0	15.3		6.9	76	8.1	8.3
14.1		05/27/92	950	1	15.1		6.9	77	7.9	
14.1		05/27/92	950	2	15.0		6.8	77	7.9	
14.1		05/27/92	950	3	14.9		6.8	77	7.8	
14.1		05/27/92	950	4	14.8		6.8	77	7.7	
14.1		06/18/92	1221	0	16.4		7.1	87	9.2	
14.1		06/18/92	1221	1	14.7		6.9	86	8.8	
14.1		06/18/92	1221	2	14.2		6.9	86	8.4	
14.1		06/18/92	1221	3	13.1		6.8	109	9.3	
14.1		06/18/92	1221	4	11.7		6.7	129	9.4	
14.1		07/08/92	1325	0	18.2		7.1	91	9.0	
14.1		07/08/92	1325	1	15.4		7.0	89	7.9	
14.1		07/08/92	1325	2	14.8		7.0	90	7.0	
14.1		07/08/92	1325	3	11.7		6.8	133	5.8	
14.1		07/08/92	1325	4	11.0		6.7	137	5.8	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
14.1	BR @ Canoe Club	07/21/92	1010	0	16.7		6.7	93	7.8	
14.1		07/21/92	1010	1	16.0		6.8	94	6.0	
14.1		07/21/92	1010	2	15.3		6.7	95	6.0	
14.1		07/21/92	1010	3	11.6		6.6	138	4.9	
14.1		07/21/92	1010	4	11.1		6.6	137	4.8	
14.1		08/05/92	1550	0	20.2		7.0	90	10.0	
14.1		08/05/92	1550	1	17.6		6.9	90	7.9	
14.1		08/05/92	1550	2	15.3		6.7	94	7.5	
14.1		08/05/92	1550	3	11.7		6.7	138	7.8	
14.1		08/05/92	1550	4	11.4		6.6	138	6.8	
14.1		08/05/92	1550	4.8	11.2		6.6	131	6.5	
14.1		08/17/92	1512	0	22.0		6.8	92	8.3	
14.1		08/17/92	1512	1	18.1		6.7	92	7.1	
14.1		08/17/92	1512	2	12.6		6.6	132	9.3	
14.1		08/17/92	1512	3	11.9		6.6	128	4.7	
14.1		08/17/92	1512	4	11.6		6.6	123	4.6	
14.1		08/17/92	1512	4.6	11.4		6.6	123	4.5	
14.1		09/10/92	1155	0	14.9		6.8	87	7.5	
14.1		09/10/92	1155	1	14.4		6.7	87	7.3	
14.1		09/10/92	1155	2	13.8		6.7	86	6.9	
14.1		09/10/92	1155	3	12.5		6.6	109	3.5	
14.1		09/10/92	1155	4	11.4		6.5	133	0.7	
14.1		10/01/92	1225	0	15.1		6.7	85	7.5	
14.1		10/01/92	1225	1	14.6		6.6	86	6.8	
14.1		10/01/92	1225	2	12.8		6.5	89	5.5	
14.1		10/01/92	1225	3	12.4		6.6	88	5.2	
14.1		10/01/92	1225	3.8	11.3		6.5	104	3.4	
13.6	BR blw Canoe Club	09/25/91	1055	0	14.2		6.6	87	9.7	
13.6		09/25/91	1055	1	13.9		6.6	87	9.8	
13.6		09/25/91	1055	2	13.8		6.6	87	9.8	
13.6		09/25/91	1055	3	11.3		6.5	128	9.9	
13.6		10/09/91	1205	0	11.9		6.7	87	8.8	
13.6		10/09/91	1205	1	11.6		6.6	87	8.8	
13.6		10/09/91	1205	2	11.5		6.5	88	8.9	
13.6		10/09/91	1205	3	10.6		6.3	133	8.5	
13.6		10/09/91	1205	4	9.9		6.2	124	7.4	
13.6		05/05/92	1335	0	16.3		7.0	73	8.4	
13.6		05/05/92	1335	1	15.3		6.9	73	8.1	
13.6		05/05/92	1335	2	15.0		6.9	73	7.6	
13.6		05/05/92	1335	3	14.4		6.8	73	7.7	
13.6		05/05/92	1335	4	13.4		6.8	79	7.5	
13.6		05/05/92	1335	4.7	12.7		6.8	85	6.4	
13.1	BR abv Steel Piling	07/23/91	1140	0	19.0		6.4	89	8.5	
13.1		07/23/91	1147	2	17.7		6.4	91	8.2	
13.1		07/23/91	1147	4	10.9		6.2	135	6.4	
13.1		08/15/91	1135	0	20.1		6.5	88	8.6	
13.1		08/15/91	1135	1	17.9		6.5	89	9.0	
13.1		08/15/91	1135	2	13.1		6.3	135	9.6	
13.1		08/15/91	1135	3	11.1		6.2	141	6.3	
13.1		08/15/91	1135	4	10.7		6.1	140	4.3	
13.1		08/15/91	1135	5	10.4		6.1	152	4.3	
13.1		08/15/91	1135	6					4.0	
13.1		09/25/91	1110	0	14.4		6.6	90	9.8	
13.1		09/25/91	1110	1	14.0		6.6	90	9.8	
13.1		09/25/91	1110	2	13.0		6.5	117	10.9	
13.1		09/25/91	1110	3	10.9		6.4	139	7.4	
13.1		09/25/91	1110	4	10.7		6.3	141	6.1	
13.1		09/25/91	1110	5	10.4		6.2	148	5.1	
13.1		10/09/91	1225	0	12.0		6.6	88	9.2	
13.1		10/09/91	1225	1	11.9		6.5	87	9.1	
13.1		10/09/91	1225	2	11.4		6.4	106	9.9	
13.1		10/09/91	1225	3	10.3		6.2	137	6.1	
13.1		10/09/91	1225	4	10.2		6.1	138	4.9	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
13.1	BR abv Steel Piling	05/05/92	1355	0	18.1		7.0	73	8.3	
13.1		05/05/92	1355	1	16.6		6.9	73	8.4	
13.1		05/05/92	1355	2	15.3		6.9	73	8.4	
13.1		05/05/92	1355	3	14.6		6.8	76	8.1	
13.1		05/05/92	1355	4	11.7		6.6	122	6.2	
13.1		05/05/92	1355	5	10.3		6.6	115	6.3	
13.1		05/05/92	1355	5.5	10.3		6.6	134	6.2	
13.1		05/27/92	1010	0	16.1		6.9	75	8.8	
13.1		05/27/92	1010	1	16.0		6.9	75	8.7	
13.1		05/27/92	1010	2	15.6		6.9	75	8.2	
13.1		05/27/92	1010	3	11.2		6.6	133	8.2	
13.1		05/27/92	1010	4	10.4		6.5	146	7.5	
13.1		05/27/92	1010	5	10.5		6.5	150	7.4	
13.1		06/18/92	1136	0	17.5		7.1	85	10.2	
13.1		06/18/92	1136	1	16.1		6.9	85	10.3	
13.1		06/18/92	1136	2	12.6		6.7	124	11.3	
13.1		06/18/92	1136	3	10.5		6.5	148	9.3	
13.1		06/18/92	1136	4	10.5		6.6	155	6.4	
13.1		06/18/92	1136	5	10.3		6.5	176	5.7	
13.1		07/08/92	1245	0	18.0		6.9	89	9.2	
13.1		07/08/92	1245	1	16.4		6.8	89	8.5	
13.1		07/08/92	1245	2	13.3		6.7	114	8.5	
13.1		07/08/92	1245	3	10.8		6.5	114	5.2	
13.1		07/08/92	1245	4	10.3		6.4	151	5.0	
13.1		07/08/92	1245	5	10.3		6.4	163	4.9	
13.1		07/21/92	1045	0	17.8		6.7	109	7.7	
13.1		07/21/92	1045	1	15.7		6.7	98	7.3	
13.1		07/21/92	1045	2	13.0		6.6	149	8.4	
13.1		07/21/92	1045	3	10.9		6.6	152	5.1	
13.1		07/21/92	1045	4	10.5		6.5	154	4.8	
13.1		07/21/92	1045	5	10.3		6.5	157	4.8	
13.1		07/21/92	1045	5.9	10.3		6.5	165	4.6	
13.1		08/05/92	1500	0	18.8		6.8	90	9.1	
13.1		08/05/92	1500	1	15.7		6.7	94	8.2	
13.1		08/05/92	1500	1.5	16.1		6.6	95	8.2	
13.1		08/05/92	1500	2	13.7		6.7	144	14.1	
13.1		08/05/92	1500	2.5	12.4		6.6	146	12.8	
13.1		08/05/92	1500	3	11.3		6.6	150	8.0	
13.1		08/05/92	1500	4	10.7		6.5	151	6.2	
13.1		08/05/92	1500	5	10.6		6.5	150	5.7	
13.1		08/05/92	1520	2						13.8
13.1		08/17/92	1430	0	22.5		6.8	89	8.8	
13.1		08/17/92	1430	1	21.0		6.8	90	8.6	
13.1		08/17/92	1430	2	16.4		6.8	103	13.2	
13.1		08/17/92	1430	3	12.8		6.7	129	11.0	
13.1		08/17/92	1430	4	11.3		6.6	153	7.4	
13.1		08/17/92	1430	5	10.7		6.6	161	5.3	
13.1		08/17/92	1430	5.6	10.7		6.5	168	5.1	
13.1		09/10/92	1130	0	15.9		6.9	81	9.4	
13.1		09/10/92	1130	1	15.6		6.9	81	9.4	
13.1		09/10/92	1130	2	12.9		6.7	102	7.0	
13.1		09/10/92	1130	3	11.3		6.5	137	1.5	
13.1		09/10/92	1130	4	10.6		6.5	143	1.0	
13.1		09/10/92	1130	5	10.4		6.5	151	2.5	
13.1		09/10/92	1130	6	10.3		6.5	156	2.5	
13.1		10/01/92	1205	0	15.2		6.7	89	6.9	
13.1		10/01/92	1205	1	13.1		6.6	87	5.7	
13.1		10/01/92	1205	2	12.1		6.5	111	3.1	
13.1		10/01/92	1205	3	10.7		6.5	141	2.3	
13.1		10/01/92	1205	4	10.3		6.5	139	4.0	
13.1		10/01/92	1205	5	10.3		6.5	160	4.1	
12.8	BR @ narrows blw Steel Piling	09/12/91	1100	0	15.3		7.1	91	8.3	
12.8		09/12/91	1100	1	14.1		7.0	95	7.4	
12.8		09/12/91	1100	2	12.3		6.8	126	7.0	
12.8		09/25/91	1130	0	14.5		6.6	91	10.0	
12.8		09/25/91	1130	1	13.9		6.6	93	10.0	
12.8		09/25/91	1130	2	11.9		6.5	118	10.0	

RM Code	Site Description	Date	Time	Depth (m)	Horiz Loc	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
12.8	BR @ narrows blw Steel Piling	10/09/91	1240	0		12.3		6.7	88	9.2	
12.8		10/09/91	1240	1		11.7		6.5	89	9.2	
12.8		10/09/91	1240	2		10.4		6.2	131	8.4	
12.8		05/05/92	1410	0		18.6		7.0	74	8.6	
12.8		05/05/92	1410	1		14.9		6.9	76	8.2	
12.6	BR blw narrows blw Steel Piling	08/17/92	1210	0		23.7		6.9	92	9.1	
12.6		08/17/92	1210	0.7		21.0		6.8	92	8.6	
12.3	BR abv Dairy Drainage	09/25/91	1150	0	RB	17.2		6.8	92	9.7	
12.3		09/25/91	1150	0		15.1		6.7	94	9.8	
12.3		09/25/91	1150	1		14.5		6.7	93	9.8	
12.3		09/25/91	1150	2		14.3		6.6	100	9.3	
12.3		09/25/91	1150	3		13.7		6.6	101	9.3	
12.3		09/25/91	1150	0	LB	15.4		6.8	95	10.1	
12.3		10/09/91	1313	0	RB	14.3		6.3	95	10.0	
12.3		10/09/91	1310	0		12.7		6.6	93	9.9	
12.3		10/09/91	1310	1		12.3		6.6	93	9.9	
12.3		10/09/91	1310	2		11.9		6.5	94	10.1	
12.3		10/09/91	1310	3		11.8		6.4	96	8.3	
12.3		10/09/91	1310	3.8		11.7		6.3	122	4.8	
12.3		10/09/91	1310	0	LB	12.8		6.8	95	10.6	
12.3		05/05/92	1422	0		18.3		6.9	77	8.4	
12.3		05/05/92	1422	1		15.2		6.9	78	8.1	
12.3		05/05/92	1422	2		14.7		6.8	81	7.8	
12.3		05/05/92	1422	3		14.3		6.7	86	7.5	
12.3		05/05/92	1422	4		13.4		6.6	97	7.0	
12.2	BR nr Dairy Drainage	08/15/91	1205	0	RB	20.3		6.9	1600	1.0	
12.2		09/25/91	1210	0	RB	17.2		6.9	158	9.9	
12.2		09/25/91	1210	0		15.3		6.7	93	9.9	
12.2		09/25/91	1210	1		14.7		6.7	93	9.9	
12.2		09/25/91	1210	2		14.0		6.6	107	9.4	
12.2		09/25/91	1210	3		13.6		6.5	103	9.5	
12.2		09/25/91	1210	4		13.5		6.5	146	0.2	
12.2		09/25/91	1210	0	LB	15.6		6.8	93	10.5	
12.2		10/09/91	1322	0	RB	15.1		6.9	297	9.9	
12.2		10/09/91	1320	0		12.8		6.6	94	9.8	
12.2		10/09/91	1320	1		12.5		6.5	94	9.9	
12.2		10/09/91	1320	2		11.9		6.5	97	11.3	
12.2		10/09/91	1320	3		11.9		6.4	101	8.5	
12.2		10/09/91	1320	4		11.6		6.3	144	5.3	
12.2		10/09/91	1337	0	LB	12.6		6.8	97	10.8	
12.1	BR blw Dairy Drainage	09/25/91	1255	0	RB	17.7		6.9	94	9.4	
12.1		09/25/91	1255	0		16.0		6.8	96	9.8	
12.1		09/25/91	1255	1		14.8		6.7	93	9.9	
12.1		09/25/91	1255	2		14.3		6.6	98	9.7	
12.1		09/25/91	1255	3		13.8		6.6	102	9.6	
12.1		09/25/91	1255	4		13.6		6.5	135	0.7	
12.1		09/25/91	1255	0	LB	15.6		6.8	93	10.0	
12.1		10/09/91	1357	0	RB	16.4		6.7	93	7.9	
12.1		10/09/91	1345	0		12.7		6.7	94	9.9	
12.1		10/09/91	1345	1		12.6		6.6	94	9.9	
12.1		10/09/91	1345	2		11.9		6.6	95	10.3	
12.1		10/09/91	1345	3		11.8		6.5	99	9.4	
12.1		10/09/91	1345	4		11.6		6.4	116	6.9	
12.1		10/09/91	1345	0	LB	12.6		6.7	95	10.5	
11.9	BR abv Mima Ck	07/23/91	1200	0		19.6		6.6	89	9.3	
11.9		07/23/91	1200	2		16.8		6.4	94	9.0	
11.9		07/23/91	1200	4		14.6		6.2	110	2.8	
11.9		07/23/91	1200	6		13.2		6.1	150	0.1	
11.9		08/15/91	1230	0		21.4		6.5	89	8.7	9.0
11.9		08/15/91	1230	1		18.2		6.4	94	8.9	
11.9		08/15/91	1230	2		16.0		6.4	102	9.1	
11.9		08/15/91	1230	3		15.6		6.3	184	0.3	
11.9		08/15/91	1230	4		14.8		6.5	502	0.1	
11.9		08/15/91	1230	5		14.3		6.6	607	0.0	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
11.9	BR abv Mima Ck	09/03/91	1045	0	16.6		6.9	93	7.9	
11.9		09/03/91	1045	1	16.6		6.8	95	7.9	
11.9		09/03/91	1045	2	15.3		6.8	103	6.4	
11.9		09/03/91	1045	3	14.7		6.6	128	2.9	
11.9		09/03/91	1045	4	14.2		6.9	550	0.1	
11.9		09/03/91	1057	0						7.6
11.9		09/03/91	1057	0						7.7
11.9		09/05/91	1050	0	17.1		6.8	95	7.6	7.7
11.9		09/05/91	1050	1	16.5		6.8	96	7.1	
11.9		09/05/91	1050	2	15.7		6.6	108	6.0	
11.9		09/05/91	1050	3	15.1		6.5	118	3.2	
11.9		09/05/91	1050	3.2	14.9		6.4	125	2.1	
11.9		09/10/91	1330	0	18.0		6.9	95		
11.9		09/10/91	1330	1	17.0		6.9	96		
11.9		09/10/91	1330	2	15.6		6.7	111		
11.9		09/10/91	1330	3	14.9		6.6	122		
11.9		09/10/91	1330	4	14.6		6.6	243		
11.9		09/10/91	1330	5	14.0		6.7	715		
11.9		09/11/91	1220	0	15.8		7.1	98	7.6	
11.9		09/11/91	1220	1	15.2		7.0	104	7.2	
11.9		09/11/91	1220	2	14.7		6.9	104	6.6	
11.9		09/11/91	1220	3	14.4		6.8	105	3.6	
11.9		09/11/91	1220	4	14.4		6.9	520	0.3	
11.9		09/11/91	1220	5	13.7		6.8	796	0.2	
11.9		09/12/91	1130	0	15.6		7.3	98	8.2	
11.9		09/12/91	1130	1	14.7		7.0	101	7.5	
11.9		09/12/91	1130	2	14.3		6.8	106	6.5	
11.9		09/12/91	1130	3	14.0		6.8	107	6.5	
11.9		09/12/91	1130	4	14.2		6.8	585	0.2	
11.9		09/12/91	1130	5	13.6		6.8	822	0.1	
11.9		09/25/91	1310	0	15.9		6.7	94	9.9	
11.9		09/25/91	1310	1	15.3		6.7	93	9.9	
11.9		09/25/91	1310	2	14.4		6.7	93	10.1	
11.9		09/25/91	1310	3	13.8		6.6	100	9.9	
11.9		09/25/91	1310	4	13.5		6.5	116	1.5	
11.9		09/25/91	1310	5	13.6		6.6	691	0.2	
11.9		10/09/91	1405	0						9.6
11.9		10/09/91	1405	0	12.8		6.7	94	10.0	9.7
11.9		10/09/91	1405	1	12.6		6.6	94	10.0	
11.9		10/09/91	1405	2	12.2		6.5	94	10.5	
11.9		10/09/91	1405	3	11.8		6.5	97	10.0	
11.9		10/09/91	1405	4	11.7		6.4	100	9.4	
11.9		10/09/91	1405	5	11.6		6.4	203	5.0	
11.9		10/09/91	1405	5.2	12.2		6.5	693	0.3	
11.9		05/05/92	1656	0						8.6
11.9		05/05/92	1656	0	19.0		7.0	78	8.6	8.4
11.9		05/05/92	1656	1	17.0		6.9	76	8.2	
11.9		05/05/92	1656	2	15.3		6.8	79	8.1	
11.9		05/05/92	1656	3	15.0		6.8	80	7.7	
11.9		05/05/92	1656	4	14.2		6.7	83	7.5	
11.9		05/06/92	1605							8.2
11.9		05/26/92	1600	0						9.2
11.9		05/27/92	1030	0	15.5		6.9	86	9.3	9.3
11.9		05/27/92	1030	1	15.3		6.8	87	9.2	
11.9		05/27/92	1030	2	15.2		6.8	86	9.0	
11.9		05/27/92	1030	3	14.8		6.8	91	8.6	
11.9		05/27/92	1030	4	14.4		6.7	95	8.1	
11.9		05/27/92	1030	5	13.1		6.6	99	5.6	
11.9		05/27/92	1030	5.6	13.0		6.6	101	4.9	
11.9		06/18/92	855	0						12.2
11.9		06/18/92	1052	0	17.2		7.1	89	11.8	11.7
11.9		06/18/92	1052	2	14.9		6.8	106	10.1	
11.9		06/18/92	1052	3	14.3		6.7	109	9.7	
11.9		06/18/92	1052	4	14.0		6.7	105	9.2	
11.9		06/18/92	1052	5.5	13.6		6.6	124	1.3	
11.9		06/19/92	1025	0						10.7

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
11.9	BR abv Mima Ck	07/08/92	1057	0						9.5
11.9		07/08/92	1210	0						9.3
11.9		07/08/92	1225	0	17.7		6.6	96	9.5	
11.9		07/08/92	1225	1	16.1		6.7	97	8.7	
11.9		07/08/92	1225	2	15.2		6.7	102	8.4	
11.9		07/08/92	1225	3	14.9		6.6	107	7.9	
11.9		07/08/92	1225	4	14.1		6.5	126	0.6	
11.9		07/08/92	1225	5	13.7		6.4	153	0.3	
11.9		07/08/92	1225	5.9	13.3		6.5	202	0.2	
11.9		07/09/92	1157	0						9.9
11.9		07/20/92	1545	0						8.9
11.9		07/20/92	1548	0						8.9
11.9		07/21/92	1135	0	17.9		6.8	99	8.7	
11.9		07/21/92	1135	1	17.1		6.8	102	8.8	
11.9		07/21/92	1135	2	16.0		6.7	113	9.1	
11.9		07/21/92	1135	3	15.0		6.6	125	3.3	
11.9		07/21/92	1135	4	14.2		6.6	131	0.1	
11.9		07/21/92	1135	5	13.7		6.5	171	0.1	
11.9		07/21/92	1150	0						8.9
11.9		07/21/92	1150	0						8.9
11.9		07/21/92	1220	4.5						0.2
11.9		08/05/92	1338	1.2						9.8
11.9		08/05/92	1340	0	18.3		6.8	99	9.2	
11.9		08/05/92	1340	1	17.0		6.7	102	9.8	
11.9		08/05/92	1340	2	16.1		6.7	114	11.3	
11.9		08/05/92	1340	3	15.7		6.7	117	7.6	
11.9		08/05/92	1340	4	15.2		6.5	122	2.5	
11.9		08/05/92	1340	5	14.4		6.5	169	0.1	
11.9		08/05/92	1340	5.8	13.5		6.8	245	0.1	
11.9		08/06/92	1106	0						8.9
11.9		08/17/92	1350	0	22.2		6.8	93	8.5	
11.9		08/17/92	1350	1	21.8		6.8	93	8.3	
11.9		08/17/92	1350	2	18.1		6.7	104	10.1	
11.9		08/17/92	1350	3	16.6		6.7	106	9.9	
11.9		08/17/92	1350	4	15.4		6.6	110	1.3	
11.9		08/17/92	1350	5	14.9		6.5	135	0.6	
11.9		08/17/92	1400	0						8.4
11.9		08/18/92	1144	1						8.9
11.9		09/10/92	1115	0	15.8		6.9	87	9.1	9.0
11.9		09/10/92	1115	1	15.7		6.9	88	9.1	
11.9		09/10/92	1115	2	15.7		6.9	89	9.0	
11.9		09/10/92	1115	3	14.2		6.8	85	8.4	
11.9		09/10/92	1115	4	13.6		6.9	85	7.4	
11.9		09/10/92	1115	5	13.3		6.8	88	6.8	
11.9		09/10/92	1115	5.8	13.1		6.8	91	5.1	
11.9		09/11/92	820	0						9.1
11.9		09/11/92	820	0						9.3
11.9		10/01/92	1120	0	14.4		6.7	94	6.5	
11.9		10/01/92	1120	1	13.7		6.6	96	5.6	
11.9		10/01/92	1120	2	13.3		6.6	102	4.7	
11.9		10/01/92	1120	3	13.1		6.5	112	3.1	
11.9		10/01/92	1120	4	12.8		6.5	99	5.0	
11.9		10/01/92	1120	5	12.5		6.6	97	3.3	
11.9		10/01/92	1120	5.5	12.4		6.6	100	1.2	
11.9		10/01/92	1135	0						6.8
11.9		10/01/92	1135	0						6.8
11.7	BR blw Mima Ck	09/25/91	1345	0	16.2		6.7	95	9.6	
11.7		09/25/91	1345	1	14.9		6.7	94	9.7	
11.7		09/25/91	1345	2	14.6		6.7	94	9.7	
11.7		09/25/91	1345	3	14.5		6.7	94	9.5	
11.6		10/09/91	1425	0	12.6		6.6	97	10.0	
11.6		10/09/91	1425	1	12.2		6.5	97	9.9	
11.6		10/09/91	1425	2	11.8		6.5	97	10.0	
11.6		10/09/91	1425	3	11.8		6.4	97	9.9	
11.6		10/09/91	1425	4	11.8		6.4	97	9.6	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
11.1	BR abv Big Lagoon	07/23/91	1226							
11.1		07/23/91	1226	0						9.9
11.1		07/23/91	1226	0	20.2		6.5	90	9.0	9.9
11.1		07/23/91	1226	2	18.2		6.5	91	8.4	
11.1		07/23/91	1226	4	16.1		6.3	98	6.5	
11.1		07/23/91	1226	6	15.6		6.2	98	6.2	
11.1		07/23/91	1226	7	15.3		6.2	98	5.6	
11.1		08/15/91	1305	0	21.4		6.5	91	8.5	
11.1		08/15/91	1305	1	20.5		6.5	92	8.3	
11.1		08/15/91	1305	2	18.4		6.5	94	8.8	
11.1		08/15/91	1305	3	17.6		6.4	95	7.4	
11.1		08/15/91	1305	4	17.3		6.3	100	5.2	
11.1		08/15/91	1305	5	17.0		6.2	103	5.1	
11.1		08/15/91	1305	6	16.7		6.2	105	4.3	
11.1		08/15/91	1305	7	16.4		6.2	109	2.9	
11.1		08/15/91	1305	8	15.3		6.2	128	0.1	
11.1		09/10/91	1400	0	18.8		6.8	99		
11.1		09/10/91	1400	0.2						7.9
11.1		09/10/91	1400	1	16.7		6.8	97		
11.1		09/10/91	1400	2	16.1		6.7	99		
11.1		09/10/91	1400	3	15.9		6.7	102		
11.1		09/10/91	1400	3.6						6.5
11.1		09/10/91	1400	4	15.7		6.6	105		
11.1		09/11/91	1300	0	16.7		7.2	97	8.3	
11.1		09/11/91	1300	0.8						8.6
11.1		09/11/91	1300	1	16.4		7.1	96	8.0	
11.1		09/11/91	1300	2	16.1		7.0	96	7.8	
11.1		09/11/91	1300	3	15.8		7.0	97	7.3	
11.1		09/11/91	1300	3.3						7.4
11.1		09/12/91	1200	0	16.6		7.2	98	8.6	8.5
11.1		09/12/91	1200	1	16.2		7.1	98	8.2	
11.1		09/12/91	1200	2	15.4		6.9	100	7.0	
11.1		09/12/91	1200	2.9						6.7
11.1		09/12/91	1200	3	15.2		6.9	100	6.9	
11.1		09/25/91	1405	0	16.6		6.7	93	10.0	
11.1		09/25/91	1405	1	15.7		6.7	93	9.8	
11.1		09/25/91	1405	2	15.3		6.7	93	9.7	
11.1		09/25/91	1405	3	14.8		6.6	93	8.1	
11.1		10/09/91	1440	0	13.8		6.7	98	10.1	
11.1		10/09/91	1440	1	12.7		6.6	97	10.2	
11.1		10/09/91	1440	2	12.2		6.5	99	10.1	
11.1		10/09/91	1440	3	12.0		6.5	98	9.6	
11.1		05/27/92	1100	0	16.1		7.0	82	9.9	
11.1		05/27/92	1100	1	15.4		6.9	83	9.2	
11.1		05/27/92	1100	2	15.2		6.8	83	9.0	
11.1		05/27/92	1100	3	15.1		6.8	82	8.9	
11.1		06/18/92	1025	0	16.4		7.0	94	11.0	
11.1		06/18/92	1025	2	15.2		6.9	93	10.7	
11.1		06/18/92	1025	3	15.0		6.9	93	10.4	
11.1		07/08/92	1157	0	18.7		6.9	97	9.3	
11.1		07/08/92	1157	1	17.0		6.9	97	8.6	
11.1		07/08/92	1157	2	16.1		6.8	97	8.3	
11.1		07/08/92	1157	3	16.1		6.8	97	8.3	
11.1		07/08/92	1157	4	16.0		6.7	97	8.3	
11.1		07/21/92	1245	0	19.6		6.8	98	8.4	
11.1		07/21/92	1245	1	19.4		6.8	99	8.1	
11.1		07/21/92	1245	2	17.7		6.8	103	8.2	
11.1		07/21/92	1245	3	17.4		6.7	104	8.0	
11.1		08/05/92	1252	0	19.8		6.9	100	7.9	
11.1		08/05/92	1252	1	19.4		6.9	99	7.0	
11.1		08/05/92	1252	2	18.3		6.8	102	5.9	
11.1		08/05/92	1252	3	17.9		6.7	103	7.4	
11.1		08/05/92	1252	3.5	17.9		6.7	103	7.3	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
11.1	BR abv Big Lagoon	08/17/92	1330	0	22.4		6.8	97	8.4	
11.1		08/17/92	1330	1	20.8		6.8	97	7.6	
11.1		08/17/92	1330	2	19.9		6.7	97	7.0	
11.1		08/17/92	1330	3	18.8		6.6	100	6.0	
11.1		08/17/92	1330	3.7	18.3		6.6	101	4.3	
11.1		09/10/92	1040	0	15.8		6.9	91	8.4	
11.1		09/10/92	1040	1	15.4		6.9	91	8.0	
11.1		09/10/92	1040	2	15.3		6.8	91	7.8	
11.1		09/10/92	1040	3	15.1		6.8	91	6.9	
11.1		10/01/92	1100	0	15.0		6.7	95	7.4	
11.1		10/01/92	1100	1	14.6		6.7	95	6.8	
11.1		10/01/92	1100	2	13.9		6.6	96	5.7	
11.1		10/01/92	1100	3	13.8		6.6	96	5.2	
11.0001	Big Lagoon	06/18/92	1025	0	15.9		7.1	94	11.1	
11.0001		06/18/92	1025	2	15.2		6.9	94	10.6	
10.6	BR @ Swecker Dock	07/23/91	1245	0	19.9		6.5	91	9.2	
10.6		07/23/91	1245	2	18.4		6.4	96	8.3	
10.6		07/23/91	1245	4	16.0		6.2	98	6.1	
10.6		08/15/91	1325	0	21.4		6.5	87	8.8	
10.6		08/15/91	1325	1	20.3		6.5	93	9.1	
10.6		08/15/91	1325	2	18.0		6.5	97	8.9	
10.6		08/15/91	1325	3	17.4		6.4	100	6.1	
10.6		08/15/91	1325	3.9	17.0		6.3	107	3.9	
10.6		09/10/91	1500	0	19.6		6.8	97		
10.6		09/10/91	1500	1	16.6		6.8	96		
10.6		09/10/91	1500	2	16.2		6.7	99		
10.6		09/10/91	1500	3	15.8		6.7	105		
10.6		09/10/91	1500	4	15.3		6.6	110		
10.6		09/11/91	1350	0	16.9		7.3	97	8.8	
10.6		09/11/91	1350	1	16.3		7.1	97	7.8	
10.6		09/11/91	1350	2	15.8		7.0	99	6.4	
10.6		09/11/91	1350	3	15.6		7.0	99	6.0	
10.6		09/11/91	1350	4	15.2		6.9	102	5.8	
10.6		09/12/91	1230	0	16.4		7.3	99	9.1	
10.6		09/12/91	1230	1	15.9		7.1	98	8.1	
10.6		09/12/91	1230	2	15.7		6.9	100	6.7	
10.6		09/12/91	1230	3	15.5		6.9	101	6.9	
10.6		09/12/91	1230	4	15.0		6.8	104	6.1	
10.6		09/25/91	1425	0						9.6
10.6		09/25/91	1425	0	16.9		6.7	93	9.9	9.6
10.6		09/25/91	1425	1	16.4		6.7	93	9.9	
10.6		09/25/91	1425	2	15.5		6.8	93	10.1	
10.6		09/25/91	1425	3	14.9		6.7	99	8.2	
10.6		09/25/91	1425	4	14.5		6.6	102	7.2	
10.6		10/09/91	1455	0	13.3		6.6	99	9.7	
10.6		10/09/91	1455	1	12.7		6.5	99	9.6	
10.6		10/09/91	1455	2	12.3		6.5	100	9.0	
10.6		10/09/91	1455	3	11.9		6.4	104	8.0	
10.6		10/09/91	1455	4	11.7		6.4	105	7.5	
10.6		05/05/92	1630	0	17.0		7.0	78	8.5	
10.6		05/05/92	1630	1	16.2		6.9	78	8.4	
10.6		05/05/92	1630	2	14.9		6.9	78	8.2	
10.6		05/05/92	1630	3	14.5		6.8	78	8.0	
10.6		05/05/92	1630	4	14.4		6.8	78	8.0	
10.6		05/27/92	1110	0	16.1		6.9	83	9.3	
10.6		05/27/92	1110	1	15.7		6.9	82	9.3	
10.6		05/27/92	1110	2	15.4		6.8	82	8.9	
10.6		05/27/92	1110	3	15.3		6.8	83	8.8	
10.6		06/18/92	1010	0	15.6		7.1	94	11.1	
10.6		06/18/92	1010	2	15.1		6.9	94	10.7	
10.6		06/18/92	1010	3	14.8		6.8	97	10.7	
10.6		06/18/92	1010	4	14.6		6.8	99	9.4	
10.6		07/08/92	1135	0	18.3		6.9	97	9.6	
10.6		07/08/92	1135	1	17.3		6.8	97	9.5	
10.6		07/08/92	1135	2	16.5		6.8	98	8.4	
10.6		07/08/92	1135	3	16.3		6.8	98	8.3	
10.6		07/08/92	1135	4	16.1		6.7	103	7.9	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
10.6	BR @ Swecker Dock	08/17/92	1316	0	22.2		6.8	97	8.1	
10.6		08/17/92	1316	1	21.2		6.8	97	8.1	
10.6		08/17/92	1316	2	19.7		6.7	100	7.2	
10.6		08/17/92	1316	3	18.8		6.7	103	6.0	
10.6		08/17/92	1316	3.8	17.5		6.6	103	2.5	
10.6		09/10/92	1030	0	15.9		6.9	92	8.8	
10.6		09/10/92	1030	1	15.7		6.9	92	8.6	
10.6		09/10/92	1030	2	15.6		6.9	93	8.6	
10.6		09/10/92	1030	3	15.1		6.8	95	6.6	
10.6		09/10/92	1030	3.8	14.9		6.8	98	7.0	
10.6		10/01/92	1050	0	14.6		6.7	95	7.3	
10.6		10/01/92	1050	1	14.4		6.6	95	6.8	
10.6		10/01/92	1050	2	14.0		6.6	95	5.9	
10.6		10/01/92	1050	3	13.7		6.6	95	5.2	
10.6		10/01/92	1050	4	13.4		6.6	99	3.3	
10.1	BR nr Osprey Nest	09/25/91	1445	0	17.0		6.8	94	9.9	
10.1		09/25/91	1445	1	16.4		6.8	94	9.8	
10.1		09/25/91	1445	2	15.7		6.8	94	9.8	
10.1		09/25/91	1445	3	15.2		6.7	95	8.0	
10.1		09/25/91	1445	4	14.6		6.6	100	6.6	
10.1		09/25/91	1445	5	14.5		6.5	101	5.8	
10.1		10/09/91	1510	0	13.4		6.6	100	9.2	
10.1		10/09/91	1510	1	13.1		6.6	100	9.0	
10.1		10/09/91	1510	2	12.8		6.5	100	8.8	
10.1		10/09/91	1510	3	12.4		6.5	101	8.3	
10.1		10/09/91	1510	4	12.2		6.4	102	7.8	
10.1		10/09/91	1510	4.8	12.2		6.4	102	7.6	
9.7	BR abv Big Dock	07/23/91	1306	0	21.0		6.5	95	9.1	
9.7		07/23/91	1306	2	18.4		6.5	95	8.8	
9.7		07/23/91	1306	4	15.9		6.2	98	6.1	
9.7		08/15/91	1355	0	22.1		6.6	94	9.0	
9.7		08/15/91	1355	1	19.8		6.6	96	10.6	
9.7		08/15/91	1355	2	17.9		6.9	97	12.0	
9.7		08/15/91	1355	3	17.4		6.5	101	5.2	
9.7		08/15/91	1355	4	16.9		6.3	105	3.5	
9.7		09/05/91	1130	0	18.0		6.9	93	8.5	
9.7		09/05/91	1130	1	17.4		6.8	94	8.1	
9.7		09/05/91	1130	2	16.4		6.7	101	5.6	
9.7		09/05/91	1130	3	15.8		6.6	103	4.4	
9.7		09/05/91	1130	3.5	15.6		6.6	105	3.6	
9.7		09/06/91	1030	0	17.3		6.8	96	7.7	
9.7		09/06/91	1030	1	17.0		6.7	97	7.2	
9.7		09/06/91	1030	2	16.6		6.6	99	6.1	
9.7		09/06/91	1030	3	15.7		6.5	105	4.2	
9.7		09/06/91	1030	4	15.4		6.4	109	2.9	
9.7		09/06/91	1030	4.2	15.3		6.4	109	2.3	
9.7		09/25/91	1500	0	18.6		6.8	95	9.6	
9.7		09/25/91	1500	1	15.8		6.8	95	10.5	
9.7		09/25/91	1500	2	15.6		6.8	94	10.0	
9.7		09/25/91	1500	3	14.9		6.7	96	7.8	
9.7		09/25/91	1500	4	14.6		6.5	102	5.2	
9.7		10/09/91	1530	0	14.1		6.6	100	9.0	
9.7		10/09/91	1530	1	13.1		6.5	99	9.3	
9.7		10/09/91	1530	2	12.7		6.5	99	9.1	
9.7		10/09/91	1530	3	12.6		6.5	100	8.1	
9.7		10/09/91	1530	4	12.6		6.4	100	7.3	
9.7		05/05/92	1600							
9.7		05/05/92	1600	0						8.5
9.7		05/05/92	1600	0	17.7		7.0	78	8.2	8.4
9.7		05/05/92	1600	1	16.3		6.9	78	8.3	
9.7		05/05/92	1600	2	15.7		6.8	78	8.3	
9.7		05/05/92	1600	3	15.2		6.8	78	8.1	
9.7		05/05/92	1600	4	14.9		6.8	78	8.0	
9.7		05/05/92	1600	5	14.8		6.8	78	8.0	
9.7		05/06/92	1540							8.2
9.7		05/06/92	1540							8.7

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
9.7	BR abv Big Dock	05/26/92	1630	0						9.0
9.7		05/26/92	1630	0						9.8
9.7		05/27/92	1200	0	16.8		7.0	83	9.5	9.5
9.7		05/27/92	1200	0	16.8		7.0	83	9.5	9.6
9.7		05/27/92	1200	1	16.1		6.9	83	9.5	
9.7		05/27/92	1200	2	16.0		6.9	83	9.2	
9.7		05/27/92	1200	3	15.9		6.9	83	9.1	
9.7		05/27/92	1200	4	15.8		6.9	83	8.8	
9.7		06/18/92	925	0	16.8		7.1	95	11.3	11.2
9.7		06/18/92	925	0	16.8		7.1	95	11.3	11.6
9.7		06/18/92	925	2	15.3		6.9	97	9.8	
9.7		06/18/92	925	4	15.0		6.9	97	9.8	
9.7		06/18/92	1000	0						10.9
9.7		06/19/92	953	0						11.3
9.7		06/19/92	953	0						11.6
9.7		07/08/92	1117	0	17.4		6.9	99	8.5	9.3
9.7		07/08/92	1117	2	16.8		6.9	99	7.3	
9.7		07/08/92	1117	4	16.6		6.8	100	6.7	
9.7		07/09/92	1125	0						9.1
9.7		07/09/92	1125	0						9.3
9.7		07/20/92	1402	0						8.9
9.7		07/21/92	1350	0	19.3		6.8	100	8.7	
9.7		07/21/92	1350	1	18.9		6.8	102	8.4	
9.7		07/21/92	1350	2	18.2		6.8	105	7.1	
9.7		07/21/92	1350	3	17.5		6.7	105	7.4	
9.7		07/21/92	1350	4	16.8		6.6	105	2.5	
9.7		07/21/92	1359	0						8.4
9.7		08/05/92	1058	0						8.7
9.7		08/05/92	1146	0	18.7		6.7	102	8.8	
9.7		08/05/92	1146	1	18.6		6.8	102	8.7	
9.7		08/05/92	1146	2	18.4		6.7	103	7.7	
9.7		08/05/92	1146	3	18.1		6.7	106	6.3	
9.7		08/05/92	1146	4	17.3		6.5	110	1.5	
9.7		08/05/92	1158	0.9						8.7
9.7		08/05/92	1207	3.6						4.4
9.7		08/06/92	1203	0						8.4
9.7		08/06/92	1203	0						8.5
9.7		08/17/92	1255	0	22.5		6.8	97	8.5	
9.7		08/17/92	1255	1	20.9		6.8	100	8.1	
9.7		08/17/92	1255	2	19.8		6.7	99	7.4	
9.7		08/17/92	1255	3	19.0		6.7	99	9.3	
9.7		08/17/92	1255	4	17.7		6.6	102	2.9	
9.7		08/17/92	1255	4.8	17.1		6.5	106	0.9	
9.7		08/17/92	1305	0						8.4
9.7		08/18/92	1346	1						7.8
9.7		09/10/92	1010	0						9.3
9.7		09/10/92	1010	0	16.2		6.9	94	9.4	9.2
9.7		09/10/92	1010	1	16.2		6.9	94	9.3	
9.7		09/10/92	1010	2	15.5		6.9	96	8.9	
9.7		09/10/92	1010	3	15.2		6.8	98	6.9	
9.7		09/10/92	1010	4	15.1		6.7	97	6.1	
9.7		09/11/92	900	0						8.9
9.7		10/01/92	955	0	15.0		6.9	97	10.0	
9.7		10/01/92	955	1	14.3		6.7	95	8.0	
9.7		10/01/92	955	2	13.9		6.6	97	6.0	
9.7		10/01/92	955	3	13.7		6.6	96	5.3	
9.7		10/01/92	955	4	13.4		6.6	100	4.6	
9.7		10/01/92	1015	2.8						5.3
9.3	BR abv Global Aqua	07/23/91	1320	0	20.3		6.6	95	9.9	
9.3		07/23/91	1320	1	19.9		6.5	95	10.0	
9.3		08/15/91	1420	0	20.4		6.7	95	11.3	11.5
9.3		08/15/91	1420	1	20.2		6.7	97	11.3	
9.3		09/10/91	1530	0	18.2		6.8	99		
9.3		09/10/91	1530	0.7						7.7
9.3		09/10/91	1530	1	17.7		6.8	99		

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
9.3	BR abv Global Aqua	09/11/91	1415	0	16.9		7.2	99	8.2	
9.3		09/11/91	1415	0.7						8.1
9.3		09/11/91	1415	1	16.7		7.1	99	8.0	
9.3		09/12/91	1300	0	16.2		7.2	99	7.8	
9.3		09/12/91	1300	1	16.1		7.1	99	7.8	
9.3		09/25/91	1525	0	16.7		6.8	95	10.2	
9.3		09/25/91	1525	1	16.6		6.8	94	10.3	
9.3		10/09/91	1550	0	13.9		6.7	99	8.6	
9.3		10/09/91	1550	0.9	13.6		6.6	99	8.5	
9.3		05/27/92	1150	0	16.4		6.9	83	9.6	
9.3		05/27/92	1150	1	16.4		6.9	83	9.6	
9.3		07/21/92	1445	0	19.1		6.8	102	8.4	
9.3		07/21/92	1445	0.8	19.0		6.8	102	8.1	
9.3		08/05/92	1114	0	18.3		6.7	103	8.1	
9.3		08/05/92	1114	1	18.2		6.7	103	7.8	
9.1	BR @ BNRR Trestle	07/23/91	1345	0	19.7		6.6	99	10.1	
9.1		07/23/91	1345	0.5	19.8		6.5	98	10.0	
9.1		08/15/91	1432	0	20.2		6.7	97	11.1	
8.5	BR abv Schoolland BL	09/10/91	1710	0	18.2		6.9	100		
8.5		09/10/91	1850	0	17.9		6.9	103		
8.5		09/11/91	1500	0	16.7		7.2	100	9.4	9.7
8.5		09/12/91	1415	0						9.0
8.5		09/12/91	1415	0	16.0		7.0	103	9.3	8.9
8.5		09/25/91	1605	0	17.1		6.9	98	10.5	10.0
8.5		10/09/91	1620	0	14.1		6.8	102	9.7	9.4
7.9	BR @ the Millpond	07/23/91	1420	0	22.0		6.8	98	9.9	
7.9		07/23/91	1420	2	19.8		6.6	98	8.5	
7.9		07/23/91	1420	3.5	17.5		6.5	108	6.5	
7.9		08/15/91	1525	0	22.3		6.9	98	10.4	
7.9		08/15/91	1525	1	21.1		6.6	99	9.8	
7.9		08/15/91	1525	2	19.3		6.7	99	6.7	
7.9		08/15/91	1525	3	17.7		6.6	108	7.6	
7.9		09/10/91	1720	0	18.6		7.1	101		
7.9		09/10/91	1720	0.7						11.1
7.9		09/10/91	1720	1	18.3		7.1	103		
7.9		09/10/91	1720	2	17.2		7.0	103		
7.9		09/10/91	1720	3	16.3		6.9	107		
7.9		09/11/91	1600	0	17.2		7.4	105	10.2	
7.9		09/11/91	1600	0.7						10.2
7.9		09/11/91	1600	1	16.6		7.3	104	9.6	
7.9		09/11/91	1600	2	16.1		7.2	105	7.9	
7.9		09/11/91	1600	2.9						7.4
7.9		09/11/91	1600	3	15.9		7.1	105	7.3	
7.8	BR abv Big Rock Springs	07/22/91	1800	0	20.0					
7.8		07/22/91	1800	2	17.0					
7.7	BR nr Big Rock	09/06/91	1120	0						8.4
7.7		09/06/91	1120	0	16.8		6.9	101	8.5	8.5
7.7		09/06/91	1120	0.6	16.7		6.8	101	8.5	
7.4	BR abv Moon Rd (Bulkhead)	07/23/91	1440	0	20.2		6.7	99	9.0	9.7
7.4		08/15/91	1540	0	21.0		6.7	95	9.4	
7.1	BR @ Moon Rd Bridge	07/23/91	1650	0	21.5		7.0	98	9.7	
7.1		08/01/91	1700	0.5	20.0		7.2	97	11.0	
7.1		08/21/91	745	0	18.6		6.9	104	7.2	
7.1		08/21/91	745	0.5	18.6		6.9	104	7.2	
7.1		08/22/91	1735	0	19.9		7.0	102	10.7	
7.1		08/22/91	1735	0.5	19.9		7.0	103	10.7	
7.1		09/03/91	1245	0	16.8		7.0	103	8.6	
7.1		09/03/91	1245	0.5	16.8		7.0	103	8.6	
7.1		09/06/91	830	0	16.7		6.9	103	7.2	
7.1		09/06/91	830	0.5	16.7		6.9	103	7.1	
7.1		09/10/91	755	0	14.3		7.1			7.0
7.1		09/10/91	1400	0	17.3		7.5			9.7
7.1		09/11/91	740	0	15.0		7.5			7.0
7.1		09/11/91	1300	0	16.5		7.4			9.6
7.1		09/12/91	745	0	15.1		7.4			7.2
7.1		09/12/91	1350	0	16.3		7.5			10.1
7.1		06/18/92	1340	0.75	17.8		7.5	97	11.9	

RM Code	Site Description	Date	Time	Depth Horiz Loc (m)	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho /cm)	DO meter (mg/L)	DO Winkler (mg/L)
7.1	BR @ Moon Rd Bridge	07/21/92	1250	0		18.2	7.1			8.5
7.1		07/21/92	1300	0		18.3	7.0			8.6
7.1		08/05/92	1340	0						10.0
7.1		08/05/92	1340	0		18.5	7.3	102		10.0
7.1		08/24/92	1833	0.5						9.8
7.1		08/25/92	730	0.5						8.2
7.1		10/01/92	805	0.2	14.7		6.8	101	7.0	
4.1	BR @ SR 12 Bridge	08/12/91	1700	0	18.6		6.9	109	9.1	
4.1		08/21/91	730	0	19.3		7.0	106	7.4	
4.1		08/21/91	730	0.8	19.4		6.9	106	7.4	
4.1		08/22/91	1720	0	19.7		7.0	105	9.7	
4.1		08/22/91	1720	0.5	19.7		7.0	106	9.7	
4.1		09/03/91	1255	0	16.5		7.1	105	8.5	
4.1		09/03/91	1255	0.5	16.3		7.1	105	8.5	
4.1		09/06/91	815	0	17.3		6.8	105	7.1	
4.1		09/06/91	815	0.5	17.3		6.8	104	7.1	
4.1		09/10/91	850	0	15.2		7.3			7.9
4.1		09/11/91	830	0	15.8		7.2			7.8
4.1		09/12/91	840	0	15.8		7.5			8.3
4.1		07/21/92	1205	0		17.8	6.9			6.9
4.1		08/05/92	1305	0		18.0	7.0	102		8.5
4.1		08/24/92	1845	0						9.2
4.1		08/25/92	738	0						9.1
1.2	BR @ Howanut Rd Bridge	08/01/91	1725	0.2	20.8		7.9	101	12.7	
1.2		08/01/91	1725	1	20.7		7.8	102	12.6	
1.2		08/21/91	720	0	18.7		6.9	109	7.3	
1.2		08/21/91	720	0.9	18.7		6.9	111	7.3	
1.2		08/22/91	1711	0	21.0		7.1	106	11.5	
1.2		08/22/91	1711	0.8	20.9		7.1	108	11.4	
1.2		09/03/91	1310	0	17.4		7.1	107	9.4	
1.2		09/03/91	1310	1	17.1		7.1	108	9.4	
1.2		09/06/91	755	0	16.7		6.8	108	7.5	
1.2		09/06/91	755	0.8	16.8		6.8	109	7.5	
1.2		09/10/91	825	0						8.3
1.2		09/10/91	825	0	14.4		7.3			8.1
1.2		09/10/91	1330	0	16.5		7.3			9.7
1.2		09/11/91	755	0						7.9
1.2		09/11/91	755	0	15.1		7.2			7.9
1.2		09/11/91	1350	0	16.5		7.4			9.2
1.2		09/12/91	805	0						7.9
1.2		09/12/91	805	0	15.2		7.3			7.9
1.2		09/12/91	1325	0	16.0		7.4			9.1
1.2		09/12/91	1530	0						10.0
1.2		09/12/91	1530	0						10.1
1.2		09/13/91	1145	0						8.6
1.2		09/13/91	1145	0						8.7
1.2		07/21/92	820	0		17.5	7.0			7.2
1.2		07/21/92	1445	0	18.2	17.8	7.0			7.8
1.2		08/05/92	815	0		17.5	7.0	103		7.5
1.2		08/05/92	1710	0		18.7	7.3	107		10.5
1.2		08/24/92	1900	0.5						12.4
1.2		08/25/92	748	0.5						8.0

Appendix D
Table D.2 Tributary Field Measurement Data

				All Samples collected midstream, middepth					
RM Code	Site Description	Date	Time	Temp meter (°C)	Temp Hg (°C)	PH (su)	Cond (umho/cm)	DO meter (mg/L)	DO Winkler (mg/L)
20.1002	Salmon Ck @ Creekwood Dr	08/19/92	1540	20.1		6.8	128	8.2	
19.4002	Blooms Ditch @ 110th St	08/19/92	1520	17.6		7.0	97	9.0	
17.3019	Waddell Ck @ Waddell Ck Rd	08/19/92	1400	17.8		7.1	58	9.8	
16.8038	Beaver Ck @ Case Rd	08/19/92	1450	19.5		6.8	121	6.6	
16.8023002	Scott Lake Ck @ SR 121	08/19/92	1155	17.3		6.8	93	6.0	
16.8002	Beaver Ck @ SR 121 nr mouth	09/10/91	1100	13.8		7.4			9.5
		09/11/91	950	13.6		7.2			9.6
		08/19/92	1118	16.3		7.1	93	9.6	
		08/19/92	1123						9.7
11.8009	Mima Ck @ Mima-Gate Rd	08/01/91	1645	17.5		6.9	72	8.5	
		09/10/91	940	12.5		7.4			9.7
		09/11/91	905	12.5		7.4			10.0
		07/21/92	1330		16.5	7.4			8.8
		08/05/92	1545		16.2	7.3	78		9.3
9.6002	Rochester Sl (Steelhammer)	08/01/91	1630	20.9		6.5	111	4.7	
		09/10/91	1020	13.8		6.9			4.1
		09/11/91	1010	14.0		6.9			5.5
9.2001	Springs nr Global Aqua	07/23/91	1340	13.3		6.4	147	6.3	
		09/10/91	1600	12.3		6.9	144		
		09/11/91	1430	12.4		7.1	147	5.7	
7.7001	Springs nr Big Rock	07/22/91	1800	11.5					
		07/23/91	1430	12.2		6.4	142	6.0	
		09/10/91	1745	11.9		6.8	135		
		09/11/91	1615	11.7		7.1	140	6.7	
		07/21/92	1415		11.2	6.8			7.0
		08/05/92	1415		11.4	6.9	137		5.1

APPENDIX E. Productivity and Diurnal Field Measurements

Appendix E

Table E.1 Summary of Diurnal DS3 Measurements

RM Code	Date	N		TEMP °C	PH S.U.	COND µmho/cm	DO %Sat	DO mg/L
1.2	9/12/91-9/13/91	22	min	15.2	7.0	100	79	8.0
			avg	16.1		110	93	9.2
			max	17.0	7.3	110	106	10.3
			range	1.8	0.4	10	27	2.3
4.0	9/5/91-9/6/91	23	min	17.1	7.0	130	73	7.0
			avg	17.7		130	87	8.4
			max	18.3	7.3	130	99	9.4
			range	1.3	0.2	0	26	2.4
7.7	9/5/91-9/6/91	23	min	16.1	6.8	120	58	5.6
			avg	17.5		120	77	7.3
			max	19.0	7.2	120	104	9.7
			range	2.9	0.3	0	45	4.1
9.7	9/5/91-9/6/91	23	min	17.1	6.8	101	71	6.9
			avg	17.4		102	83	8.0
			max	18.0	7.0	103	95	9.0
			range	1.0	0.2	2	24	2.1
9.7	5/26/92-5/27/92	20	min	16.0	7.0	90	94	9.3
			avg	16.5		91	98	9.5
			max	17.1	7.1	93	102	9.8
			range	1.2	0.1	2	8	0.5
9.7	6/18/92-6/19/92	24	min	15.8	7.1	93	106	11.1
			avg	16.9		94	115	11.7
			max	17.9	7.3	95	121	12.1
			range	2.1	0.2	2	15	1.1
9.7	7/8/92-7/9/92	24	min	16.5	6.9	101	94	8.9
			avg	16.9		102	101	9.5
			max	17.3	7.2	103	109	10.2
			range	0.8	0.2	2	15	1.3
9.7	7/20/92-7/21/92	19	min	18.9	6.9	95	86	8.4
			avg	19.2		96	90	8.7
			max	19.6	7.5	97	95	9.1
			range	0.7	0.6	2	8	0.7
9.7	8/5/92-8/6/92	24	min	18.5	6.9	97	90	8.2
			avg	18.7		98	96	8.7
			max	19.0	7.2	98	103	9.3
			range	0.5	0.4	1	13	1.2
9.7	8/17/92-8/18/92	24	min	19.8	6.6	97	77	7.4
			avg	20.6		98	86	8.1
			max	21.7	6.9	100	96	8.9
			range	1.9	0.3	3	19	1.4
9.7	9/10/92-9/11/92	21	min	16.4	6.8	96	91	8.9
			avg	16.9		87	97	9.4
			max	17.2	7.0	97	105	10.2
			range	0.8	0.2	2	14	1.3

N = number of hours monitored. Measurements were recorded hourly.

Table E.1, page 2 of 3

River Mile	Date	N		TEMP °C	PH S.U.	COND µmho/cm	DO %Sat	DO mg/L
11.9	9/3/91-9/4/91	24	min	16.2	6.7	110	72	7.3
			avg	16.8		110	78	7.7
			max	18.1	7.0	120	91	8.8
			range	2.0	0.2	10	19	1.6
11.9	5/5/92-5/6/92	24	min	14.8	6.7	76	77	8.1
			avg	15.5		78	81	8.4
			max	16.4	6.8	81	85	8.7
			range	1.6	0.1	5	8	0.6
11.9	5/26/92-5/27/92	20	min	15.4	6.9	84	94	9.3
			avg	15.9		86	99	9.6
			max	16.6	7.0	88	103	9.9
			range	1.2	0.1	4	8	0.6
11.9	6/18/92-6/19/92	24	min	15.6	7.1	88	106	10.4
			avg	16.3		90	115	11.4
			max	17.5	7.6	93	126	12.4
			range	1.9	0.5	5	20	2.0
11.9	7/8/92-7/9/92	24	min	15.5	6.9	93	86	9.4
			avg	15.8		95	88	9.6
			max	16.1	7.4	96	91	9.8
			range	0.5	0.5	3	5	0.4
11.9	7/20/92-7/21/92	24	min	16.3	6.8	96	92	8.6
			avg	17.0		100	96	8.9
			max	17.3	7.0	108	101	9.5
			range	1.0	0.2	11	9	1.0
11.9	8/5/92-8/6/92	24	min	16.5	6.8	93	96	9.1
			avg	17.2		96	100	9.5
			max	17.8	7.0	100	105	10.1
			range	1.2	0.1	8	9	1.0
11.9	8/17/92-8/18/92	24	min	18.2	6.8	91	89	8.2
			avg	19.9		95	93	8.6
			max	21.9	7.0	103	99	9.3
			range	3.7	0.3	12	11	1.2
11.9	9/10/92-9/11/92	24	min	15.4	6.9	87	92	8.9
			avg	16.0		86	93	9.0
			max	17.7	7.1	91	104	9.7
			range	2.3	0.2	4	12	0.7
14.1	9/3/91-9/4/91	24	min	14.4	6.7	108	65	6.7
			avg	15.3		110	70	7.1
			max	15.9	6.8	111	74	7.3
			range	1.5	0.1	2	9	0.7
15.3	9/3/91-9/4/91	24	min	13.6	6.7	99	58	5.9
			avg	14.5		100	62	6.3
			max	15.1	6.9	100	66	6.7
			range	1.5	0.2	1	8	0.8

N = number of hours monitored. Measurements were recorded hourly.

Table E.1, page 3 of 3

River Mile	Date	N		TEMP °C	PH S.U.	COND µmho/cm	DO %Sat	DO mg/L
15.3	5/5/92-5/6/92	23	min	13.7	6.6	70	62	6.3
			avg	15.0		70	68	6.7
			max	16.3	6.9	70	77	7.4
			range	2.5	0.3	0	14	1.1
15.3	5/26/92-5/27/92	23	min	13.4	6.7	79	66	6.2
			avg	14.4		79	73	6.7
			max	15.4	7.0	80	81	7.4
			range	2.1	0.3	1	14	1.2
15.3	6/18/92-6/19/92	24	min	12.9	6.6	90	65	6.1
			avg	14.4		90	72	6.8
			max	15.5	6.9	91	81	7.6
			range	2.6	0.3	1	17	1.5
15.3	7/8/92-7/9/92	24	min	13.8	6.8	91	62	6.2
			avg	14.4		91	68	6.7
			max	14.9	6.9	91	74	7.3
			range	1.2	0.1	0	12	1.1
15.3	7/20/92-7/21/92	24	min	14.5	6.7	90	59	5.7
			avg	14.8		91	64	6.2
			max	15.0	6.9	91	69	6.7
			range	0.5	0.2	1	10	1.0
15.3	8/5/92-8/6/92	24	min	12.9	6.6	89	58	6.0
			avg	13.6		90	65	6.6
			max	14.0	7.2	90	72	7.3
			range	1.1	0.6	1	13	1.3
15.3	8/17/92-8/18/92	24	min	14.1	6.5	92	53	5.5
			avg	14.6		92	59	6.0
			max	15.1	6.8	93	66	6.6
			range	1.1	0.3	1	12	1.2
15.3	9/18/92-9/19/92	24	min	13.7	6.5	92	54	5.6
			avg	14.3		92	59	6.0
			max	14.7	6.6	93	65	6.6
			range	1.1	0.1	0	11	1.0
15.3	9/10/92-9/11/92	25	min	13.0	6.5	86	59	5.8
			avg	13.6		87	64	6.3
			max	13.9	6.7	87	69	6.9
			range	0.9	0.1	1	11	1.1
17.6	8/19/92-8/20/92	24	min	19.8	6.7	86	57	5.2
			avg	20.7		86	64	5.7
			max	21.7	6.9	87	72	6.4
			range	1.9	0.2	0	15	1.2
19.6	8/19/92-8/20/92	24	min	17.9	6.6	86	62	5.4
			avg	19.1		87	72	6.3
			max	19.8	6.8	89	77	6.7
			range	1.8	0.2	4	15	1.3

N = number of hours monitored. Measurements were recorded hourly.

Appendix E
Table E.2 Full Results of DS3 Measurements

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0819
Setup Date (MMDDYY) : 081892
Setup Time (HHMMSS) : 165142
Starting Date (MMDDYY) : 081992
Starting Time (HHMMSS) : 070000
Stopping Date (MMDDYY) : 082092
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 34
Stn ID: Below 110th St Br
RM: Black River 19.6
Temp (F,mx/av/mn): 82/64/45
Precip (in): 0
Wind (mph,avg): 5.6
Clouds(0-10): 2-1
Description: Hazy, warm - clear, warm

Date	Time	TEMP	PH	COND	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
81992	93000						[5.8]	5.6
81992	100000	18.9	6.8	88	63	5.6	5.9	
81992	110000	19.0	6.7	88	62	5.5	5.8	
81992	120000	19.1	6.7	89	63	5.5	5.8	
81992	130000	19.3	6.7	89	62	5.4	5.8	
81992	140000	19.4	6.7	89	64	5.6	5.9	
81992	150000	19.7	6.7	89	66	5.7	6.1	
81992	160000	19.7	6.6	89	66	5.7	6.1	
81992	170000	19.7	6.6	87	70	6.1	6.4	
81992	180000	19.6	6.7	87	72	6.2	6.6	
81992	190000	19.7	6.7	86	72	6.3	6.6	
81992	200000	19.7	6.7	86	75	6.5	6.9	
81992	210000	19.7	6.7	86	77	6.7	7.0	
81992	220000	19.6	6.7	86	77	6.7	7.0	
81992	230000	19.8	6.7	87	77	6.7	7.0	
82092	0	19.6	6.7	87	76	6.7	7.0	
82092	10000	19.4	6.7	87	75	6.5	6.9	
82092	20000	19.2	6.7	87	74	6.5	6.8	
82092	30000	19.0	6.7	86	73	6.5	6.8	
82092	40000	18.8	6.7	86	72	6.4	6.7	
82092	50000	18.6	6.7	86	72	6.4	6.7	
82092	60000	18.3	6.7	86	71	6.4	6.7	
82092	70000	18.1	6.7	86	70	6.3	6.6	
82092	80000	18.0	6.7	86	69	6.2	6.5	
82092	90000	17.9	6.7	86	68	6.1	6.4	
82092	93300						[6.4]	6.0

Appendix E Table E.2, page 2 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl0819	Unit #:	36	
Setup Date (MMDDYY) : 081892	Stn ID:	Below 123rd St Br	
Setup Time (HHMMSS) : 165527	RM:	Black River 17.6	
Starting Date (MMDDYY) : 081992			
Starting Time (HHMMSS) : 070000	Temp (F,mx/av/mn):	82/64/45	
Stopping Date (MMDDYY) : 082092	Precip (in):	0	
Stopping Time (HHMMSS) : 120000	Wind (mph,avg):	5.6	
Interval (HHMMSS) : 010000	Clouds(0-10):	2-1	
Warmup : Enable	Description:	Hazy, warm - clear, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
81992	84500					[5.41]		5.4
81992	90000	20.2	6.9	86	60	5.4	5.4	
81992	100000	20.2	6.8	86	60	5.5	5.4	
81992	110000	20.3	6.8	86	61	5.5	5.5	
81992	120000	20.5	6.8	86	62	5.6	5.6	
81992	130000	20.6	6.8	86	63	5.6	5.6	
81992	140000	21.0	6.8	86	66	5.9	5.9	
81992	150000	21.3	6.8	86	67	5.9	5.9	
81992	160000	21.5	6.8	87	69	6.1	6.1	
81992	170000	21.5	6.9	87	70	6.2	6.2	
81992	180000	21.7	6.8	87	68	6.0	6.0	
81992	190000	21.5	6.9	86	71	6.3	6.3	
81992	200000	21.1	6.8	86	72	6.4	6.4	
81992	210000	20.9	6.8	86	69	6.1	6.1	
81992	220000	20.8	6.8	87	66	5.9	5.9	
81992	230000	20.6	6.8	86	63	5.6	5.6	
82092	0	20.6	6.8	87	63	5.7	5.7	
82092	10000	20.6	6.8	87	62	5.6	5.6	
82092	20000	20.6	6.8	86	63	5.7	5.7	
82092	30000	20.4	6.8	86	62	5.6	5.6	
82092	40000	20.3	6.8	86	62	5.6	5.6	
82092	50000	20.1	6.8	86	60	5.5	5.4	
82092	60000	20.0	6.7	86	58	5.3	5.3	
82092	70000	19.8	6.7	86	57	5.2	5.2	
82092	80000	19.8	6.7	86	57	5.2	5.2	
82092	85100					[5.25]		5.3
82092	90000	19.8	6.7	86	58	5.3	5.3	

Appendix E Table E.2, page 3 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method DO/S2 = DO measurement with Surveyor 2 meter

Log File Name : bl15	Unit #:	34	
Setup Date (MMDDYY) : 090391	Stn ID:	Littlerock Boat Launch	
Setup Time (HHMMSS) : 085808	RM:	Black River 15.3	
Starting Date (MMDDYY) : 090391			
Starting Time (HHMMSS) : 100000	Temp (F,mx/av/mn):	82/66/47	
Stopping Date (MMDDYY) : 090691	Precip (in):	0	
Stopping Time (HHMMSS) : 140000	Wind (mph,avg):	5.6	
Interval (HHMMSS) : 010000	Clouds(0-10):	3-5-0	
Warmup : Enable	Description:	Sunny, warm and clear	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90391	93500					[6.2]			6.3
90391	100000	13.6	6.9	0.099	59	6.3	6.1		
90391	110000	13.6	6.8	0.099	60	6.4	6.2		
90391	120000	13.7	6.8	0.099	61	6.4	6.3	6.1	
90391	130000	13.9	6.8	0.099	62	6.5	6.4		
90391	140000	14.2	6.8	0.099	63	6.6	6.4		
90391	150000	14.4	6.8	0.099	64	6.7	6.5		
90391	160000	14.7	6.8	0.100	66	6.8	6.6		
90391	170000	14.8	6.8	0.100	66	6.9	6.7		
90391	180000	14.8	6.8	0.100	66	6.8	6.6		
90391	190000	14.9	6.8	0.100	66	6.8	6.6		
90391	200000	14.9	6.8	0.100	66	6.8	6.6		
90391	210000	14.9	6.8	0.100	65	6.7	6.5		
90391	220000	15.0	6.7	0.100	64	6.6	6.4		
90391	230000	15.0	6.7	0.100	63	6.5	6.3		
90491	0	15.0	6.7	0.100	63	6.5	6.3		
90491	10000	15.1	6.8	0.100	63	6.5	6.3		
90491	20000	14.8	6.7	0.100	62	6.4	6.2		
90491	30000	14.8	6.7	0.100	61	6.4	6.2		
90491	40000	14.6	6.7	0.100	60	6.3	6.1		
90491	50000	14.7	6.7	0.100	61	6.3	6.1		
90491	60000	14.4	6.7	0.100	60	6.3	6.1		
90491	70000	14.0	6.7	0.100	58	6.1	5.9		
90491	80000	14.0	6.7	0.100	58	6.1	5.9		
90491	90000	14.0	6.7	0.100	60	6.3	6.1		

Appendix E

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(continued from page 3)

Date	Time	Temp	pH	SpCond	DO	DO*1.02	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90491	100000	13.8	6.7	0.100	58	6.2	6.0		
90491	110000	14.0	6.7	0.100	59	6.2	6.0		
90491	120000	14.1	6.7	0.100	60	6.3	6.1		
90491	130000	14.0	6.7	0.100	60	6.4	6.2		
90491	140000	14.4	6.7	0.100	62	6.5	6.3		
90491	150000	14.6	6.7	0.100	63	6.6	6.4		
90491	160000	14.8	6.7	0.100	64	6.6	6.4		
90491	170000	14.8	6.7	0.100	65	6.7	6.5		
90491	180000	15.0	6.7	0.100	65	6.7	6.5		
90491	190000	14.9	6.7	0.100	65	6.7	6.5		
90491	200000	15.1	6.7	0.100	64	6.6	6.4		
90491	210000	15.1	6.7	0.100	63	6.5	6.3		
90491	220000	15.3	6.7	0.100	63	6.5	6.3		
90491	230000	15.4	6.7	0.100	63	6.5	6.3		
90591	0	15.3	6.7	0.100	63	6.4	6.2		
90591	10000	15.3	6.7	0.100	63	6.5	6.3		
90591	20000	15.1	6.7	0.100	61	6.3	6.1		
90591	30000	15.0	6.7	0.100	62	6.4	6.2		
90591	40000	14.8	6.7	0.100	60	6.3	6.1		
90591	50000	14.4	6.7	0.101	60	6.3	6.1		
90591	60000	14.5	6.7	0.100	60	6.2	6.0		
90591	70000	14.0	6.7	0.101	58	6.2	6.0		
90591	80000	13.9	6.7	0.101	59	6.2	6.0		
90591	90000	13.6	6.7	0.100	58	6.2	6.0		
90591	100000	13.8	6.7	0.100	59	6.2	6.0		
90591	100500					[6.2]		6.2	6.2

Appendix E Table E.2, page 5 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl5592	Unit #:	36	
Setup Date (MMDDYY) : 050592	Stn ID:	Above Littlerock Boat Launch	
Setup Time (HHMMSS) : 110147	RM:	Black River 15.3	
Starting Date (MMDDYY) : 050592			
Starting Time (HHMMSS) : 120000	Temp (F,mx/av/mn):	81/65/51	
Stopping Date (MMDDYY) : 050692	Precip (in):	0	
Stopping Time (HHMMSS) : 190000	Wind (mph,avg):	6.4	
Interval (HHMMSS) : 010000	Clouds(0-10):	0-1	
Warmup : Enable	Description:	n/a	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l
50592	175100					[7.5]		7.4
50592	180000	16.3	6.9	0.072	77	7.5	7.4	
50592	190000	16.2	6.8	0.072	75	7.4	7.3	
50592	200000	16.2	6.7	0.072	73	7.2	7.1	
50592	210000	16.1	6.7	0.072	71	7.0	6.9	
50592	220000	15.9	6.6	0.072	69	6.9	6.7	
50592	230000	15.8	6.6	0.072	68	6.7	6.6	
50692	0	15.5	6.6	0.073	66	6.6	6.5	
50692	10000	15.3	6.6	0.073	65	6.5	6.4	
50692	20000	15.1	6.6	0.073	64	6.4	6.3	
50692	30000	14.8	6.6	0.073	63	6.4	6.3	
50692	40000	14.6	6.6	0.073	63	6.4	6.3	
50692	50000	14.4	6.6	0.074	63	6.4	6.3	
50692	60000	14.2	6.6	0.074	62	6.4	6.3	
50692	70000	14.0	6.6	0.074	62	6.4	6.3	
50692	80000	13.8	6.6	0.074	63	6.5	6.4	
50692	90000	13.7	6.6	0.074	64	6.6	6.5	
50692	100000	13.8	6.6	0.074	65	6.7	6.6	
50692	110000	14.0	6.6	0.074	67	6.9	6.8	
50692	120000	14.3	6.6	0.074	69	7.0	6.9	
50692	130000	14.7	6.6	0.074	71	7.2	7.1	
50692	140000	15.1	6.6	0.074	73	7.3	7.2	
50692	150000	15.5	6.6	0.074	75	7.4	7.3	
50692	160000	15.9	6.7	0.074	76	7.5	7.4	
50692	165500					[7.5]		7.6

Appendix E Table E.2, page 6 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl526	Unit #:	35	
Setup Date (MMDDYY) : 052692	Station:	Above Littlerock Boat Launch	
Setup Time (HHMMSS) : 103533	RM:	Black River 15.3	
Starting Date (MMDDYY) : 052692			
Starting Time (HHMMSS) : 120000	Temp (F,mx/av/mn):	66/56/44	
Stopping Date (MMDDYY) : 052792	Precip (in):	0	
Stopping Time (HHMMSS) : 190000	Wind (mph,avg):	8.1	
Interval (HHMMSS) : 010000	Clouds(0-10):	5-9	
Warmup : Enable	Description:	Sun broke through @ 1110	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
52692	125000					[7.4]		6.7
52692	130000	14.3	7.0	80	73	7.5	6.7	
52692	140000	14.4	6.9	80	76	7.8	7.0	
52692	150000	14.7	6.8	80	78	8.0	7.2	
52692	160000	15.0	6.8	80	80	8.1	7.3	
52692	170000	15.2	6.8	80	81	8.2	7.4	
52692	180000	15.3	6.8	80	81	8.1	7.3	
52692	190000	15.4	6.8	79	80	8.1	7.3	
52692	200000	15.4	6.8	79	80	8.0	7.2	
52692	210000	15.4	6.8	79	78	7.9	7.1	
52692	220000	15.2	6.8	79	77	7.8	7.0	
52692	230000	15.0	6.8	79	75	7.6	6.8	
52792	0	14.8	6.8	79	74	7.5	6.8	
52792	10000	14.6	6.8	79	73	7.4	6.6	
52792	20000	14.4	6.8	79	71	7.3	6.5	
52792	30000	14.2	6.8	79	70	7.2	6.4	
52792	40000	14.0	6.8	79	69	7.1	6.3	
52792	50000	13.8	6.7	79	68	7.0	6.3	
52792	60000	13.7	6.7	79	67	7.0	6.2	
52792	70000	13.6	6.7	79	66	7.0	6.2	
52792	80000	13.4	6.7	79	67	7.0	6.2	
52792	90000	13.4	6.7	79	67	7.1	6.3	
52792	100000	13.4	6.7	79	69	7.2	6.4	
52792	110000	13.4	6.7	79	70	7.4	6.6	
52792	120000	13.6	6.8	79	72	7.6	6.8	
52792	130000	13.7	6.7	79	74	7.7	7.0	
52792	132000					[7.8]		7.0

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl618
Setup Date (MMDDYY) : 061792
Setup Time (HHMMSS) : 184054
Starting Date (MMDDYY) : 061892
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 061992
Stopping Time (HHMMSS) : 140000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 35
Stn ID: Littlerock Boat Launch
RM: Black River 15.3
Temp (F,mx/av/mn): 83/64/49
Precip (in): 0
Wind (mph,avg): 5.2
Clouds(0-10): 1-7
Description: sunny, clear, cool-warm

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
61892	82100					[7.0]		6.3
61892	90000	13.0	6.9	90	67	7.0	6.5	
61892	100000	12.9	6.7	90	67	7.1	6.5	
61892	110000	13.0	6.7	90	69	7.2	6.7	
61892	120000	13.3	6.7	90	71	7.4	6.9	
61892	125100					[7.6]		7.1
61892	130000	13.7	6.7	90	74	7.7	7.1	
61892	140000	13.9	6.7	90	76	7.8	7.2	
61892	150000	14.4	6.7	90	79	8.1	7.5	
61892	160000	14.7	6.7	90	80	8.2	7.6	
61892	170000	14.9	6.7	90	81	8.2	7.6	
61892	180000	15.1	6.7	90	81	8.2	7.6	
61892	190000	15.2	6.7	90	80	8.0	7.4	
61892	200000	15.4	6.7	90	79	7.9	7.3	
61892	210000	15.5	6.7	90	77	7.7	7.1	
61892	220000	15.5	6.7	90	75	7.5	6.9	
61892	230000	15.5	6.7	91	74	7.4	6.8	
61992	0	15.4	6.7	91	72	7.2	6.6	
61992	10000	15.2	6.7	91	70	7.1	6.5	
61992	20000	15.0	6.6	91	69	6.9	6.4	
61992	30000	14.8	6.6	91	68	6.9	6.3	
61992	40000	14.5	6.6	91	67	6.8	6.2	
61992	50000	14.3	6.6	91	66	6.7	6.2	
61992	60000	14.0	6.6	91	66	6.8	6.2	
61992	70000	13.8	6.6	91	65	6.7	6.1	
61992	80000	13.7	6.6	91	65	6.7	6.1	
61992	90000	13.7	6.6	91	65	6.8	6.2	
61992	100000	13.5	6.6	91	66	6.9	6.3	
61992	105800					[7.0]		6.4
61992	110000	13.7	6.6	91	68	7.0	6.5	

Appendix E Table E.2, page 8 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl708	Unit #:	36	
Setup Date (MMDDYY) : 070692	Stn ID:	Above Littlerock Boat Launch	
Setup Time (HHMMSS) : 083537	RM:	Black River 15.3	
Starting Date (MMDDYY) : 070892			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):	75/65/50	
Stopping Date (MMDDYY) : 070992	Precip (in):	0	
Stopping Time (HHMMSS) : 120000	Wind (mph,avg):	4.8	
Interval (HHMMSS) : 010000	Clouds(0-10):	9-5-1	
Warmup : Enable	Description:	overcast, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/mtr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
70892	110000	13.8	6.9	91	65	6.7	6.5	
70892	120000	14.0	6.8	91	67	6.9	6.6	
70892	130000	14.0	6.8	91	69	7.1	6.8	
70892	134700					[7.2]		7.0
70892	140000	14.2	6.9	91	70	7.2	7.0	
70892	150000	14.4	6.9	91	71	7.3	7.1	
70892	160000	14.5	6.9	91	74	7.5	7.3	
70892	170000	14.6	6.9	91	74	7.5	7.3	
70892	180000	14.6	6.9	91	74	7.5	7.3	
70892	190000	14.7	6.9	91	74	7.5	7.3	
70892	200000	14.8	6.9	91	73	7.4	7.2	
70892	210000	14.9	6.9	91	72	7.3	7.1	
70892	220000	14.9	6.9	91	71	7.2	7.0	
70892	230000	14.9	6.9	91	70	7.1	6.8	
70992	0	14.9	6.9	91	69	7.0	6.7	
70992	10000	14.8	6.9	91	67	6.8	6.6	
70992	20000	14.8	6.9	91	67	6.8	6.5	
70992	30000	14.6	6.9	91	66	6.7	6.4	
70992	40000	14.5	6.9	91	65	6.6	6.4	
70992	50000	14.3	6.9	91	64	6.5	6.3	
70992	60000	14.2	6.8	91	63	6.5	6.3	
70992	70000	14.0	6.8	91	63	6.5	6.2	
70992	80000	13.8	6.8	91	62	6.4	6.2	
70992	90000	13.8	6.8	91	62	6.5	6.2	
70992	100000	13.8	6.8	91	64	6.6	6.4	
70992	110000	13.9	6.8	91	65	6.7	6.5	
70992	120000	13.9	6.8	91	67	6.9	6.7	
70992	125500					[7.1]		7.0

Appendix E Table E.2, page 9 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl720	Unit #:	36	
Setup Date (MMDDYY) : 072092	Stn ID:	Above Littlerock Boat Launch	
Setup Time (HHMMSS) : 083930	RM:	Black River 15.3	
Starting Date (MMDDYY) : 072092			
Starting Time (HHMMSS) : 110000	Temp (F,mx/av/mn):	74/67/61	
Stopping Date (MMDDYY) : 072192	Precip (in):	0	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	6.7	
Interval (HHMMSS) : 010000	Clouds(0-10):	9-10	
Warmup : Enable	Description:	cloudy, overcast, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
72092	130000	14.7	6.9	91	62	6.3	6.0	
72092	140000	14.8	6.8	91	64	6.4	6.2	
72092	150000	14.7	6.8	91	64	6.5	6.2	
72092	160000	14.8	6.8	91	66	6.7	6.4	
72092	170000	14.9	6.8	91	67	6.8	6.5	
72092	171700					[6.8]		6.4
72092	180000	14.9	6.8	91	69	6.9	6.6	
72092	190000	14.9	6.8	91	69	7.0	6.7	
72092	200000	15.0	6.8	91	69	7.0	6.7	
72092	210000	14.9	6.8	91	68	6.9	6.6	
72092	220000	14.9	6.8	91	68	6.8	6.6	
72092	230000	15.0	6.8	91	67	6.7	6.4	
72192	0	15.0	6.8	91	66	6.7	6.4	
72192	10000	15.0	6.8	91	65	6.5	6.2	
72192	20000	15.0	6.8	91	64	6.5	6.2	
72192	30000	15.0	6.8	91	64	6.5	6.2	
72192	40000	15.0	6.8	91	63	6.4	6.1	
72192	50000	14.9	6.8	91	62	6.3	6.0	
72192	60000	14.9	6.8	91	61	6.2	5.9	
72192	70000	14.8	6.8	91	60	6.1	5.8	
72192	80000	14.8	6.8	91	60	6.1	5.8	
72192	90000	14.7	6.8	91	59	6.0	5.7	
72192	91700					[6.0]		5.8
72192	100000	14.6	6.7	90	59	6.0	5.7	
72192	110000	14.6	6.7	90	59	6.0	5.8	
72192	120000	14.5	6.7	90	60	6.1	5.8	
72192	130000	14.6	6.7	90	61	6.2	5.9	
72192	140000	14.7	6.7	90	62	6.3	6.0	
72192	150000	14.8	6.7	91	63	6.4	6.1	
72192	160000	14.7	6.7	90	64	6.5	6.2	
72192	170000	14.8	6.7	91	66	6.7	6.4	
72192	180000	14.8	6.7	90	66	6.7	6.4	6.6

Appendix E Table E.2, page 10 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl805	Unit #:	34	
Setup Date (MMDDYY) : 080392	Stn ID:	Above Littlerock Boat Launch	
Setup Time (HHMMSS) : 075846	RM:	Black River 15.3	
Starting Date (MMDDYY) : 080592			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):	67/62/56	
Stopping Date (MMDDYY) : 080692	Precip (in):	0.75	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	5.5	
Interval (HHMMSS) : 010000	Clouds(0-10):	5-10	
Warmup : Enable	Description:	cool, a few clouds - rainy, mild	

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
80592	85900					[6.1]		6.2
80592	90000	12.9	7.2	89	58	6.1	6.0	
80592	100000	13.1	6.8	90	61	6.4	6.2	
80592	110000	12.9	6.7	90	60	6.4	6.2	
80592	120000	13.0	6.7	90	62	6.5	6.4	
80592	130000	13.1	6.6	90	64	6.7	6.5	
80592	140000	13.5	6.6	90	65	6.8	6.6	
80592	150000	13.4	6.6	90	67	7.0	6.9	
80592	160000	13.9	6.6	90	68	7.1	6.9	
80592	164100					[7.2]		6.9
80592	170000	13.8	6.6	90	70	7.2	7.1	
80592	180000	13.7	6.6	90	72	7.4	7.3	
80592	190000	13.8	6.6	90	72	7.4	7.3	
80592	200000	13.9	6.6	90	71	7.3	7.2	
80592	210000	14.0	6.6	90	70	7.2	7.1	
80592	220000	14.0	6.6	90	69	7.1	7.0	
80592	230000	13.9	6.6	90	68	7.0	6.9	
80692	0	13.8	6.6	90	67	6.9	6.8	
80692	10000	13.8	6.6	90	66	6.8	6.6	
80692	20000	13.9	6.6	90	65	6.7	6.6	
80692	30000	13.9	6.6	90	65	6.7	6.5	
80692	40000	13.9	6.6	90	64	6.6	6.5	
80692	50000	13.8	6.6	90	63	6.5	6.4	
80692	60000	13.7	6.6	90	62	6.4	6.3	
80692	70000	13.6	6.6	90	61	6.3	6.2	
80692	80000	13.7	6.6	90	61	6.3	6.2	
80692	90000	13.6	6.6	90	60	6.3	6.1	
80692	100000	13.4	6.6	89	59	6.2	6.1	
80692	102000					[6.2]		6.1
80692	110000	13.5	6.6	89	61	6.3	6.2	
80692	120000	13.5	6.6	89	60	6.3	6.2	
80692	130000	13.5	6.6	88	61	6.3	6.2	

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0817
Setup Date (MMDDYY) : 081792
Setup Time (HHMMSS) : 083628
Starting Date (MMDDYY) : 081792
Starting Time (HHMMSS) : 110000
Stopping Date (MMDDYY) : 081892
Stopping Time (HHMMSS) : 150000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 35
Stn ID: Above Littlerock Boat Launch
RM: Black River 15.3
Temp (F,mx/av/mn): 92/69/52
Precip (in): 0
Wind (mph,avg): 5.6
Clouds(0-10): 1-4-1
Description: warm, clear - cloudy, cool - clear, warm after 1200 on 18th

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO-mtr mg/l	DO/corr mg/l	DO/Wink mg/l
81792	120000	14.1	6.8	93	57	5.9	5.9	
81792	130000	14.2	6.7	93	57	5.9	5.9	
81792	140000	14.5	6.6	93	59	6.0	6.0	
81792	150000	14.3	6.5	93	61	6.2	6.2	
81792	154000					[6.4]		6.4
81792	160000	14.7	6.5	93	64	6.4	6.4	
81792	170000	14.6	6.5	93	65	6.6	6.6	
81792	180000	14.9	6.5	92	66	6.6	6.6	
81792	190000	15.1	6.5	92	65	6.5	6.5	
81792	200000	14.8	6.5	92	65	6.6	6.6	
81792	210000	14.9	6.5	92	63	6.4	6.4	
81792	220000	14.9	6.5	92	62	6.3	6.3	
81792	230000	14.9	6.5	92	61	6.2	6.2	
81892	0	14.8	6.5	92	61	6.1	6.1	
81892	10000	14.8	6.5	92	59	6.0	6.0	
81892	20000	14.7	6.5	93	58	5.9	5.9	
81892	30000	14.7	6.5	93	58	5.8	5.8	
81892	40000	14.6	6.5	93	57	5.8	5.8	
81892	50000	14.6	6.5	93	57	5.8	5.8	
81892	60000	14.5	6.5	93	57	5.8	5.8	
81892	70000	14.2	6.5	93	55	5.6	5.6	
81892	80000	14.2	6.5	93	55	5.6	5.6	
81892	90000	14.2	6.5	93	54	5.6	5.6	
81892	94000					[5.5]		5.8
81892	100000	14.1	6.6	92	53	5.5	5.5	
81892	110000	14.1	6.5	93	55	5.6	5.6	
81892	120000	14.3	6.5	93	56	5.7	5.7	
81892	130000	14.5	6.6	93	56	5.7	5.7	
81892	140000	14.5	6.5	93	57	5.9	5.9	
81892	150000	14.5	6.5	93	59	6.1	6.1	

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0818
Setup Date (MMDDYY) : 081792
Setup Time (HHMMSS) : 083721
Starting Date (MMDDYY) : 081892
Starting Time (HHMMSS) : 130000
Stopping Date (MMDDYY) : 081992
Stopping Time (HHMMSS) : 180000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 35
Stn ID: Above Littlerock Boat Launch
RM: Black River 15.3
Temp (F,mx/av/mn): 81/66/50
Precip (in): 0
Wind (mph,avg): 5.7
Clouds(0-10): 1-7-2
Description: warm, clear - cloudy, cool - hazy, warm after 1000 on 19th

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
81892	130000	14.5	6.6	93	56	5.7	5.7	
81892	140000	14.5	6.5	93	57	5.9	5.9	
81892	150000	14.5	6.5	93	59	6.1	6.1	
81892	160000	14.5	6.5	93	62	6.3	6.3	
81892	162500					[6.4]		6.3
81892	170000	14.6	6.5	92	64	6.5	6.5	
81892	180000	14.6	6.6	92	65	6.6	6.6	
81892	190000	14.7	6.6	92	64	6.5	6.5	
81892	200000	14.7	6.6	92	63	6.4	6.4	
81892	210000	14.7	6.6	93	62	6.3	6.3	
81892	220000	14.7	6.6	92	61	6.2	6.2	
81892	230000	14.6	6.6	92	60	6.1	6.1	
81992	0	14.5	6.6	92	59	6.0	6.0	
81992	10000	14.4	6.6	92	58	5.9	5.9	
81992	20000	14.3	6.6	92	57	5.9	5.9	
81992	30000	14.3	6.6	93	57	5.8	5.8	
81992	40000	14.3	6.6	93	57	5.8	5.8	
81992	50000	14.2	6.6	93	57	5.8	5.8	
81992	60000	14.2	6.6	93	57	5.9	5.9	
81992	70000	14.0	6.6	92	56	5.7	5.7	
81992	80000	13.9	6.6	93	55	5.7	5.7	
81992	90000	13.8	6.6	93	54	5.6	5.6	
81992	100000	13.7	6.6	93	54	5.6	5.6	
81992	110000	13.9	6.5	92	55	5.7	5.7	
81992	120000	13.8	6.5	93	56	5.8	5.8	
81992	130000	14.0	6.5	93	57	5.9	5.9	
81992	140000	14.0	6.5	93	59	6.0	6.0	
81992	150000	14.0	6.5	92	61	6.3	6.3	
81992	160000	14.1	6.5	92	63	6.5	6.5	
81992	170000	14.3	6.6	93	65	6.7	6.7	6.6

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0910
Setup Date (MMDDYY) : 090892
Setup Time (HHMMSS) : 102038
Starting Date (MMDDYY) : 091092
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 091192
Stopping Time (HHMMSS) : 130000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 36
Stn ID: Above Littlerock Boat Launch
RM: Black River 15.3
Temp (F,mx/av/mn): 79/61/49
Precip (in): 0
Wind (mph,avg): 6.9
Clouds(0-10): 9-9
Description: clear, mild

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
91092	100000	13.0	6.7	87	59	6.2	5.9	
91092	110000	13.0	6.6	87	60	6.3	6.0	
91092	120000	13.0	6.6	87	61	6.4	6.1	
91092	122100					[6.4]		6.1
91092	130000	13.1	6.5	87	63	6.6	6.3	
91092	140000	13.2	6.6	87	64	6.7	6.4	
91092	150000	13.4	6.6	87	66	6.9	6.6	
91092	160000	13.5	6.6	87	68	7.1	6.7	
91092	170000	13.6	6.6	87	69	7.2	6.8	
91092	180000	13.7	6.6	87	69	7.2	6.9	
91092	190000	13.8	6.7	87	69	7.2	6.9	
91092	200000	13.8	6.7	87	69	7.2	6.8	
91092	210000	13.8	6.7	87	69	7.1	6.8	
91092	220000	13.8	6.6	87	68	7.0	6.7	
91092	230000	13.8	6.6	87	66	6.9	6.5	
91192	0	13.8	6.6	86	65	6.7	6.4	
91192	10000	13.8	6.6	86	64	6.6	6.3	
91192	20000	13.9	6.6	86	63	6.5	6.2	
91192	30000	13.9	6.6	86	62	6.5	6.1	
91192	40000	13.9	6.6	86	62	6.4	6.1	
91192	50000	13.8	6.6	86	61	6.3	6.0	
91192	60000	13.8	6.6	86	60	6.2	5.9	
91192	70000	13.7	6.6	86	59	6.1	5.8	
91192	74600					[6.1]		5.9
91192	80000	13.6	6.6	87	59	6.1	5.8	
91192	90000	13.6	6.6	87	59	6.1	5.8	
91192	100000	13.6	6.6	87	59	6.1	5.8	

Appendix E Table E.2, page 14 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method DO/S2 = DO measurement by Surveyor 2 meter

Log File Name : bl14	Unit #:	35	
Setup Date (MMDDYY) : 090391	Stn ID:	Above Canoe Club	
Setup Time (HHMMSS) : 090045	RM:	Black River Mile 14.1	
Starting Date (MMDDYY) : 090391			
Starting Time (HHMMSS) : 100000	Temp (F,mx/av/mn):	82/66/47	
Stopping Date (MMDDYY) : 090691	Precip (in):	0	
Stopping Time (HHMMSS) : 140000	Wind (mph,avg):	5.6	
Interval (HHMMSS) : 010000	Clouds(0-10):	3-5-0	
Warmup : Enable	Description:	Sunny, warm and clear	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90391	110000	14.4	6.8	0.108	66	6.9	6.7		
90391	111000					[6.9]		6.7	
90391	120000	14.4	6.8	0.109	65	6.8	6.7		
90391	130000	14.6	6.8	0.109	66	6.9	6.7		
90391	140000	14.6	6.7	0.109	67	6.9	6.8		
90391	150000	14.8	6.7	0.109	67	6.9	6.8		
90391	160000	14.9	6.7	0.110	67	6.9	6.7		
90391	170000	15.2	6.7	0.110	68	7.0	6.8		
90391	180000	15.6	6.7	0.110	69	7.0	6.9		
90391	190000	15.8	6.7	0.111	70	7.1	6.9		
90391	200000	15.9	6.8	0.111	73	7.4	7.2		
90391	210000	15.9	6.8	0.111	74	7.4	7.3		
90391	220000	15.9	6.8	0.111	74	7.5	7.3		
90391	230000	15.8	6.8	0.111	74	7.5	7.3		
90491	0	15.8	6.8	0.110	74	7.5	7.3		
90491	10000	15.7	6.8	0.110	73	7.5	7.3		
90491	20000	15.7	6.8	0.110	73	7.4	7.3		
90491	30000	15.6	6.8	0.110	73	7.4	7.3		
90491	40000	15.5	6.8	0.110	73	7.4	7.2		
90491	50000	15.4	6.8	0.110	72	7.4	7.2		
90491	60000	15.3	6.8	0.110	72	7.4	7.2		
90491	70000	15.2	6.8	0.110	72	7.3	7.2		
90491	80000	15.1	6.8	0.110	71	7.3	7.1		
90491	90000	15.2	6.7	0.110	70	7.3	7.1		
90491	100000	15.1	6.7	0.110	70	7.2	7.1		

Appendix E

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(continued from page 14)

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90491	110000	15.1	6.7	0.110	68	7.0	6.9		
90491	120000	15.1	6.7	0.111	70	7.2	7.0		
90491	130000	15.2	6.7	0.111	69	7.1	6.9		
90491	140000	15.4	6.7	0.111	70	7.2	7.0		
90491	150000	15.5	6.7	0.111	70	7.1	7.0		
90491	160000	15.7	6.7	0.112	70	7.1	6.9		
90491	170000	16.0	6.7	0.112	70	7.1	6.9		
90491	180000	16.2	6.7	0.112	71	7.2	7.0		
90491	190000	16.4	6.7	0.113	71	7.1	7.0		
90491	200000	16.5	6.7	0.113	71	7.1	6.9		
90491	210000	16.6	6.7	0.112	73	7.2	7.1		
90491	220000	16.5	6.7	0.113	72	7.2	7.0		
90491	230000	16.4	6.8	0.113	72	7.2	7.0		
90591	0	16.4	6.8	0.113	74	7.4	7.2		
90591	10000	16.3	6.8	0.113	74	7.4	7.2		
90591	20000	16.2	6.8	0.112	73	7.4	7.2		
90591	30000	16.0	6.8	0.112	73	7.4	7.2		
90591	40000	15.8	6.8	0.112	72	7.3	7.2		
90591	50000	15.7	6.8	0.112	71	7.2	7.1		
90591	60000	15.5	6.8	0.112	71	7.2	7.1		
90591	70000	15.3	6.8	0.112	71	7.3	7.1		
90591	80000	15.2	6.8	0.112	70	7.2	7.0		
90591	90000	15.2	6.7	0.112	70	7.2	7.1		
90591	100000	15.2	6.7	0.112	69	7.1	6.9		
90591	103000					[7.0]			7.2

Appendix E Table E.2, page 16 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method DO/S2 = DO measurement by Surveyor 2 meter

Log File Name : bl11	Unit #:	36
Setup Date (MMDDYY) : 090391	Stn ID:	Above Mima Creek
Setup Time (HHMMSS) : 090255	RM:	Black River 11.9
Starting Date (MMDDYY) : 090391		
Starting Time (HHMMSS) : 100000	Temp (F,mx/av/mn):	
Stopping Date (MMDDYY) : 090691	Precip (in):	
Stopping Time (HHMMSS) : 140000	Wind (mph,avg):	
Interval (HHMMSS) : 010000	Clouds(0-10):	
Warmup : Enable	Description:	

Date	Time		Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS		degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90391	104000						[8.0]			8.0
90391	105700						[8.1]		7.7	
90391	110000	1	16.8	7.0	0.108	81	8.1	7.7		
90391	120000	2	17.3	6.9	0.109	85	8.3	7.9		
90391	130000	3	17.3	6.9	0.109	86	8.4	8.0		
90391	140000	4	18.1	6.9	0.109	91	8.8	8.4		
90391	150000	5	18.0	6.9	0.110	90	8.7	8.3		
90391	160000	6	16.2	6.7	0.116	74	7.5	7.1		
90391	170000	7	16.2	6.7	0.115	72	7.3	6.8		
90391	180000	8	17.0	6.8	0.112	75	7.5	7.0		
90391	190000	9	16.4	6.7	0.115	74	7.4	7.0		
90391	200000	10	16.6	6.8	0.113	75	7.5	7.1		
90391	210000	11	16.8	6.8	0.112	78	7.7	7.3		
90391	220000	12	16.7	6.8	0.113	76	7.6	7.2		
90391	230000	13	16.6	6.8	0.113	77	7.6	7.2		
90491	0	14	17.2	6.8	0.110	78	7.6	7.2		
90491	10000	15	17.2	6.8	0.110	78	7.7	7.2		
90491	20000	16	17.0	6.8	0.110	77	7.6	7.2		
90491	30000	17	16.9	6.8	0.110	78	7.7	7.3		
90491	40000	18	16.8	6.8	0.110	77	7.7	7.3		
90491	50000	19	16.6	6.8	0.110	76	7.6	7.2		
90491	60000	20	16.5	6.8	0.110	75	7.5	7.1		
90491	70000	21	16.4	6.8	0.111	74	7.4	7.0		
90491	80000	22	16.3	6.8	0.111	74	7.4	7.0		
90491	90000	23	16.3	6.8	0.111	73	7.3	6.9		
90491	100000	24	16.5	6.8	0.112	74	7.4	7.0		

Appendix E

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(continued from page 16)

Date	Time		Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink	DO/S2
MMDDYY	HHMMSS		degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l	mg/l
90491	110000	25	16.9	6.8	0.111	75	7.5	7.1		
90491	120000	26	16.5	6.7	0.111	73	7.3	6.9		
90491	130000	27	16.4	6.7	0.111	74	7.4	7.0		
90491	140000	28	16.5	6.7	0.111	75	7.5	7.0		
90491	150000	29	16.2	6.7	0.114	72	7.3	6.8		
90491	160000	30	15.9	6.7	0.119	72	7.2	6.8		
90491	170000	31	16.3	6.7	0.115	72	7.2	6.8		
90491	180000	32	16.3	6.7	0.114	73	7.3	6.9		
90491	190000	33	16.2	6.7	0.114	72	7.3	6.9		
90491	200000	34	16.3	6.7	0.116	73	7.4	6.9		
90491	210000	35	16.5	6.8	0.112	73	7.3	6.9		
90491	220000	36	16.8	6.8	0.112	75	7.4	7.0		
90491	230000	37	16.9	6.8	0.113	76	7.5	7.1		
90591	0	38	16.8	6.8	0.113	75	7.4	7.0		
90591	10000	39	17.0	6.8	0.113	76	7.5	7.1		
90591	20000	40	17.0	6.8	0.113	75	7.4	7.0		
90591	30000	41	17.1	6.8	0.112	77	7.6	7.2		
90591	40000	42	16.9	6.8	0.112	77	7.6	7.2		
90591	50000	43	16.8	6.8	0.112	77	7.6	7.2		
90591	60000	44	16.6	6.8	0.112	75	7.5	7.1		
90591	70000	45	16.5	6.8	0.113	75	7.5	7.1		
90591	80000	46	16.4	6.8	0.113	73	7.4	6.9		
90591	90000	47	16.4	6.8	0.113	74	7.4	7.0		
90591	100000	48	16.5	6.8	0.113	74	7.4	7.0		
90591	105000						[7.4]			7.2
90591	110000	49	16.6	6.8	0.113	74	7.4	7.0		

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl5592	Unit #:	34	
Setup Date (MMDDYY) : 050592	Stn ID:	Above Mima Creek	
Setup Time (HHMMSS) : 112519	RM:	Black River 11.9	
Starting Date (MMDDYY) : 050592			
Starting Time (HHMMSS) : 120000	Temp (F,mx/av/mn):	81/65/51	
Stopping Date (MMDDYY) : 050692	Precip (in):	0	
Stopping Time (HHMMSS) : 190000	Wind (mph,avg):	6.4	
Interval (HHMMSS) : 010000	Clouds(0-10):	0-1	
Warmup : Enable	Description:	n/a	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l
50592	160000	15.4	6.8	0.077	82	8.3	8.5	
50592	165600					[8.3]		8.5
50592	170000	16.4	6.8	0.077	85	8.3	8.5	
50592	180000	16.2	6.8	0.077	85	8.4	8.6	
50592	190000	16.0	6.8	0.076	85	8.4	8.7	
50592	200000	16.1	6.8	0.076	85	8.3	8.6	
50592	210000	15.9	6.7	0.077	85	8.4	8.6	
50592	220000	16.1	6.7	0.076	85	8.4	8.6	
50592	230000	16.3	6.8	0.077	85	8.4	8.6	
50692	0	16.0	6.7	0.077	84	8.3	8.6	
50692	10000	15.9	6.7	0.078	84	8.3	8.5	
50692	20000	15.8	6.7	0.077	83	8.2	8.5	
50692	30000	15.7	6.7	0.078	82	8.1	8.4	
50692	40000	15.6	6.7	0.078	81	8.1	8.4	
50692	50000	15.5	6.7	0.078	81	8.1	8.3	
50692	60000	15.3	6.7	0.078	80	8.0	8.2	
50692	70000	15.2	6.7	0.078	79	8.0	8.2	
50692	80000	15.1	6.7	0.079	79	7.9	8.2	
50692	90000	15.0	6.7	0.079	78	7.9	8.1	
50692	100000	15.0	6.7	0.079	78	7.9	8.1	
50692	110000	15.0	6.7	0.079	78	7.9	8.1	
50692	120000	15.0	6.7	0.080	78	7.8	8.1	
50692	130000	14.8	6.7	0.080	77	7.8	8.1	
50692	140000	15.0	6.7	0.081	78	7.8	8.1	
50692	150000	14.9	6.7	0.081	77	7.8	8.1	
50692	160000	15.1	6.7	0.081	78	7.9	8.1	
50692	160500					[7.9]		8.2

Appendix E Table E.2, page 19 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl526	Unit#:	36	
Setup Date (MMDDYY) : 052692	Station:	Above Mima Ck	
Setup Time (HHMMSS) : 104156	RM:	Black River 11.9	
Starting Date (MMDDYY) : 052692			
Starting Time (HHMMSS) : 120000	Temp (F,mx/av/mn):	66/56/44	
Stopping Date (MMDDYY) : 052792	Precip (in):	0	
Stopping Time (HHMMSS) : 190000	Wind (mph,avg):	8.1	
Interval (HHMMSS) : 010000	Clouds(0-10):	5-9	
Warmup : Enable	Description:	Sun broke through @ 1110	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
52692	160000					[9.6]		9.2
52692	170000	15.9	7.0	85	98	9.8	9.6	
52692	180000	16.6	7.0	84	102	10.0	9.8	
52692	190000	16.5	7.0	84	101	10.0	9.8	
52692	200000	15.9	6.9	86	100	9.9	9.7	
52692	210000	16.5	7.0	84	103	10.1	9.9	
52692	220000	16.4	7.0	85	100	9.8	9.6	
52692	230000	16.2	7.0	86	102	10.0	9.8	
52792	0	16.1	7.0	86	101	10.0	9.8	
52792	10000	16.1	7.0	85	101	10.0	9.8	
52792	20000	16.0	7.0	85	101	10.0	9.8	
52792	30000	15.9	7.0	85	101	10.0	9.8	
52792	40000	15.8	7.0	85	99	9.8	9.6	
52792	50000	15.7	7.0	85	99	9.9	9.7	
52792	60000	15.6	7.0	86	98	9.8	9.6	
52792	70000	15.5	6.9	86	96	9.7	9.5	
52792	80000	15.4	6.9	87	95	9.5	9.3	
52792	90000	15.4	6.9	88	94	9.5	9.3	
52792	100000	15.4	6.9	88	94	9.5	9.3	
52792	103000					[9.5]		9.3
52792	110000	15.4	6.9	88	94	9.5	9.3	
52792	120000	15.6	6.9	88	96	9.6	9.4	

Appendix E
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DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl618
Setup Date (MMDDYY) : 061792
Setup Time (HHMMSS) : 183849
Starting Date (MMDDYY) : 061892
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 061992
Stopping Time (HHMMSS) : 140000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 36
Stn ID: Above Mima Creek
RM: Black River 11.9
Temp (F,mx/av/mn): 83/64/49
Precip (in): 0
Wind (mph,avg): 5.2
Clouds(0-10): 1-7
Description: sunny, clear, cool-warm

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
61892	90000	15.6	7.6	90	112	11.2	11.3	
61892	100000	15.7	7.3	89	115	11.4	11.5	
61892	105200					[11.6]		11.7
61892	110000	15.8	7.3	89	118	11.7	11.8	
61892	120000	15.9	7.3	89	118	11.7	11.8	
61892	130000	15.9	7.2	89	118	11.6	11.7	
61892	140000	16.6	7.3	89	115	11.2	11.3	
61892	150000	15.9	7.2	90	116	11.4	11.5	
61892	160000	15.6	7.2	91	116	11.5	11.6	
61892	170000	15.9	7.2	91	117	11.6	11.7	
61892	180000	15.9	7.2	90	118	11.7	11.8	
61892	190000	15.7	7.2	92	119	11.9	12.0	
61892	200000	15.6	7.2	93	116	11.5	11.7	
61892	210000	15.6	7.2	93	117	11.6	11.7	
61892	220000	16.7	7.3	90	126	12.3	12.4	
61892	230000	16.9	7.3	90	126	12.2	12.3	
61992	0	17.5	7.4	89	123	11.8	11.9	
61992	10000	17.3	7.3	91	119	11.4	11.6	
61992	20000	17.3	7.2	89	112	10.8	10.9	
61992	30000	17.3	7.2	88	109	10.5	10.6	
61992	40000	17.1	7.1	90	108	10.4	10.5	
61992	50000	16.9	7.1	89	107	10.4	10.5	
61992	60000	16.8	7.1	90	106	10.3	10.4	
61992	70000	16.5	7.1	90	106	10.4	10.5	
61992	80000	16.3	7.1	92	107	10.5	10.6	
61992	90000	15.9	7.0	94	105	10.4	10.5	
61992	100000	15.9	7.0	95	106	10.5	10.6	
61992	102500					[10.5]		10.7

Appendix E Table E.2, page 21 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl708	Unit #:	34	
Setup Date (MMDDYY) : 070692	Stn ID:	Above Mima Ck	
Setup Time (HHMMSS) : 082815	RM:	Black River 11.9	
Starting Date (MMDDYY) : 070892			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):	75/65/50	
Stopping Date (MMDDYY) : 070992	Precip (in):	0	
Stopping Time (HHMMSS) : 120000	Wind (mph,avg):	4.8	
Interval (HHMMSS) : 010000	Clouds(0-10):	9-5-1	
Warmup : Enable	Description:	overcast, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
70892	105700					[8.6]		9.5
70892	110000	16.1	7.4	96	87	8.6	9.4	
70892	120000	15.9	7.1	96	89	8.8	9.6	
70892	121000					[8.8]		9.3
70892	130000	15.8	7.0	95	87	8.6	9.5	
70892	140000	15.6	7.0	96	86	8.5	9.4	
70892	150000	15.7	6.9	96	88	8.7	9.5	
70892	160000	15.5	6.9	96	87	8.7	9.5	
70892	170000	15.8	7.0	95	88	8.7	9.6	
70892	180000	15.6	6.9	96	88	8.7	9.6	
70892	190000	15.8	6.9	95	89	8.8	9.6	
70892	200000	15.8	6.9	95	90	8.9	9.7	
70892	210000	15.8	6.9	95	89	8.8	9.7	
70892	220000	15.7	6.9	96	89	8.9	9.7	
70892	230000	15.9	6.9	96	91	9.0	9.8	
70992	0	15.9	6.9	94	89	8.8	9.7	
70992	10000	16.1	6.9	95	90	8.8	9.7	
70992	20000	15.9	6.9	95	89	8.8	9.6	
70992	30000	15.9	6.9	93	88	8.7	9.5	
70992	40000	15.9	6.9	95	88	8.7	9.6	
70992	50000	15.9	6.9	95	88	8.7	9.5	
70992	60000	15.9	6.9	94	88	8.7	9.5	
70992	70000	15.9	6.9	96	88	8.7	9.5	
70992	80000	15.9	6.9	95	88	8.7	9.5	
70992	90000	15.8	6.9	94	87	8.6	9.5	
70992	100000	15.8	6.9	95	88	8.7	9.5	
70992	110000	15.8	6.9	96	88	8.7	9.5	
70992	115700					[8.8]	0.8	9.9
70992	120000	16.0	6.9	95	89	8.8	9.6	

Appendix E Table E.2, page 22 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl720	Unit #:	35	
Setup Date (MMDDYY) : 072092	Stn ID:	Above Mima Ck	
Setup Time (HHMMSS) : 084213	RM:	Black River 11.9	
Starting Date (MMDDYY) : 072092			
Starting Time (HHMMSS) : 110000	Temp (F,mx/av/mn):	74/67/61	
Stopping Date (MMDDYY) : 072192	Precip (in):	0	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	6.7	
Interval (HHMMSS) : 010000	Clouds(0-10):	9-10	
Warmup : Enable	Description:	cloudy, overcast, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
72092	140000	17.1	7.0	100	98	9.5	9.1	
72092	150000	16.9	6.9	106	97	9.4	9.0	
72092	154500					[9.5]		8.9
72092	154800					[9.6]		8.9
72092	160000	16.7	6.9	101	99	9.6	9.2	
72092	170000	16.3	6.9	108	99	9.7	9.3	
72092	180000	16.4	6.8	106	101	9.9	9.5	
72092	190000	16.8	6.8	103	99	9.6	9.2	
72092	200000	16.8	6.9	103	99	9.6	9.2	
72092	210000	17.2	6.9	100	97	9.3	8.9	
72092	220000	17.1	6.9	101	99	9.5	9.1	
72092	230000	17.2	6.9	101	95	9.1	8.7	
72192	0	17.3	6.9	99	94	9.1	8.7	
72192	10000	17.3	6.9	100	94	9.1	8.7	
72192	20000	17.2	7.0	98	95	9.2	8.8	
72192	30000	17.1	6.9	99	95	9.2	8.8	
72192	40000	17.2	6.9	100	94	9.1	8.7	
72192	50000	17.2	6.9	100	95	9.1	8.8	
72192	60000	17.3	6.9	100	96	9.2	8.8	
72192	70000	17.1	6.9	98	94	9.1	8.7	
72192	80000	17.1	6.9	99	94	9.1	8.7	
72192	90000	17.1	6.9	96	94	9.1	8.7	
72192	100000	17.0	6.9	97	93	9.0	8.7	
72192	110000	17.1	6.9	96	93	9.0	8.6	
72192	115000					[8.9]		8.9
72192	120000	17.0	6.8	97	92	8.9	8.6	
72192	130000	17.3	6.8	97	93	9.0	8.6	
72192	140000	17.3	6.8	93	93	8.9	8.6	
72192	150000	17.2	6.8	97	95	9.2	8.8	
72192	160000	17.1	6.8	95	96	9.2	8.9	

Appendix E Table E.2, page 23 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl805	Unit #:	35	
Setup Date (MMDDYY) : 080392	Stn ID:	Above Mima Creek	
Setup Time (HHMMSS) : 080304	RM:	Black River 11.9	
Starting Date (MMDDYY) : 080592			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):	67/62/56	
Stopping Date (MMDDYY) : 080692	Precip (in):	0.75	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	5.5	
Interval (HHMMSS) : 010000	Clouds(0-10):	5-10	
Warmup : Enable	Description:	cool, a few clouds - rainy, mild	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
80592	110000	16.9	7.0	98	98	9.4	9.3	
80592	120000	17.0	6.9	96	100	9.7	9.6	
80592	130000	16.8	6.9	98	100	9.7	9.6	
80592	133800					[9.7]		9.8
80592	140000	17.0	6.8	96	100	9.7	9.6	
80592	150000	16.9	6.9	96	99	9.6	9.5	
80592	160000	16.7	6.9	97	102	9.9	9.8	
80592	170000	16.8	6.8	99	103	10.0	9.9	
80592	180000	16.8	6.9	94	103	10.0	9.9	
80592	190000	16.5	6.8	100	105	10.2	10.1	
80592	200000	16.8	6.9	100	103	10.0	9.9	
80592	210000	16.7	6.9	97	103	10.0	9.9	
80592	220000	17.2	6.9	97	102	9.8	9.7	
80592	230000	17.3	6.9	95	101	9.7	9.6	
80692	0	17.7	6.9	95	101	9.7	9.6	
80692	10000	17.7	6.9	93	101	9.6	9.5	
80692	20000	17.8	6.9	94	101	9.6	9.5	
80692	30000	17.7	6.9	94	99	9.5	9.4	
80692	40000	17.8	6.9	93	98	9.3	9.2	
80692	50000	17.7	6.9	95	98	9.3	9.2	
80692	60000	17.6	6.9	93	99	9.4	9.3	
80692	70000	17.4	6.9	94	98	9.4	9.3	
80692	80000	17.3	6.9	94	98	9.4	9.3	
80692	90000	17.4	6.8	95	97	9.3	9.2	
80692	100000	17.4	6.9	94	96	9.2	9.1	
80692	110000	17.3	6.9	93	96	9.2	9.1	
80692	110600					[9.2]		8.9
80692	120000	17.1	6.8	94	96	9.3	9.2	

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0817
Setup Date (MMDDYY) : 081792
Setup Time (HHMMSS) : 084238
Starting Date (MMDDYY) : 081792
Starting Time (HHMMSS) : 110000
Stopping Date (MMDDYY) : 081892
Stopping Time (HHMMSS) : 150000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 36
Stn ID: Above Mima Creek
RM: Black River 11.9
Temp (F,mx/av/mn): 92/69/52
Precip (in): 0
Wind (mph,avg): 5.6
Clouds(0-10): 1-4-1
Description: warm, clear - cloudy, cool - clear, warm after 1200 on 18th

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
81792	130000	21.2	7.0	91	90	8.0	8.2	
81792	140000	21.9	7.0	91	93	[8.1]		8.4
81792	150000	21.9	7.0	91	94	8.2	8.4	
81792	160000	20.4	6.9	95	89	8.0	8.2	
81792	170000	19.6	6.8	98	95	8.7	8.9	
81792	180000	19.3	6.8	101	93	8.6	8.8	
81792	190000	19.1	6.8	100	93	8.6	8.8	
81792	200000	19.3	6.9	93	99	9.2	9.3	
81792	210000	19.4	6.9	98	94	8.7	8.8	
81792	220000	19.5	6.9	95	95	8.8	8.9	
81792	230000	19.7	6.9	96	94	8.6	8.8	
81892	0	20.3	6.9	92	94	8.5	8.7	
81892	10000	20.6	6.9	93	92	8.3	8.5	
81892	20000	20.7	7.0	92	93	8.4	8.5	
81892	30000	20.7	7.0	91	91	8.2	8.3	
81892	40000	20.6	7.0	92	90	8.1	8.2	
81892	50000	20.3	6.9	93	92	8.3	8.4	
81892	60000	20.1	6.9	93	91	8.3	8.5	
81892	70000	19.9	6.9	93	90	8.2	8.4	
81892	80000	19.5	6.8	96	90	8.3	8.5	
81892	90000	19.1	6.9	96	91	8.5	8.6	
81892	100000	18.7	6.8	101	92	8.6	8.7	
81892	110000	18.3	6.8	99	94	8.8	9.0	
81892	114400					[8.8]		8.9
81892	120000	18.2	6.8	103	94	8.8	9.0	
81892	130000	18.1	6.8	104	93	8.8	8.9	
81892	140000	18.0	6.8	99	97	9.2	9.4	
81892	150000	18.1	6.8	100	100	9.4	9.6	

Appendix E
Table E.2, page 25 of 36

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0910
Setup Date (MMDDYY) : 090892
Setup Time (HHMMSS) : 103807
Starting Date (MMDDYY) : 091092
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 091192
Stopping Time (HHMMSS) : 130000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 35
Stn ID: Above Mima Creek
RM: Black River 11.9
Temp (F,mx/av/mn): 79/61/49
Precip (in): 0
Wind (mph,avg): 6.9
Clouds(0-10): 9-9
Description: clear, mild

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
91092	100000	15.4	7.1	91	92	9.2	9.0	
91092	110000	15.6	6.9	91	92	9.2	9.0	
91092	111500					[9.2]		9.0
91092	120000	15.9	6.9	90	94	9.3	9.1	
91092	130000	16.3	6.9	90	96	9.4	9.1	
91092	140000	16.2	6.9	90	96	9.4	9.2	
91092	150000	16.1	6.9	89	96	9.5	9.3	
91092	160000	17.0	6.9	88	100	9.7	9.5	
91092	170000	17.4	7.0	88	102	9.8	9.6	
91092	180000	17.7	7.0	87	104	9.9	9.7	
91092	190000	17.6	7.0	88	96	9.1	8.9	
91092	200000	16.0	7.0	90	99	9.8	9.5	
91092	210000	15.8	6.9	91	97	9.7	9.4	
91092	220000	15.9	6.9	91	97	9.6	9.3	
91092	230000	15.9	6.9	91	97	9.6	9.4	
91192	0	16.0	6.9	91	97	9.6	9.4	
91192	10000	16.0	6.9	90	97	9.5	9.3	
91192	20000	16.0	6.9	89	95	9.4	9.2	
91192	30000	16.0	6.9	88	97	9.6	9.4	
91192	40000	16.0	6.9	90	96	9.5	9.3	
91192	50000	16.0	6.9	90	96	9.5	9.2	
91192	60000	16.1	6.9	89	96	9.5	9.3	
91192	70000	16.2	6.9	87	97	9.5	9.3	
91192	80000	16.1	6.9	88	96	9.5	9.3	
91192	82000					[9.5]		9.2
91192	90000	16.1	6.9	87	96	9.4	9.2	

Appendix E Table E.2, page 26 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/S2 = DO measurement by Surveyor 2 meter No Winkler field verification data available

Log File Name : bl9	Unit #:	34	
Setup Date (MMDDYY) : 090391	Stn ID:	Above Big Dock	
Setup Time (HHMMSS) : 085808	RM:	Black River 9.7	
Starting Date (MMDDYY) : 090391			
Starting Time (HHMMSS) : 100000	Temp (F,mx/av/mn):	87/66/51	
Stopping Date (MMDDYY) : 090691	Precip (in):	0	
Stopping Time (HHMMSS) : 140000	Wind (mph,avg):	5.5	
Interval (HHMMSS) : 010000	Clouds(0-10):	0-9-2	
Warmup : Enable	Description:	Sunny and warm	

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO/mtr mg/l	DO/S2 mg/l
90591	113000					[8.4]	8.3
90591	120000	17.2	6.9	0.101	86	8.5	
90591	130000	17.3	6.9	0.102	88	8.7	
90591	140000	17.5	6.9	0.102	89	8.8	
90591	150000	17.9	7.0	0.102	95	9.2	
90591	160000	17.7	7.0	0.102	93	9.1	
90591	170000	18.0	7.0	0.102	92	8.9	
90591	180000	18.0	6.9	0.102	89	8.6	
90591	190000	17.8	6.9	0.102	87	8.4	
90591	200000	17.8	6.9	0.102	87	8.5	
90591	210000	17.6	6.9	0.103	88	8.5	
90591	220000	17.4	6.9	0.103	82	8.1	
90591	230000	17.3	6.9	0.103	80	7.9	
90691	0	17.4	6.9	0.103	82	8.1	
90691	10000	17.4	6.9	0.102	87	8.5	
90691	20000	17.3	6.9	0.102	83	8.1	
90691	30000	17.4	6.8	0.102	80	7.9	
90691	40000	17.4	6.8	0.102	79	7.7	
90691	50000	17.3	6.8	0.102	76	7.5	
90691	60000	17.2	6.8	0.102	73	7.2	
90691	70000	17.1	6.8	0.102	73	7.2	
90691	80000	17.1	6.8	0.102	71	7.0	
90691	90000	17.1	6.8	0.102	74	7.3	
90691	100000	17.2	6.8	0.102	75	7.4	
90691	102000					[7.4]	7.3

Appendix E Table E.2, page 27 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl526
Setup Date (MMDDYY) : 052692
Setup Time (HHMMSS) : 105353
Starting Date (MMDDYY) : 052692
Starting Time (HHMMSS) : 120000
Stopping Date (MMDDYY) : 052792
Stopping Time (HHMMSS) : 190000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 34
Station: Above Big Dock
RM: Black River 9.7
Temp (F,mx/av/mn): 66/56/44
Precip (in): 0
Wind (mph,avg): 8.1
Clouds(0-10): 5-9
Description: Sun broke through @ 1110

pH ref electrode cap was not removed

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
52692	163000					[9.8]		9.4
52692	170000	16.8	7.0	90	100	9.8	9.7	
52692	180000	17.0	7.0	91	101	9.9	9.7	
52692	190000	16.9	7.0	91	101	9.8	9.7	
52692	200000	17.1	7.0	91	102	9.9	9.8	
52692	210000	17.1	7.1	91	101	9.8	9.7	
52692	220000	17.0	7.1	91	101	9.8	9.7	
52692	230000	16.9	7.1	91	100	9.7	9.6	
52792	0	16.8	7.1	91	100	9.7	9.6	
52792	10000	16.7	7.1	91	99	9.6	9.5	
52792	20000	16.7	7.1	91	99	9.7	9.5	
52792	30000	16.5	7.1	91	98	9.6	9.5	
52792	40000	16.4	7.1	92	97	9.5	9.4	
52792	50000	16.3	7.0	92	96	9.5	9.3	
52792	60000	16.1	7.0	92	95	9.4	9.3	
52792	70000	16.1	7.0	92	95	9.4	9.3	
52792	80000	16.0	7.0	92	94	9.4	9.3	
52792	90000	16.0	7.0	92	95	9.4	9.3	
52792	100000	16.0	7.0	93	95	9.5	9.4	
52792	110000	16.0	7.0	93	97	9.6	9.5	
52792	120000	16.1	7.0	93	98	9.7	9.6	9.5

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl618
Setup Date (MMDDYY) : 061792
Setup Time (HHMMSS) : 183604
Starting Date (MMDDYY) : 061892
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 061992
Stopping Time (HHMMSS) : 140000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 34
Stn ID: Above Big Dock
RM: Black River 9.7
Temp (F,mx/av/mn): 83/64/49
Precip (in): 0
Wind (mph,avg): 5.2
Clouds(0-10): 1-7
Description: sunny, clear, cool-warm

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
61892	100000	15.8	7.3	95	106	10.5	11.1	10.9
61892	110000	16.0	7.1	95	108	10.7	11.3	
61892	120000	16.1	7.1	95	111	11.0	11.5	
61892	130000	16.0	7.1	95	111	10.9	11.5	
61892	140000	16.3	7.1	95	114	11.2	11.7	
61892	150000	17.1	7.2	95	118	11.4	12.0	
61892	160000	17.6	7.3	95	121	11.6	12.1	
61892	170000	17.7	7.2	95	120	11.4	12.0	
61892	180000	17.9	7.2	94	119	11.3	11.9	
61892	190000	17.5	7.2	94	121	11.6	12.1	
61892	200000	17.9	7.2	94	120	11.4	12.0	
61892	210000	17.7	7.2	94	119	11.4	11.9	
61892	220000	17.3	7.2	94	118	11.3	11.9	
61892	230000	17.3	7.2	94	118	11.3	11.9	
61992	0	17.0	7.1	94	117	11.3	11.8	
61992	10000	16.9	7.1	94	115	11.1	11.7	
61992	20000	16.7	7.1	94	113	11.0	11.5	
61992	30000	16.7	7.1	93	114	11.1	11.7	
61992	40000	16.6	7.1	93	114	11.1	11.6	
61992	50000	16.9	7.1	93	112	10.9	11.4	
61992	60000	16.7	7.1	93	112	10.9	11.5	
61992	70000	16.7	7.1	93	113	11.0	11.6	
61992	80000	16.8	7.1	93	112	10.8	11.4	
61992	90000	16.9	7.1	93	110	10.7	11.3	
61992	95300					[10.8]		11.5
61992	100000	16.9	7.1	93	112	10.9	11.4	

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl708
Setup Date (MMDDYY) : 070692
Setup Time (HHMMSS) : 083155
Starting Date (MMDDYY) : 070892
Starting Time (HHMMSS) : 080000
Stopping Date (MMDDYY) : 070992
Stopping Time (HHMMSS) : 120000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 35
Stn ID: Above Big Dock
RM: Black River 9.7
Temp (F,mx/av/mn): 75/65/50
Precip (in): 0
Wind (mph,avg): 4.8
Clouds(0-10): 9-5-1
Description: overcast, warm

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
70892	111700					[9.5]		9.3
70892	120000	17.0	7.1	102	99	9.6	9.3	
70892	130000	17.1	7.1	102	102	9.9	9.6	
70892	140000	17.1	7.1	102	102	9.9	9.6	
70892	150000	17.2	7.2	102	106	10.2	9.9	
70892	160000	17.2	7.1	102	105	10.1	9.8	
70892	170000	17.2	7.1	102	107	10.3	10.0	
70892	180000	17.2	7.2	101	108	10.4	10.1	
70892	190000	17.2	7.1	101	107	10.3	10.0	
70892	200000	17.3	7.1	101	109	10.5	10.2	
70892	210000	17.1	7.1	101	104	10.0	9.7	
70892	220000	17.0	7.1	101	103	10.0	9.7	
70892	230000	17.2	7.1	101	105	10.2	9.9	
70992	0	16.8	7.0	102	97	9.4	9.1	
70992	10000	16.7	6.9	102	96	9.4	9.1	
70992	20000	16.6	7.0	103	96	9.4	9.1	
70992	30000	16.6	7.0	102	95	9.3	9.0	
70992	40000	16.6	7.0	102	94	9.2	8.9	
70992	50000	16.8	7.1	101	101	9.8	9.5	
70992	60000	16.6	7.1	101	100	9.8	9.5	
70992	70000	16.5	7.1	102	97	9.5	9.2	
70992	80000	16.5	7.1	102	95	9.3	9.0	
70992	90000	16.5	7.0	102	96	9.4	9.1	
70992	100000	16.7	7.1	102	97	9.4	9.1	
70992	110000	16.7	7.0	102	98	9.5	9.2	
70992	112500					[9.5]		9.2

Appendix E Table E.2, page 30 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl720	Unit #:	34	
Setup Date (MMDDYY) : 072092	Stn ID:	Above Big Dock	
Setup Time (HHMMSS) : 084553	RM:	Black River 9.7	
Starting Date (MMDDYY) : 072092			
Starting Time (HHMMSS) : 110000	Temp (F,mx/av/mn):	74/67/61	
Stopping Date (MMDDYY) : 072192	Precip (in):	0	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	6.7	
Interval (HHMMSS) : 010000	Clouds(0-10):	9-10	
Warmup : Enable	Description:	cloudy, overcast, warm	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
72092	140000	19.6	7.5	95	93	8.5	8.9	
72092	140200					[8.5]		8.9
72092	150000	19.6	7.1	95	95	8.7	9.0	
72092	160000	19.5	7.0	95	95	8.7	9.0	
72092	170000	19.4	7.0	96	95	8.7	9.1	
72092	180000	19.4	7.0	96	94	8.7	9.0	
72092	190000	19.2	6.9	96	93	8.6	9.0	
72092	200000	19.2	6.9	96	91	8.4	8.8	
72092	210000	19.0	6.9	96	91	8.4	8.7	
72092	220000	19.0	6.9	97	88	8.2	8.6	
72092	230000	19.2	6.9	96	90	8.3	8.6	
72192	0	19.1	6.9	96	89	8.2	8.6	
72192	10000	19.1	6.9	97	89	8.2	8.6	
72192	20000	19.1	6.9	97	88	8.1	8.5	
72192	30000	19.1	6.9	97	88	8.2	8.5	
72192	40000	19.1	6.9	96	88	8.1	8.5	
72192	50000	19.0	6.9	96	87	8.0	8.4	
72192	60000	19.0	6.9	96	86	8.0	8.4	
72192	70000	19.0	6.9	96	87	8.1	8.4	
72192	80000	18.9	6.9	96	87	8.0	8.4	

Appendix E Table E.2, page 31 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl805	Unit #:	36	
Setup Date (MMDDYY) : 080392	Stn ID:	Above Big Dock	
Setup Time (HHMMSS) : 080821	RM:	Black River 9.7	
Starting Date (MMDDYY) : 080592			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):	67/62/56	
Stopping Date (MMDDYY) : 080692	Precip (in):	0.75	
Stopping Time (HHMMSS) : 180000	Wind (mph,avg):	5.5	
Interval (HHMMSS) : 010000	Clouds(0-10):	5-10	
Warmup : Enable	Description:	cool, a few clouds - rainy, mild	

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	uS/cm	%Sat	mg/l	mg/l	mg/l
80592	105800					[8.8]		8.7
80592	110000	18.5	7.2	98	94	8.8	8.6	
80592	115800					[8.9]		8.7
80592	120000	18.6	7.1	98	96	9.0	8.7	
80592	130000	18.6	7.1	98	95	8.9	8.6	
80592	140000	18.7	7.0	98	94	8.8	8.5	
80592	150000	18.9	7.1	98	100	9.3	9.0	
80592	160000	18.9	7.0	98	101	9.4	9.2	
80592	170000	19.0	7.1	98	103	9.6	9.3	
80592	180000	19.0	7.1	98	103	9.6	9.3	
80592	190000	19.0	7.1	98	102	9.5	9.2	
80592	200000	18.9	7.0	98	101	9.4	9.1	
80592	210000	18.8	7.0	98	101	9.4	9.2	
80592	220000	18.8	6.9	98	97	9.1	8.8	
80592	230000	18.8	6.9	98	95	8.9	8.6	
80692	0	18.6	6.9	98	93	8.7	8.5	
80692	10000	18.6	6.9	98	93	8.7	8.4	
80692	20000	18.6	6.9	98	91	8.5	8.2	
80692	30000	18.6	6.9	98	90	8.4	8.2	
80692	40000	18.7	6.9	98	92	8.6	8.4	
80692	50000	18.7	7.0	98	95	8.9	8.6	
80692	60000	18.7	7.0	97	96	8.9	8.7	
80692	70000	18.6	7.0	98	94	8.8	8.5	
80692	80000	18.6	6.9	97	93	8.7	8.4	
80692	90000	18.5	7.0	97	93	8.7	8.4	
80692	100000	18.5	7.0	97	92	8.6	8.4	
80692	110000	18.5	7.0	96	93	8.7	8.4	
80692	120000	18.5	7.0	96	93	8.7	8.5	
80692	120300					[8.7]		8.4

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl0817
Setup Date (MMDDYY) : 081792
Setup Time (HHMMSS) : 083151
Starting Date (MMDDYY) : 081792
Starting Time (HHMMSS) : 110000
Stopping Date (MMDDYY) : 081892
Stopping Time (HHMMSS) : 150000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 34
STN ID: Above Big Dock
RM: Black River 9.7
Temp (F,mx/av/mn): 92/69/52
Precip (in): 0
Wind (mph,avg): 5.6
Clouds(0-10): 1-4-1
Description: warm, clear - cloudy, cool - clear, warm after 1200 on 18th

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
81792	130000	20.8	6.9	99	87	7.8	8.2	
81792	130500					[7.8]		8.4
81792	140000	21.0	6.9	97	89	7.9	8.3	
81792	150000	21.3	6.9	97	93	8.2	8.6	
81792	160000	21.6	6.9	97	93	8.2	8.6	
81792	170000	21.7	6.9	97	96	8.4	8.8	
81792	180000	21.7	6.9	97	96	8.5	8.9	
81792	190000	21.7	6.9	97	96	8.4	8.8	
81792	200000	21.5	6.9	97	95	8.4	8.8	
81792	210000	21.3	6.9	97	94	8.4	8.8	
81792	220000	20.9	6.9	97	91	8.1	8.5	
81792	230000	20.7	6.8	98	91	8.1	8.5	
81892	0	20.3	6.8	98	87	7.9	8.3	
81892	10000	20.2	6.7	100	85	7.7	8.1	
81892	20000	20.1	6.7	98	85	7.8	8.2	
81892	30000	20.1	6.7	99	83	7.5	7.9	
81892	40000	20.0	6.7	99	81	7.4	7.8	
81892	50000	19.9	6.7	99	80	7.3	7.7	
81892	60000	19.9	6.6	99	78	7.1	7.5	
81892	70000	19.8	6.6	98	77	7.1	7.5	
81892	80000	19.9	6.7	98	77	7.0	7.4	
81892	90000	19.9	6.7	98	78	7.1	7.5	
81892	100000	20.0	6.7	97	79	7.2	7.6	
81892	110000	20.0	6.8	98	80	7.3	7.7	
81892	120000	20.0	6.7	98	81	7.4	7.8	
81892	130000	20.1	6.7	98	83	7.6	8.0	
81892	134600					[7.6]		7.8
81892	140000	20.2	6.7	98	84	7.6	8.0	
81892	150000	20.3	6.7	99	84	7.6	8.0	

Appendix E Table E.2, page 33 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/Wink = DO measurement by Winkler method

Log File Name : bl0910	Unit #:	34	
Setup Date (MMDDYY) : 090892	Stn ID:	Above Big Dock	
Setup Time (HHMMSS) : 105502	RM:	Black River 9.7	
Starting Date (MMDDYY) : 091092			
Starting Time (HHMMSS) : 080000	Temp (F,mx/av/mn):		79/61/49
Stopping Date (MMDDYY) : 091192	Precip (in):		0
Stopping Time (HHMMSS) : 130000	Wind (mph,avg):		6.9
Interval (HHMMSS) : 010000	Clouds(0-10):		9-9
Warmup : Enable	Description:		clear, mild

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond uS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
91092	130225	16.4	7.0	0	101	9.9	9.8	
91092	140033	16.6	7.0	0	104	10.1	10.1	
91092	150000	16.8	7.0	97	105	10.2	10.2	
91092	160000	16.9	7.0	97	104	10.0	10.0	
91092	170000	17.2	7.0	97	101	9.7	9.7	
91092	180000	17.2	7.0	97	101	9.7	9.6	
91092	190000	17.2	7.0	97	100	9.7	9.6	
91092	200000	17.2	6.9	97	99	9.6	9.5	
91092	210000	17.2	6.9	96	98	9.5	9.4	
91092	220000	17.2	6.9	96	98	9.4	9.3	
91092	230000	17.1	6.9	96	96	9.3	9.2	
91192	0	17.0	6.9	96	96	9.2	9.2	
91192	10000	17.0	6.9	96	95	9.2	9.1	
91192	20000	16.9	6.9	96	94	9.1	9.1	
91192	30000	16.9	6.9	96	94	9.1	9.0	
91192	40000	16.8	6.9	96	93	9.1	9.0	
91192	50000	16.7	6.9	96	93	9.0	9.0	
91192	60000	16.7	6.9	96	92	9.0	8.9	
91192	70000	16.6	6.8	96	92	8.9	8.9	
91192	80000	16.6	6.9	96	91	8.9	8.9	
91192	90000	16.6	6.8	96	92	8.9	8.9	8.9

Appendix E
Table E.2, page 34 of 36

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl7
Setup Date (MMDDYY) : 090391
Setup Time (HHMMSS) : 090255
Starting Date (MMDDYY) : 090391
Starting Time (HHMMSS) : 100000
Stopping Date (MMDDYY) : 090691
Stopping Time (HHMMSS) : 140000
Interval (HHMMSS) : 010000
Warmup : Enable

Unit #: 36
Stn ID: Moon Rd Bridge
RM: Black River 7.7
Temp (F,mx/av/mn): 87/66/51
Precip (in): 0
Wind (mph,avg): 5.5
Clouds(0-10): 0-9-2
Description: Sunny and warm

Date	Time	Temp	pH	SpCond	DO	DO/mtr	DO/corr	DO/Wink
MMDDYY	HHMMSS	degC	units	mS/cm	%Sat	mg/l	mg/l	mg/l
90591	130000	17.8	7.1	0.119	99	9.7	9.4	
90591	140000	18.2	7.1	0.119	103	9.9	9.7	
90591	150000	18.6	7.2	0.119	104	9.9	9.7	
90591	160000	18.9	7.2	0.118	103	9.8	9.6	
90591	170000	19.0	7.1	0.118	101	9.6	9.3	
90591	180000	19.0	7.1	0.119	98	9.3	9.1	
90591	190000	18.9	7.0	0.119	92	8.8	8.5	
90591	200000	18.6	7.0	0.120	83	7.9	7.7	
90591	210000	18.3	6.9	0.120	76	7.3	7.0	
90591	220000	18.0	6.9	0.121	71	6.9	6.6	
90591	230000	17.7	6.9	0.121	67	6.6	6.3	
90691	0	17.5	6.9	0.122	65	6.3	6.1	
90691	10000	17.3	6.8	0.122	63	6.2	6.0	
90691	20000	17.1	6.8	0.122	62	6.2	5.9	
90691	30000	16.9	6.8	0.122	61	6.1	5.8	
90691	40000	16.7	6.8	0.122	60	6.0	5.7	
90691	50000	16.6	6.8	0.122	60	5.9	5.7	
90691	60000	16.4	6.8	0.122	59	5.9	5.7	
90691	70000	16.3	6.8	0.122	58	5.9	5.6	
90691	80000	16.1	6.8	0.122	61	6.1	5.8	
90691	90000	16.1	6.9	0.122	66	6.7	6.4	
90691	100000	16.3	6.9	0.122	73	7.4	7.1	
90691	110000	16.6	7.0	0.122	83	8.3	8.1	
90691	112000					[8.6]		8.4

Appendix E Table E.2, page 35 of 36	DO/corr = Corrected DO Measurement DO/mtr = DO measurement by DS3 meter DO/S2 = DO measurement by Surveyor 2 meter No Winkler field verification data available

Log File Name : bl4	Unit #:	35	
Setup Date (MMDDYY) : 090391	Stn ID:	@ SR 12 Bridge	
Setup Time (HHMMSS) : 090045	RM:	Black River 4.0	
Starting Date (MMDDYY) : 090391			
Starting Time (HHMMSS) : 100000	Temp (F,mx/av/mn):	87/66/51	
Stopping Date (MMDDYY) : 090691	Precip (in):	0	
Stopping Time (HHMMSS) : 140000	Wind (mph,avg):	5.5	
Interval (HHMMSS) : 010000	Clouds(0-10):	0-9-2	
Warmup : Enable	Description:	Sunny and warm	

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO/mtr mg/l	DO/S2 mg/l
90591	140000	17.2	7.1	0.129	86	8.5	
90591	150000	17.2	7.1	0.129	90	8.8	
90591	160000	17.3	7.2	0.129	92	9.0	
90591	170000	17.4	7.2	0.129	94	9.2	
90591	180000	17.7	7.2	0.129	97	9.5	
90591	190000	17.9	7.3	0.129	99	9.6	
90591	200000	18.0	7.3	0.129	98	9.5	
90591	210000	18.1	7.3	0.129	97	9.4	
90591	220000	18.2	7.3	0.129	97	9.4	
90591	230000	18.3	7.3	0.129	97	9.3	
90691	0	18.3	7.3	0.129	96	9.3	
90691	10000	18.3	7.2	0.129	94	9.0	
90691	20000	18.3	7.2	0.129	91	8.7	
90691	30000	18.2	7.2	0.129	88	8.5	
90691	40000	18.0	7.2	0.130	84	8.2	
90691	50000	17.9	7.1	0.130	81	7.9	
90691	60000	17.7	7.1	0.129	77	7.5	
90691	70000	17.5	7.1	0.130	74	7.3	
90691	80000	17.3	7.0	0.130	73	7.1	
90691	81500					[7.1]	7.2
90691	90000	17.2	7.1	0.129	73	7.2	
90691	100000	17.1	7.1	0.129	75	7.4	
90691	110000	17.1	7.1	0.129	78	7.7	
90691	120000	17.2	7.1	0.129	82	8.1	

DO/corr = Corrected DO Measurement
DO/mtr = DO measurement by DS3 meter
DO/Wink = DO measurement by Winkler method

Log File Name : bl1	Unit #:	35	
Setup Date (MMDDYY) : 091091	Stn ID:	Howanut Road Bridge	
Setup Time (HHMMSS) : 091951	RM:	Black River 1.2	
Starting Date (MMDDYY) : 091091			
Starting Time (HHMMSS) : 100000		Temp (F,mx/av/mn):	70/58/46
Stopping Date (MMDDYY) : 091391		Precip (in):	0
Stopping Time (HHMMSS) : 140000		Wind (mph,avg):	8.1
Interval (HHMMSS) : 010000		Clouds(0-10):	1-3
Warmup : Enable		Description:	Sunny, warm

Date MMDDYY	Time HHMMSS	Temp degC	pH units	SpCond mS/cm	DO %Sat	DO/mtr mg/l	DO/corr mg/l	DO/Wink mg/l
91291	140000	16.0	7.1	0.104	94	9.5	9.3	
91291	150000	16.5	7.2	0.104	100	10.0	9.8	
91291	153000					[10.1]		10.1
91291	160000	16.8	7.2	0.104	104	10.3	10.2	
91291	170000	16.9	7.3	0.104	106	10.5	10.3	
91291	180000	17.0	7.3	0.104	106	10.5	10.3	
91291	190000	16.9	7.3	0.105	105	10.4	10.2	
91291	200000	16.8	7.3	0.105	103	10.3	10.1	
91291	210000	16.8	7.3	0.105	102	10.1	10.0	
91291	220000	16.7	7.3	0.105	100	9.9	9.8	
91291	230000	16.6	7.3	0.106	98	9.7	9.6	
91391	0	16.4	7.2	0.106	95	9.5	9.4	
91391	10000	16.2	7.2	0.106	93	9.3	9.2	
91391	20000	16.1	7.2	0.106	90	9.1	8.9	
91391	30000	15.9	7.1	0.106	88	8.9	8.7	
91391	40000	15.8	7.1	0.106	86	8.7	8.5	
91391	50000	15.7	7.1	0.106	84	8.5	8.3	
91391	60000	15.6	7.1	0.106	82	8.4	8.2	
91391	70000	15.4	7.1	0.106	80	8.2	8.0	
91391	80000	15.3	7.0	0.106	79	8.1	8.0	
91391	90000	15.2	7.0	0.106	80	8.2	8.0	
91391	100000	15.2	7.0	0.105	81	8.3	8.1	
91391	110000	15.3	7.0	0.105	84	8.6	8.4	
91391	114500					[8.8]		8.6

APPENDIX F. Laboratory Results

Appendix F

Table F.1 Mainstem Laboratory Results: General Chemistry, Microbiology, BOD

RM Code	Site Description	Lab #	Date	Time	Depth (m)	COND (µmho/cm)	ALK (mg/l)	TURB (NTU)	TSS (mg/l)	TDS (mg/l)	FC (cfu/100ml)	BOD5 (mg/l)	BOD5 (mg/l)
19.7	BR @ 110th St Br	348087	08/19/92	1040	0	94		1.0	2	83	16	2.0 U	2.0 U
17.4	BR @ River Rd Br	348084	08/19/92	1302	0	95		0.8	1	86	56	2.4	2.4
		348092	08/19/92	1310	0				1 U	80			
17.2	BR @ 128th St Br	378328	09/10/91	1015	0	94		1.0					
		378428	09/11/91	931	0	92		1.1					
		348089	08/19/92	1200	0			1.0			72	2.0 U	2.0
15.3	BR abv Littlerock BL	378300	09/10/91	945	1.9	102	40.4	2.0	2	89	44		
		378301	09/10/91	945	1.9	99	40.4	1.8	1	78	44		
		378400	09/11/91	1050	1.7	98	40.2	1.8	3	121	47		
		378401	09/11/91	1050	1.7	98	40.3	2.0	2	116	40 B		
		378500	09/12/91	935	1.9	100	39.8	2.2			37		
		258120	06/18/92	1241	0	96		1.4					
		308500	07/21/92	940	2	124	41.1	2.5	2	93	120		
		308516	07/21/92	1810	2		40.8	2.0				2.0 U	2.0 U
		328536	08/05/92	1617	2.1		40.5	2.0			31		
		328520	08/05/92	1645	2.1	101	40.2	2.3	2	74		2.0 U	2.0 U
		348080	08/19/92	1700	1	102		2.0	1 U	88	80	2.0 U	2.0 U
		408090	10/01/92	1315	1.6	104		1.3				2.0 U	2.0 U
14.1	BR @ Canoe Club	378303	09/10/91	1005	3.6	139	48.0	1.4					
		378302	09/10/91	1105	0.9	97	40.7	1.8	2	109	22		
		378402	09/11/91	1140	0.9	95	40.1	1.7	2	114	16		
		378403	09/11/91	1140	3.7	136	47.3	1.6					
		378502	09/12/91	1020	0.9	96	39.9	1.8			7 B		
		378503	09/12/91	1020	2.6			1.5					
		308501	07/21/92	1025	0.8		41.4	2.0					
		308502	07/21/92	1028	3.4								
		328521	08/05/92	1559	1		40.4	1.7					
		328522	08/05/92	1604	3.9								
13.1	BR above Steel Trestle	308503	07/21/92	1108	1.2		42.2	2.0					
		308504	07/21/92	1113	4.8								
		328523	08/05/92	1515	0.9		40.4	1.5					
		328537	08/05/92	1520	2	126							
		328524	08/05/92	1527	3.8								
12.8	BR @ Narrows blw Steel Trestle	378519	09/12/91	1100	1.4	105		1.8			5 B		
11.9	BR above Mima Creek	378304	09/10/91	1330	1.1	101		1.4					
		378305	09/10/91	1330	4.4	627		35.0					
		378404	09/11/91	1220	1.1	113		1.3					
		378405	09/11/91	1220	4.5	674		35.0					

RM Code	Site Description	Lab #	Date	Time	Depth (m)	COND (µmho/cm)	ALK (mg/l)	TURB (NTU)	TSS (mg/l)	TDS (mg/l)	FC (cfu/100ml)	BOD5 (mg/l)	BOD5 (mg/l)
11.9	BR above Mima Creek	378504	09/12/91	1130	1.1	105		1.6			8		
		378505	09/12/91	1130	4.6	642		36.0					
		258121	06/18/92	1052	0	97		1.6					
		308505	07/21/92	1150	1.1	106	42.3	2.0	2	81		2.4	2.8
		308506	07/21/92	1150	1.1	107	42.6	2.2	3	77		2.6	2.4
		308507	07/21/92	1220	4.5	138	61.1	3.1	8	94			
		308508	07/21/92	1220	4.5								
		328525	08/05/92	1405	1.2	107	42.5	1.6	4	81		2.0 U	2.0 U
		328526	08/05/92	1405	1.2	106	42.2	2.4	2	74		2.0 U	2.0 U
		328527	08/05/92	1425	4.7	137	61.0	4.7	7	95		4.8	4.2
		328528	08/05/92	1425	4.7								
		408091	10/01/92	1135	3.8			1.5				2.0 U	2.0 U
11.1	BR above Big Lagoon	378306	09/10/91	1400	0.9	102	41.2	1.4	2	89	6		
		378307	09/10/91	1400	3.6	104	41.7	1.5	3	94			
		378406	09/11/91	1300	0.8	102	41.4	1.5	3	128	16		
		378407	09/11/91	1300	3.1	104	41.8	1.7	2	110			
		378506	09/12/91	1200	0.7	103	41.1	1.6			7		
		378507	09/12/91	1200	2.9	106	41.8	1.9					
		308509	07/21/92	1255	0.7		41.3	1.5	2	67			
		308510	07/21/92	1255	2.7								
		328529	08/05/92	1316	0.7		41.6	1.3					
		328530	08/05/92	1320	2.9								
10.6	BR near Swecker Dock	378308	09/10/91	1500	0.8	103		1.5					
		378309	09/10/91	1500	3.4	110		1.3					
		378408	09/11/91	1350	0.8	102		1.7					
		378409	09/11/91	1350	3.3	108		1.5					
		378508	09/12/91	1230	0.8	103		1.9					
		378509	09/12/91	1230	3.2	107		1.6					
9.7	BR above Big Dock	258122	06/18/92	925	0	104		1.5					
		258123	06/18/92	925	0	104		1.5					
		308512	07/21/92	1405	0.9								
		308512	07/21/92	1405	0.9		41.9	1.4					
		308513	07/21/92	1408	3.7								
		328532	08/05/92	1158	0.9	103	42.1	1.4	2	84			
		328533	08/05/92	1207	3.6		43.8	2.2		83			
		408092	10/01/92	1015	2.8	109		1.1				2.0 U	2.0 U
9.5	BR blw Rochester Slough	308514	07/21/92	1448	0	105	41.8	1.4	2	77			
		308515	07/21/92	1622	0	105	41.9	1.1	1	45	13	2.0 U	2.0 U
		328535	08/05/92	1119	0.8	103	42.3	1.7	3		13	2.2	2.4
9.3	BR abv Global Aqua	378310	09/10/91	1530	0.7	107		1.3	1	88	7		
		378410	09/11/91	1415	0.7	106		1.4	2	117	4		
		378510	09/12/91	1300	0.7	104		1.5			17		

RM Code	Site Description	Lab #	Date	Time	Depth (m)	COND (µmho/cm)	ALK (mg/l)	TURB (NTU)	TSS (mg/l)	TDS (mg/l)	FC (cfu/100ml)	BOD5 (mg/l)	BOD5 (mg/l)
8.5	BR abv Schoolland Rd BL	378312	09/10/91	1850	0	111		0.5	1 U	115	1 U		
		378313	09/10/91	1850	0	111		0.5	1 U	109	6 B		
		378412	09/11/91	1500	0	111		0.6	1	121	3		
		378413	09/11/91	1500	0	111		0.5	1	124	2 B		
		378512	09/12/91	1415	0			0.6			5 B		
		378513	09/12/91	1415	0	109		0.5			2 B		
7.9	BR @ the Millpond	378314	09/10/91	1720	0.7	110	42.5	0.5					
		378315	09/10/91	1720	3	111	42.8	1.0					
		378414	09/11/91	1600	0.7	111	42.7	0.5					
		378415	09/11/91	1600	2.9	112	43.2	1.0					
7.1	BR @ Moon Rd Bridge	378325	09/10/91	755	0	114		1.0					
		378333	09/10/91	1400	0	112		0.5	1	97	6		
		378425	09/11/91	740	0	114		0.5					
		378433	09/11/91	1300	0	114		0.5	1	129	13		
		378525	09/12/91	745	0	113		0.5					
		378533	09/12/91	1350	0	112		0.5			11		
		258124	06/18/92	1340	0	105		0.6					
		308577	07/21/92	1205	0	111	43.8	1.5	1	85	36		
		308578	07/21/92	1300	0			1.3					
		328592	08/05/92	1340	0	113	44.2	1.0	1	87	21	2.0 U	2.0 U
		328593	08/05/92	1340	0			1.2			20		
		408093	10/01/92	815	0.2			0.5				2.0 U	2.0 U
4.1	BR @ SR 12 Bridge	378331	09/10/91	850	0	116		0.5	1	103	39		
		378431	09/11/91	830	0	116		0.5	1	116	28		
		378531	09/12/91	840	0	116		0.5			29		
		308576	07/21/92	1205	0								
		328591	08/05/92	1305	0								
1.2	BR @ Howanut Rd Bridge	378326	09/10/91	825	0	118		1.0					
		378327	09/10/91	825	0	118		1.2					
		378334	09/10/91	1330	0	117		1.0	2	79	27		
		378426	09/11/91	755	0	117		1.1					
		378427	09/11/91	755	0	117		1.3					
		378434	09/11/91	1350	0	116		1.0	2	138	35		
		378526	09/12/91	805	0	117		1.3					
		378527	09/12/91	805	0	117		1.2					
		378534	09/12/91	1325	0	116		1.0			32		
		308570	07/21/92	820	0	117	45.4	1.7	4	86		2.0 U	2.0 U
		308581	07/21/92	1445	0	116	44.2	1.2	3	94	43		
		328585	08/05/92	815	0	116	45.4	1.2	2	97		2.0 U	2.0 U
		328596	08/05/92	1710	0								
		328596	08/05/92	1710	0	116	45.6	1.5	2	92	28		

U = The analyte was not detected at or above the reported result. B = Bottle overfull; can't shake sample.

Appendix F

Table F.2 Tributary Laboratory Results: General Chemistry, Microbiology, BOD

RM Code	Site Description	Lab #	Date	Time	COND (µmho/cm)	ALK (mg/l)	TURB (NTU)	TSS (mg/l)	TDS (mg/l)	FC (cfu/100ml)	BOD5 (mg/l)	BOD5 (mg/l)
20.1005	Salmon Ck @ Creekwood Dr	348088	08/19/92	1540			1.3			41	3.0	3.0
19.4003	Blooms Ditch @ 110th St	348086	08/19/92	1528			2.2			68	2.6	2.6
17.3019	Waddell Ck @ Waddell Ck Rd	348090	08/19/92	900			0.5			25	2.0 U	2.0 U
		348085	08/19/92	1400			0.5			29	2.0 U	2.0
16.8038	Beaver Ck @ Case Rd	348083	08/19/92	1450			1.5			6	2.6	3.0
16.8023001	Scott Lake Ck @ SR 121	348082	08/19/92	1200			3.8			69	3.2	2.8
16.8002	Beaver Ck @ SR 121 nr mouth	378329	09/10/91	1100	126		1.5					
		378429	09/11/91	950	124		1.5					
		348081	08/19/92	1125			1.5			280	2.0	2.2
		348091	08/19/92	1125	101		1.4			230	2.0 U	2.0 U
11.8009	Mima Ck @ Mima-Gate Rd	378330	09/10/91	940	86		2.9					
		378430	09/11/91	905	85		2.6					
		308579	07/21/92	1330								
		328594	08/05/92	1445								
10.7004	Swecker Salmon Farm	378371	09/09/91		141		1.5	3	104	4		
		378471	09/10/91		145		1.5	5	134	6 X		
10.7001	Swecker Discharge Stream	308511	07/21/92	1320	132	42.5	1.0	2	104	59		
		328531	08/05/92	1240	133	41.9	1.7	1 U	106	49	2.0	2.0 U
9.6002	Rochester Sl (Steelhammer)	378347	09/10/91	1020	124		27.0					
		378447	09/11/91	1010	135		21.0					
9.2003	Global Aqua/BR	378375	09/09/91		160		1.0	1	113	1 U		
		378376	09/09/91		160		1.0	3	101	1 U		
		378475	09/10/91		160		1.1	2	130	1 U		
		378476	09/10/91		160		2.6	2	118	1 U		
9.2001	Springs nr Global Aqua	378311	09/10/91	1600	160		0.4					
		378411	09/11/91	1430	160		0.1					
7.7001	Springs nr Big Rock	378316	09/10/91	1745	153		0.1					
		378416	09/11/91	1615	153		0.2					
		308580	07/21/92	1415		54.0	0.7					
		328595	08/05/92	1415		55.7	1.2				2.0 U	2.0 U

U = The analyte was not detected at or above the reported result. X = High background count.

Appendix F

Table F.3 Mainstem Laboratory Results: Chlorophyll a, TOC, Nutrients, Chloride.

RM Code	Site Description	Lab #	Date	Time	Depth (m)	CHLA (µg/L)	TOC (mg/l)	NH3N (mg/l)	TN (mg/l)	NO23N (mg/l)	TP (mg/l)	SRP (mg/l)	CL (mg/l)
19.7	BR @ 110th St Br	348087	08/19/92	1040	0	3.2	3.1	0.018	0.470 J	0.032	0.043		3.2
17.4	BR @ River Rd Br	348084	08/19/92	1302	0	5.8	3.7	0.011	0.287	0.010 U	0.039		3.6
		348092	08/19/92	1310	0	8.3							
17.2	BR @ 128th St Br	378328	09/10/91	1015	0			0.032	0.453	0.183	0.045 L		3.8
		378428	09/11/91	931	0			0.027	0.447	0.120	0.043 L		3.6
		348089	08/19/92	1200	0	11.3	3.8	0.011	0.321	0.010 U	0.046		3.5
15.3	BR abv Littlerock BL	378300	09/10/91	945	1.9	0.6	3.7	0.012	0.526	0.414	0.026 L	0.015	4.7
		378301	09/10/91	945	1.9	0.6	4.1	0.013	0.525	0.414	0.023 L	0.014	4.7
		378400	09/11/91	1050	1.7	1.1	3.0	0.010 U	0.560	0.424	0.025 L	0.015	4.6
		378401	09/11/91	1050	1.7	0.6	3.0	0.010 U	0.552	0.426	0.019 L	0.015	4.6
		378500	09/12/91	935	1.9	1.7	3.0	0.012	0.539	0.415	0.027 L	0.015	4.4
		258120	06/18/92	1241	0		2.1	0.022	0.581	0.396	0.017	0.010 U	4.3
		308500	07/21/92	940	2	1.6	2.2	0.015	0.561	0.463	0.036	0.010 U	4.3
		308516	07/21/92	1810	2	0.0	2.1	0.010 U	0.542	0.460	0.010 U	0.010 U	4.3
		328536	08/05/92	1617	2.1	1.4	1.7	0.021	0.611	0.485	0.024	0.018	4.3
		328520	08/05/92	1645	2.1	0.0	1.7	0.017	0.561	0.471	0.026	0.018	4.3
		348080	08/19/92	1700	1	0.6	2.3	0.013	0.580	0.419	0.025		4.3
		408090	10/01/92	1315	1.6	0.7	3.1	0.015	0.511	0.370	0.026		5.3
14.1	BR @ Canoe Club	378303	09/10/91	1005	3.6			0.076	3.050	2.720	0.045 L	0.013	5.4
		378302	09/10/91	1105	0.9	0.6	4.6	0.019	0.474	0.329	0.025 L	0.013	4.5
		378402	09/11/91	1140	0.9	0.8	3.3	0.011	0.469	0.304	0.024 L	0.013	4.4
		378403	09/11/91	1140	3.7			0.062	2.900	2.640	0.088 L	0.013	5.3
		378502	09/12/91	1020	0.9	0.7	3.5	0.022	0.452	0.294	0.025 L	0.011	4.3
		378503	09/12/91	1020	2.6			0.047	2.180	2.070	0.023 L	0.012	4.9
		308501	07/21/92	1025	0.8	2.2	2.6	0.010 U	0.406	0.248	0.010 U	0.010 U	4.1
		308502	07/21/92	1028	3.4			0.094	3.140	3.000	0.020	0.010 U	5.6
		328521	08/05/92	1559	1	3.5	2.0	0.017	0.360	0.193	0.023	0.010	4.0
		328522	08/05/92	1604	3.9			0.074	2.790	2.600	0.048	0.011	5.3
13.1	BR above Steel Trestle	308503	07/21/92	1108	1.2	1.2	2.2	0.010 U	0.878	0.772	0.010 U	0.010 U	4.3
		308504	07/21/92	1113	4.8			0.022	4.530	4.710	0.010 U	0.010 U	6.4
		328523	08/05/92	1515	0.9	2.4	2.0	0.012	0.500	0.259	0.020	0.010	3.9
		328537	08/05/92	1520	2		1.5	0.010 U	2.630	2.150	0.022	0.011	5.2
		328524	08/05/92	1527	3.8			0.018	4.460	3.400	0.029	0.010 U	6.0
12.8	BR @ narrows blw Steel Trestle	378519	09/12/91	1100	1.4			0.019	1.000	0.843	0.019 L		4.5
11.9	BR above Mima Creek	378304	09/10/91	1330	1.1			0.010 U	0.658	0.501	0.023 L		4.7
		378305	09/10/91	1330	4.4			28.300	36.100	0.079	8.430		23.8
		378404	09/11/91	1220	1.1			0.010 U	1.370	1.050	0.031 L		5.0
		378405	09/11/91	1220	4.5			31.100	38.700	0.015	9.020		25.6

RM Code	Site Description	Lab #	Date	Time	Depth (m)	CHLA (µg/L)	TOC (mg/l)	NH3N (mg/l)	TN (mg/l)	NO23N (mg/l)	TP (mg/l)	SRP (mg/l)	CL (mg/l)
11.9	BR above Mima Creek	378504	09/12/91	1130	1.1			0.010	0.989	0.849	0.029 L		4.6
		378505	09/12/91	1130	4.6			28.700	38.700	0.043	8.540		24.1
		258121	06/18/92	1052	0		2.3	0.010	0.742	0.403	0.017	0.010 U	4.2
		308505	07/21/92	1150	1.1	6.2	2.1	0.010 U	1.190	1.080	0.010 U	0.010 U	4.4
		308506	07/21/92	1150	1.1	5.9	3.0	0.010 U	1.140	1.090	0.010 U	0.010 U	4.4
		308507	07/21/92	1220	4.5	10.3	4.6	0.641	1.260	0.292	0.034	0.010 U	5.5
		308508	07/21/92	1220	4.5			0.643	1.300	0.291	0.034	0.010 U	5.7
		328525	08/05/92	1405	1.2	5.0	1.9	0.010	0.940	0.709	0.021	0.010 U	4.3
		328526	08/05/92	1405	1.2	5.7	1.8	0.012	0.906	0.719	0.022	0.010 U	4.3
		328527	08/05/92	1425	4.7	11.0	2.9	0.369	1.110	0.298	0.054	0.010 U	5.1
		328528	08/05/92	1425	4.7		3.2	0.356	1.130	0.293	0.055		5.1
		408091	10/01/92	1135	3.8	2.0	4.0	0.054	1.270	1.170	0.029		6.0
11.1	BR above Big Lagoon	378306	09/10/91	1400	0.9	6.8	4.6	0.019	0.835	0.579	0.037 L	0.011	4.8
		378307	09/10/91	1400	3.6	3.5	4.1	0.043	0.844	0.629	0.035 L	0.016	4.7
		378406	09/11/91	1300	0.8	12.3	3.8	0.010 U	0.995	0.565	0.048 L	0.010	4.7
		378407	09/11/91	1300	3.1	8.0	3.5	0.024	1.030	0.645	0.040 L	0.012	4.8
		378506	09/12/91	1200	0.7	10.3	3.8	0.010 U	0.768	0.582	0.033 L	0.009	4.8
		378507	09/12/91	1200	2.9	4.4	3.5	0.046	2.030	0.799	0.075 L	0.017	4.7
		308509	07/21/92	1255	0.7	5.3	2.9	0.035	0.702	0.516	0.010 U	0.010 U	4.3
		308510	07/21/92	1255	2.7			0.040	0.992	0.895	0.010 U	0.010 U	4.4
		328529	08/05/92	1316	0.7	3.0	2.3	0.029	0.710	0.490	0.016	0.010 U	4.2
		328530	08/05/92	1320	2.9			0.051	0.839	0.670	0.019	0.010 U	4.3
10.6	BR near Swecker Dock	378308	09/10/91	1500	0.8			0.018	0.412	0.599	0.017 L		4.8
		378309	09/10/91	1500	3.4			0.058	1.360	1.100	0.083 L		5.0
		378408	09/11/91	1350	0.8			0.010 U	0.886	0.574	0.046 L		4.8
		378409	09/11/91	1350	3.3			0.043	1.200	0.982	0.065 L		4.9
		378508	09/12/91	1230	0.8			0.010 U	0.934	0.638	0.041 L		4.7
		378509	09/12/91	1230	3.2			0.040	1.160	0.936	0.069 L		4.7
9.7	BR above Big Dock	258122	06/18/92	925	0		2.0	0.010 U	1.120	0.852	0.016	0.010 U	4.3
		258123	06/18/92	925	0		1.9	0.010 U	1.340	0.852	0.015	0.010 U	4.3
		308512	07/21/92	1405	0.9	6.8							
		308512	07/21/92	1405	0.9	4.5	2.4	0.024	0.860	0.748	0.010	0.010 U	4.6
		308513	07/21/92	1408	3.7			0.074	0.921	0.699	0.010 U	0.010 U	4.7
		328532	08/05/92	1158	0.9	4.0	1.9	0.024	0.772	0.653	0.022	0.011	4.3
		328533	08/05/92	1207	3.6	7.8	2.1	0.036	0.915	0.689	0.035	0.011	4.5
		408092	10/01/92	1015	2.8	4.4	3.4	0.010 U	0.570	0.571	0.026		5.6
9.5	BR blw Rochester Slough	308514	07/21/92	1448	0	1.2	2.3	0.042	0.933	0.753	0.010 U	0.010 U	4.5
		308515	07/21/92	1622	0	4.0	2.3	0.041	0.901	0.746	0.010 U	0.010 U	4.5
		328535	08/05/92	1119	0.8	9.9	2.0	0.032	0.931	0.700	0.026	0.013	4.4
9.3	BR abv Global Aqua	378310	09/10/91	1530	0.7	9.9	4.2	0.042	1.060	0.785	0.059 L	0.031	4.9
		378410	09/11/91	1415	0.7	11.6	3.8	0.019	1.040	0.757	0.056 L	0.026	4.9
		378510	09/12/91	1300	0.7	2.1	3.7	0.015	0.908	0.729	0.049 L	0.025	4.7

RM Code	Site Description	Lab #	Date	Time	Depth (m)	CHLA (µg/L)	TOC (mg/l)	NH3N (mg/l)	TN (mg/l)	NO23N (mg/l)	TP (mg/l)	SRP (mg/l)	CL (mg/l)
8.5	BR abv Schoolland Rd BL	378312	09/10/91	1850	0	0.7	3.7	0.010 U	1.050	0.853	0.047 L	0.033	5.3
		378313	09/10/91	1850	0	0.1	4.3	0.012	1.040	0.853	0.047 L	0.033	5.1
		378412	09/11/91	1500	0	1.3	3.5	0.010 U	1.070	0.880	0.040 L	0.035	5.3
		378413	09/11/91	1500	0	1.2	3.3	0.010 U	1.060	0.882	0.047 L	0.036	5.3
		378512	09/12/91	1415	0	0.7	3.8	0.010 U	0.987	0.847	0.045 L	0.036	5.0
		378513	09/12/91	1415	0		3.3	0.011	1.010	0.849	0.043 L	0.036	5.0
7.9	BR @ the Millpond	378314	09/10/91	1720	0.7			0.010 U	0.925	0.763	0.041 L		5.4
		378315	09/10/91	1720	3			0.010 U	0.968	0.791	0.045 L		5.3
		378414	09/11/91	1600	0.7			0.010 U	1.050	0.872	0.049 L		5.3
		378415	09/11/91	1600	2.9			0.010 U	1.050	0.869	0.050 L		5.3
7.1	BR @ Moon Rd Bridge	378325	09/10/91	755	0			0.010	1.060	0.852	0.050 L		5.5
		378333	09/10/91	1400	0	0.5	3.8	0.010 U	0.986	0.802	0.044 L	0.033	5.5
		378425	09/11/91	740	0			0.014	1.100	0.879	0.048 L		5.6
		378433	09/11/91	1300	0	0.9	3.3	0.010 U	1.050	0.883	0.042 L	0.035	5.6
		378525	09/12/91	745	0			0.014	1.100	0.860	0.040 L		5.4
		378533	09/12/91	1350	0	0.6	3.3	0.010 U	0.983	0.840	0.040 L	0.033	5.3
		258124	06/18/92	1340	0		1.9	0.020	0.962	0.739	0.018	0.010 U	4.5
		308577	07/21/92	1205	0	0.0	2.1	0.018	0.879	0.855	0.013	0.015	5.0
		308578	07/21/92	1300	0	0.6	2.1	0.016	0.921	0.850	0.010 U	0.015	5.0
		328592	08/05/92	1340	0	0.0	1.9	0.010	0.981	0.779	0.022	0.020	5.3
		328593	08/05/92	1340	0		1.9	0.010 U	0.939	0.777	0.021	0.020	5.1
		408093	10/01/92	815	0.2	2.9	2.7	0.011	0.807	0.708	0.030		5.2
4.1	BR @ SR 12 Bridge	378331	09/10/91	850	0	0.8	2.4	0.010 U	1.040	0.830	0.042 L	0.023	5.5
		378431	09/11/91	830	0	1.0	3.2	0.010 U	1.040	0.825	0.040 L	0.030	5.7
		378531	09/12/91	840	0	0.7	3.2	0.010 U	1.050	0.876	0.039 L	0.030	5.5
		308576	07/21/92	1205	0			0.032	0.897	0.838	0.020	0.019	5.2
		328591	08/05/92	1305	0			0.023	0.913	0.731	0.028	0.022	5.5
1.2	BR @ Howanut Rd Bridge	378326	09/10/91	825	0			0.010 U	1.120	0.943	0.041 L		5.8
		378327	09/10/91	825	0			0.010 U	1.170	0.945	0.042 L		5.7
		378334	09/10/91	1330	0	0.9	3.5	0.010 U	1.100	0.921	0.040 L	0.026	5.7
		378426	09/11/91	755	0			0.015	1.120	0.909	0.041 L		5.6
		378427	09/11/91	755	0			0.010 U	1.120	0.911	0.040 L		5.6
		378434	09/11/91	1350	0	1.0	3.1	0.010 U	1.100	0.917	0.040 L	0.027	5.6
		378526	09/12/91	805	0			0.034	1.110	0.912	0.036 L		5.4
		378527	09/12/91	805	0			0.010 U	1.100	0.916	0.035 L		5.4
		378534	09/12/91	1325	0	0.7	3.3	0.010 U	1.080	0.920	0.037 L	0.027	5.7
		308570	07/21/92	820	0	0.0	3.3	0.047	1.050	0.905	0.024	0.024	5.3
		308581	07/21/92	1445	0	0.9	2.0	0.030	1.060	0.930	0.022	0.017	5.4
		328585	08/05/92	815	0	2.2	1.9	0.027	0.970	0.807	0.028	0.021	5.4
		328596	08/05/92	1710	0	1.3							
		328596	08/05/92	1710	0	2.5	1.8	0.010	0.962		0.010	0.019	5.4

U = The analyte was not detected at or above the reported result. L = The analyte was detected at the reported result; actual value may be higher.

Appendix F

Table F.4 Tributary Laboratory Results: Chlorophyll a, TOC, Nutrients, Chloride

RM Code	Site Description	Lab #	Date	Time	CHLA (µg/L)	TOC (mg/l)	NH3N (mg/l)	TN (mg/l)	NO23N (mg/l)	TP (mg/l)	SRP (mg/l)	CL (mg/l)
20.1005	Salmon Ck @ Creekwood Dr	348088	08/19/92	1540		4.5	0.027	0.453	0.105	0.121		5.6
19.4003	Blooms Ditch @ 110th St	348086	08/19/92	1528		2.5	0.011	0.590	0.393	0.035		5.0
17.3019	Waddell Ck @ Waddell Ck Rd	348090	08/19/92	900		1.0	0.010 U	0.403	0.314	0.016		2.6
	Waddell Ck @ Waddell Ck Rd	348085	08/19/92	1400		1.0 U	0.010 U	0.381	0.299	0.010 U		2.6
16.8038	Beaver Ck @ Case Rd	348083	08/19/92	1450		3.2	0.038	0.401	0.113	0.034		16.3
16.8023001	Scott Lake Ck @ SR 121	348082	08/19/92	1200		4.9	0.032	0.569	0.143	0.057		4.5
16.8002	Beaver Ck @ SR 121 nr mouth	378329	09/10/91	1100			0.027	2.180	1.820	0.052 L		9.3
		378429	09/11/91	950			0.010 U	2.050	1.780	0.047 L		9.1
		348081	08/19/92	1125		3.7	0.010 U	1.030	0.681	0.052		5.3
		348091	08/19/92	1125		3.7	0.010 U	0.998	0.682	0.053		5.4
11.8009	Mima Ck @ Mima-Gate Rd	378330	09/10/91	940			0.013	0.364	0.148	0.022 L	0.011	3.5
		378430	09/11/91	905			0.010 U	0.252	0.138	0.015 L	0.007	3.5
		308579	07/21/92	1330		3.2	0.010 U	0.328	0.191	0.010 U	0.010 U	3.4
		328594	08/05/92	1445		3.0	0.010 U	0.397	0.209	0.017	0.015	3.7
10.7004	Swecker Salmon Farm	378371	09/09/91		0.7	2.6	0.941	4.130	2.580	0.364	0.227	5.8
		378471	09/10/91		1.1	3.8	1.230	4.670	2.710	0.490	0.351	5.8
10.7001	Swecker Discharge Stream	308511	07/21/92	1320	3.1	1.7	0.346	3.310	2.950	0.157	0.152	6.1
		328531	08/05/92	1240	2.6	1.5	0.320	3.600	2.820	0.187	0.162	5.7
9.6002	Rochester Sl (Steelhammer)	378347	09/10/91	1020			0.079	1.010	0.014	0.206	0.025	6.4
		378447	09/11/91	1010			0.025	1.410	0.010 U	0.261	0.025	6.1
9.2003	Global Aqua/BR	378375	09/09/91		0.1	3.3	0.212	1.670	1.280	0.088 L	0.064	8.4
		378376	09/09/91		0.1	2.6	0.208	1.660	1.260	0.091 L	0.058	8.3
		378475	09/10/91		0.1	2.1	0.218	1.680	1.300	0.092 L	0.055	8.1
		378475	09/10/91		0.1							
		378476	09/10/91		0.1	3.0	0.212	1.680	1.330	0.128	0.055	8.1
9.2001	Springs nr Global Aqua	378311	09/10/91	1600			0.010 U	1.530	1.550	0.078 L	0.076	8.4
		378411	09/11/91	1430			0.010 U	1.580	1.430	0.084 L	0.074	8.4
7.7001	Springs nr Big Rock	378316	09/10/91	1745			0.010 U	1.590	1.600	0.079 L	0.080	8.4
		378416	09/11/91	1615			0.010 U	1.590	1.490	0.081 L	0.075	8.4
		308580	07/21/92	1415	0.0	0.1 U	0.010 U	1.660	1.770	0.066	0.083	7.6
		328595	08/05/92	1415	0.0	1.0 U	0.010 U	1.790		0.076	0.095	8.0

U = The analyte was not detected at or above the reported result. L = The analyte was detected at the reported result; actual value may be higher.

Appendix F

Table F.5 Ultimate CBOD Analysis Results Summary

MAINSTEM RM Code	Site Description	Lab #	Date	Time	Depth (m)	CBOD5 (mg/L)	UBOD (mg/L)	u/5	k (1/day)	SS	Dltn	Days
15.3	BR abv Littlerock BL	378300	9/10/91	945	1.9	0.44	1.44	3.30	0.078	5.4E-02	1	29
15.3		378301	9/10/91	945	1.9	0.58	1.48	2.55	0.110	8.9E-02	1	29
15.3		308500	7/21/92	940	2	0.89	1.12	1.25	0.240	9.8E-02	1	34
15.3		328536	8/5/92	1617	2.1	0.03	1.43	47.67	0.054	5.2E-01	1	34
11.9	BR above Mima Ck	308505	7/21/92	1150	1.1	1.51	1.73	1.15	0.280	7.9E-01	1	34
11.9		308506	7/21/92	1150	1.1	1.79	2.50	1.39	0.222	4.5E-01	1	34
11.9		308507	7/21/92	1220	4.5	2.56	5.27	2.06	0.146	5.2E-01	1	34
11.1	BR above Big Lagoon	378306	9/10/91	1400	0.9	1.36	2.24	1.65	0.224	1.0E-01	1	29
11.1		378307	9/10/91	1400	3.6	0.94	1.61	1.71	0.185	6.6E-02	1	29
11.1		378406	9/11/91	1300	0.8	1.60	2.63	1.64	0.192	5.3E-02	1	29
9.5	BR below Rochester Slough	308514	7/21/92	1448	0	0.96	1.86	1.93	0.184	4.9E-01	1	34
9.5		328535	8/5/92	1119	0.8	0.92	2.50	2.72	0.127	2.7E-01	1	34
9.3	BR above Global Aqua	378310	9/10/91	1530	0.7	2.04	2.94	1.44	0.269	1.9E-01	1	29
9.3		378310R	9/10/91	1530	0.7	1.95	2.85	1.46	0.294	2.1E-01	1	29
7.1	BR at Moon Rd Bridge	378333	9/10/91	1400	0	1.02	1.92	1.88	0.160	1.0E-01	1	29
7.1		308577	7/21/92	1205	0	1.33	1.77	1.33	0.227	2.8E-01	1	34
1.2	BR at Howanut Rd Bridge	378334	9/10/91	1330	0	1.04	2.22	2.14	0.139	1.5E-01	1	29
1.2		308581	7/21/92	1445	0	1.38	1.93	1.40	0.209	1.7E-01	1	34
1.2		328596	8/5/92	1710	0	0.63	1.99	3.16	0.103	1.3E-01	1	34
TRIBUTARIES												
9.2003	Global Aqua/BR	378375	9/10/91			3.37	8.78	2.60	0.082	4.4E+00	1	29
9.2003		378375	9/10/91			5.32	6.84	1.29	0.333	1.7E+00	3	29
9.2003		378475	9/11/91			2.33	2.83	1.21	0.297	1.6E-01	2	29
9.2003		378475	9/11/91			1.67	3.32	1.98	0.174	5.7E-01	1	29
10.7004	Swecker Salmon Farm	378371	9/10/91			5.34	6.30	1.18	0.472	2.2E-01	4	12
10.7004		378371	9/10/91			3.37	4.23	1.25	0.371	4.4E+00	2	29
10.7004		378471	9/11/91			4.45	4.09	0.92	0.807	2.8E+00	4	29
10.7004		378471	9/11/91			4.04	5.19	1.29	0.308	1.0E+00	2	29
10.7004		378471R	9/11/91			4.08	4.19	1.03	0.490	9.1E-01	4	29
10.7004		378471R	9/11/91			4.41	4.99	1.13	0.424	1.1E+00	2	29
10.7001	Swecker Discharge Stream	308511	7/21/92	1320		2.92	4.09	1.40	0.310	1.8E-01	1	12
7.7001	Big Rock Springs	308580	7/21/92	1415		0.55	0.42	0.77	0.240	1.4E+00	1	34
7.7001		308580R	7/21/92	1415		0.47	0.31	0.66	0.239	3.4E+00	1	34

"u/5" = UBOD:CBOD5 ratio. "k" = bottle deoxygenation rate. "SS" = Residual sum of squares of 1st order fit. "Dltn" = laboratory sample dilution. "Days" = # of analysis days used in 1st order fit.

APPENDIX G. Model Calibration

G.1 Segment Dimensions and Dispersion Coefficients

To develop model segmentation, the WASP5 documentation (Ambrose *et al*, 1993) and other support documents (NCASI, 1991) suggest that attention should be paid to the relative size of segments and the residence time or travel time for each segment. Therefore, the initial estimates of travel time discussed above helped define model segmentation. Maximum segment size was established in the swift lower river based on the distance between sampling locations, and then smaller segments with similar travel times were defined in the slow middle reach.

Cross-sectional areas that were measured as part of flow determinations were used to develop channel geometry. After segment volumes were established, average segment depth, width, length, and inter-segment surface areas were defined consistent with field data.

Dispersion coefficients for the model were developed in the vertical and longitudinal dimensions between neighboring water column segments. Dispersion coefficients were applied globally to sections of the River with similar characteristics - one horizontal coefficient for the lower river and a horizontal and vertical coefficient for the middle river. Horizontal coefficients are velocity-based using the method in Liu (1977) and cited in EPA (1985). Vertical dispersion coefficients were developed from temperature profile data using the method presented in Thomann and Mueller (1987).

To test the appropriateness of the estimated dispersion coefficients, the model was run with several different coefficients. The model was insensitive to the dispersion coefficients, *i.e.*, variation of the dispersion coefficients produced very little change in the model results.

G.2 Flow, Velocity, and Depth

For the WASP5 model of the Black River, flows were specified in the input file. A flow mass balance was developed with a spreadsheet, so that changes in flows could be balanced and then entered in the input file. A copy of the spreadsheets for July and August 1992 conditions are presented in Appendix Tables G.1 and G.2 respectively. Flows in the input file are organized into instream horizontal flows, tributary/point source flows, consumptive use withdrawals, vertical flows, and ground water flows.

Tributary stream flows were measured during the surveys, as were river flows at selected locations. During the early August survey, river flows were not measured due to rainfall causing the river to rise. River flows were measured in the late

August survey, and early August flows were estimated by interpolating between July and August flow measurements.

Ground water inflows were estimated by mass balance, with consideration given to the regional ground water flow patterns described in Sinclair and Hirschey (1992), as well as the local topography and geology.

Flow from the Global Aqua and the Swecker Salmon Farm facilities were initially estimated from the flow mass balance, and then refined using the chloride mass balance. These flow estimates were then compared to the effluent flow reported on the facilities' Discharge Monitoring Reports (DMRs). In the mass balance spreadsheet, the flows from these facilities were set as a percentage of the DMR flows. Based on field observations, flow from the Swecker facility was split between surface flow in the effluent discharge channel and ground water flow downstream of the effluent discharge location. Flows from Global Aqua reach the river through the springs described earlier.

Consumptive use withdrawals were estimated by reviewing all of the water rights on the Black River, and totaling these water rights allocations by segment. A percentage of the total permitted withdrawals was applied to each segment based on how many pumps had been observed in the area compared to the number of water rights. As with ground water flows, this initial rough estimate was refined using flow and chloride mass balance.

WASP5 requires that hydraulic coefficients and exponents be provided that specify velocity and depth as a function of flow. The format of these equations is $v = a * Q^b$ and $h = c * Q^d$, where v = velocity, Q = flow, h = depth, and a, b, c, and d are the hydraulic coefficients and exponents. Using the method recommended in the WASP5 documentation (Ambrose *et al.*, 1993), exponents were selected that are typical of temperate rivers with cohesive soils. Coefficients for each segment were then derived from the selected exponents and from the flow, velocity and depth measurements from the river.

G.3 Loading Sources and Boundary Concentrations

For chloride tracer modeling in the Black River, ground water chloride sources were input as boundary concentrations. Boundary concentrations for ground water were set to levels that appeared to be typical for the region. Regional ground water quality data were found in Sinclair and Hirschey (1992), Pearson and Higgins (1977), and Erickson (1990b).

Tributary, point source, and headwater chloride sources were input as waste loads. Loading was calculated from measured or estimated flows and from chloride concentrations measured during the surveys. Where necessary to meet the chloride

mass balance, additional loading was input as a waste load to benthic segments, under the assumption that unknown sources were reaching the river through ground water.

For full eutrophication modeling, boundary conditions and waste loads must be specified for the state variables of eight systems. The method to set the inputs for the eight parameters was similar to the way chloride inputs were set. Boundary conditions were set to background levels for regional ground water quality. Tributaries and point sources were given loadings for the eight systems calculated from measured flows and concentrations. The loading sources identified by the chloride mass balance were determined using several different approaches (explained below), depending on the probable source and pathway to the river.

Appendix Tables G.4 and G.5 show the waste loads and boundary conditions for July and August 1992 conditions, respectively. Point source loads for the Global Aqua springs (Segment 4), the Swecker discharge stream (Segment 22), Mima Creek (Segment 24), and the upstream boundary in the Black River at the Littlerock boat launch (Segment 19) were measured directly by intensive survey sampling. Loading to the Black River from the Swecker Salmon Farm by ground water pathways (Segment 21) was estimated by assuming that the quality of that portion of the discharge would be similar to the quality of the Global Aqua Springs. Ground water inflows attributed to the two facilities were developed from the chloride modeling, and the loading for the eight model systems was calculated from those estimated inflows and the measured concentrations in the springs.

Initial calibration runs indicated that the additional loading predicted by the chloride modeling was needed for the eight model systems to achieve the best fit for the model. To estimate those loadings, the most likely source needed to be identified. As discussed above, several dairies operate near the Black River, and the location of the loading that the model requires coincides with the location of the dairies. Since other land uses at those locations are unlikely to be sources of loading at the levels required for the model calibration, dairy operations were selected as the most likely source.

To estimate typical loading from a dairy, ground water quality data were used from an assessment of a dairy lagoon near the Chehalis River in Adna (Erickson, 1992). The ratio between each eutrophication parameter and chloride in the ground water near the dairy waste lagoon was evaluated. To estimate the loading of the eight parameters to the Black River where dairies were the suspected sources, this ratio was applied to the chloride calibration input loadings. Use of the chloride ratios assumes that the behavior of the constituents in the ground water where the data were collected will be similar in the areas where the ratio is applied. This assumption cannot be tested, but it allows a rough estimate of loading that cannot otherwise be measured.

Additional loading was applied to the subsurface segment above Mima Creek to balance higher observed levels of some parameters. This loading reflects some combination of a possible surface discharge of waste materials to this location and the release of loading from sediments.

Regional ground water data for nutrients were used to develop boundary conditions for ground water inputs. Chlorophyll *a* and organic nutrients were assumed to be absent in ground water. Ultimate BOD was set to 0.5 mg/L and DO to 2 mg/L based on available data.

G.4 Parameters, Constants and Miscellaneous Time Functions

WASP5 requires a number of parameters, constants and time functions for eutrophication modeling. Parameters were entered that varied for different segments. Constants and time functions were applied as a single value for all segments and times. In addition, solids settling was included to remove phytoplankton from the water column. Settling velocities varied by segment, but were held constant over time.

Three parameters were developed for the Black River model - temperature, light extinction coefficient, and sediment oxygen demand (SOD). Temperature input values were developed from field measurements during the intensive surveys. Temperatures for sampled segments were applied to neighboring unsampled segments based on similarities in channel and flow characteristics.

Light extinction coefficients were measured directly at four sites on the Black and Chehalis Rivers. Linear regression was used to relate Secchi disk depth to light extinction. A reasonably good relationship was found ($r^2=0.85$, $p<.05$). Extinction coefficients were then calculated for all the Secchi readings. A coefficient typical of a location and appropriate season was applied to similar, unmeasured segments for use in the model. Five extinction coefficients were applied to different groups of river segments, ranging from 0.75 at the upstream end of the model, to 1.5 at the lower end of the two-layer reach.

SOD values were developed by using an initial input value of 2.0 g/m^2-day, and then calibrating values to observed oxygen levels. The resulting SOD values used were: 0.3 in the upper half of the stratified reach, 15.0 in the segment directly upstream of Mima Creek, 0.8 in the stratified reaches below Mima Creek, and 1.5 in the lower river (all units in g/m^2-day)[8]. An SOD temperature coefficient of 1.08 was used.

With a few exceptions, constants were either taken from Ambrose, *et al* (1993) or from the literature data for diatom-dominated waters in EPA (1985). To improve model results during calibration, constants in some cases were adjusted within the reported range to achieve a best fit.

The nitrification rate was estimated from observed data by applying linear regression to the log of the net change in ammonia with river mile. The deoxygenation rate was also estimated from observed data by applying linear regression to the log of the net change in UBOD with river mile. With both the nitrification rate and the deoxygenation rate, values developed from field data were compared to literature values to ensure that they were reasonable.

Incident light energy and air temperature were entered as time functions. Incident light energy was based on field measurements, and adjusted to account for the season and to fit the algorithm used by the model (which is based on the average light during the photoperiod and the length of the photoperiod as a percentage of the day). Air temperature was obtained from National Weather Service data for the Olympia Airport weather station.

Initial calibration runs of the Black River model indicated that increased phytoplankton settling was necessary to reduce the biomass in the water column of the middle river. Settling rates for phytoplankton solids were calibrated to observed chlorophyll *a* data. Settling for the middle reach of the river was set near the upper end of the range of literature values, since a relatively high value seemed reasonable for diatoms.

In addition, as discussed above, phytoplankton appears to be filtered out by macrophytes below the steel trestle (RM 9.1), and this effect needed to be accounted for by the use of an increased settling rate in the model. An artificially high value was used in the lower river to account for the particulate removal by macrophyte beds.

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[8]The SOD value 15 g/m^2-day used in the segment above Mima Creek is based on calibration of the model to oxygen levels in the subsurface segment. The value is extremely high, but within the range of values found in the literature for locations near pollutant inputs.

Appendix G
Table G.1 Black River Segment Flow and Chloride Balance - July 1992

Surface Flow Segments | All flows in cfs, concentrations in mg/L, loads in lb/day

RM	Seg	Horizontal	Vertical	Horizontal	Pumping	Ground Water		Tributary #1		Tributary #2		Tributary #3	
Code	No	Inflow	Inflow	Outflow	Withdrawal	Flow	Conc.	Flow	Load	Flow	Load	Flow	Load
0.0	1	50.7	1.4	50.5	-1.6								
1.2	2	51.1	3.4	50.7	-3.8								
4.1	3	46.1	9.0	51.1	-4.0								
7.1	4	49.3	-7.5	46.1	-2.7			7.0	288.2				
9.3	5	49.6	-0.2	49.3	-0.1								
9.7	6	47.6	2.0	49.6									
10.1	7	42.9	4.7	47.6									
10.6	8	38.2	4.7	42.9									
11.1	9	36.2	2.0	38.2									
11.5	10	32.4	3.8	36.2									
11.9	11	32.3	0.1	32.4									
12.2	12	32.2	0.1	32.3									
12.6	13	32.0	0.2	32.2									
13.1	14	31.4	0.6	32.0									
13.4	15	30.6	0.8	31.4									
13.8	16	30.0	0.6	30.6									
14.1	17	28.9	1.1	30.0									
14.5	18	27.7	1.2	28.9									
14.9	19	0.0	1.2	27.7				26.5	613.8				
15.3													
Subsurface Segments													
9.7	20		2.0	2.0									
10.1	21		2.5	4.7				2.2	72.3				
10.6	22		2.5	4.7				2.2	72.3				
11.1	23		2.0	2.0									
11.5	24		1.5	3.8				2.3	42.3				
11.9	25		0.1	0.1									
12.2	26		0.1	0.1									
12.6	27		0.2	0.2									
13.1	28		0.6	0.6									
13.4	29		0.8	0.8									
13.8	30		0.6	0.6									
14.1	31			0.0									
14.5	32			0.0									
14.9													
Benthic Segments													
0.0	33			13.8		13.8	4.0	0.0	250.0				
7.1	34			-7.7		-7.7							
9.7	35			10.5		10.5	4.6						
11.9	36			0.4		0.4	4.6	0.0	15.0				
13.1	37			2.0		2.0	4.6	0.0	20.0				
14.1	38			0		0	0						
15.3													
Surface GW Input													
14.1	39	0.0		3.5		3.5	1.5						

Appendix G
Table G.2 Black River Segment Flow and Chloride Balance - August 1992

Surface Flow Segments — All flows in cfs, concentrations in mg/L, loads in lb/day

RM Code	Seg No	Horizontal Inflow	Vertical Inflow	Horizontal Outflow	Pumping Withdrawal	Ground Water Flow	Ground Water Conc.	Tributary #1 Flow	Tributary #1 Load	Tributary #2 Flow	Tributary #2 Load	Tributary #3 Flow	Tributary #3 Load
0.0	1	45.1	1.4	44.9	-1.6								
1.2	2	45.5	3.4	45.1	-3.8								
4.1	3	40.5	9.0	45.5	-4.0								
7.1	4	43.7	-7.5	40.5	-2.7			7.0	303.4				
9.3	5	44.0	-0.2	43.7	-0.1								
9.7	6	42.0	2.0	44.0									
10.1	7	37.3	4.7	42.0									
10.6	8	32.6	4.7	37.3									
11.1	9	30.6	2.0	32.6									
11.5	10	27.6	3.0	30.6									
11.9	11	27.5	0.1	27.6									
12.2	12	27.4	0.1	27.5									
12.6	13	27.2	0.2	27.4									
13.1	14	26.6	0.6	27.2									
13.4	15	25.8	0.8	26.6									
13.8	16	25.2	0.6	25.8									
14.1	17	24.1	1.1	25.2									
14.5	18	22.9	1.2	24.1									
14.9	19	0.0	1.2	22.9				21.7	504.0				
15.3													

Subsurface Segments

9.7	20		2.0	2.0									
10.1	21		2.5	4.7				2.2	67.5				
10.6	22		2.5	4.7				2.2	67.5				
11.1	23		2.0	2.0									
11.5	24		1.5	3.0				1.5	30.9				
11.9	25		0.1	0.1									
12.2	26		0.1	0.1									
12.6	27		0.2	0.2									
13.1	28		0.6	0.6									
13.4	29		0.8	0.8									
13.8	30		0.6	0.6									
14.1	31			0.0									
14.5	32			0.0									
14.9													

Benthic Segments

0.0	33			13.8		13.8	4.0	0.0	250.0				
7.1	34			-7.7		-7.7							
9.7	35			10.5		10.5	4.6						
11.9	36			0.4		0.4	4.6	0.0	15.0				
13.1	37			2.0		2.0	4.6	0.0	20.0				
14.1	38			0		0	0						
15.3													

Surface GW Input

14.1	39	0.0		3.5		3.5	1.5						

Appendix G

Table G.3 Chloride Modeling Results - July and August 1992

Root Mean Square Error (RMSE) Summary				
	Flow	<--------	Chloride	----->
	All	Lower	Upper	Deep
	(cfs)	(mg/l)	(mg/l)	(mg/l)
July	2.35	0.08	0.10	0.31
August	2.28	0.16	0.12	0.27

July 92		<--------	Chloride	----->	<--------	Flow	----->
		Modeled	Observed	(Error)2	Modeled	Observed	(Error)2
RM	SEG	(mg/l)	(mg/l)		(cfs)	(cfs)	
0.0	1	5.45			50.5		
1.2	2	5.39	5.4	0.0016	50.7	51.01	0.0961
4.1	3	5.26	5.2	0.0036	51.1		
7.1	4	4.86	5.0	0.0196	46.1	43.32	7.7284
9.3	5	4.47	4.5	0.0009	49.3	49.99	0.4761
	RMSE			0.08			
9.7	6	4.46	4.6	0.0196	49.6		
10.1	7	4.45			47.6		
10.6	8	4.36			42.9		
11.1	9	4.25	4.3	0.0025	38.2		
11.5	10	4.23			36.2	32.48	13.8384
11.9	11	4.27	4.4	0.0169	32.4		
12.2	12	4.25			32.3		
12.6	13	4.22			32.2		
13.1	14	4.18	4.3	0.0144	32		
13.4	15	4.13			31.4		
13.8	16	4.07	4.1	0.0009	30.6		
14.1	17	4.03			30		
14.5	18	4.1			28.9		
14.9	19	4.19			27.7		
	RMSE			0.10			2.35
9.7	20	4.57	4.7	0.0169			
10.1	21	5.17					
10.6	22	5.17					
11.1	23	4.51	4.4	0.0121			
11.5	24	3.94					
11.9	25	5.63	5.6	0.0009			
12.2	26	5.19					
12.6	27	5.46					
13.1	28	5.74	6.4	0.4356			
13.4	29	5.4					
13.8	30	5.45	5.6	0.0225			
14.1	31	4.03					
14.5	32	4.1					
	RMSE			0.31			

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August 92		<-------- Chloride		----->	<-------- Flow		----->
		Modeled	Observed	(Error)2	Modeled	Observed	(Error)2
RM	SEG	(mg/l)	(mg/l)		(cfs)	(cfs)	
0.0	1	5.57			44.9		
1.2	2	5.51	5.4	0.0121	45.1	44.38	0.5184
4.1	3	5.37	5.5	0.0169	45.5		
7.1	4	4.94	5.2	0.0676	40.5	42.8	5.29
9.3	5	4.44	4.4	0.0016	43.7	47.23	12.4609
	RMSE			0.16			
9.7	6	4.44	4.3	0.0196	44.0		
10.1	7	4.43			42.0		
10.6	8	4.34			37.3		
11.1	9	4.23	4.2	0.0009	32.6		
11.5	10	4.21			30.6	32.175	2.480625
11.9	11	4.21	4.3	0.0081	27.6		
12.2	12	4.18			27.5		
12.6	13	4.16			27.4		
13.1	14	4.1	3.9	0.04	27.2		
13.4	15	4.05			26.6		
13.8	16	3.97	4	0.0009	25.8		
14.1	17	3.92			25.2		
14.5	18	4.03			24.1		
14.9	19	4.16			22.9		
	RMSE			0.12			2.28
9.7	20	4.56	4.5	0.0036			
10.1	21	5.01					
10.6	22	5					
11.1	23	4.51	4.3	0.0441			
11.5	24	4.21					
11.9	25	5.58	5.1	0.2304			
12.2	26	5.14					
12.6	27	5.4					
13.1	28	5.72	6	0.0784			
13.4	29	5.36					
13.8	30	5.41	5.3	0.0121			
14.1	31	3.92					
14.5	32	4.03					
	RMSE			0.27			

Appendix G

Table G.4 EUTRO5 Calibration Loading and Boundary Conditions - July 1992

Point Source Loads — Flow in cfs, Loads in lb/day

RM	SgNo	Flow	NH3N	NO23N	SRP	Phyt-C	UBOD	DO	Org-N	Org-P
1.2	2	0	0.89	0.00	0.27	0.00	5.3	0.0	1.07	0.00
4.1	3	0	2.38	0.00	0.71	0.00	14.2	0.0	2.84	0.00
7.1	4	7	0.19	66.72	3.13	0.00	13.8	0.0	0.00	0.00
14.9	19	26.5	1.43	65.85	0.71	8.96	159.8	0.0	11.42	2.21
10.1	21	2.2	0.06	20.97	0.98	0.00	4.32	0.00	0.00	0.00
10.6	22	2.2	4.10	34.95	1.80	2.92	48.5	94.8	0.17	0.06
11.5	24	2.3	0.06	2.37	0.06	0.99	24.8	0.0	1.63	0.00
11.9	25	0	1.19	0.00	0.36	0.00	7.1	0.0	1.42	0.00
11.9	36	0	0.22	0.00	0.07	0.00	1.3	0.0	0.27	0.00
13.1	37	0	0.30	0.00	0.09	0.00	1.8	0.0	0.36	0.00

Boundary Conditions — CHLA in µg/L, all others in mg/L

RM	SgNo	NH3N	NO23N	SRP	CHLA	UBOD	DO	Org-N	Org-P
0.0	33	0.005	2.2	0.02	0	0.5	2	0	0
7.1	34	0.005	2.3	0.03	0	0.5	2	0	0
9.7	35	0.005	1.4	0.02	0	0.5	2	0	0
11.9	36	0.005	1.4	0.02	0	0.5	2	0	0
13.1	37	0.005	3.2	0.02	0	0.5	2	0	0
14.1	39	0.005	0.375	0.02	0	0.5	2	0	0

Org-N = Organic Nitrogen
Org-P = Organic Phosphorus
Phyt-C = Phytoplankton Carbon

Appendix G

Table G.5 EUTRO5 Calibration Loading and Boundary Conditions - August 1992

Point Source Loads — Flow in cfs, Loads in lb/day

RM	SgNo	Flow	NH3N	NO23N	SRP	Phyt-C	UBOD	DO	Org-N	Org-P
1.2	2	0	0.89	0.00	0.27	0.00	5.3	0.0	1.07	0.00
4.1	3	0	2.38	0.00	0.71	0.00	14.2	0.0	2.84	0.00
7.1	4	7	0.19	59.55	3.58	0.00	13.8	0.0	7.73	0.00
14.9	19	21.7	2.22	55.85	2.10	6.40	167.1	0.0	10.90	0.82
10.1	21	2.2	0.06	18.72	1.13	0.00	4.3	0.0	2.43	0.00
10.6	22	2.2	3.79	33.41	1.92	2.43	24.9	94.8	5.45	0.30
11.5	24	1.5	0.04	1.69	0.12	0.65	16.2	0.0	1.48	0.02
11.9	25	0	1.19	0.00	0.36	0.00	7.1	0.0	1.42	0.00
11.9	36	0	0.22	0.00	0.07	0.00	1.3	0.0	0.27	0.00
13.1	37	0	0.30	0.00	0.09	0.00	1.8	0.0	0.36	0.00

Boundary Conditions — CHLA in µg/L, all others in mg/L

RM	SgNo	NH3N	NO23N	SRP	CHLA	UBOD	DO	Org-N	Org-P
0.0	33	0.005	2.2	0.02	0	0.5	2	0	0
7.1	34	0.005	2.3	0.03	0	0.5	2	0	0
9.7	35	0.005	1.4	0.02	0	0.5	2	0	0
11.9	36	0.005	1.4	0.02	0	0.5	2	0	0
13.1	37	0.005	3.2	0.02	0	0.5	2	0	0
14.1	39	0.005	0.375	0.02	0	0.5	2	0	0

Org-N = Organic Nitrogen
Org-P = Organic Phosphorus
Phyt-C = Phytoplankton Carbon

Appendix G
Table G.6 Calibration Modeled and Observed Results - Black River, July 1992

Surface Segments — All units in mg/L, except CHLA in µg/L

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-modeled			DO	Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Max	Avg	Min	Obs	Mod	Obs	Mod	Obs
0.0	1	0.019		1.210		0.017		0.1		1.2		8.7	8.4	8.1		0.075		0.007	
1.2	2	0.019	0.039	1.180	0.918	0.017	0.021	0.3	0.4	1.3	1.9	9.0	8.7	8.4	7.5	0.081	0.099	0.008	0.002
4.1	3	0.015	0.032	1.110	0.838	0.015	0.019	0.9		1.5		9.0	8.5	7.9		0.094	0.027	0.010	0.001
7.1	4	0.006	0.017	0.901	0.853	0.011	0.015	3.3	0.3	2.1	1.8	9.2	8.4	7.6	8.5	0.134	0.031	0.017	0.000
9.3	5	0.005	0.042	0.784	0.750	0.002	0.005	8.7	2.6	3.4	1.9	8.7	8.3	7.9	8.2	0.222	0.126	0.029	0.000
9.7	6	0.006	0.024	0.797	0.748	0.004	0.005	8.2	5.6	3.2		8.7	8.3	7.9	8.7	0.209	0.088	0.027	0.005
10.1	7	0.008		0.795		0.006		7.3		3.0		8.6	8.2	7.8		0.193		0.025	
10.6	8	0.014		0.740		0.006		6.2		2.9		8.4	8.0	7.6		0.179		0.023	
11.1	9	0.008	0.035	0.593	0.516	0.002	0.005	4.9	5.3	2.5		8.4	7.9	7.4	8.2	0.163	0.151	0.021	0.000
11.5	10	0.009		0.562		0.002		4.6		2.4		8.5	8.0	7.5		0.159		0.020	
11.9	11	0.011	0.005	0.563	1.085	0.004	0.005	4.2	6.0	2.3	1.7	8.4	7.9	7.4	8.9	0.152	0.075	0.020	0.000
12.2	12	0.008		0.576		0.004		3.4		2.0		8.2	7.7	7.2		0.128		0.018	
12.6	13	0.009		0.586		0.005		2.7		1.9		7.9	7.4	6.9		0.116		0.017	
13.1	14	0.009	0.005	0.590	0.772	0.006	0.005	2.3	1.2	1.8		7.5	7.0	6.5	7.8	0.106	0.101	0.016	0.000
13.4	15	0.010		0.547		0.006		2.0		1.7		7.3	6.8	6.3		0.101		0.016	
13.8	16	0.010		0.488		0.007		1.5		1.6		7.1	6.6	6.1		0.093		0.015	
14.1	17	0.011	0.005	0.441	0.248	0.007	0.005	1.2	2.2	1.5		6.9	6.4	5.9	6.6	0.087	0.153	0.015	0.000
14.5	18	0.011		0.448		0.007		1.0		1.6		6.8	6.3	5.8		0.086		0.015	
14.9	19	0.011		0.456		0.006		0.8		1.6		6.7	6.2	5.7		0.087		0.016	
15.3															6.2				

Subsurface Segments

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-modeled	DO	Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Avg	Obs	Mod	Obs	Mod	Obs
9.7	20	0.005	0.074	1.220	0.699	0.013	0.005	3.3		1.5		3.0	2.5	0.085	0.148	0.011	0.000
10.1	21	0.005		1.440		0.042		1.9		1.0		4.5		0.044		0.006	
10.6	22	0.115		1.930		0.069		3.0		3.2		4.7		0.070		0.011	
11.1	23	0.004	0.040	1.170	0.895	0.012	0.005	2.8		1.4		2.9		0.070	0.057	0.009	0.000
11.5	24	0.006		0.646		0.009		1.7		2.0		5.9		0.106		0.005	
11.9	25	0.357	0.642	0.530	0.292	0.113	0.005	9.3	10.3	9.8	5.3	0.0	0.2	0.712	0.347	0.037	0.029
12.2	26	0.013		0.615		0.002		4.9		2.6		6.9		0.192		0.023	
12.6	27	0.010		0.671		0.005		5.1		2.5		6.9		0.172		0.021	
13.1	28	0.007	0.022	2.250	4.710	0.004	0.005	6.1		2.7		5.2	4.7	0.182	0.000	0.021	0.000
13.4	29	0.007		1.900		0.005		5.4		2.4		5.4		0.156		0.019	
13.8	30	0.008	0.094	1.930	3.000	0.003	0.005	5.6		2.6		5.4	4.8	0.175	0.046	0.021	0.015
14.1	31	0.010		0.366		0.001		3.2		2.1		6.5		0.148		0.019	
14.5	32	0.009		0.382		0.001		3.1		2.1		6.3		0.141		0.019	
14.9																	

Root Mean Square Error (RMSE) Summary — July 1992 Data

	NH3N	NO23N	SRP	CHLA	UBOD	DO-avg	Org-N	Org-P
Seg 1-5	0.023	0.191	0.004	3.9	0.9	1.0	0.079	0.018
Seg 6-19	0.015	0.265	0.002	1.6	0.5	0.6	0.071	0.019
Seg 20-32	0.138	1.427	0.049	1.0	4.6	0.4	0.201	0.015

Org-N = Organic Nitrogen; Org-P = Organic Phosphorus

Appendix G
Table G.7 Calibration Modeled and Observed Results - Black River, August 1992

Surface Segments — All units in mg/L, except CHLA in µg/L

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-modeled			DO	Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Max	Avg	Min	Obs	Mod	Obs	Mod	Obs
0.0	1	0.027		1.230		0.020		0.1		1.5		9.8	8.3	6.8		0.124		0.008	
1.2	2	0.026	0.019	1.200	0.807	0.019	0.020	0.2	2.0	1.7	2.0	10.2	8.7	7.2	9.0	0.134	0.544	0.009	0.000
4.1	3	0.021	0.023	1.130	0.731	0.018	0.022	0.9		1.9		9.6	8.4	7.3		0.154	0.159	0.012	0.006
7.1	4	0.010	0.008	0.889	0.778	0.013	0.020	3.8	0.0	2.7	1.8	9.2	8.4	7.6	10.0	0.219	0.172	0.020	0.001
9.3	5	0.007	0.032	0.784	0.700	0.001	0.013	10.9	9.9	4.3	2.5	9.2	8.6	8.0	7.9	0.314	0.199	0.036	0.013
9.7	6	0.006	0.024	0.794	0.653	0.002	0.011	11.1	4.0	4.2		9.4	8.8	8.2	8.7	0.307	0.095	0.035	0.011
10.1	7	0.007		0.790		0.005		10.5		4.1		9.4	8.8	8.2		0.296		0.033	
10.6	8	0.013		0.748		0.005		9.0		3.8		9.3	8.7	8.1		0.269		0.030	
11.1	9	0.007	0.029	0.596	0.490	0.001	0.005	7.5	3.0	3.3		9.0	8.5	8.0	7.4	0.227	0.191	0.025	0.011
11.5	10	0.007		0.561		0.002		7.4		3.3		9.2	8.7	8.2		0.226		0.025	
11.9	11	0.009	0.011	0.560	0.714	0.004	0.005	6.9	5.4	3.2	1.7	9.2	8.7	8.2	9.5	0.214	0.201	0.023	0.017
12.2	12	0.007		0.586		0.006		5.3		2.7		8.8	8.3	7.8		0.173		0.019	
12.6	13	0.010		0.608		0.010		4.0		2.4		8.3	7.8	7.3		0.147		0.015	
13.1	14	0.012	0.009	0.619	1.205	0.012	0.011	3.1	2.4	2.2		7.8	7.3	6.8	8.5	0.129	0.352	0.013	0.021
13.4	15	0.013		0.571		0.014		2.6		2.1		7.7	7.2	6.7		0.121		0.012	
13.8	16	0.016		0.506		0.016		1.7		1.9		7.3	6.8	6.3		0.106		0.010	
14.1	17	0.017	0.017	0.452	0.193	0.017	0.010	1.2	3.5	1.8		7.1	6.6	6.1	8.5	0.098	0.158	0.008	0.013
14.5	18	0.018		0.461		0.018		0.9		1.9		7.0	6.5	6.0		0.096		0.008	
14.9	19	0.019		0.471		0.018		0.7		1.9		6.8	6.3	5.8		0.097		0.008	
15.3															6.6				

Subsurface Segments

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-modeled		Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Avg	Obs	Mod	Obs	Mod	Obs
9.7	20	0.005	0.036	1.210	0.689	0.011	0.011	4.5	7.8	1.9		3.2	3.0	0.120	0.190	0.015	0.024
10.1	21	0.006		1.360		0.045		3.9		1.9		4.0		0.163		0.011	
10.6	22	0.118		1.880		0.074		2.3		3.0		4.8		0.231		0.016	
11.1	23	0.003	0.051	1.160	0.670	0.010	0.005	4.2		1.8		3.3		0.101	0.118	0.012	0.014
11.5	24	0.005		0.746		0.013		2.8		2.2		5.7		0.137		0.009	
11.9	25	0.273	0.363	0.509	0.296	0.099	0.005	14.4	11.0	11.5	9.3	0.0	0.9	0.853	0.554	0.052	0.049
12.2	26	0.013		0.609		0.002		6.6		3.4		7.5		0.247		0.026	
12.6	27	0.009		0.662		0.004		7.3		3.3		7.6		0.223		0.023	
13.1	28	0.007	0.018	2.250	3.400	0.003	0.005	7.1		3.0		5.5	5.9	0.207	1.042	0.023	0.029
13.4	29	0.007		1.880		0.004		6.9		2.9		5.9		0.191		0.021	
13.8	30	0.007	0.074	1.920	2.600	0.003	0.011	6.5		3.0		5.8	6.7	0.201	0.116	0.022	0.037
14.1	31	0.010		0.328		0.001		4.9		2.9		7.4		0.204		0.021	
14.5	32	0.009		0.340		0.002		5.0		3.0		7.4		0.201		0.021	
14.9																	

Root Mean Square Error (RMSE) Summary — August 1992 Data

	NH3N	NO23N	SRP	CHLA	UBOD	DO-avg	Org-N	Org-P
Seg 1-5	0.013	0.289	0.007	2.5	1.1	1.0	0.214	0.016
Seg 6-19	0.013	0.305	0.005	4.0	1.5	1.1	0.141	0.013
Seg 20-32	0.056	0.684	0.042	3.3	2.2	0.7	0.400	0.009

Org-N = Organic Nitrogen; Org-P = Organic Phosphorus

APPENDIX H. Model Verification

Appendix H
Table H.1 Black River Segment Flow and Chloride Balance - September 1991

Surface Flow Segments | All flows in cfs, concentrations in mg/L, loads in lb/day

RM	Seg	Horizontal	Vertical	Horizontal	Pumping	Ground Water		Tributary #1		Tributary #2		Tributary #3	
Code	No	Inflow	Inflow	Outflow	Withdrawal	Flow	Conc.	Flow	Load	Flow	Load	Flow	Load
0.0	1	66.0	1.4	65.8	-1.6								
1.2	2	66.4	3.4	66.0	-3.8								
4.1	3	61.4	9.0	66.4	-4.0								
7.1	4	62.3	-7.5	61.4	-2.7			9.3	425.0				
9.3	5	62.6	-0.2	62.3	-0.1								
9.7	6	60.6	2.0	62.6									
10.1	7	56.2	4.4	60.6									
10.6	8	51.8	4.4	56.2									
11.1	9	49.8	2.0	51.8									
11.5	10	45.9	3.9	49.8									
11.9	11	45.8	0.1	45.9									
12.2	12	45.7	0.1	45.8									
12.6	13	45.5	0.2	45.7									
13.1	14	44.9	0.6	45.5									
13.4	15	44.1	0.8	44.9									
13.8	16	43.5	0.6	44.1									
14.1	17	42.4	1.1	43.5									
14.5	18	41.2	1.2	42.4									
14.9	19	0.0	1.2	41.2				40.0	990.8				
15.3													
Subsurface Segments													
9.7	20		2.0	2.0									
10.1	21		2.5	4.4				1.9	60.6				
10.6	22		2.5	4.4				1.9	60.6				
11.1	23		2.0	2.0									
11.5	24		1.5	3.9				2.4	46.7				
11.9	25		0.1	0.1				0.0	50.0				
12.2	26		0.1	0.1									
12.6	27		0.2	0.2									
13.1	28		0.6	0.6									
13.4	29		0.8	0.8									
13.8	30		0.6	0.6									
14.1	31			0.0									
14.5	32			0.0									
14.9													
Benthic Segments													
0.0	33			13.8		13.8	4.0	0.0	250.0				
7.1	34			-7.7		-7.7							
9.7	35			10.5		10.5	4.6						
11.9	36			0.4		0.4	4.6	0.0	15.0				
13.1	37			2.0		2.0	4.6	0.0	20.0				
14.1	38			0		0	0						
15.3													
Surface GW Input													
14.1	39	0.0		3.5		3.5	1.5						

Appendix H
Table H.2 Chloride Modeling Results - September 1991

Root Mean Square Error (RMSE) Summary				
	Flow	<--------	Chloride	----->
	All (cfs)	Lower (mg/L)	Upper (mg/L)	Deep (mg/L)
September	7.0	0.16	0.09	0.64

Sept 91		<--------	Chloride	----->	<--------	Flow	----->
RM	SEG	Modeled (mg/L)	Observed (mg/L)	(Error)2	Modeled (cfs)	Observed (cfs)	(Error)2
0.0	1	5.6			65.8		
1.2	2	5.6	5.6	0.0017	66.0	66.4	0.16
4.1	3	5.5	5.6	0.0075	66.4	69.8	11.42
7.1	4	5.2	5.5	0.0803	61.4	49.8	134.56
9.3	5	4.7	4.8	0.0128	62.3		
	RMSE			0.16			
9.7	6	4.7			62.6		
10.1	7	4.7			60.6		
10.6	8	4.7	4.8	0.0075	56.2		
11.1	9	4.6	4.8	0.0160	51.8		
11.5	10	4.6			49.8		
11.9	11	4.7	4.8	0.0044	45.9		
12.2	12	4.5			45.8		
12.6	13	4.5	4.5		45.7		
13.1	14	4.4			45.5		
13.4	15	4.4			44.9		
13.8	16	4.4	4.4	0.0009	44.1		
14.1	17	4.3			43.5		
14.5	18	4.4			42.4		
14.9	19	4.5			41.2		
15.3			4.6				
	RMSE			0.09			7.0
9.7	20	4.6					
10.1	21	5.1					
10.6	22	5.1	4.9	0.0499			
11.1	23	4.6	4.7	0.0152			
11.5	24	4.1					
11.9	25	23.3	24.5	1.4400			
12.2	26	5.4					
12.6	27	5.7					
13.1	28	5.8					
13.4	29	5.5					
13.8	30	5.6	5.2	0.1444			
14.1	31	4.3					
14.5	32	4.4					
	RMSE			0.64			

Appendix H

Table H.3 EUTRO5 Verification Loading and Boundary Conditions - September 1991

Point Source Loads — Flow in cfs, Loads in lb/day

RM	SgNo	Flow	NH3N	NO23N	SRP	Phyt-C	UBOD	DO	Org-N	Org-P
1.2	2	0	0.89	0.00	0.27	0.00	5.3	0.0	1.07	0.00
4.1	3	0	2.38	0.00	0.71	0.00	14.2	0.0	2.84	0.00
7.1	4	9.3	0.25	75.99	3.83	0.00	25.0	0.0	3.63	0.29
14.9	19	40	2.02	90.16	3.15	16.21	314.5	0.0	24.21	2.02
10.1	21	1.9	0.05	15.53	0.78	0.00	5.1	0.0	0.74	0.06
10.6	22	1.9	5.55	27.06	1.48	2.95	49.4	81.8	3.42	0.35
11.5	24	2.4	0.12	1.85	0.11	1.03	25.8	103.4	2.02	0.12
11.9	25	0	0.74	0.00	0.22	0.00	4.4	0.0	0.89	0.00
11.9	36	0	0.22	0.00	0.07	0.00	1.3	0.0	0.27	0.00
13.1	37	0	0.30	0.00	0.09	0.00	1.8	0.0	0.36	0.00

Boundary Conditions — CHLA in µg/L, all others in mg/L

RM	SgNo	NH3N	NO23N	SRP	CHLA	UBOD	DO	Org-N	Org-P
0.0	33	0.005	2.2	0.02	0	0.5	2	0	0
7.1	34	0.005	2.3	0.03	0	0.5	2	0	0
9.7	35	0.005	1.4	0.02	0	0.5	2	0	0
11.9	36	0.005	1.4	0.02	0	0.5	2	0	0
13.1	37	0.005	3.2	0.02	0	0.5	2	0	0
14.1	39	0.005	0.375	0.02	0	0.5	2	0	0

Org-N = Organic Nitrogen
Org-P = Organic Phosphorus
Phyt-C = Phytoplankton Carbon

Appendix H
Table H.4 Verification Modeled and Observed Results - September 1991

Surface Segments — All units in mg/L, except CHLA in µg/L

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-Modeled			DO	Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Max	Avg	Min	Obs	Mod	Obs	Mod	Obs
0.0	1	0.025		1.080		0.026		0.1		1.3		9.6	8.5	7.4		0.084		0.006	
1.2	2	0.025	0.009	1.060	0.922	0.026	0.027	0.1	0.9	1.4	2.2	9.9	8.8	7.7	9.2	0.088	0.182	0.006	0.013
4.1	3	0.022	0.005	0.997	0.844	0.025	0.028	0.3	0.9	1.5		9.5	8.4	7.1	8.4	0.095	0.195	0.007	0.013
7.1	4	0.017	0.009	0.821	0.853	0.024	0.034	1.1	0.7	1.7	1.9	9.0	7.7	6.4	7.3	0.112	0.185	0.010	0.009
9.3	5	0.018	0.025	0.718	0.757	0.016	0.027	2.6	7.9	2.2	8.4	8.1	7.1	6.1	7.9	0.138	0.220	0.013	0.027
9.7	6	0.018		0.719		0.016		3.7		2.4		8.1	7.1	6.1	8.0	0.154		0.016	
10.1	7	0.021		0.703		0.017		3.4		2.4		8.1	7.1	6.1		0.151		0.015	
10.6	8	0.025	0.009	0.650	0.604	0.016		3.2		2.4		8.1	7.1	6.1	7.8	0.152	0.199	0.015	
11.1	9	0.013	0.010	0.545	0.575	0.012	0.010	2.8	9.8	2.2	2.4	7.9	7.1	6.3	8.1	0.143	0.281	0.013	0.029
11.5	10	0.014		0.516		0.013		2.6		2.2		8.0	7.2	6.4		0.142		0.013	
11.9	11	0.015	0.007	0.511	0.800	0.013		2.4		2.2		8.0	7.2	6.4	7.7	0.141	0.199	0.013	
12.2	12	0.012		0.515		0.013		2.1		2.1		7.9	7.1	6.3		0.133		0.012	
12.6	13	0.012	0.019	0.519	0.843	0.014		1.8		2.1	0.0	7.6	6.9	6.2	7.6	0.128	0.138	0.012	0.000
13.1	14	0.012		0.518		0.014		1.7		2.0		7.4	6.7	6.0		0.125		0.011	
13.4	15	0.012		0.486		0.014		1.5		2.0		7.2	6.6	6.0		0.123		0.011	
13.8	16	0.012		0.442		0.015		1.3		2.0		7.1	6.5	5.9		0.121		0.011	
14.1	17	0.011	0.017	0.408	0.309	0.015	0.012	1.1	0.7	2.0		7.0	6.5	6.0	7.1	0.119	0.139	0.011	0.013
14.5	18	0.011		0.412		0.015		1.0		2.0		6.9	6.4	5.9		0.120		0.011	
14.9	19	0.010		0.416		0.015		0.9		2.1		6.8	6.4	6.0		0.122		0.011	
15.3															6.3				

Subsurface Segments

RM	Seg	NH3N		NO23N		SRP		CHLA		UBOD		DO-Modeled	DO	Org-N		Org-P	
Code	No	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Mod	Obs	Avg	Obs	Mod	Obs	Mod	Obs
9.7	20	0.008		1.220		0.018		1.4		1.1		2.2		0.049		0.005	
10.1	21	0.008		1.330		0.040		0.9		1.0		3.7		0.055		0.005	
10.6	22	0.183	0.047	1.760	1.006	0.065		2.1		3.9		4.1	5.9	0.168	0.187	0.018	
11.1	23	0.006	0.038	1.170	0.691	0.017	0.015	1.3	5.3	1.0	1.6	2.3	6.9	0.046	0.573	0.005	0.035
11.5	24	0.009		0.606		0.013		1.1		2.0		5.3		0.113		0.008	
11.9	25	0.303	29.367	0.511	0.046	0.091		3.4		6.2		0.0	0.2	0.427	8.421	0.015	
12.2	26	0.014		0.561		0.008		4.4		2.7		5.9		0.195		0.019	
12.6	27	0.013		0.624		0.013		4.1		2.6		5.7		0.174		0.016	
13.1	28	0.008		2.230		0.007		5.8		2.7		4.6		0.183		0.020	
13.4	29	0.009		1.890		0.011		4.3		2.3		4.5		0.147		0.015	
13.8	30	0.008	0.062	1.920	2.477	0.007	0.013	5.2	0.0	2.6		4.8	5.2	0.177	0.172	0.018	0.039
14.1	31	0.010		0.297		0.002		4.4		2.8		6.1		0.208		0.020	
14.5	32	0.009		0.307		0.002		4.5		2.8		6.1		0.205		0.020	
14.9																	

Root Mean Square Error (RMSE) Summary — September 1991 Data

	NH3N	NO23N	SRP	CHLA	UBOD	DO-avg	Org-N	Org-P
Seg 1-5	0.013	0.106	0.008	2.7	3.2	0.5	0.088	0.008
Seg 6-19	0.009	0.201	0.002	5.0	1.9	0.7	0.071	0.013
Seg 20-32	0.031	0.818	0.004	4.6	1.7	2.5	0.271	0.019

Org-N = Organic Nitrogen; Org-P = Organic Phosphorus

APPENDIX I. Background and Existing Critical Conditions

Appendix I
Table I.1 Black River Segment Flow Balance - Background Critical Conditions

Surface Flow Segments									All flows in cfs
RM Code	Seg No	Horizontal Inflow	Vertical Inflow	Horizontal Outflow	Pumping Withdrawal	Ground Water Flow	Tributary #1 Flow	Tributary #2 Flow	Tributary #3 Flow
0.0	1	32.7	1.2	33.9	0.0				
1.2	2	29.6	3.1	32.7	0.0				
4.1	3	21.6	8.0	29.6	0.0				
7.1	4	29.9	-8.3	21.6	0.0		0.0		
9.3	5	30.2	-0.3	29.9	0.0				
9.7	6	28.4	1.8	30.2					
10.1	7	26.2	2.2	28.4					
10.6	8	24.0	2.2	26.2					
11.1	9	22.2	1.8	24.0					
11.5	10	19.9	2.3	22.2					
11.9	11	19.8	0.1	19.9					
12.2	12	19.7	0.1	19.8					
12.6	13	19.6	0.1	19.7					
13.1	14	19.1	0.5	19.6					
13.4	15	18.4	0.7	19.1					
13.8	16	17.9	0.5	18.4					
14.1	17	17.0	0.9	17.9					
14.5	18	16.0	1.0	17.0					
14.9	19	0.0	1	16.0			15.0		
15.3									
Subsurface Segments									
9.7	20		1.8	1.8					
10.1	21		2.2	2.2			0.0		
10.6	22		2.2	2.2			0.0		
11.1	23		1.8	1.8					
11.5	24		1.3	2.3			1.0		
11.9	25		0.1	0.1					
12.2	26		0.1	0.1					
12.6	27		0.1	0.1					
13.1	28		0.5	0.5					
13.4	29		0.7	0.7					
13.8	30		0.5	0.5					
14.1	31			0.0					
14.5	32			0.0					
14.9									
Benthic Segments									
0.0	33			12.3		12.3	0.0		
7.1	34			-8.6		-8.6			
9.7	35			9.3		9.3			
11.9	36			0.3		0.3	0.0		
13.1	37			1.7		1.7	0.0		
14.1	38			0		0			
15.3									
Surface GW Input									
14.1	39	0.0		2.9		2.9			

Appendix I

Table I.2 EUTRO5 Loading and Boundary Conditions
- Background Critical Conditions

Point Source Loads — Flow in cfs, Loads in lb/day

RM	SgNo	Flow	NH3N	NO23N	SRP	Phyt-C	UBOD	DO	Org-N	Org-P
1.2	2	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.1	3	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.1	4	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.9	19	15	0.40	20.00	1.45	4.40	115.0	480.0	7.70	0.70
10.1	21	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.6	22	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.5	24	1	0.03	1.67	0.05	0.43	10.8	50.0	0.43	0.01
11.9	25	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.9	36	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.1	37	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Boundary Conditions — CHLA in µg/L, all others in mg/L

RM	SgNo	NH3N	NO23N	SRP	CHLA	UBOD	DO	Org-N	Org-P
0.0	33	0.005	2.2	0.02	0	0.5	2	0	0
7.1	34	0.005	2.3	0.03	0	0.5	2	0	0
9.7	35	0.005	1.4	0.02	0	0.5	2	0	0
11.9	36	0.005	1.4	0.02	0	0.5	2	0	0
13.1	37	0.005	3.2	0.02	0	0.5	2	0	0
14.1	39	0.005	0.375	0.02	0	0.5	2	0	0

Org-N = Organic Nitrogen
Org-P = Organic Phosphorus
Phyt-C = Phytoplankton Carbon

Appendix I
Table I.3 Modeled Results - Black River, Background Critical Conditions

Surface Segments — All units in mg/L, except CHLA in µg/L

RM Code	Seg No	NH3N Modeled	NO23N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	Org-N Modeled	Org-P Modeled	TP Modeled
0.0	1	0.018	1.210	0.010	0.0	0.9	9.7	7.5	5.3	0.057	0.006	0.016
1.2	2	0.017	1.170	0.009	0.0	1.0	10.4	8.2	6.0	0.063	0.007	0.016
4.1	3	0.017	1.070	0.007	0.2	1.1	10.5	8.3	6.1	0.076	0.008	0.015
7.1	4	0.018	0.649	0.001	1.3	1.7	10.0	7.8	5.6	0.126	0.015	0.016
9.3	5	0.014	0.646	0.001	4.7	2.5	8.2	7.2	6.2	0.178	0.022	0.022
9.7	6	0.012	0.649	0.001	5.0	2.5	8.6	7.6	6.6	0.178	0.022	0.023
10.1	7	0.012	0.612	0.001	5.2	2.6	8.7	7.7	6.7	0.181	0.022	0.023
10.6	8	0.012	0.559	0.000	5.3	2.6	8.8	7.8	6.8	0.186	0.023	0.023
11.1	9	0.011	0.498	0.001	5.6	2.7	9.1	8.1	7.1	0.190	0.023	0.024
11.5	10	0.011	0.439	0.001	5.8	2.8	9.4	8.4	7.4	0.195	0.023	0.024
11.9	11	0.010	0.395	0.000	6.2	2.9	9.7	8.7	7.7	0.202	0.024	0.025
12.2	12	0.007	0.400	0.001	6.4	2.9	9.7	8.7	7.7	0.197	0.024	0.025
12.6	13	0.007	0.423	0.005	5.4	2.6	9.4	8.4	7.4	0.172	0.020	0.025
13.1	14	0.007	0.450	0.010	4.0	2.2	8.9	7.9	6.9	0.142	0.016	0.025
13.4	15	0.008	0.395	0.012	3.2	2.1	8.7	7.7	6.7	0.129	0.014	0.026
13.8	16	0.010	0.313	0.015	2.1	1.9	8.3	7.3	6.3	0.111	0.011	0.026
14.1	17	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	0.101	0.010	0.026
14.5	18	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	0.097	0.009	0.027
14.9	19	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	0.097	0.009	0.027
15.3												

Subsurface Segments

RM Code	Seg No	NH3N Modeled	NO23N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Avg	Org-N Modeled	Org-P Modeled	TP Modeled
9.7	20	0.004	1.150	0.008	3.9	1.7	3.2	0.102	0.013	0.021
10.1	21	0.004	1.130	0.008	4.0	1.7	3.4	0.100	0.013	0.021
10.6	22	0.004	1.120	0.007	4.1	1.8	3.3	0.106	0.014	0.021
11.1	23	0.003	1.100	0.007	4.6	1.8	3.5	0.108	0.014	0.021
11.5	24	0.006	0.790	0.010	2.7	2.0	5.3	0.095	0.009	0.019
11.9	25	0.013	0.537	0.001	5.3	2.8	6.2	0.206	0.024	0.025
12.2	26	0.013	0.483	0.001	5.5	2.9	7.1	0.213	0.024	0.025
12.6	27	0.005	0.469	0.001	6.2	2.9	7.8	0.196	0.023	0.024
13.1	28	0.004	2.100	0.002	5.6	2.4	5.3	0.160	0.019	0.021
13.4	29	0.003	1.720	0.003	5.7	2.4	5.9	0.155	0.019	0.022
13.8	30	0.004	1.720	0.002	5.4	2.5	5.8	0.164	0.019	0.021
14.1	31	0.009	0.118	0.001	5.1	2.9	7.9	0.208	0.022	0.023
14.5	32	0.007	0.121	0.002	5.2	3.0	7.8	0.204	0.022	0.023
14.9										

Org-N = Organic Nitrogen; Org-P = Organic Phosphorus

Appendix I
Table I.4 Black River Segment Flow Balance - Existing Critical Conditions

Surface Flow Segments									All flows in cfs
RM Code	Seg No	Horizontal Inflow	Vertical Inflow	Horizontal Outflow	Pumping Withdrawal	Ground Water Flow	Tributary #1 Flow	Tributary #2 Flow	Tributary #3 Flow
0.0	1	37.5	1.2	37.1	-1.6				
1.2	2	38.2	3.1	37.5	-3.8				
4.1	3	34.2	8.0	38.2	-4.0				
7.1	4	37.4	-8.3	34.2	-2.7		7.8		
9.3	5	37.8	-0.3	37.4	-0.1				
9.7	6	36.0	1.8	37.8					
10.1	7	30.0	6.0	36.0					
10.6	8	24.0	6.0	30.0					
11.1	9	22.2	1.8	24.0					
11.5	10	19.9	2.3	22.2					
11.9	11	19.8	0.1	19.9					
12.2	12	19.7	0.1	19.8					
12.6	13	19.6	0.1	19.7					
13.1	14	19.1	0.5	19.6					
13.4	15	18.4	0.7	19.1					
13.8	16	17.9	0.5	18.4					
14.1	17	17.0	0.9	17.9					
14.5	18	16.0	1.0	17.0					
14.9	19	0.0	1	16.0			15.0		
15.3									
Subsurface Segments									
9.7	20		1.8	1.8					
10.1	21		2.2	6.0			3.8		
10.6	22		2.2	6.0			3.8		
11.1	23		1.8	1.8					
11.5	24		1.3	2.3			1.0		
11.9	25		0.1	0.1					
12.2	26		0.1	0.1					
12.6	27		0.1	0.1					
13.1	28		0.5	0.5					
13.4	29		0.7	0.7					
13.8	30		0.5	0.5					
14.1	31			0.0					
14.5	32			0.0					
14.9									
Benthic Segments									
0.0	33			12.3		12.3	0.0		
7.1	34			-8.6		-8.6			
9.7	35			9.3		9.3			
11.9	36			0.3		0.3	0.0		
13.1	37			1.7		1.7	0.0		
14.1	38			0		0			
15.3									
Surface GW Input									
14.1	39	0.0		2.9		2.9			

Appendix I

Table I.5 EUTRO5 Loading and Boundary Conditions - Existing Critical Conditions

Point Source Loads — Flow in cfs, Loads in lb/day

RM	SgNo	Flow	NH3N	NO23N	SRP	Phyt-C	UBOD	DO	Org-N	Org-P
1.2	2	0	0.89	0.00	0.27	0.00	5.3	0.00	1.07	0.00
4.1	3	0	2.38	0.00	0.71	0.00	14.2	0.00	2.84	0.00
7.1	4	7.8	0.21	66.36	3.99	0.00	15.4	212.0	8.61	0.00
14.9	19	15	2.22	55.85	2.1	4.42	167.1	482.6	10.9	0.82
10.1	21	3.8	0.10	32.33	1.95	0.00	7.4	103.3	4.20	0.00
10.6	22	3.8	6.55	57.71	3.32	4.20	43.0	163.7	9.41	0.52
11.5	24	1	0.04	1.69	0.12	0.43	16.2	50.2	1.48	0.02
11.9	25	0	1.19	0.00	0.36	0.00	7.10	0.00	1.42	0.00
11.9	36	0	0.22	0.00	0.07	0.00	1.30	0.00	0.27	0.00
13.1	37	0	0.30	0.00	0.09	0.00	1.80	0.00	0.36	0.00

Boundary Conditions — CHLA in µg/L, all others in mg/L

RM	SgNo	NH3N	NO23N	SRP	CHLA	UBOD	DO	Org-N	Org-P
0.0	33	0.005	2.2	0.02	0	0.5	2	0	0
7.1	34	0.005	2.3	0.03	0	0.5	2	0	0
9.7	35	0.005	1.4	0.02	0	0.5	2	0	0
11.9	36	0.005	1.4	0.02	0	0.5	2	0	0
13.1	37	0.005	3.2	0.02	0	0.5	2	0	0
14.1	39	0.005	0.375	0.02	0	0.5	2	0	0

Org-N = Organic Nitrogen
Org-P = Organic Phosphorus
Phyt-C = Phytoplankton Carbon

Appendix I
Table I.6 Modeled Results - Black River, Exisiting Critical Conditions

Surface Segments (All units in mg/L, except CHLA in µg/L)

RM Code	Seg No	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Exst -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled
0.0	1	0.038	1.380	0.023	0.1	1.8	9.7	7.5	5.3	5.3	0.01	0.159	0.011	0.035
1.2	2	0.035	1.350	0.023	0.2	2.0	10.4	8.2	6.0	6.0	-0.03	0.175	0.013	0.035
4.1	3	0.028	1.280	0.021	1.0	2.3	10.4	8.2	6.0	6.1	-0.06	0.204	0.016	0.037
7.1	4	0.014	1.060	0.016	4.9	3.4	10.3	8.1	5.9	5.6	0.26	0.298	0.028	0.044
9.3	5	0.010	0.965	0.000	15.3	5.9	9.9	8.9	7.9	6.2	1.65	0.455	0.053	0.053
9.7	6	0.007	0.975	0.001	16.1	5.9	10.5	9.5	8.5	6.6	1.95	0.451	0.052	0.053
10.1	7	0.007	0.992	0.006	15.4	5.7	10.5	9.5	8.5	6.7	1.83	0.435	0.049	0.055
10.6	8	0.020	0.988	0.009	11.9	5.1	10.0	9.0	8.0	6.8	1.20	0.382	0.043	0.052
11.1	9	0.016	0.733	0.000	8.1	4.1	9.2	8.2	7.2	7.1	0.16	0.293	0.033	0.033
11.5	10	0.014	0.693	0.001	8.7	4.3	9.6	8.6	7.6	7.4	0.23	0.306	0.034	0.035
11.9	11	0.014	0.683	0.001	9.4	4.4	10.0	9.0	7.9	7.7	0.26	0.313	0.036	0.036
12.2	12	0.008	0.704	0.001	8.9	4.0	10.1	9.1	8.1	7.7	0.38	0.278	0.032	0.033
12.6	13	0.008	0.734	0.005	7.9	3.7	9.9	8.9	7.9	7.4	0.42	0.248	0.028	0.033
13.1	14	0.011	0.778	0.013	5.5	3.1	9.2	8.2	7.2	6.9	0.25	0.200	0.021	0.033
13.4	15	0.014	0.738	0.016	4.3	2.9	8.9	7.9	6.9	6.7	0.16	0.179	0.018	0.034
13.8	16	0.020	0.675	0.020	2.6	2.6	8.3	7.3	6.3	6.3	0.04	0.150	0.014	0.034
14.1	17	0.023	0.621	0.023	1.7	2.5	8.0	7.0	6.0	6.0	-0.01	0.135	0.012	0.034
14.5	18	0.026	0.645	0.025	1.1	2.5	7.8	6.8	5.8	5.8	-0.01	0.132	0.011	0.035
14.9	19	0.027	0.671	0.026	0.7	2.6	7.5	6.5	5.5	5.5	-0.01	0.133	0.010	0.036
15.3														

Subsurface Segments

RM Code	Seg No	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Avg	DO Bckd	Exst -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled
9.7	20	0.006	1.230	0.008	6.8	2.7	3.7	3.2	0.41	0.185	0.023	0.031
10.1	21	0.006	1.430	0.057	4.7	2.2	4.5	3.4	1.13	0.212	0.013	0.070
10.6	22	0.166	2.160	0.098	2.5	3.9	5.7	3.3	2.42	0.309	0.021	0.118
11.1	23	0.004	1.160	0.006	5.7	2.3	3.6	3.5	0.14	0.145	0.018	0.024
11.5	24	0.007	0.853	0.014	3.9	3.0	5.5	5.3	0.14	0.193	0.014	0.027
11.9	25	0.135	0.522	0.069	23.8	14.8	0.0	6.2	-6.24	1.140	0.086	0.155
12.2	26	0.019	0.722	0.001	8.6	4.5	7.9	7.1	0.74	0.340	0.036	0.037
12.6	27	0.009	0.730	0.002	9.6	4.4	8.6	7.8	0.80	0.307	0.033	0.035
13.1	28	0.008	2.190	0.003	8.2	3.6	6.1	5.3	0.80	0.255	0.028	0.030
13.4	29	0.007	1.860	0.003	8.3	3.6	6.7	5.9	0.78	0.243	0.027	0.030
13.8	30	0.008	1.860	0.002	7.7	3.6	6.6	5.8	0.78	0.253	0.027	0.029
14.1	31	0.011	0.454	0.001	6.8	4.0	8.4	7.9	0.58	0.281	0.028	0.030
14.5	32	0.009	0.476	0.002	7.0	4.1	8.4	7.8	0.65	0.280	0.029	0.030
14.9												

Bckd = Minimum DO results for Background Critical Conditions Org-N = Organic Nitrogen; Org-P = Organic Phosphorus

Exst-Bckd = Amount that DO for Existing Critical Conditions is above or below DO for Background Critical Conditions

APPENDIX J. TMDL Analysis

Appendix J

Table J.1 Modeled Results - Alternative Loading Case 1

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.037	1.380	0.023	0.1	1.8	9.7	7.5	5.3	5.3	0.01	0.153	0.011	0.034	7.4	351
1.2	2	37.5	0.034	1.360	0.023	0.2	1.9	10.4	8.2	6.0	6.0	-0.03	0.168	0.012	0.035	6.9	385
4.1	3	38.2	0.027	1.280	0.021	1.0	2.2	10.4	8.2	6.0	6.1	-0.06	0.197	0.016	0.036	5.6	456
7.1	4	34.2	0.013	1.070	0.016	4.8	3.3	10.3	8.1	5.9	5.6	0.27	0.287	0.027	0.043	2.4	599
9.3	5	37.4	0.009	0.974	0.000	15.0	5.7	9.9	8.9	7.9	6.2	1.69	0.438	0.051	0.051	1.9	1138
9.7	6	37.8	0.006	0.984	0.002	15.6	5.6	10.5	9.5	8.5	6.6	1.97	0.432	0.050	0.052	1.2	1146
10.1	7	36.0	0.007	1.010	0.007	14.6	5.4	10.4	9.4	8.4	6.7	1.76	0.412	0.047	0.053	1.4	1037
10.6	8	30.0	0.020	1.000	0.010	11.0	4.7	10.0	9.0	7.9	6.8	1.13	0.355	0.040	0.050	3.2	762
11.1	9	24.0	0.015	0.745	0.000	7.3	3.7	9.2	8.2	7.2	7.1	0.17	0.267	0.031	0.031	2.0	482
11.5	10	22.2	0.014	0.707	0.001	7.8	3.9	9.6	8.6	7.6	7.4	0.23	0.277	0.031	0.032	1.6	466
11.9	11	19.9	0.013	0.697	0.000	8.4	4.0	10.0	9.0	8.0	7.7	0.28	0.283	0.033	0.033	1.4	429
12.2	12	19.8	0.008	0.704	0.001	8.9	4.0	10.1	9.1	8.1	7.7	0.38	0.278	0.032	0.033	0.9	430
12.6	13	19.7	0.008	0.734	0.005	7.9	3.7	9.9	8.9	7.9	7.4	0.42	0.248	0.028	0.033	0.8	394
13.1	14	19.6	0.011	0.778	0.013	5.5	3.1	9.2	8.2	7.2	6.9	0.25	0.200	0.021	0.033	1.2	331
13.4	15	19.1	0.014	0.738	0.016	4.3	2.9	8.9	7.9	6.9	6.7	0.16	0.179	0.018	0.034	1.5	298
13.8	16	18.4	0.020	0.675	0.020	2.6	2.6	8.3	7.3	6.3	6.3	0.04	0.150	0.014	0.034	2.0	257
14.1	17	17.9	0.023	0.621	0.023	1.7	2.5	8.0	7.0	6.0	6.0	-0.01	0.135	0.012	0.034	2.2	238
14.5	18	17.0	0.026	0.645	0.025	1.1	2.5	7.8	6.8	5.8	5.8	-0.01	0.132	0.011	0.035	2.3	231
14.9	19	16.0	0.027	0.671	0.026	0.7	2.6	7.5	6.5	5.5	5.5	-0.01	0.133	0.010	0.036	2.4	227
15.3																	
9.7	20	1.8	0.005	1.230	0.008	6.6	2.6		3.7		3.2	0.42	0.180	0.022	0.030	0.1	26
10.1	21	6.0	0.006	1.430	0.057	4.6	2.2		4.5		3.4	1.12	0.208	0.012	0.070	0.2	69
10.6	22	6.0	0.166	2.160	0.098	2.4	3.8		5.7		3.3	2.41	0.304	0.020	0.118	5.4	123
11.1	23	1.8	0.004	1.160	0.006	5.4	2.2		3.6		3.5	0.12	0.135	0.017	0.023	0.0	21
11.5	24	2.3	0.007	0.858	0.014	3.6	2.9		5.5		5.3	0.12	0.183	0.013	0.026	0.1	36
11.9	25	0.1	0.020	0.752	0.002	8.6	4.5		7.1		6.2	0.86	0.346	0.037	0.038	0.0	2
12.2	26	0.1	0.019	0.722	0.001	8.6	4.5		7.9		7.1	0.74	0.339	0.036	0.037	0.0	2
12.6	27	0.1	0.009	0.730	0.002	9.6	4.4		8.6		7.8	0.80	0.307	0.033	0.035	0.0	2
13.1	28	0.5	0.008	2.190	0.003	8.2	3.6		6.1		5.3	0.80	0.255	0.028	0.030	0.0	10
13.4	29	0.7	0.007	1.860	0.003	8.3	3.6		6.7		5.9	0.78	0.243	0.027	0.030	0.0	14
13.8	30	0.5	0.008	1.860	0.002	7.7	3.6		6.6		5.8	0.78	0.253	0.027	0.029	0.0	10
14.1	31	0.0	0.011	0.454	0.001	6.8	4.0		8.4		7.9	0.58	0.281	0.028	0.030	0.0	0
14.5	32	0.0	0.009	0.476	0.002	7.0	4.1		8.4		7.8	0.65	0.280	0.029	0.030	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions Case-Bckd = Amount that DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen Org-P = Organic Phosphorus Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.2 Modeled Results - Alternative Loading Case 2

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.034	1.290	0.023	0.1	1.6	9.7	7.5	5.3	5.3	0.02	0.140	0.010	0.033	6.9	319
1.2	2	37.5	0.032	1.260	0.022	0.2	1.7	10.4	8.2	6.0	6.0	-0.03	0.154	0.011	0.033	6.4	351
4.1	3	38.2	0.025	1.180	0.021	1.0	2.0	10.4	8.2	6.0	6.1	-0.06	0.180	0.014	0.035	5.2	413
7.1	4	34.2	0.011	0.938	0.016	4.6	3.0	10.3	8.1	5.9	5.6	0.29	0.263	0.025	0.041	2.1	544
9.3	5	37.4	0.008	0.813	0.001	14.4	5.2	10.0	9.0	8.0	6.2	1.73	0.403	0.047	0.048	1.5	1047
9.7	6	37.8	0.005	0.828	0.002	14.6	5.1	10.5	9.5	8.5	6.6	1.92	0.393	0.046	0.048	1.1	1040
10.1	7	36.0	0.008	0.850	0.009	12.8	4.7	10.2	9.2	8.2	6.7	1.53	0.360	0.041	0.050	1.5	903
10.6	8	30.0	0.021	0.808	0.012	9.2	4.0	9.7	8.7	7.7	6.8	0.90	0.300	0.033	0.045	3.4	641
11.1	9	24.0	0.013	0.491	0.001	6.0	3.0	9.1	8.1	7.1	7.1	0.07	0.213	0.025	0.025	1.6	385
11.5	10	22.2	0.012	0.431	0.001	6.2	3.1	9.5	8.5	7.5	7.4	0.08	0.218	0.025	0.026	1.4	367
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.190	0.008	6.4	2.5		3.7		3.2	0.42	0.169	0.021	0.029	0.0	24
10.1	21	6.0	0.006	1.410	0.058	4.3	2.1		4.4		3.4	1.09	0.201	0.011	0.069	0.2	66
10.6	22	6.0	0.167	2.140	0.098	2.0	3.7		5.7		3.3	2.37	0.296	0.019	0.117	5.4	119
11.1	23	1.8	0.004	1.100	0.007	4.8	1.9		3.5		3.5	0.04	0.116	0.015	0.022	0.0	19
11.5	24	2.3	0.007	0.789	0.014	3.0	2.6		5.4		5.3	0.05	0.165	0.011	0.025	0.1	32
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen Org-P = Organic Phosphorus Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.3 Modeled Results - Alternative Loading Case 3

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM	Seg	Flow	NH3N	NO3N	SRP	CHLA	UBOD	DO				Case	Org-N	Org-P	TP	NH3N	UBOD
Code	No	(cfs)	Modeled	Modeled	Modeled	Modeled	Modeled	Max	Avg	Min	Bckd	-Bckd	Modeled	Modeled	Modeled	Mod-lb/day	Mod-lb/day
0.0	1	37.1	0.032	1.220	0.023	0.1	1.4	9.7	7.5	5.3	5.3	0.02	0.121	0.008	0.030	6.3	277
1.2	2	37.5	0.030	1.190	0.022	0.2	1.5	10.4	8.2	6.0	6.0	-0.03	0.133	0.009	0.031	6.0	305
4.1	3	38.2	0.023	1.110	0.021	0.8	1.7	10.4	8.2	6.0	6.1	-0.08	0.154	0.011	0.032	4.8	353
7.1	4	34.2	0.010	0.852	0.016	3.7	2.5	10.1	7.9	5.7	5.6	0.11	0.220	0.020	0.036	1.9	451
9.3	5	37.4	0.006	0.708	0.001	11.5	4.2	9.4	8.4	7.4	6.2	1.15	0.326	0.037	0.038	1.3	848
9.7	6	37.8	0.004	0.719	0.002	11.6	4.1	9.8	8.8	7.8	6.6	1.21	0.317	0.036	0.038	0.8	839
10.1	7	36.0	0.004	0.726	0.007	10.3	3.8	9.5	8.5	7.5	6.7	0.88	0.294	0.032	0.039	0.8	733
10.6	8	30.0	0.007	0.643	0.006	8.0	3.3	9.2	8.2	7.2	6.8	0.41	0.251	0.028	0.034	1.1	535
11.1	9	24.0	0.013	0.491	0.001	6.0	3.0	9.1	8.1	7.1	7.1	0.07	0.213	0.025	0.025	1.6	384
11.5	10	22.2	0.012	0.431	0.001	6.2	3.1	9.5	8.5	7.5	7.4	0.08	0.218	0.025	0.026	1.4	367
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.170	0.008	5.5	2.2		3.5		3.2	0.23	0.144	0.018	0.026	0.0	21
10.1	21	6.0	0.007	1.400	0.059	2.2	1.5		4.2		3.4	0.87	0.162	0.006	0.065	0.2	49
10.6	22	6.0	0.009	1.400	0.059	1.8	1.4		4.1		3.3	0.83	0.154	0.005	0.064	0.3	46
11.1	23	1.8	0.004	1.100	0.007	4.8	1.9		3.5		3.5	0.04	0.116	0.015	0.022	0.0	19
11.5	24	2.3	0.007	0.789	0.014	3.0	2.6		5.4		5.3	0.05	0.165	0.011	0.025	0.1	32
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions

Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen

Org-P = Organic Phosphorus

Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.4 Modeled Results - Alternative Loading Case 4

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	29.5	0.034	1.290	0.026	0.0	1.2	9.7	7.5	5.3	5.3	-0.04	0.093	0.006	0.032	5.4	187
1.2	2	29.9	0.034	1.250	0.026	0.0	1.3	10.4	8.2	6.0	6.0	-0.01	0.103	0.006	0.032	5.5	209
4.1	3	30.6	0.030	1.150	0.024	0.2	1.4	10.4	8.2	6.0	6.1	-0.06	0.117	0.008	0.032	4.9	236
7.1	4	26.6	0.017	0.835	0.020	1.4	1.8	9.8	7.6	5.4	5.6	-0.19	0.156	0.013	0.033	2.4	254
9.3	5	29.8	0.016	0.643	0.001	5.1	2.7	8.3	7.3	6.3	6.2	0.03	0.196	0.023	0.024	2.5	428
9.7	6	30.2	0.014	0.643	0.001	5.3	2.7	8.6	7.6	6.6	6.6	0.02	0.195	0.023	0.024	2.3	439
10.1	7	28.4	0.014	0.606	0.001	5.5	2.8	8.7	7.7	6.7	6.7	0.03	0.199	0.024	0.024	2.1	422
10.6	8	26.2	0.013	0.553	0.000	5.7	2.9	8.9	7.9	6.9	6.8	0.04	0.206	0.024	0.025	1.9	403
11.1	9	24.0	0.013	0.491	0.001	6.0	3.0	9.1	8.1	7.1	7.1	0.07	0.213	0.025	0.025	1.6	384
11.5	10	22.2	0.012	0.431	0.001	6.2	3.1	9.5	8.5	7.5	7.4	0.08	0.218	0.025	0.026	1.4	367
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.150	0.008	4.0	1.7		3.3		3.2	0.01	0.107	0.014	0.021	0.0	17
10.1	21	2.2	0.004	1.130	0.008	4.1	1.8		3.4		3.4	0.02	0.106	0.014	0.021	0.1	21
10.6	22	2.2	0.005	1.120	0.007	4.2	1.8		3.3		3.3	0.02	0.113	0.014	0.022	0.1	22
11.1	23	1.8	0.004	1.100	0.007	4.8	1.9		3.5		3.5	0.04	0.116	0.015	0.022	0.0	19
11.5	24	2.3	0.007	0.789	0.014	3.0	2.6		5.4		5.3	0.05	0.165	0.011	0.025	0.1	32
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions

Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen

Org-P = Organic Phosphorus

Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.5 Modeled Results - Alternative Loading Case 5

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	29.3	0.038	1.280	0.015	0.1	1.6	9.6	7.4	5.2	5.3	-0.05	0.127	0.010	0.025	6.0	249
1.2	2	29.7	0.036	1.240	0.014	0.2	1.8	10.4	8.2	6.0	6.0	0.00	0.142	0.012	0.025	5.8	280
4.1	3	30.4	0.030	1.130	0.010	0.8	2.0	10.5	8.3	6.1	6.1	0.00	0.170	0.015	0.025	4.8	334
7.1	4	26.4	0.014	0.812	0.001	4.7	3.2	10.4	8.2	6.0	5.6	0.43	0.263	0.028	0.029	2.0	448
9.3	5	37.4	0.008	0.813	0.001	14.3	5.2	10.0	9.0	7.9	6.2	1.71	0.402	0.047	0.048	1.6	1045
9.7	6	37.8	0.005	0.828	0.002	14.6	5.1	10.5	9.5	8.5	6.6	1.92	0.393	0.046	0.048	1.1	1040
10.1	7	36.0	0.008	0.850	0.009	12.8	4.7	10.2	9.2	8.2	6.7	1.53	0.360	0.041	0.050	1.5	903
10.6	8	30.0	0.021	0.808	0.012	9.2	4.0	9.7	8.7	7.7	6.8	0.90	0.300	0.033	0.045	3.4	641
11.1	9	24.0	0.013	0.491	0.001	6.0	3.0	9.1	8.1	7.1	7.1	0.07	0.213	0.025	0.025	1.6	385
11.5	10	22.2	0.012	0.431	0.001	6.2	3.1	9.5	8.5	7.5	7.4	0.08	0.218	0.025	0.026	1.4	367
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.190	0.008	6.4	2.5		3.7		3.2	0.42	0.169	0.021	0.029	0.0	24
10.1	21	6.0	0.006	1.410	0.058	4.3	2.1		4.4		3.4	1.09	0.201	0.011	0.069	0.2	66
10.6	22	6.0	0.167	2.140	0.098	2.0	3.7		5.7		3.3	2.37	0.296	0.019	0.117	5.4	119
11.1	23	1.8	0.004	1.100	0.007	4.8	1.9		3.5		3.5	0.04	0.116	0.015	0.022	0.0	19
11.5	24	2.3	0.007	0.789	0.014	3.0	2.6		5.4		5.3	0.05	0.165	0.011	0.025	0.1	32
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions

Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen

Org-P = Organic Phosphorus

Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.6 Modeled Results - Alternative Loading Case 6

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.023	1.280	0.019	0.1	1.4	9.7	7.5	5.3	5.3	0.03	0.126	0.010	0.029	4.6	283
1.2	2	37.5	0.020	1.250	0.018	0.2	1.6	10.4	8.2	6.0	6.0	-0.03	0.139	0.011	0.029	4.0	313
4.1	3	38.2	0.015	1.180	0.018	1.0	1.9	10.4	8.2	6.0	6.1	-0.06	0.168	0.014	0.031	3.2	382
7.1	4	34.2	0.011	0.938	0.016	4.6	3.0	10.3	8.1	5.9	5.6	0.29	0.263	0.025	0.041	2.1	544
9.3	5	37.4	0.008	0.813	0.001	14.4	5.2	10.0	9.0	8.0	6.2	1.73	0.403	0.047	0.048	1.5	1047
9.7	6	37.8	0.005	0.828	0.002	14.6	5.1	10.5	9.5	8.5	6.6	1.92	0.393	0.046	0.048	1.1	1040
10.1	7	36.0	0.008	0.850	0.009	12.8	4.7	10.2	9.2	8.2	6.7	1.53	0.360	0.041	0.050	1.5	903
10.6	8	30.0	0.021	0.808	0.012	9.2	4.0	9.7	8.7	7.7	6.8	0.90	0.300	0.033	0.045	3.4	641
11.1	9	24.0	0.013	0.491	0.001	6.0	3.0	9.1	8.1	7.1	7.1	0.07	0.213	0.025	0.025	1.6	385
11.5	10	22.2	0.012	0.431	0.001	6.2	3.1	9.5	8.5	7.5	7.4	0.08	0.218	0.025	0.026	1.4	367
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.190	0.008	6.4	2.5		3.7		3.2	0.42	0.169	0.021	0.029	0.0	24
10.1	21	6.0	0.006	1.410	0.058	4.3	2.1		4.4		3.4	1.09	0.201	0.011	0.069	0.2	66
10.6	22	6.0	0.167	2.140	0.098	2.0	3.7		5.7		3.3	2.37	0.296	0.019	0.117	5.4	119
11.1	23	1.8	0.004	1.100	0.007	4.8	1.9		3.5		3.5	0.04	0.116	0.015	0.022	0.0	19
11.5	24	2.3	0.007	0.789	0.014	3.0	2.6		5.4		5.3	0.05	0.165	0.011	0.025	0.1	32
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions

Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen

Org-P = Organic Phosphorus

Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.7 Modeled Results - Alternative Loading Case 7

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.034	1.290	0.023	0.1	1.6	9.7	7.5	5.3	5.3	0.02	0.137	0.010	0.032	6.7	313
1.2	2	37.5	0.032	1.260	0.022	0.2	1.7	10.4	8.2	6.0	6.0	-0.03	0.151	0.011	0.033	6.4	345
4.1	3	38.2	0.025	1.180	0.021	1.0	2.0	10.4	8.2	6.0	6.1	-0.06	0.176	0.014	0.034	5.1	407
7.1	4	34.2	0.011	0.940	0.016	4.6	2.9	10.3	8.1	5.9	5.6	0.29	0.258	0.024	0.041	2.0	535
9.3	5	37.4	0.007	0.815	0.001	14.3	5.1	10.0	9.0	8.0	6.2	1.73	0.397	0.047	0.047	1.5	1033
9.7	6	37.8	0.005	0.831	0.003	14.5	5.0	10.5	9.5	8.5	6.6	1.90	0.385	0.045	0.048	1.0	1022
10.1	7	36.0	0.008	0.855	0.009	12.5	4.5	10.1	9.1	8.1	6.7	1.48	0.350	0.040	0.049	1.5	880
10.6	8	30.0	0.022	0.812	0.012	8.9	3.9	9.7	8.7	7.7	6.8	0.85	0.289	0.033	0.045	3.5	622
11.1	9	24.0	0.012	0.494	0.001	5.8	2.9	9.1	8.1	7.1	7.1	0.03	0.202	0.024	0.025	1.6	370
11.5	10	22.2	0.012	0.433	0.001	6.0	3.0	9.4	8.4	7.4	7.4	0.04	0.207	0.025	0.025	1.4	353
11.9	11	19.9	0.011	0.388	0.000	6.5	3.1	9.7	8.7	7.7	7.7	0.05	0.217	0.026	0.026	1.2	327
12.2	12	19.8	0.008	0.393	0.001	6.8	3.0	9.8	8.8	7.8	7.7	0.07	0.211	0.025	0.026	0.8	324
12.6	13	19.7	0.007	0.415	0.005	5.9	2.8	9.6	8.6	7.6	7.4	0.12	0.187	0.022	0.026	0.7	295
13.1	14	19.6	0.007	0.444	0.009	4.4	2.4	9.0	8.0	7.0	6.9	0.11	0.154	0.017	0.026	0.8	252
13.4	15	19.1	0.008	0.391	0.011	3.5	2.2	8.8	7.8	6.8	6.7	0.08	0.137	0.015	0.026	0.9	225
13.8	16	18.4	0.010	0.312	0.015	2.2	1.9	8.3	7.3	6.3	6.3	0.03	0.114	0.012	0.026	1.0	190
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.190	0.008	6.3	2.5		3.7		3.2	0.42	0.167	0.021	0.029	0.0	24
10.1	21	6.0	0.006	1.410	0.058	4.3	2.0		4.4		3.4	1.08	0.199	0.011	0.069	0.2	66
10.6	22	6.0	0.168	2.140	0.098	2.0	3.7		5.7		3.3	2.36	0.294	0.019	0.117	5.4	118
11.1	23	1.8	0.004	1.100	0.007	4.7	1.9		3.5		3.5	0.02	0.112	0.014	0.022	0.0	18
11.5	24	2.3	0.006	0.789	0.010	2.8	2.0		5.4		5.3	0.01	0.099	0.010	0.020	0.1	25
11.9	25	0.1	0.019	0.505	0.002	7.2	3.7		7.0		6.2	0.73	0.287	0.030	0.032	0.0	2
12.2	26	0.1	0.017	0.457	0.001	7.1	3.6		7.7		7.1	0.55	0.276	0.030	0.031	0.0	2
12.6	27	0.1	0.009	0.450	0.002	7.6	3.4		8.2		7.8	0.42	0.242	0.027	0.028	0.0	2
13.1	28	0.5	0.008	2.080	0.003	7.4	3.3		6.0		5.3	0.64	0.228	0.025	0.027	0.0	9
13.4	29	0.7	0.007	1.700	0.004	7.3	3.1		6.4		5.9	0.51	0.207	0.023	0.027	0.0	12
13.8	30	0.5	0.007	1.700	0.002	6.8	3.1		6.3		5.8	0.52	0.218	0.024	0.026	0.0	8
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen Org-P = Organic Phosphorus Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.8 Modeled Results - Alternative Loading Case 8

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.034	1.290	0.023	0.1	1.6	9.7	7.5	5.3	5.3	0.02	0.137	0.009	0.032	6.7	313
1.2	2	37.5	0.031	1.260	0.022	0.2	1.7	10.4	8.2	6.0	6.0	-0.03	0.150	0.011	0.033	6.3	343
4.1	3	38.2	0.025	1.180	0.021	1.0	2.0	10.4	8.2	6.0	6.1	-0.06	0.176	0.014	0.034	5.1	405
7.1	4	34.2	0.011	0.940	0.016	4.6	2.9	10.3	8.1	5.9	5.6	0.29	0.258	0.024	0.040	2.0	535
9.3	5	37.4	0.007	0.816	0.001	14.3	5.1	10.0	9.0	8.0	6.2	1.73	0.396	0.046	0.047	1.5	1033
9.7	6	37.8	0.005	0.831	0.003	14.5	5.0	10.5	9.5	8.5	6.6	1.91	0.384	0.045	0.047	1.0	1020
10.1	7	36.0	0.008	0.855	0.009	12.6	4.5	10.2	9.2	8.2	6.7	1.49	0.350	0.039	0.049	1.5	880
10.6	8	30.0	0.021	0.813	0.012	8.9	3.8	9.7	8.7	7.7	6.8	0.86	0.289	0.032	0.045	3.4	620
11.1	9	24.0	0.011	0.496	0.001	5.8	2.9	9.1	8.1	7.1	7.1	0.05	0.201	0.024	0.024	1.5	368
11.5	10	22.2	0.011	0.437	0.001	6.0	2.9	9.4	8.4	7.4	7.4	0.04	0.206	0.024	0.025	1.3	350
11.9	11	19.9	0.010	0.395	0.000	6.2	2.9	9.7	8.7	7.7	7.7	0.00	0.202	0.024	0.025	1.1	310
12.2	12	19.8	0.007	0.400	0.001	6.4	2.9	9.7	8.7	7.7	7.7	0.00	0.197	0.024	0.025	0.7	307
12.6	13	19.7	0.007	0.423	0.005	5.4	2.6	9.4	8.4	7.4	7.4	0.00	0.172	0.020	0.025	0.7	275
13.1	14	19.6	0.007	0.450	0.010	4.0	2.2	8.9	7.9	6.9	6.9	0.00	0.142	0.016	0.025	0.8	236
13.4	15	19.1	0.008	0.395	0.012	3.2	2.1	8.7	7.7	6.7	6.7	0.00	0.129	0.014	0.026	0.8	215
13.8	16	18.4	0.010	0.313	0.015	2.1	1.9	8.3	7.3	6.3	6.3	0.00	0.111	0.011	0.026	0.9	186
14.1	17	17.9	0.010	0.247	0.017	1.4	1.8	8.0	7.0	6.0	6.0	0.00	0.101	0.010	0.026	0.9	172
14.5	18	17.0	0.009	0.252	0.018	1.0	1.8	7.8	6.8	5.8	5.8	0.00	0.097	0.009	0.027	0.8	163
14.9	19	16.0	0.007	0.254	0.018	0.7	1.8	7.5	6.5	5.5	5.5	0.00	0.097	0.009	0.027	0.6	158
15.3																	0
																	0
9.7	20	1.8	0.005	1.190	0.008	6.3	2.5		3.7		3.2	0.42	0.167	0.021	0.029	0.0	24
10.1	21	6.0	0.006	1.410	0.058	4.3	2.0		4.4		3.4	1.08	0.199	0.011	0.069	0.2	66
10.6	22	6.0	0.168	2.140	0.098	2.0	3.7		5.7		3.3	2.36	0.294	0.019	0.117	5.4	118
11.1	23	1.8	0.004	1.100	0.007	4.7	1.9		3.5		3.5	0.03	0.112	0.014	0.021	0.0	18
11.5	24	2.3	0.007	0.790	0.014	2.9	2.6		5.4		5.3	0.03	0.161	0.010	0.024	0.1	32
11.9	25	0.1	0.013	0.537	0.001	5.3	2.8		6.2		6.2	0.00	0.206	0.024	0.025	0.0	1
12.2	26	0.1	0.013	0.483	0.001	5.5	2.9		7.1		7.1	0.00	0.213	0.024	0.025	0.0	2
12.6	27	0.1	0.005	0.469	0.001	6.2	2.9		7.8		7.8	0.00	0.196	0.023	0.024	0.0	2
13.1	28	0.5	0.004	2.100	0.002	5.6	2.4		5.3		5.3	0.00	0.160	0.019	0.021	0.0	7
13.4	29	0.7	0.003	1.720	0.003	5.7	2.4		5.9		5.9	0.00	0.155	0.019	0.022	0.0	9
13.8	30	0.5	0.004	1.720	0.002	5.4	2.5		5.8		5.8	0.00	0.164	0.019	0.021	0.0	7
14.1	31	0.0	0.009	0.118	0.001	5.1	2.9		7.9		7.9	0.00	0.208	0.022	0.023	0.0	0
14.5	32	0.0	0.007	0.121	0.002	5.2	3.0		7.8		7.8	0.00	0.204	0.022	0.023	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions

Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen

Org-P = Organic Phosphorus

Mod-lb/day = Modeled loading in lb/day

Appendix J

Table J.9 Modeled Results - Alternative Loading Case 9

(All units in mg/l, except Chlr-a in ug/l, or as shown)

RM Code	Seg No	Flow (cfs)	NH3N Modeled	NO3N Modeled	SRP Modeled	CHLA Modeled	UBOD Modeled	DO Max	DO Avg	DO Min	DO Bckd	Case -Bckd	Org-N Modeled	Org-P Modeled	TP Modeled	NH3N Mod-lb/day	UBOD Mod-lb/day
0.0	1	37.1	0.034	1.320	0.023	0.1	1.6	9.7	7.5	5.3	5.3	0.02	0.134	0.009	0.032	6.8	309
1.2	2	37.5	0.032	1.290	0.022	0.2	1.7	10.4	8.2	6.0	6.0	-0.03	0.147	0.010	0.032	6.4	339
4.1	3	38.2	0.025	1.210	0.021	0.8	1.9	10.4	8.2	6.0	6.1	-0.09	0.170	0.013	0.033	5.2	396
7.1	4	34.2	0.012	0.985	0.016	3.9	2.8	10.1	7.9	5.7	5.6	0.10	0.244	0.022	0.038	2.2	506
9.3	5	37.4	0.008	0.868	0.001	12.1	4.7	9.4	8.4	7.4	6.2	1.13	0.361	0.041	0.042	1.6	938
9.7	6	37.8	0.005	0.878	0.002	12.5	4.6	9.8	8.8	7.8	6.6	1.25	0.355	0.040	0.042	1.0	942
10.1	7	36.0	0.005	0.887	0.006	11.7	4.4	9.7	8.7	7.7	6.7	1.04	0.339	0.038	0.043	0.9	853
10.6	8	30.0	0.008	0.841	0.005	9.4	4.0	9.4	8.4	7.4	6.8	0.55	0.300	0.033	0.038	1.2	643
11.1	9	24.0	0.015	0.745	0.000	7.3	3.7	9.2	8.2	7.2	7.1	0.17	0.267	0.031	0.031	2.0	481
11.5	10	22.2	0.014	0.707	0.001	7.8	3.9	9.6	8.6	7.6	7.4	0.23	0.277	0.031	0.032	1.6	466
11.9	11	19.9	0.013	0.697	0.000	8.4	4.0	10.0	9.0	8.0	7.7	0.28	0.283	0.033	0.033	1.4	429
12.2	12	19.8	0.008	0.704	0.001	8.9	4.0	10.1	9.1	8.1	7.7	0.38	0.278	0.032	0.033	0.9	430
12.6	13	19.7	0.008	0.734	0.005	7.9	3.7	9.9	8.9	7.9	7.4	0.42	0.248	0.028	0.033	0.8	394
13.1	14	19.6	0.011	0.778	0.013	5.5	3.1	9.2	8.2	7.2	6.9	0.25	0.200	0.021	0.033	1.2	331
13.4	15	19.1	0.014	0.738	0.016	4.3	2.9	8.9	7.9	6.9	6.7	0.16	0.179	0.018	0.034	1.5	298
13.8	16	18.4	0.020	0.675	0.020	2.6	2.6	8.3	7.3	6.3	6.3	0.04	0.150	0.014	0.034	2.0	257
14.1	17	17.9	0.023	0.621	0.023	1.7	2.5	8.0	7.0	6.0	6.0	-0.01	0.135	0.012	0.034	2.2	238
14.5	18	17.0	0.026	0.645	0.025	1.1	2.5	7.8	6.8	5.8	5.8	-0.01	0.132	0.011	0.035	2.3	231
14.9	19	16.0	0.027	0.671	0.026	0.7	2.6	7.5	6.5	5.5	5.5	-0.01	0.133	0.010	0.036	2.4	227
15.3																	0
																	0
9.7	20	1.8	0.005	1.210	0.008	5.8	2.3		3.5		3.2	0.24	0.155	0.019	0.027	0.0	22
10.1	21	6.0	0.007	1.420	0.058	2.5	1.6		4.3		3.4	0.90	0.170	0.007	0.066	0.2	52
10.6	22	6.0	0.009	1.420	0.059	2.1	1.5		4.2		3.3	0.86	0.161	0.006	0.065	0.3	49
11.1	23	1.8	0.004	1.160	0.006	5.4	2.2		3.6		3.5	0.12	0.135	0.017	0.023	0.0	21
11.5	24	2.3	0.007	0.858	0.014	3.6	2.9		5.5		5.3	0.12	0.183	0.013	0.026	0.1	36
11.9	25	0.1	0.020	0.752	0.002	8.6	4.5		7.1		6.2	0.86	0.346	0.037	0.038	0.0	2
12.2	26	0.1	0.019	0.722	0.001	8.6	4.5		7.9		7.1	0.74	0.339	0.036	0.037	0.0	2
12.6	27	0.1	0.009	0.730	0.002	9.6	4.4		8.6		7.8	0.80	0.307	0.033	0.035	0.0	2
13.1	28	0.5	0.008	2.190	0.003	8.2	3.6		6.1		5.3	0.80	0.255	0.028	0.030	0.0	10
13.4	29	0.7	0.007	1.860	0.003	8.3	3.6		6.7		5.9	0.78	0.243	0.027	0.030	0.0	14
13.8	30	0.5	0.008	1.860	0.002	7.7	3.6		6.6		5.8	0.78	0.253	0.027	0.029	0.0	10
14.1	31	0.0	0.011	0.454	0.001	6.8	4.0		8.4		7.9	0.58	0.281	0.028	0.030	0.0	0
14.5	32	0.0	0.009	0.476	0.002	7.0	4.1		8.4		7.8	0.65	0.280	0.029	0.030	0.0	0
14.9																	

Bckd = Minimum DO results for Background Critical Conditions Case-Bdkd = Amount the DO for Alternative Case is above or below DO for Background Critical Conditions

Org-N = Organic Nitrogen Org-P = Organic Phosphorus Mod-lb/day = Modeled loading in lb/day