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Upper Sangamon River Watershed Monitoring Data for the USEPA Targeted Watershed Study: 2005-2008

Laura Keefer and Erin Bauer

February 2011

Illinois State Water Survey
Institute of Natural Resource Sustainability
University of Illinois at Urbana-Champaign

Champaign, Illinois

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Prepared for the
Agricultural Watershed Institute
Decatur, Illinois
Steve John, Executive Director

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Abstract

The Illinois State Water Survey (ISWS) established four streamgaging stations in selected tributaries of the Sangamon River in Macon and Champaign Counties to monitor streamflow and nutrients for the Agricultural Watershed Institute (AWI). AWI received a grant from the U.S. Environmental Protection Agency (USEPA) to conduct the Upper Sangamon River Targeted Watershed Project (USRTWP) to address behavioral, technical, and economic aspects of nutrient management associated with agricultural crop production. The goal of the USRTWP study was to determine if water quality would improve by reducing nutrient discharges from agricultural areas by incorporating market-based implementation mechanisms. This report presents the annual precipitation, streamflow, runoff, and nitrogen and phosphorus concentration data for these stations in the two counties.

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Introduction and Background

In 2005, the Agricultural Watershed Institute (AWI) received a grant from the U.S. Environmental Protection Agency (USEPA) to conduct the Upper Sangamon River Targeted Watershed Project (USRTWP). This project included several components designed to address behavioral, technical, and economic aspects of nutrient management associated with agricultural crop production. One goal of the project was to determine if water quality would improve by reducing nutrient discharges from agricultural areas by incorporating market-based implementation mechanisms.

The project was conducted in the Upper Sangamon River Watershed (USRW), a tributary of the Illinois River, which is within the Upper Mississippi River Basin. A major reservoir in the watershed is Lake Decatur, built in 1922 by impounding the Upper Sangamon River to provide water for domestic use and processing of agricultural products. Decatur, population 82,000, is the largest city in the USRW. The portion of the USRW above Lake Decatur covers 925 square miles in seven counties with nearly 90 percent of this area in crop production. Lake Decatur has water quality problems typical of agricultural watersheds in the upper Midwest. Monitoring by the Illinois State Water Survey (ISWS) indicates that the average annual nitrate-N yield to Lake Decatur was 23 lbs/acre from 1993 to 2008 (Keefer et al., 2010). The watershed is in a humid, continental climate region typical for central Illinois. The physiography of the watershed is characterized by broad, morainic ridges with intervening wide stretches of relatively flat or gently undulating ground moraines in the Bloomington Ridged Plain of the Till Plains Section of the Central Lowland Province (Leighton et al., 1948). A more in-depth description of the water quality issues and watershed physical characteristics of the Lake Decatur watershed can be found in Keefer et al. (2010).

Since 1985, following recommendations of a citizens' advisory committee, the City of Decatur has provided financial support to Soil and Water Conservation Districts (SWCDs) of Macon and other counties for watershed management program implementation. In 1992, the city signed a Letter of Commitment to Illinois EPA to comply with the Safe Drinking Water Act nitrate-N standard for drinking water. Since then, the City of Decatur has also provided funding to the ISWS to monitor and study nitrate-N in the watershed upstream of Lake Decatur (Demissie et al., 1996; Demissie and Keefer, 1996; John et al., 1996; Keefer and Demissie, 1996;

Demissie et al., 1997; Keefer et al., 1997; Demissie and Keefer, 1998; Keefer and Demissie, 1999; Keefer and Demissie, 2000; Guo et al., 2002; Keefer and Demissie, 2002; Markus et al., 2003; Keefer and Bauer, 2005; Keefer et al., 2010). Other studies have been commissioned by the City of Decatur to develop watershed strategies to reduce nitrate-N and sedimentation (Environmental Planning and Economics Inc., 1997; Environmental Planning and Economics Inc., 1998).

Subwatershed management plans have been prepared for several small watersheds around Lake Decatur through locally-led resource planning processes facilitated by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). The total area of these small watersheds is about 95 square miles, or about 10 percent of the portion of the Upper Sangamon River watershed above the Lake Decatur dam. A management plan for the portion of the Upper Sangamon River Watershed in Piatt and Macon Counties (49 percent of the Lake Decatur watershed) was developed in 2000 by the Heart of the Sangamon River Ecosystem Partnership. This plan consists mainly of goals and recommendations for management practices and implementation resources for the watershed.

USRTWP Overview

The USRTWP was conducted by the AWI and subgrantees, including ISWS, Champaign County SWCD, and University of Illinois researchers. The project included three components addressing behavioral, technical, economic, and environmental aspects of nutrient management.

***Nitrogen fertilizer management**:* This component was designed in part to overcome behavioral and institutional obstacles to efficient nutrient management. Surveys conducted in the watershed in the 1990s suggested that many farmers apply fertilizer at rates exceeding University of Illinois (U of I) Agronomy Handbook recommendations. Over-application was viewed as a form of insurance against yield losses in either ideal growing conditions or under conditions conducive to fertilizer loss. However, occasional yield gain from extra fertilizer may not justify its cost. This project was intended to test the hypothesis that optimum application rates can increase expected net farm income while also reducing nutrient losses at a watershed scale. A study of variable rate nitrogen fertilizer application was also performed. To assess water quality response to changes in nitrogen application rates, water quality was monitored by ISWS for two sets of paired sub-watersheds in the USRW.

Starting in 2005, U of I nitrogen recommendations underwent significant changes (University of Illinois Extension, 2009). These changes and other factors led to scaling back and then discontinuing the nitrogen rate trials. However, nitrate monitoring in the paired watersheds continued, with some revision to rate prescriptions in the treatment watershed.

Drainage management in combination with subsurface denitrifying bioreactors: This component was designed to improve technologies to reduce the movement of nitrates from the soil into surface waters via subsurface tile drains. A technology for reducing nitrate concentration in tile discharge water is denitrification in subsurface bioreactors, described as "underground trenches filled with wood chips or other organic carbon sources that replace the last few hundred feet of a tile drain before it discharges" to a stream or main tile. University of Illinois researchers have found nitrate removal efficiency to be about 25 percent in past studies. This study demonstrated and assessed the performance of bioreactors and drainage control

structures, incorporating design improvements based on previous work. Midway through the USRTWP, the scope of this component was expanded to include a study of in-field nitrogen balance under conditions of free and controlled drainage.

Phosphorus fertilizer management: This component assessed economic and water quality benefits of soil testing and variable rate technology for management of phosphorus. A goal of this project was to increase the percentage of farmers using soil testing in support of variable rate technology (VRT), and to assess economic and environmental benefits of these practices. Water quality changes under improved phosphorus management were monitored for a sub-watershed of the USRW. If soil testing and VRT can reduce producer input costs without loss of yield, long-term economic and water quality benefits could result as these practices are adopted by other farmers without need for incentive payments. To assess water quality response to changes in nitrogen application rates, water quality was monitored by ISWS for one pair of sub-watersheds in the USRW.

The ISWS was a subgrantee and tasked with establishing and operating stations to monitor streamflow and nutrients for the nitrogen and phosphorus fertilizer management of paired watersheds. Nutrient management trials for nitrogen fertilizers were conducted in Macon and Champaign Counties; phosphorus fertilizers were conducted in Champaign County only. Each county had control and treatment watersheds for the trials. In Macon County, Kickapoo Creek (211) was the control watershed and Spring Creek (212) was the treatment watershed, herein referred to as Control (211) and Treatment (212). In Champaign County, Big Ditch (223) was the control watershed and Big Ditch (222) was the treatment watershed, Control (223) and Treatment (222), respectively.

The monitoring data are intended for use by the AWI and subgrantee principal investigators for analysis and discussion when compiling the AWI final technical report for the USEPA. This report presents the streamflow and nutrient data for stations in the nitrogen and phosphorus watersheds and includes an appendix containing the results of the data. The data collected during this project were submitted to the IEPA STORET database.

Acknowledgements

This study was funded by the Agricultural Watershed Institute through a Targeted Watershed Grant from the U.S. Environmental Protection Agency. The support of Steve John, Executive Director and Dr. David White is most appreciated. Much of the cost share for the USEPA study was provided by City of Decatur funding for the original monitoring study. The continued support, cooperation, and assistance of Keith Alexander, Water Management Director, City of Decatur, are greatly appreciated.

The authors wish to acknowledge the significant contributions of ISWS project staff: Louis Arighi and Ryan Williams, field technicians, responsible for field data collection; Sandy Jones and Mary Richardson, who assisted with data entry and analysis; and Yi Han, Sediment Chemist, for assistance in preparing water samples for delivery to the ISWS Analytical Services Group. We gratefully acknowledge the nitrogen and phosphorus analyses performed by the following chemists at the Illinois State Water Survey Center for Chemistry and Technology, Analytical Services Group: Sofia Lazovski, Ruthann Nichols, Lauren Sievers, Kaye Surratt, and

Daniel Webb. Becky Howard prepared the tables and appendices for the report, which was edited by Lisa Sheppard. Sara Olson provided expert advice on illustration layout. The authors are grateful to Momcilo Markus and Michael Machesky for their thoughtful review of this report.

This study was overseen by Dr. Misganaw Demissie, Director of ISWS, throughout the study period. His expertise and guidance are deeply appreciated.

Hydrologic and Nutrient Monitoring

The ISWS established four monitoring stations in the Upper Sangamon River watershed during the latter period of WY2005 to provide streamflow and nutrient data for the nitrogen- and phosphorus-paired watersheds. The stations were divided between watersheds in Champaign (nitrogen and phosphorus) and Macon Counties (nitrogen). Two other stations from the Lake Decatur watershed monitoring network funded by the City of Decatur were also located in these two counties and were included in the nutrient sampling plan of the nitrogen and phosphorus watersheds for this USEPA study. The stations were operated and nutrient samples collected from summer and fall of 2005 through September 2008. The sample collection period covers Water Years (WY) 2005 through 2008. A water year begins in October and ends in September with the water year determined by the calendar year of the final month (September). Due to very low flow conditions during the latter period of WY2005, sampling was very limited and, therefore, WY2005 is considered a partial (incomplete) water year. Table 1 presents the station number, type of paired watershed, location information, monitoring period, and drainage area for each station. The station locations are illustrated in Figure 1.

Hydrologic Monitoring

Continuous hydrologic monitoring of water levels at each station facilitates the calculation of streamflow (discharge). The relationship between streamflow and nutrient concentrations is essential for establishing the nutrient contribution from a monitored watershed. The ISWS streamgage locations for Macon County are on Kickapoo Creek (Control [211]) and Spring Creek (Treatment [212]) and Champaign County on Big Ditch (Treatment [222] and Control [223]). Stations were already established by the ISWS on Friends Creek (Friends [102]) and Big Ditch (Big Ditch [106]) for the Lake Decatur watershed study located in Macon and Champaign County, respectively. The Friends (102) station was an active Lake Decatur study station since WY1993. The Big Ditch (106) station was active during WY1993 through WY2003, and was reactivated during WY2005 by the ISWS as a station downstream of the two Big Ditch (Control [223] and Treatment [222]) stations. At each ISWS station, stage was manually measured weekly and automatically recorded at 15-minute intervals; discharge measurements were made periodically.

Precipitation

Precipitation data for selected locations around the Upper Sangamon River watershed were retrieved from the Midwestern Regional Climate Center (MRCC) located at the ISWS (http://mrcc.sws.uiuc.edu). The four precipitation stations selected were Clinton (111743), Decatur (112193), Rantoul (117150), and Urbana (118740). The Decatur and Clinton stations represent precipitation in the Macon County area, whereas the Rantoul and Urbana stations represent the Champaign County area. The monthly and annual 30-year (1971–2000) mean precipitation data are provided in Table 2. Table 3 presents the annual precipitation totals for each station and the four-year mean annual precipitation for the study period. Figures 2 and 3 illustrate the monthly precipitation during WY2005–2008 at the four selected stations.

Table 1. Station Number, Name and Location, Period of Monitoring, and Drainage Area for Upper Sangamon River Watershed Monitoring Stations

ISWS station no.	*Type*	*Location*	*County/ township*	*Period of monitoring*		*Drainage area*	
				Start	*End*	*(hectares)*	*(acres)*
211[C]	Control	Kickapoo Creek @ Hampshire Road	Macon/ Friends Creek	8/17/2005	9/30/2008	213	526
212[T]	Treatment	Spring Creek @ Wise Rd	Macon/ Friends Creek	8/17/2005	9/30/2008	340	840
102	-	Friends Creek @ IL State Rte 48	Macon/ Friends Creek	7/21/1993	9/30/2008	28,982	71,616
223[C]	Control	Big Ditch @ CR 3100N	Champaign/ Ludlow	12/1/2005	9/30/2008	3,585	8,858
222[T]	Treatment	Big Ditch @ CR 900E	Champaign/ Condit	12/13/2005	9/30/2008	1,411	3,487
106	-	Big Ditch @ CR 700E	Champaign/ Condit	7/21/1993	7/08/2003	9,894	24,448
106	-	Big Ditch @ CR 700E *	Champaign/ Condit	9/13/2005	9/30/2008	9,894	24,448

Note: C – Control watershed; T – Treatment watershed;
* ISWS restarted weekly visits on 9/13/2005. Equipment was reinstalled for 15-min monitoring on 1/4/2006.

Table 2. Monthly and Annual 30-Year (1971–2000) Mean Precipitation for Selected Stations (cm)

Month	*Macon County*		*Champaign County*	
	Decatur	*Clinton*	*Rantoul*	*Urbana*
October	7.0	8.0	7.3	7.1
November	8.0	8.3	7.1	8.8
December	7.3	7.2	6.0	7.0
January	5.4	4.7	4.9	4.8
February	4.9	4.9	4.9	5.1
March	8.3	8.7	7.5	8.2
April	9.2	10.2	9.8	9.3
May	11.4	10.9	10.1	12.2
June	9.6	10.3	10.1	10.7
July	11.7	11.0	10.0	11.9
August	10.4	10.0	8.9	11.1
September	7.6	7.1	7.7	8.2
Annual	100.8	101.4	94.0	104.3

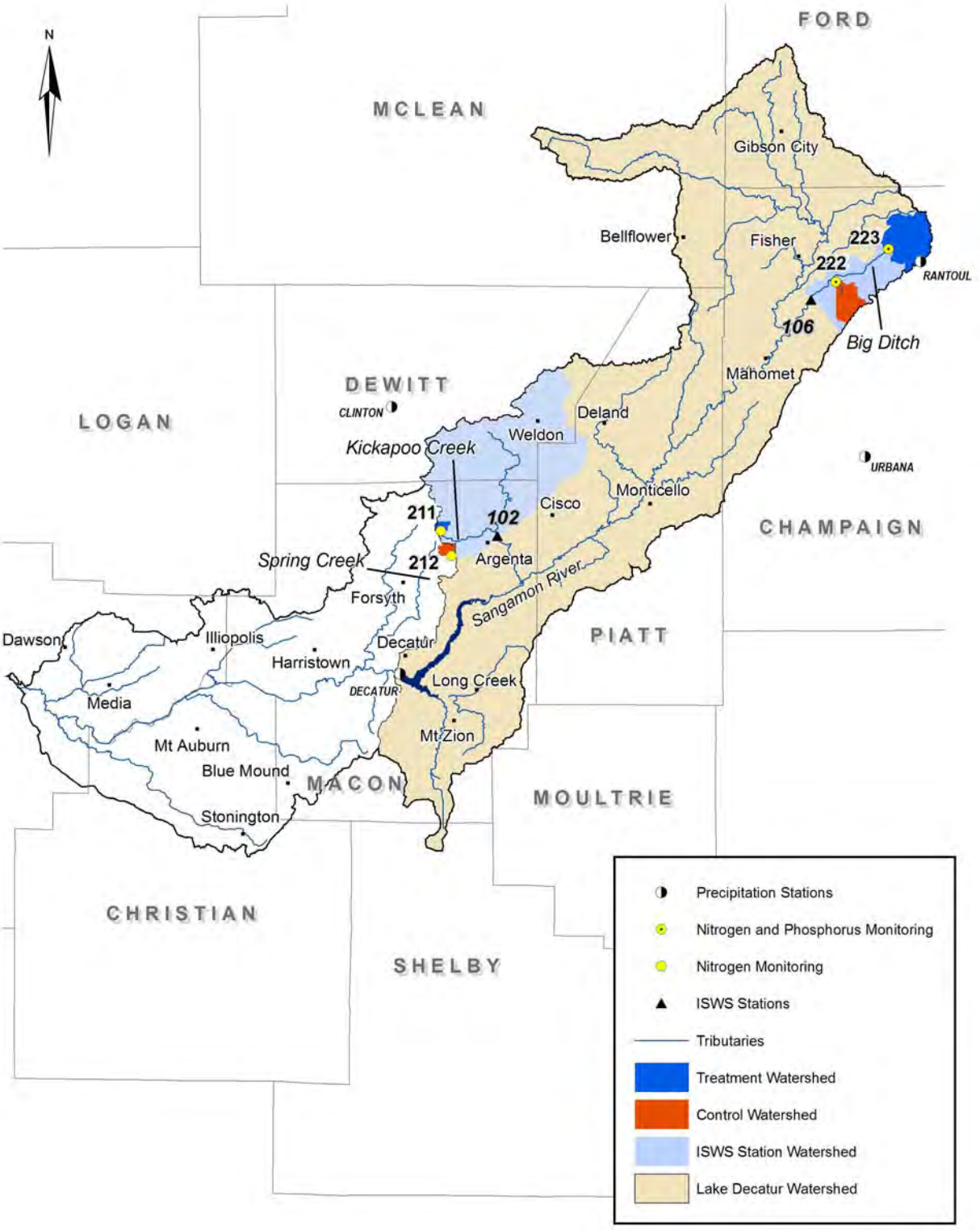


Figure 1. Location of monitoring stations in Upper Sangamon River watershed

Table 3. Annual Precipitation for WY2005–2008 for Selected Stations (cm)

	Macon County			*Champaign County*			*Regional*
Water year	*Decatur*	*Clinton*	*Annual mean*	*Rantoul*	*Urbana*	*Annual mean*	*annual mean*
2005	107.2	101.7	104.4	113.1	102.6	107.8	106.1
2006	92.7	101.6	97.2	94.8	86.2	90.5	93.8
2007	80.9	94.5	87.7	90.1	88.5	89.3	88.5
2008	152.1	116.1	134.1	141.8	135.4	138.6	136.4
4-yr mean	108.2	103.4	105.8	110.0	103.2	106.6	106.2
30-yr mean (1971–2000)	100.8	101.4	101.1	94.0	104.3	99.1	100.1

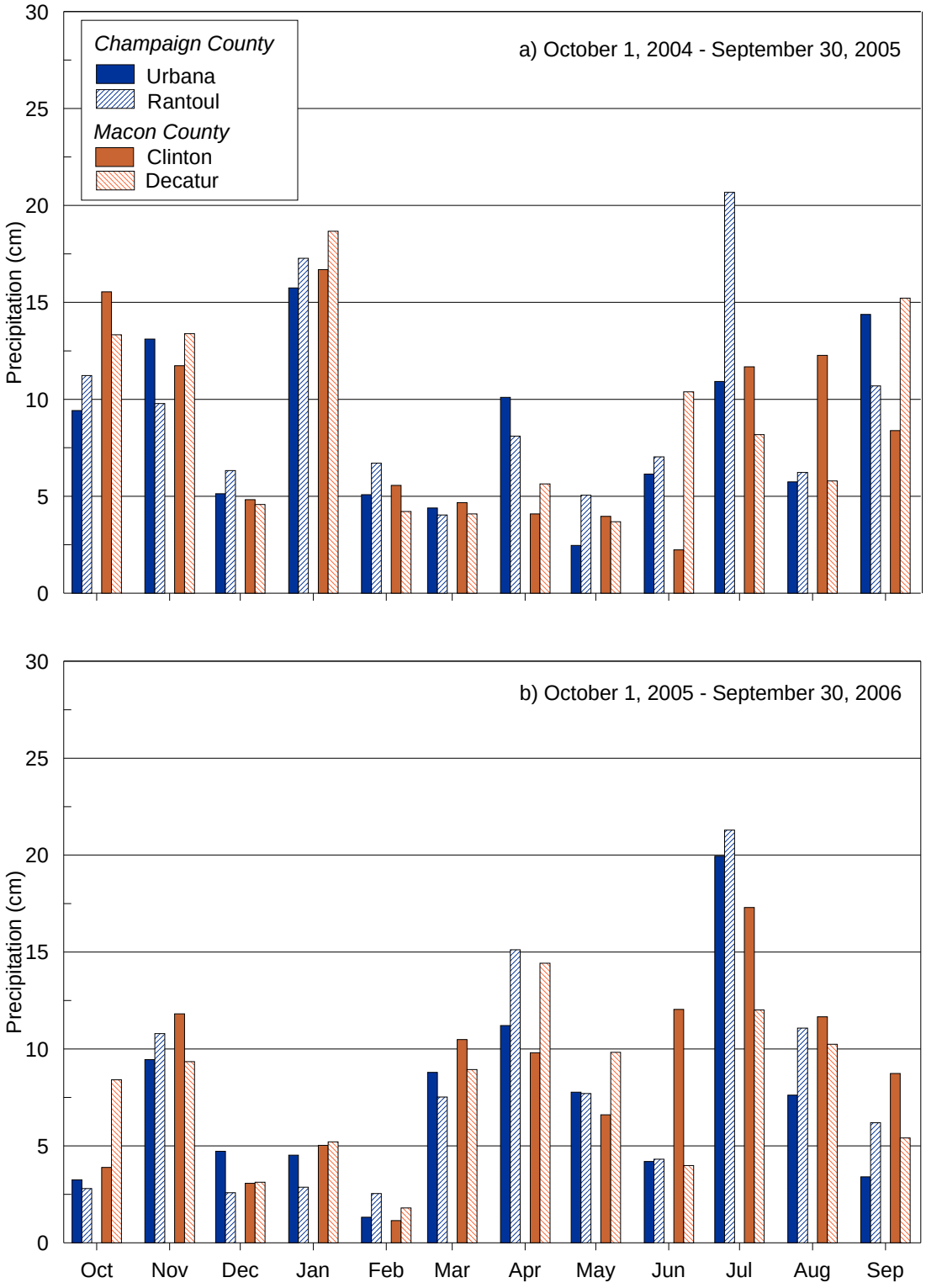


Figure 2. Monthly precipitation at selected stations for WY2005–2006

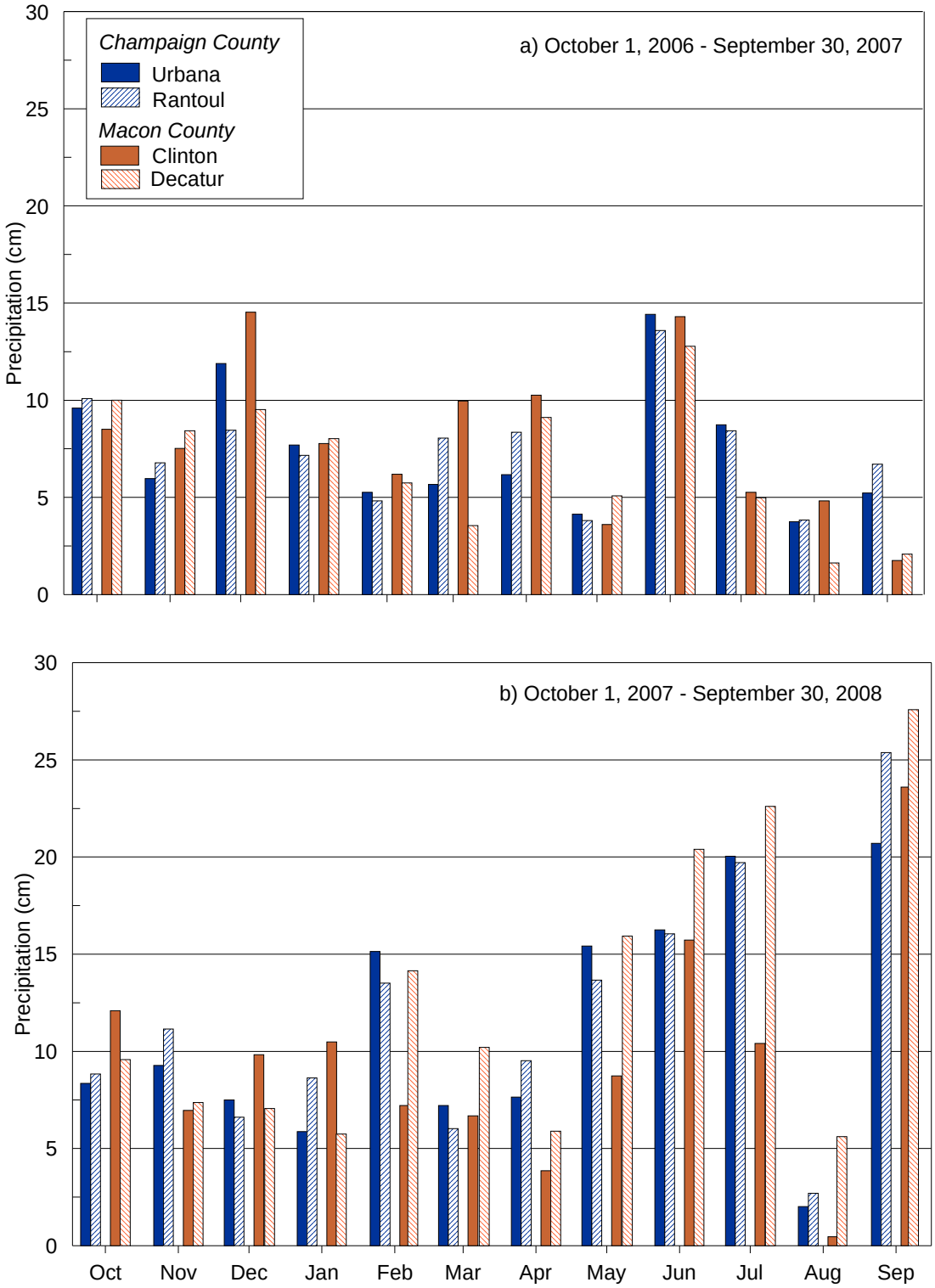


Figure 3. Monthly precipitation at selected stations for WY2007–2008

Monitoring Stations

Each ISWS streamgaging station was composed of a water-level recorder that continuously monitored and recorded the water level (stage) of the stream every 15 minutes. Stage was measured with a float-and-pulley system enclosed within a vertically mounted stilling well. The stage was recorded using a Campbell Scientific CR10X data logger/controller connected to an SM192 storage module (Figure 4). Stage recording equipment was housed in an ISWS-designed security shelter for protection from weather and vandalism and mounted on the bridge over the stream. Figures 5–8 present the upstream and downstream views of the stream channels at each of the four study stations. Figure 6 also includes views of the channel at the Treatment (212) station before and after channel maintenance that occurred between December 27, 2007 and January 8, 2008. Additional information and upstream and downstream views of the two stations operated with funding support by the City of Decatur can be found in Keefer et al. (2010).

Figure 4. Typical streamgaging station and automatic pump water sampler

(a)

(b)

Figure 5. Kickapoo Creek (Control [211]): a) upstream view, June 2008, b) downstream view, July 2007

(a)

(b)

(c)

(d)

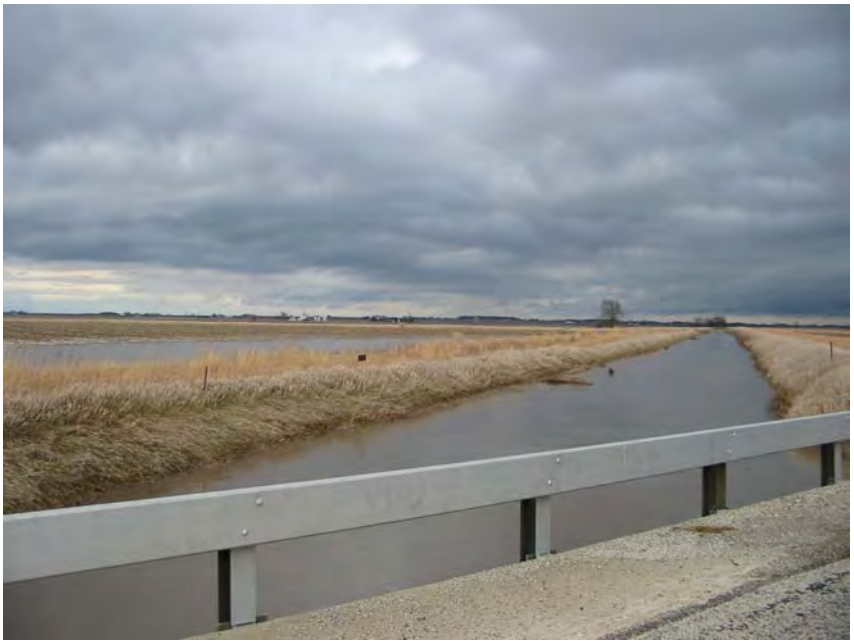
Figure 6. Spring Creek (Treatment [212]): a) upstream view, April 2007, b) channel condition post-dredging activity, upstream view, May 2008, c) downstream view, April 2007, and d) channel condition post-dredging activity, downstream view, May 2008

(a)

(b)

Figure 7. Big Ditch (Treatment [222]): a) upstream view, b) downstream view

(a)



(b)

Figure 8. Big Ditch (Control [223]): a) upstream view, b) downstream view

Streamflow

Streamflow data (discharge) are generated from the stage record collected at a gaging station. The stage of a stream is the measurement of the water surface from an arbitrary datum. The stage is recorded at discrete intervals that make it possible to calculate the volume of water flowing past a gaging station. The stage-discharge rating relationship is developed by taking detailed discharge measurements in the stream at various known stages (Figure 9). Using this stage-discharge rating, stage data are converted to discharge and then are used to calculate runoff. Discharge measurements made at each station during this study can be found in Appendix A and stage-discharge rating curves in Appendix B. All methods used in this study to determine stream discharge and rating development followed established U.S. Geological Survey (USGS) procedures as outlined by Rantz (1982a, 1982b).

During the monitoring period the rating curve may require recalibration due to changes in the channel cross section caused by the effects of extreme streamflow events, vegetation, or human modifications to the stream channel geometry. In these cases, new discharge measurements are taken to develop an adjusted relationship between stage (water level) and streamflow and are applied only to the affected stage record period. As can be seen in Figures 5–8, stream channels in small watersheds can support thick vegetation during the growing season. Vegetation that dominates a stream can create a discharge measurement that is different from one during the winter for the same stage. This necessitates the development of seasonal rating curves as demonstrated in Figure 10 (pre-dredging). Figure 10 also demonstrates stream channel pre- and post-dredging rating curves required for the Treatment (212) station due to channel maintenance that occurred between December 2007 and January 2008. It is not always possible to be present at a gaging station to measure discharge for the highest recorded water level. Therefore, methods are used to extend the stage-discharge rating for stages recorded higher than the highest discharge measurement (as seen by dashed lines in Figure 10).

Annual discharges at the four project stations as well as the two Lake Decatur study stations are summarized in Table 4. Table 5 summarizes the annual runoff for each station during the monitoring period. Runoff is computed by dividing discharge by the drainage area upstream of the streamgaging station and then converting the result to a measure of depth (centimeters or inches). Water Year 2006 through 2008 monthly runoff data for the Macon and Champaign County stations are presented in Figures 11 and 12, respectively. During WY2006, the two Champaign County (211 and 212) gage installations were completed by mid-December. Weekly visits to these gage sites from the beginning of the monitoring period through December 2005 found virtually no flow most of the time and when flow was detected, nutrient samples were collected and water levels were measured from an arbitrary datum. This allowed for an instantaneous yield to be computed for the small number of samples. However, continuous stage was not recorded for this period and is reflected in the discharge and runoff computations (Tables 4 and 5). Based on the weekly station visits, it was observed that the Champaign County stations experienced near zero discharge from June to December 2005. Due to extreme winter weather, all stations experienced frozen water conditions that resulted in missing data during February 2007.

Figure 9. Measuring discharge upstream of stilling well, ISCO shelter and equipment shelter on Kickapoo Creek (Control [211])

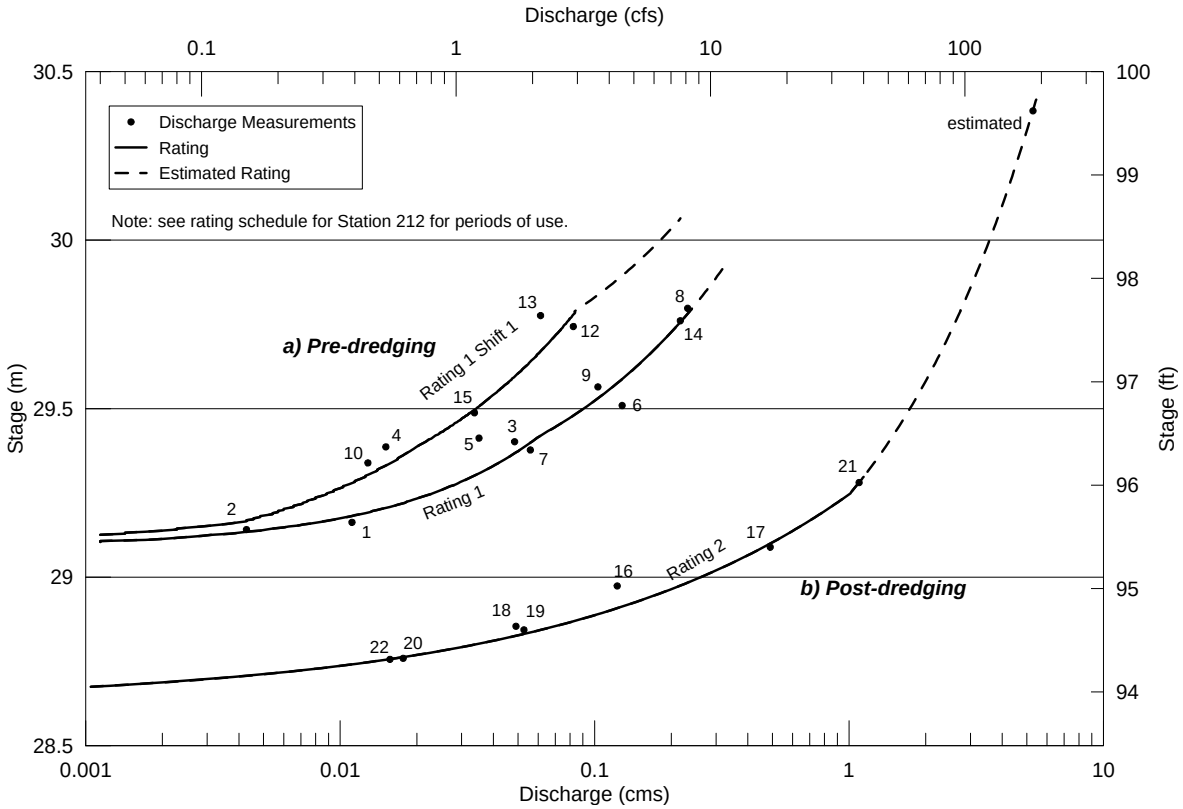


Figure 10. Treatment (212) discharge measurement points and rating curves: a) pre-dredging, seasonal rating curves, b) post-dredge rating curve

Table 4. Annual Discharge for WY2006–2008

	Macon County					
Water Year	*211^C*	***212^T***	*102*	*211^C*	***212^T***	*102*
	(cms)			*(cfs)*		
2006	0.4	**0.8**	63.9	15	**28**	2,255
2007+	0.8	**1.1**	129.2	28	**38**	4,564
2008	0.5	**1.5**	162.9	18	**53**	5,754

	Champaign County					
Water Year	*223^C*	***222^T***	*106*	*223^C*	***222^T***	*106*
	(cms)			*(cfs)*		
2006*	5.9	**2.7**	19.1	208	**95**	673
2007+	7.6	**4.0**	27.9	269	**140**	984
2008	18.3	**5.5**	45.1	646	**195**	1,698

C – Control watershed; ***T – Treatment watershed***

*+ - February 2007 missing data; *October–December 2005 missing data*

Table 5. Annual Runoff for WY2006–2008

	Macon County					
Water Year	*211^C*	***212^T***	*102*	*211^C*	***212^T***	*102*
	(cm)			*(in)*		
2006	20.72	**24.56**	20.21	8.2	**9.7**	8.0
2007+	30.18	**29.96**	28.87	11.9	**11.8**	11.4
2008	49.61	**49.72**	56.13	19.5	**19.6**	22.1

	Champaign County					
Water Year	*223^C*	***222^T***	*106*	*223^C*	***222^T***	*106*
	(cm)			*(in)*		
2006*	12.95	**14.87**	10.06	5.1	**5.9**	4.0
2007+	20.32	**26.85**	26.97	8.0	**10.6**	10.6
2008	53.34	**40.85**	50.80	21.0	**16.1**	20.0

C – Control watershed; ***T – Treatment watershed***

*+ - February 2007 missing data; *October–December 2005 missing data*

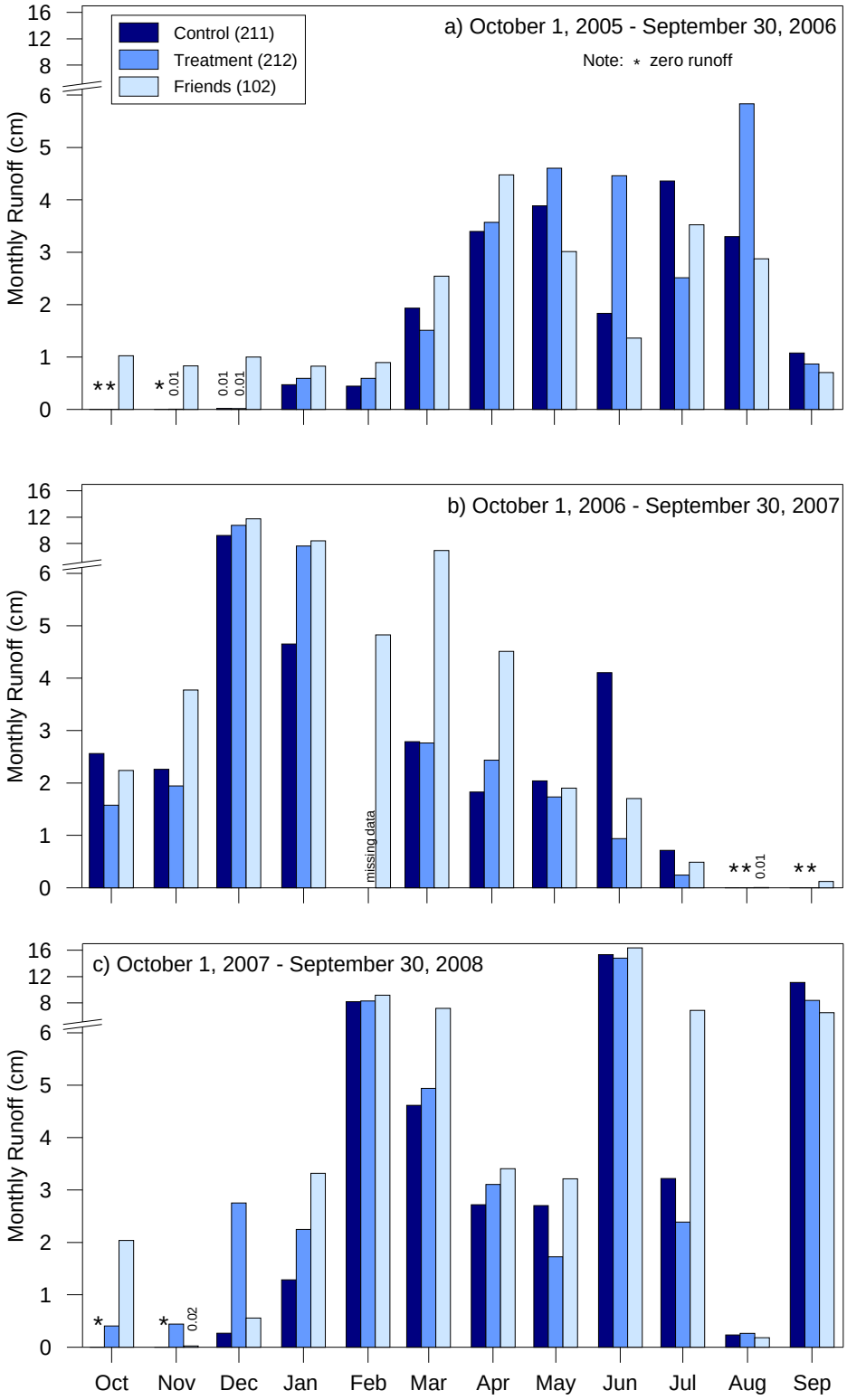


Figure 11. Monthly runoff for Macon County stations:
a) WY2006, b) WY2007, and c) WY2008

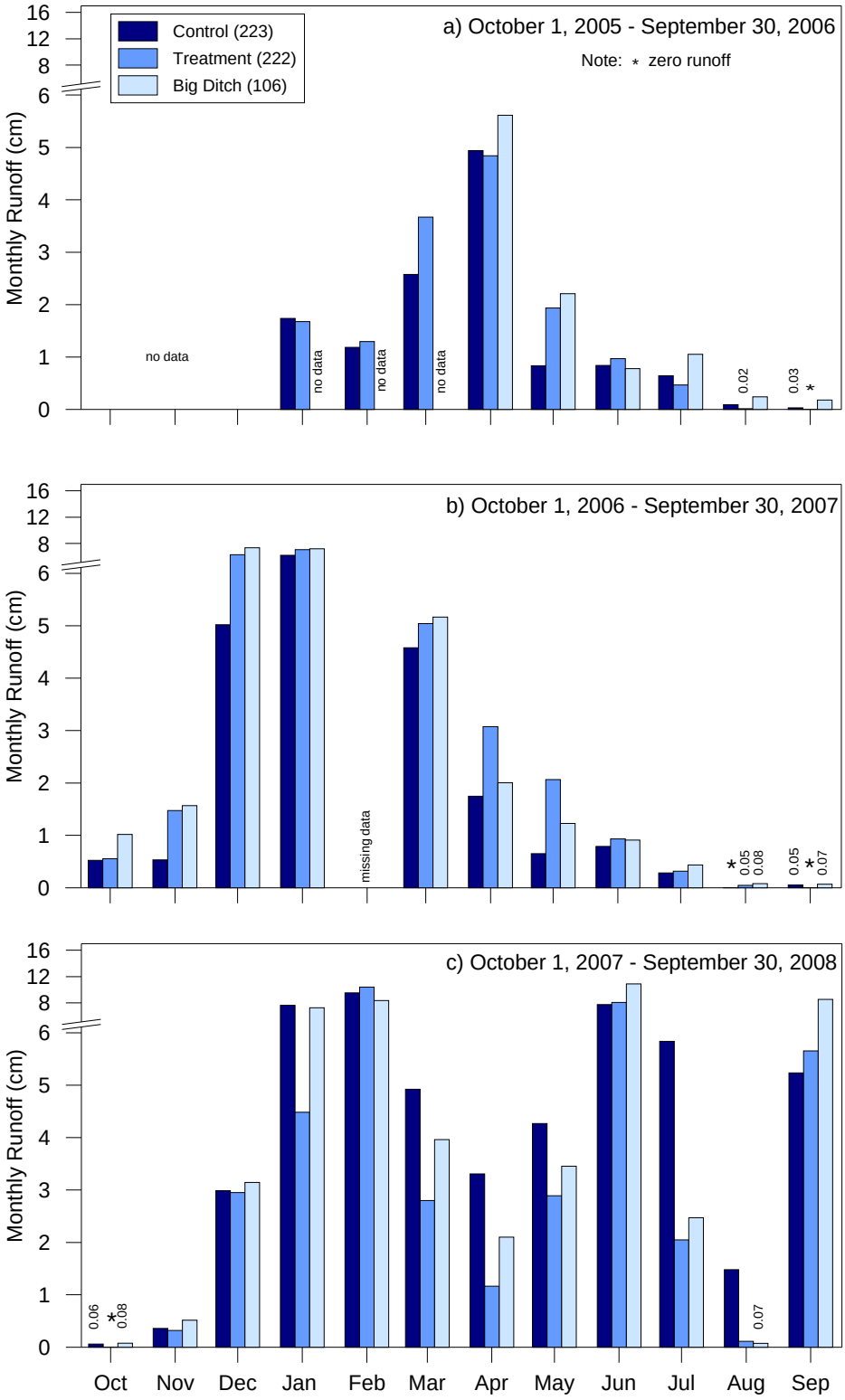


Figure 12. Monthly runoff for Champaign County stations: a) WY2006, b) WY2007, and c) WY2008

Nutrient Monitoring

The ISWS was tasked with monitoring nutrients for the nitrogen- and phosphorus-paired watersheds in the Upper Sangamon River watershed. Table 6 is a summary of the type and frequency of sampling at stations in the study area. Weekly and monthly samples were collected manually with a 1-liter glass jar, and additional samples were collected during as many storm events as possible through the use of an automated peristaltic pump sampler (ISCO model 6700) mounted to the bridge next to the streamgaging instruments (Figure 4). The streamgaging data logger was programmed to trigger sampling by the automated sampler bases on water-level readings. The monitoring stations (Macon and Champaign Counties) had water samples collected for laboratory analyses to determine the concentration of nitrogen species: nitrate (NO_3-N), ammonia (NH_4-N), and total Kjeldahl nitrogen (TKN). Samples were collected on a weekly basis for NO_3-N and on a monthly basis for NH_3-N and TKN. The phosphorus monitoring stations (Champaign County) had water samples collected for laboratory analyses to determine the concentration of phosphorous species: total phosphorous (t-P), total dissolved phosphorus (t-d-P), and ortho-phosphate (oPO_4-P) (which can be a significant fraction of dissolved reactive phosphorus). For further clarification of phosphorus species results, Table 6 shows in brackets other phosphorus terminology proposed by Haygarth and Sharpley (2000). Samples were collected on a weekly basis for t-P and on a monthly basis for d-t-P and o-P, and all phosphorus species were collected during as many storm events as possible. At the two Lake Decatur study stations (Friends [102] and Big Ditch [106]), water samples were manually collected for laboratory analyses to determine the concentration of nitrate-N on a weekly basis and during some storm events.

Table 6. Monitoring Station Sample Analyte and Frequency

	Macon County		***Champaign County***		***Lake Decatur Study***	
Analyte	*Kickapoo Creek (211^C) Control*	*Spring Creek **(212^T)** Treatment*	*Big Ditch **(222^T)** Treatment*	*Big Ditch (223^C) Control*	*Long Creek (101)*	*Friends Creek (102)*
Nitrate-N *(NO^-_3-N)*	W, S	W, S	W, S	W, S	W, S	W, S
Ammonium-N *(NH_4 - N)*	M, S	M, S	M, S	M, S	--	--
Total Kjeldahl Nitrogen *(TKN)*	M, S	M, S	M, S	M, S	--	--
Total P *(t-P)[TP unfiltered [1]]*	--	--	W, S	W, S	--	--
Total Dissolved P *(t-d-P)[TP <0.45 [1]]*	--	--	M, S	M, S	--	--
Ortho-phosphate *(oPO_4-P)* *[Reactive P, RP <0.45 [1]]*	--	--	M, S	M, S	--	--

Notes: *W – Weekly sampling; S – Sample 5-7 storms per year; M – Monthly sampling*
^{C} – Control watershed; ***^{T} – Treatment watershed***
[1] – Terminology for Phosphorus Transfer (Haygarth and Sharpley, 2000)

Nutrient management trials for nitrogen fertilizers were conducted in Macon and Champaign Counties; phosphorus fertilizers were conducted in Champaign County only. Each county had control and treatment watersheds for the trials. In Macon County, Kickapoo Creek (211) was the control watershed and Spring Creek (212) was the treatment watershed, herein referred to as Control (211) and Treatment (212). In Champaign County, Big Ditch (223) was the control watershed and Big Ditch (222) was the treatment watershed, Control (223) and Treatment (222), respectively.

Sample Collection, Preservation, and Handling

All water samples were collected in a 1-liter glass jar held inside an aluminum frame basket that was lowered on a line into the stream at the channel midpoint where the stream velocity is greatest. Samples were then brought back to the field vehicle and prepared for transportation to the ISWS Analytical Services Group laboratory for analysis. Preparation included recording water temperature and transferring water samples to predetermined polyethylene bottles for filtration and/or preservation. Specific container and preservation/filtration methods for each analyte can be found in Table 7. The station number, sample number, date and time of collection, and water temperature were recorded and labeled on the bottles. The samples were placed in a cooler kept at $<4^{\circ}$ C and transported to the laboratory for analysis. Storm samples collected by the ISCO automated pump samplers were retrieved from the field, iced, and temporarily stored in ISWS walk-in coolers. Within 24 hours of samples being collected by the ISCO, they were transferred to predetermined polyethylene bottles, labeled, and filtered and/or preserved at ISWS facilities, and delivered to the ISWS Analytical Services Group laboratory for analysis. A more detailed description of the sample collection protocol can be found in *Quality Assurance Project Plan: Upper Sangamon River Targeted Watershed Project* (Agricultural Watershed Institute, 2005) on file with the Agricultural Watershed Institute.

Analytical Methods and QA/QC Procedures

Laboratory analyses of nitrogen and phosphorus samples followed Illinois Environmental Protection Agency (IEPA) methods and were analyzed by the ISWS Analytical Services Group. Table 7 outlines for each nutrient the analytical methods, containers, preservation, and holding times. The analytical methods and laboratory procedures in the ISWS Champaign Laboratory, Analytical Services Group, can be found on file with the Center for Chemistry and Technology (Illinois State Water Survey, 2007).

The collection of water samples for water quality analysis followed several quality assurance/quality control (QA/QC) procedures. Each glass sample jar used to collect samples from the stream was first rinsed with deionized water and then resident stream water before the actual sample was collected at each station. This prevented cross-contamination among stations. Each polyethylene bottle used for storing samples was pre-cleaned according to the IEPA method specifications and was never reused.

Every week, one field blank was taken to determine if contamination of the sample bottles had occurred. This consisted of pouring deionized water into the glass bottle used to collect samples in the field, then processing the water like a normal sample. One out of every 10 samples was analyzed in duplicate to provide a test of laboratory precision. To evaluate the sample matrix, 1 out of every 10 samples the laboratory analyzed was spiked with a known amount of analyte and the recovery monitored. Blanks and spiked blanks were also carried throughout the procedure. To evaluate instrument calibration, separate-source and same-source check solutions/standards were analyzed.

The minimum concentration of a substance is delineated by the method detection limit (MDL). The MDL is defined as that analyte concentration that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis in a given matrix of a sample containing the analyte. MDLs were determined according to EPA protocol (40 CFR Part 136, Appendix B). Seven replicate aliquots of spiked reagent water were processed through the entire analytical method. The MDL was calculated as: MDL = (t) x (S), where t = the student's T value for a 99 percent confidence level and a standard deviation estimate with n-1 degrees of freedom [t = 3.14 for seven replicates], and S = the standard deviation of the replicate analyses. A concentration at the MDL is usually identified by the less-than sign (<) to the left of the value.

Table 7. Sample Nutrients, Analytical Methods, Container, Preservation, Storage, and Holding Times

Nutrient	*Method*	*Container*	*Preservation*	*Holding Time*
nitrate-N, NO_3-N	EPA 300.0[1]	HDPE[6], 60 mL (a)	filter (0.45µm), 4°C	48 hours
ortho-phosphate, o-PO_4, as phosphorus	EPA 365.1[2]	HDPE, 60 mL (a)	filter (0.45µm), 4°C	48 hours
total phosphorus, dissolved, t-d-P	EPA 365.4[3]	HDPE, 250 mL (b)	filter (0.45µm), 0.2% H_2SO_4	28 days
ammonia-N, NH_4-N	EPA 350.1[4]	HDPE, 60 mL (c)	0.2% H_2SO_4	28 days
total Kjeldahl nitrogen, TKN	EPA 351.2[5]	HDPE, 250 mL (c)	0.2% H_2SO_4	28 days
total phosphorus, t-P	EPA 365.4	HDPE, 250 mL (c)	0.2% H_2SO_4	28 days

[1] U. S. Environmental Protection Agency, 1993; [2] U. S. Environmental Protection Agency, 1993; [3]U. S. Environmental Protection Agency, 1983; [4] U. S. Environmental Protection Agency, 1993; [5] U. S. Environmental Protection Agency, 1993; [6] High density polyethylene container
[Note: Samples require 3 bottles per sample: (a), (b), and (c).]

It should be noted that expected relationships generally occur between concentrations of phosphorus or nitrogen species. For example, o-PO_4 concentrations should be less than and equal to t-d-P, t-P greater than o-PO_4-P or t-d-P, or TKN greater than NH_4. Some concentrations for samples collected in this study fell just outside these formal relationships. However, for most of these occurrences the differences in concentrations were small and within method detection limits (MDL) and instrument calibration limits. In these instances, the concentrations are equal within analytical precision. The few instances for which differences were greater are flagged and noted in Appendices C and D.

Nitrogen and Phosphorus Concentrations

The nitrogen and phosphorus sample concentration data collected during the monitoring period at the four project stations are located in Appendix C of this report. The nitrate-N concentration data for the two Lake Decatur study stations, Friends (102) and Big Ditch (106), can be found in Appendix E of Keefer et al. (2010). Tables 8 and 9 summarize the annual mean, minimum, and maximum nitrogen and phosphorus sample concentrations for each station from WY2006 to WY2008, respectively. Figures 13–24 present all nitrate-nitrogen (NO_3-N), total Kjeldahl nitrogen (TKN), and ammonium (NH_4-N) sample concentration data for the WY2005–2008 monitoring period. The concentration data are presented by water year and stations grouped by Macon or Champaign County. Figures 25–30 present all ortho-phosphate (oPO_4-P), total dissolved phosphorus (t-P-dissolved), and total phosphorus (t-P) sample concentration data for the same period.

Table 8. Annual Mean, Minimum, and Maximum Nitrogen Concentrations for WY2006–2008

Nitrate - N (NO^-_3 - N)

Station	Water year 2006			Water year 2007			Water year 2008		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
211[C]	0.29	9.86	19.00	1.81	6.04	8.67	0.20	7.79	16.65
212[T]	0.87	**12.96**	**19.26**	6.74	**10.43**	**17.17**	1.39	**9.75**	**15.82**
102	0.65	7.12	14.67	0.23	6.54	10.36	0.06	6.87	13.95
223[C]	0.07	7.21	12.64	0.07	6.11	13.67	1.28	6.02	13.87
222[T]	0.07	**11.14**	**17.16**	0.07	**10.30**	**16.59**	0.07	**10.32**	**16.99**
106	0.07	6.87	13.81	0.07	6.66	12.66	0.07	7.13	14.81

Total Kjeldahl nitrogen (TKN)

Station	Water year 2006			Water year 2007			Water year 2008		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
211[C]	0.06	0.12	0.61	0.06	0.08	0.26	0.06	0.10	0.74
212[T]	**0.19**	**0.48**	**2.65**	**0.26**	**0.61**	**1.43**	**0.19**	**1.30**	**4.65**
223[C]	0.32	1.85	10.38	0.23	1.33	4.36	0.26	2.00	22.42
222[T]	**0.24**	**0.81**	**2.57**	**0.26**	**0.91**	**2.54**	**0.18**	**2.49**	**18.42**

Ammonium (NH_4 - N)

Station	Water year 2006			Water year 2007			Water year 2008		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
211[C]	0.06	0.12	0.61	0.06	0.08	0.26	0.10	0.06	0.74
212[T]	**0.06**	**0.06**	**0.13**	**0.06**	**0.09**	**0.31**	**0.06**	**0.06**	**0.19**
223[C]	0.06	0.16	0.79	0.05	0.15	0.86	0.06	0.17	1.98
222[T]	**0.06**	**0.10**	**0.41**	**0.02**	**0.12**	**0.44**	**0.06**	**0.13**	**1.81**

[C] – Control watershed; ***[T] – Treatment watershed***

Table 9. Annual Mean, Minimum, and Maximum Phosphorus Concentrations for WY2006–2008

Ortho-phosphate (oPO_4-P)

Station	*Water year 2006*			*Water year 2007*			*Water year 2008*		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
223[C]	0.02	0.11	0.71	0.02	0.19	0.79	0.01	0.27	2.01
222[T]	**0.02**	**0.15**	**0.73**	**0.02**	**0.16**	**0.67**	**0.01**	**0.21**	**0.71**

Total dissolved phosphorus (t-d-P)

Station	*Water year 2006*			*Water year 2007*			*Water year 2008*		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
223[C]	0.05	0.13	0.72	0.03	0.20	0.76	0.04	0.26	2.24
222[T]	**0.04**	**0.16**	**0.67**	**0.05**	**0.17**	**0.65**	**0.05**	**0.24**	**1.69**

Total phosphorus (t-P)

Station	*Water year 2006*			*Water year 2007*			*Water year 2008*		
	Min	*Mean*	*Max*	*Min*	*Mean*	*Max*	*Min*	*Mean*	*Max*
223[C]	0.05	0.34	2.71	0.05	0.30	1.58	0.04	0.58	5.81
222[T]	**0.05**	**0.20**	**1.00**	**0.05**	**0.24**	**1.82**	**0.05**	**0.65**	**5.00**

[C] – Control watershed; ***[T] – Treatment watershed***

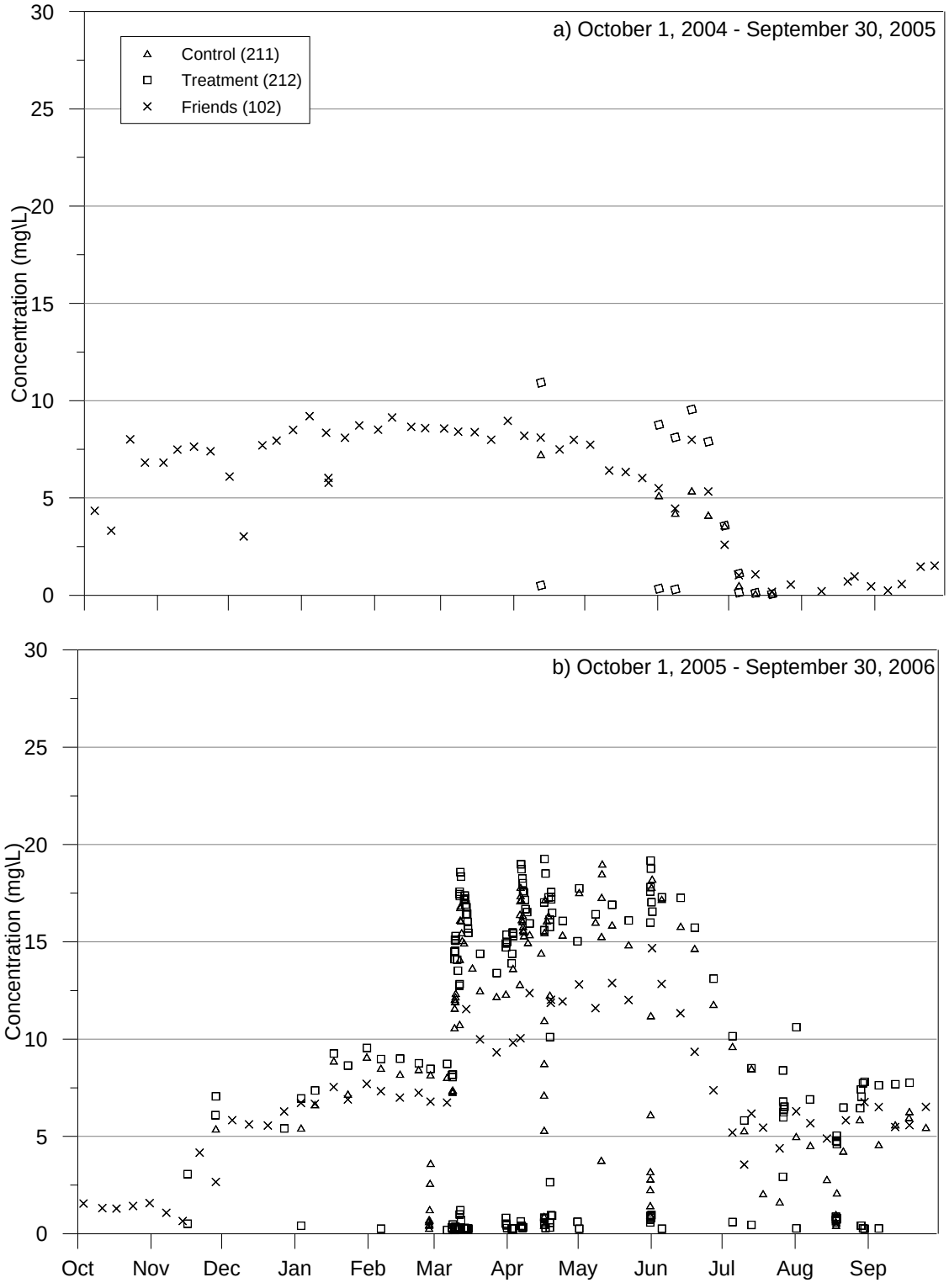


Figure 13. Nitrate-N concentrations for Macon County stations: a) WY2005 and b) WY2006

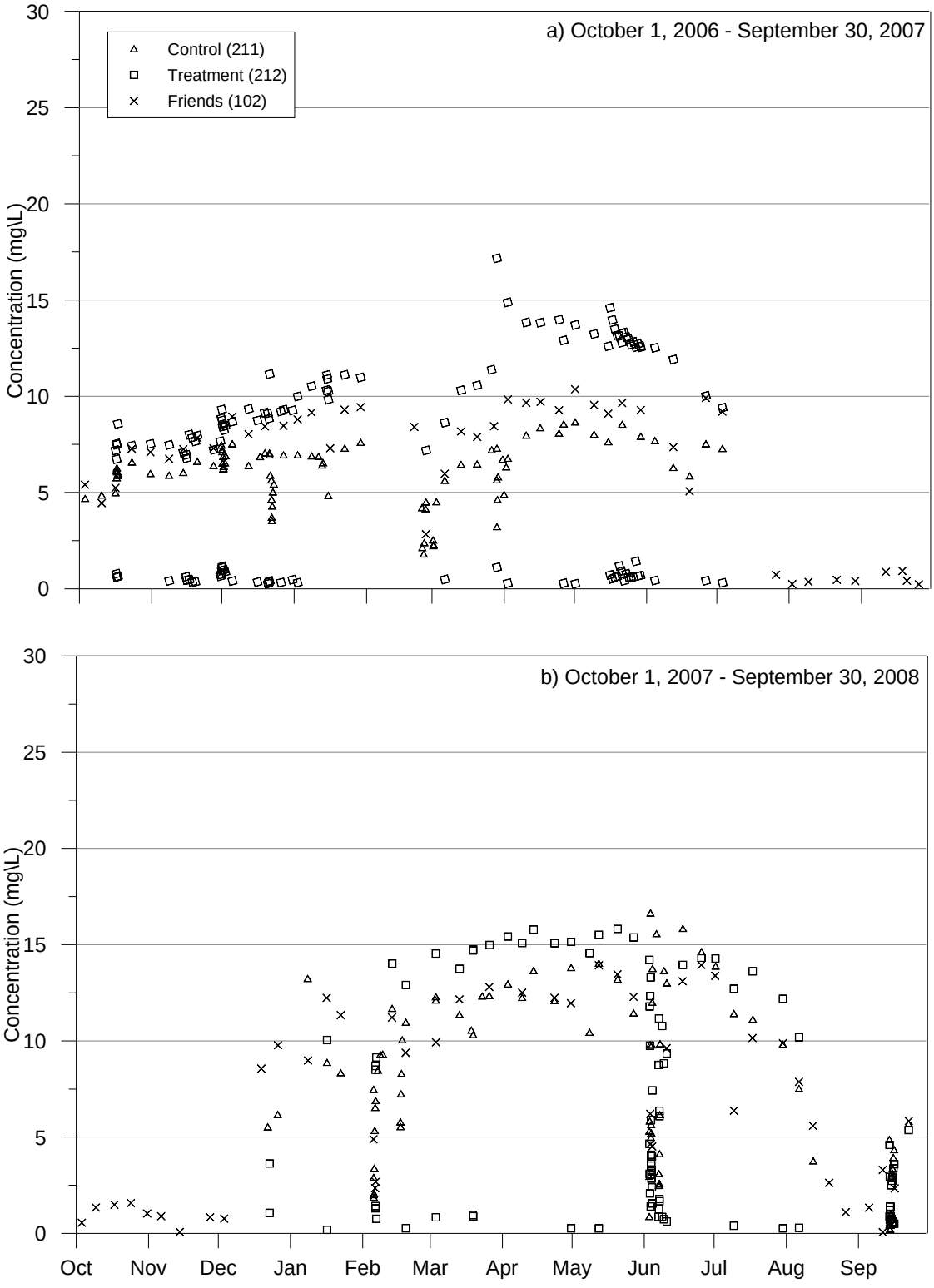


Figure 14. Nitrate-N concentrations for Macon County stations: a) WY2007 and b) WY2008

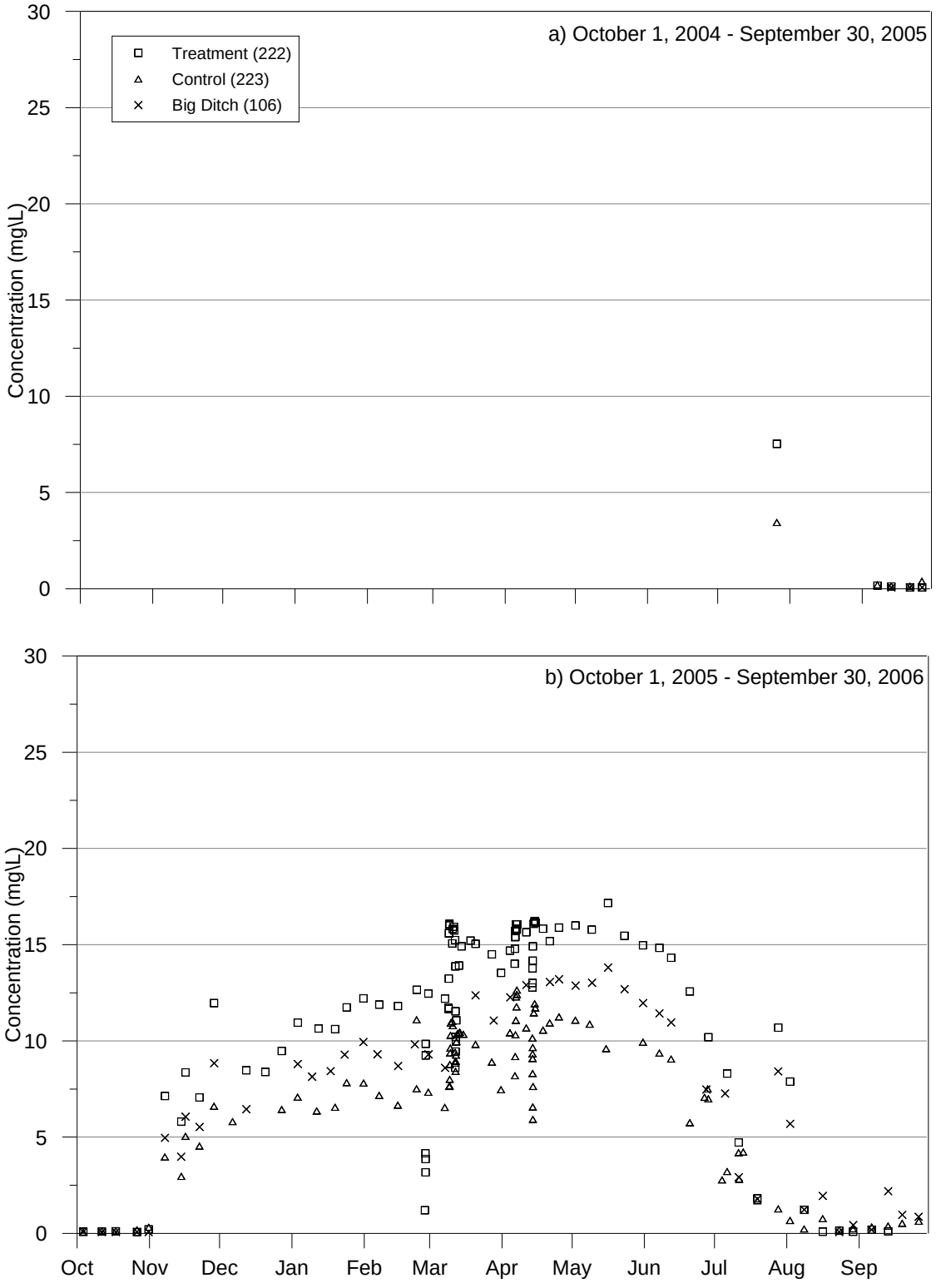


Figure 15. Nitrate-N concentrations for Champaign County stations:
a) WY2005 and b) WY2006

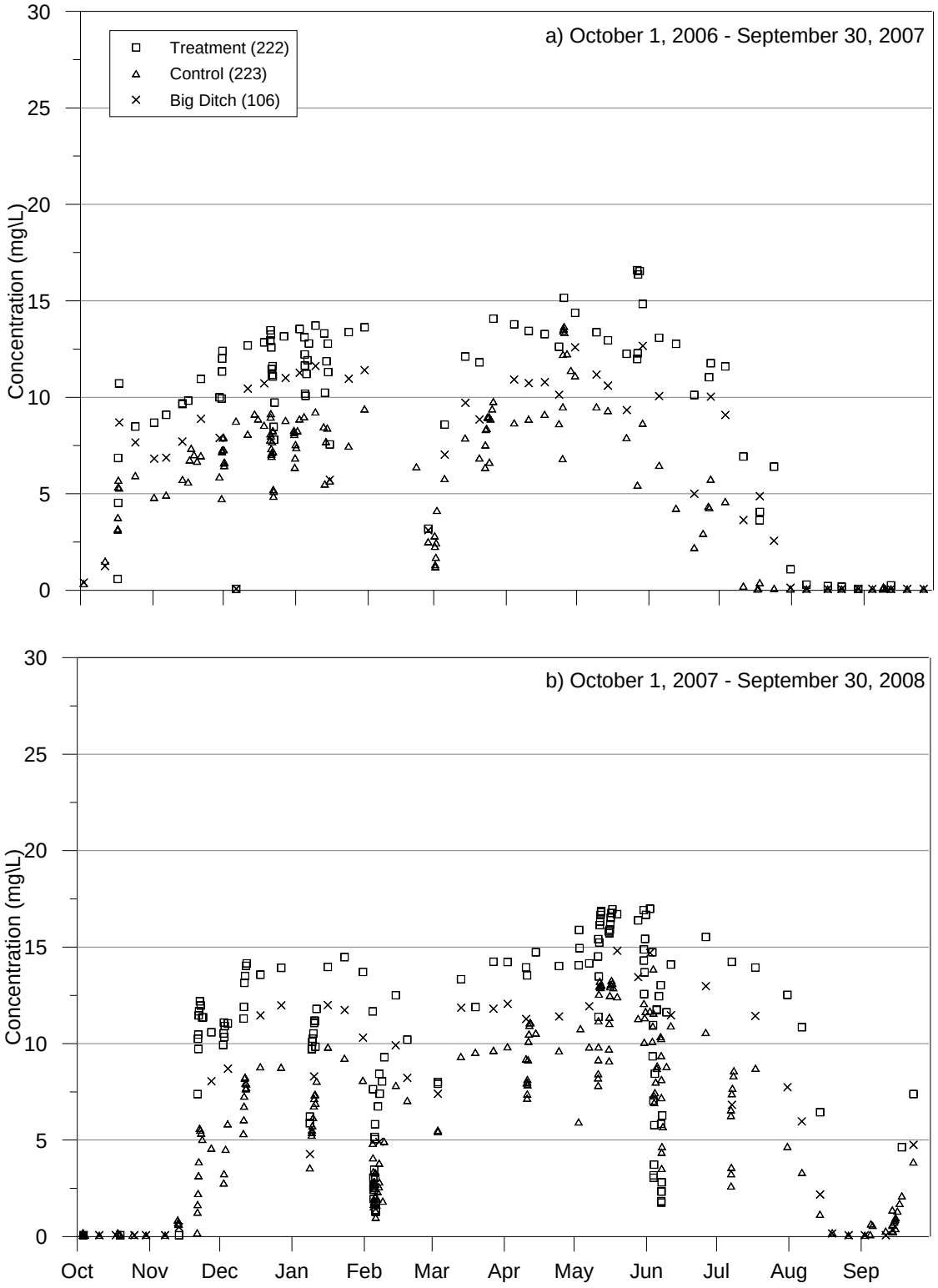


Figure 16. Nitrate-N concentrations for Champaign County stations:
a) WY2007 and b) WY2008

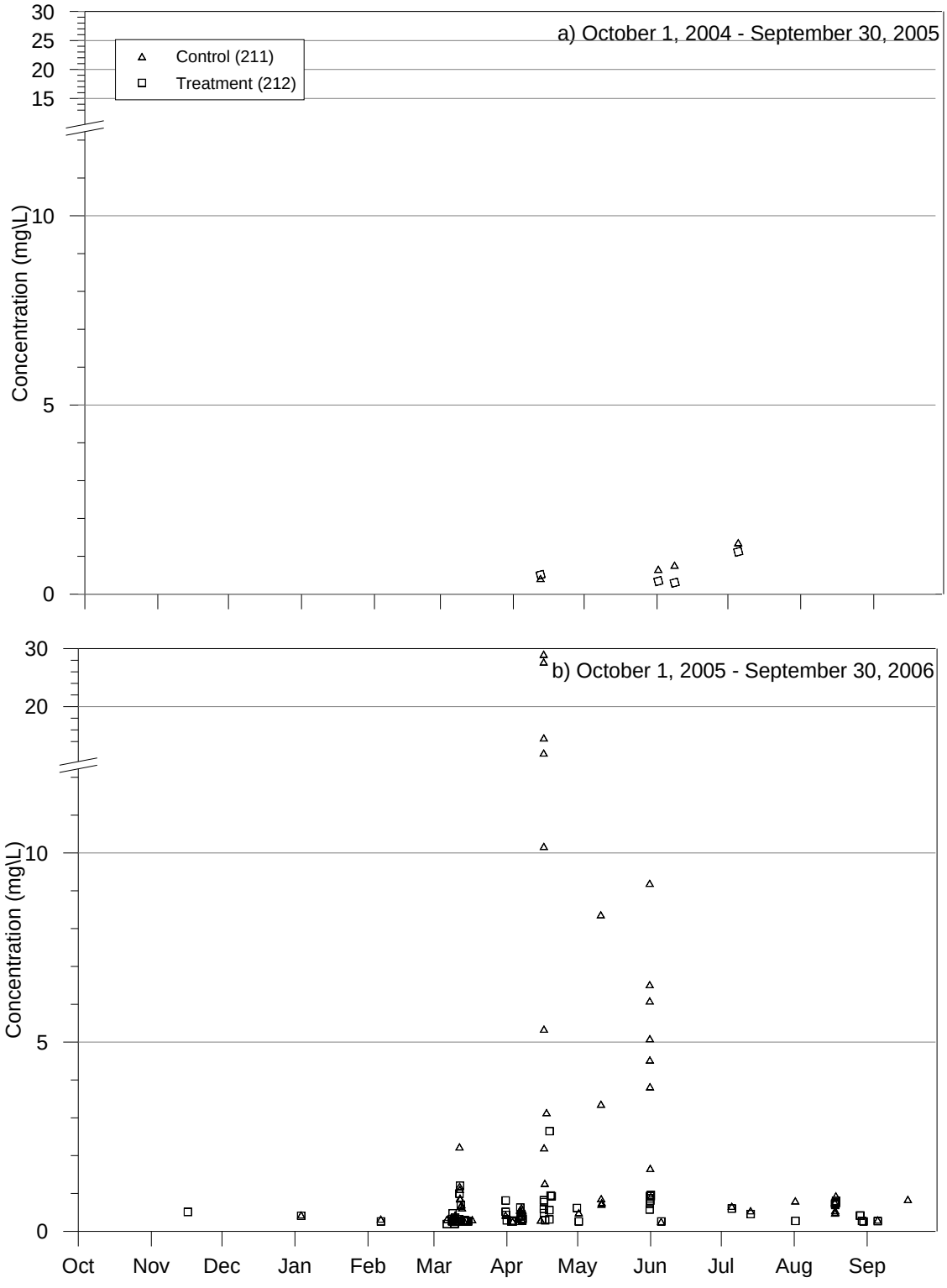


Figure 17. Total Kjeldahl nitrogen concentrations for Macon County stations: a) WY2005 and b) WY2006

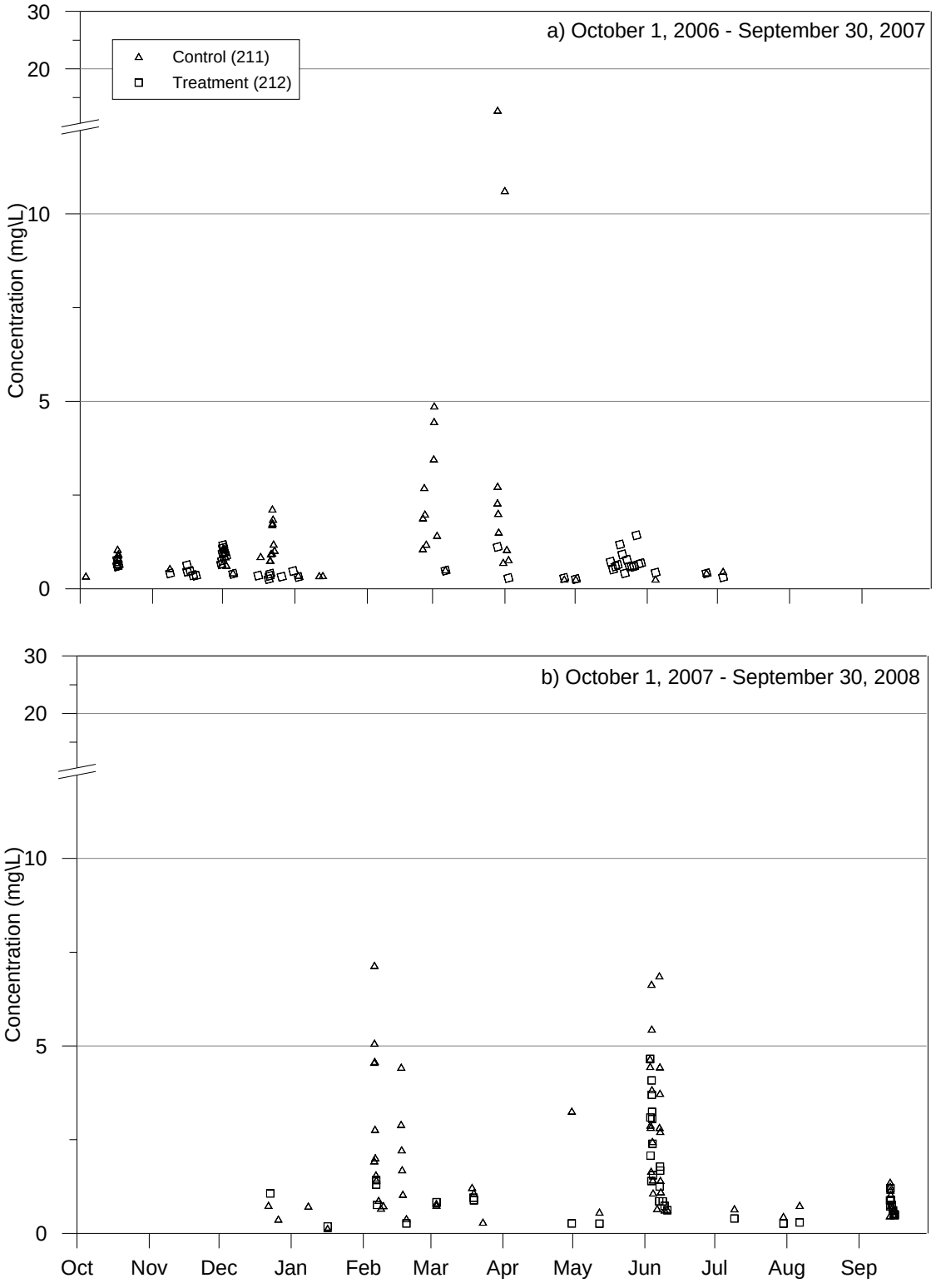


Figure 18. Total Kjeldahl nitrogen concentrations for Macon County stations: a) WY2007 and b) WY2008

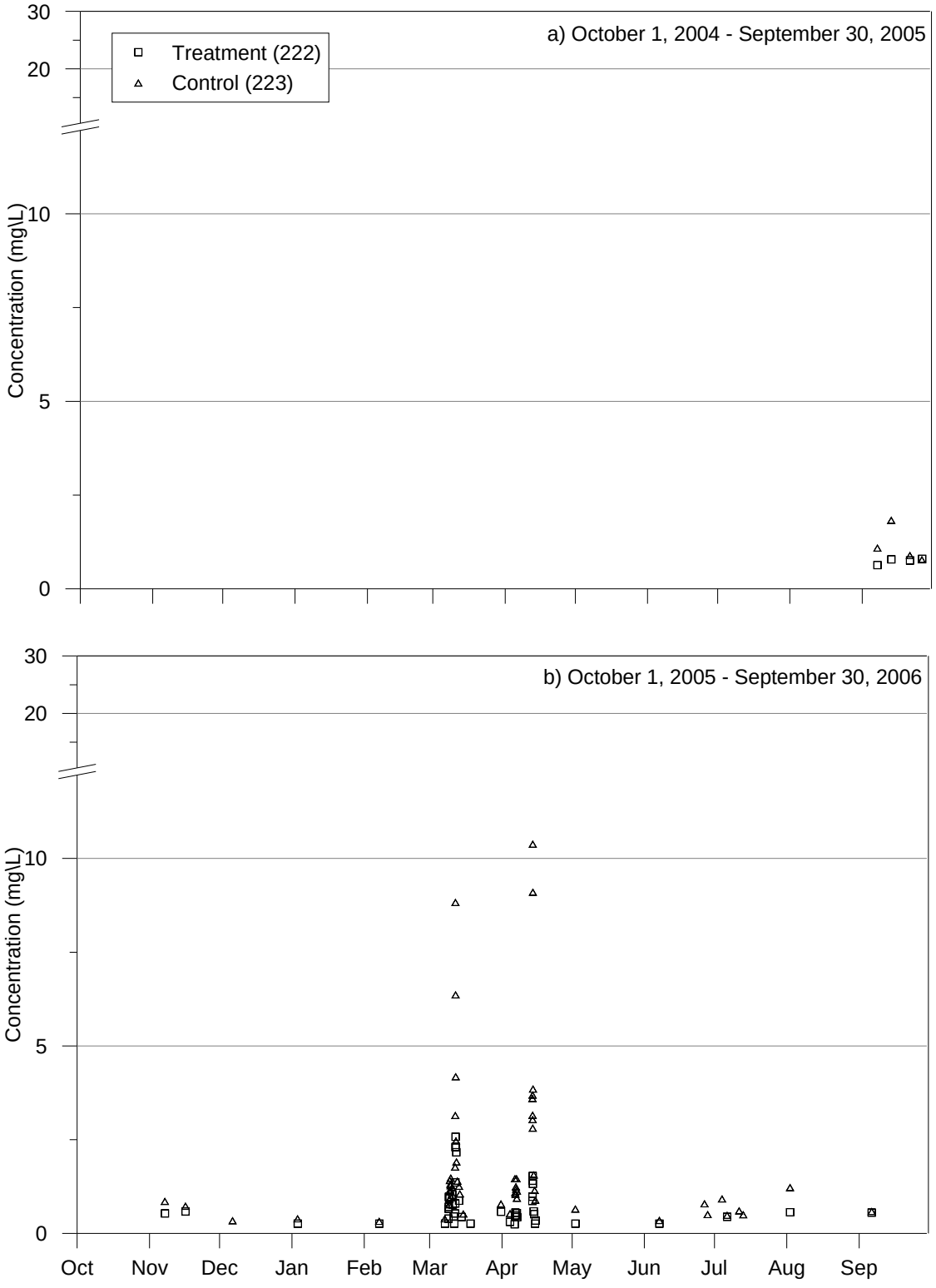


Figure 19. Total Kjeldahl nitrogen concentrations for Champaign County stations: a) WY2005 and b) WY2006

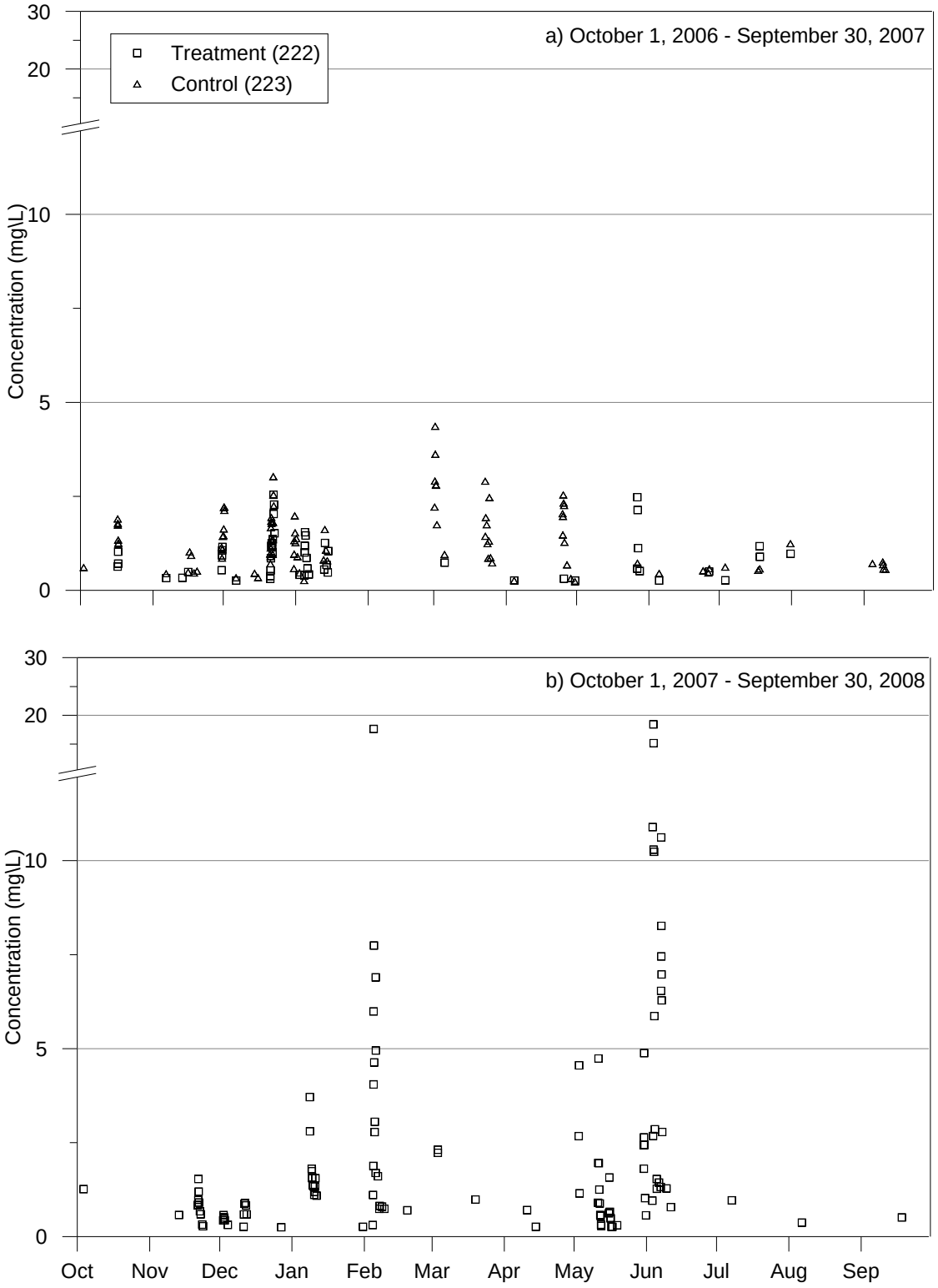


Figure 20. Total Kjeldahl nitrogen concentrations for Champaign County stations: a) WY2007 and b) WY2008

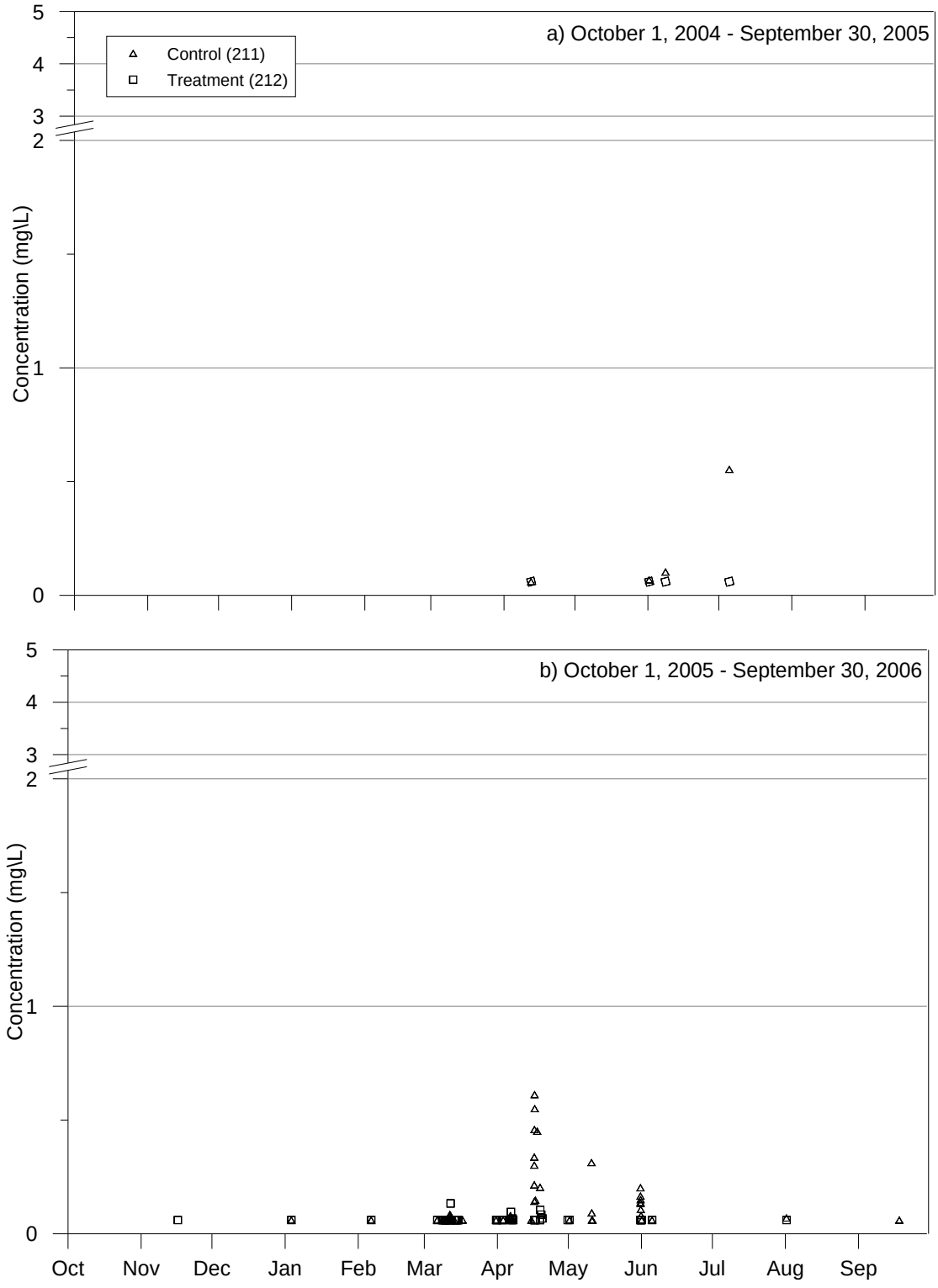


Figure 21. Ammonium-N concentrations for Macon County stations: a) WY2005 and b) WY2006

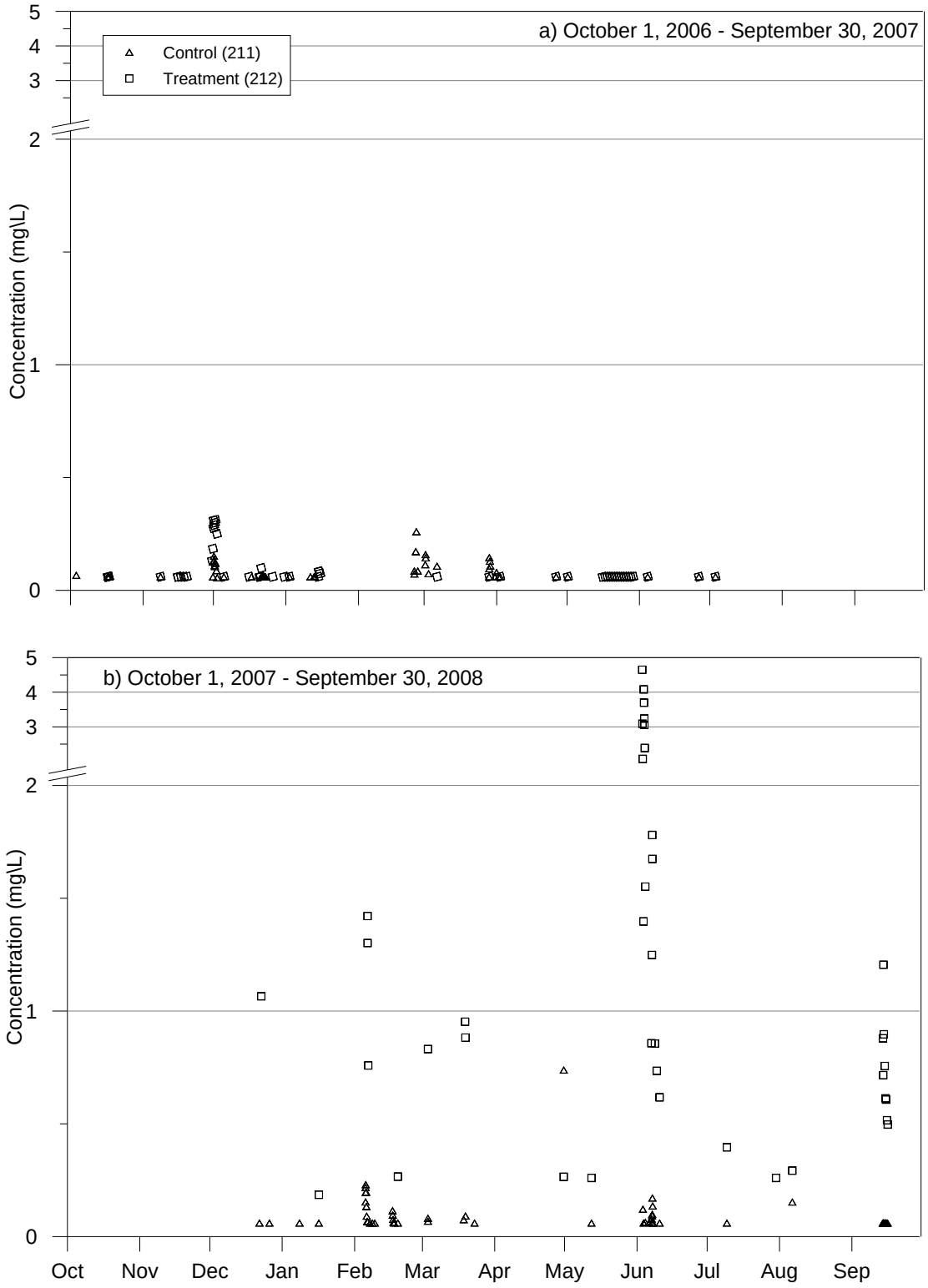


Figure 22. Ammonium-N concentrations for Macon County stations: a) WY2007 and b) WY2008

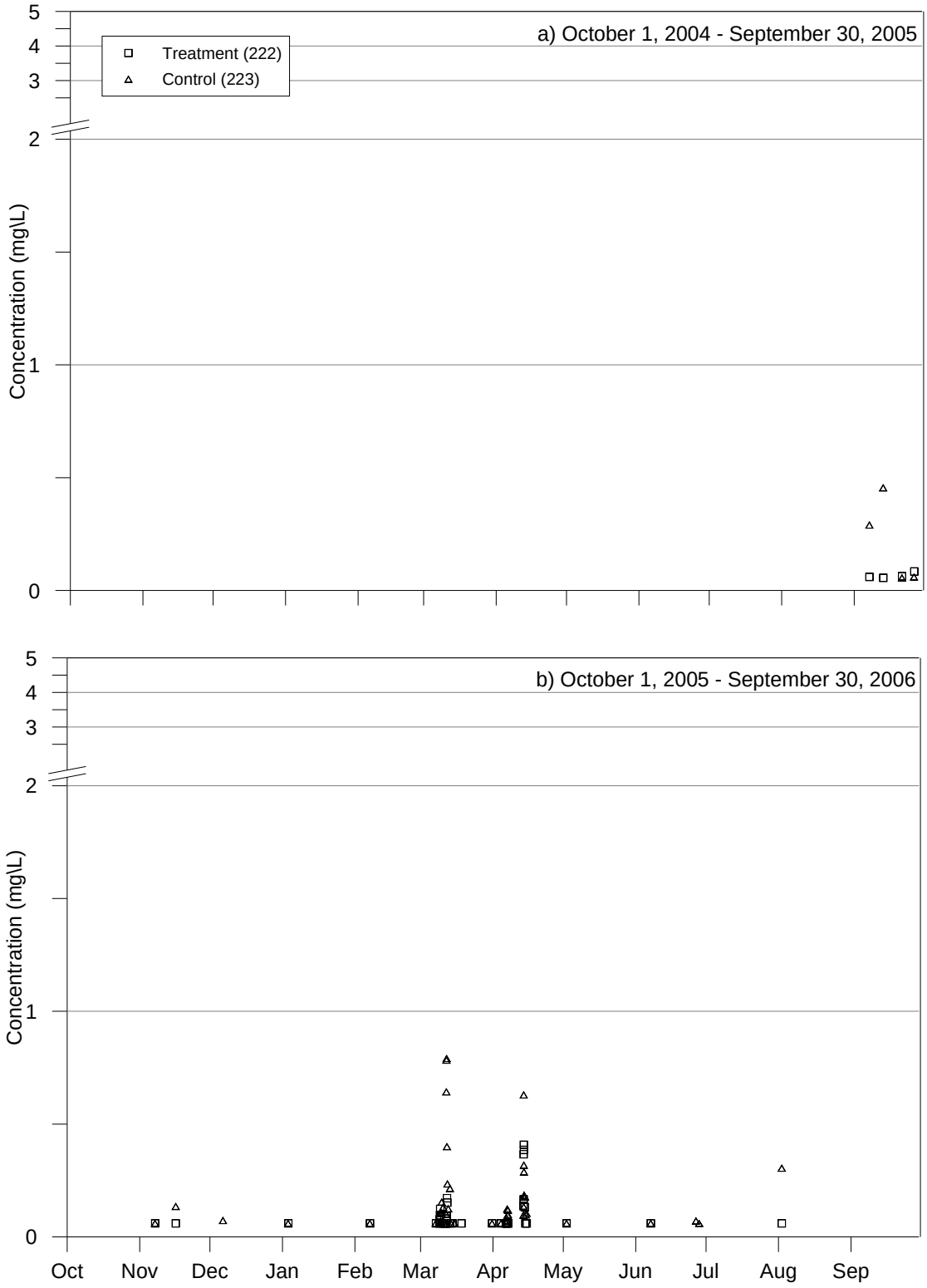


Figure 23. Ammonium-N concentrations for Champaign County stations:
a) WY2005 and b) WY2006

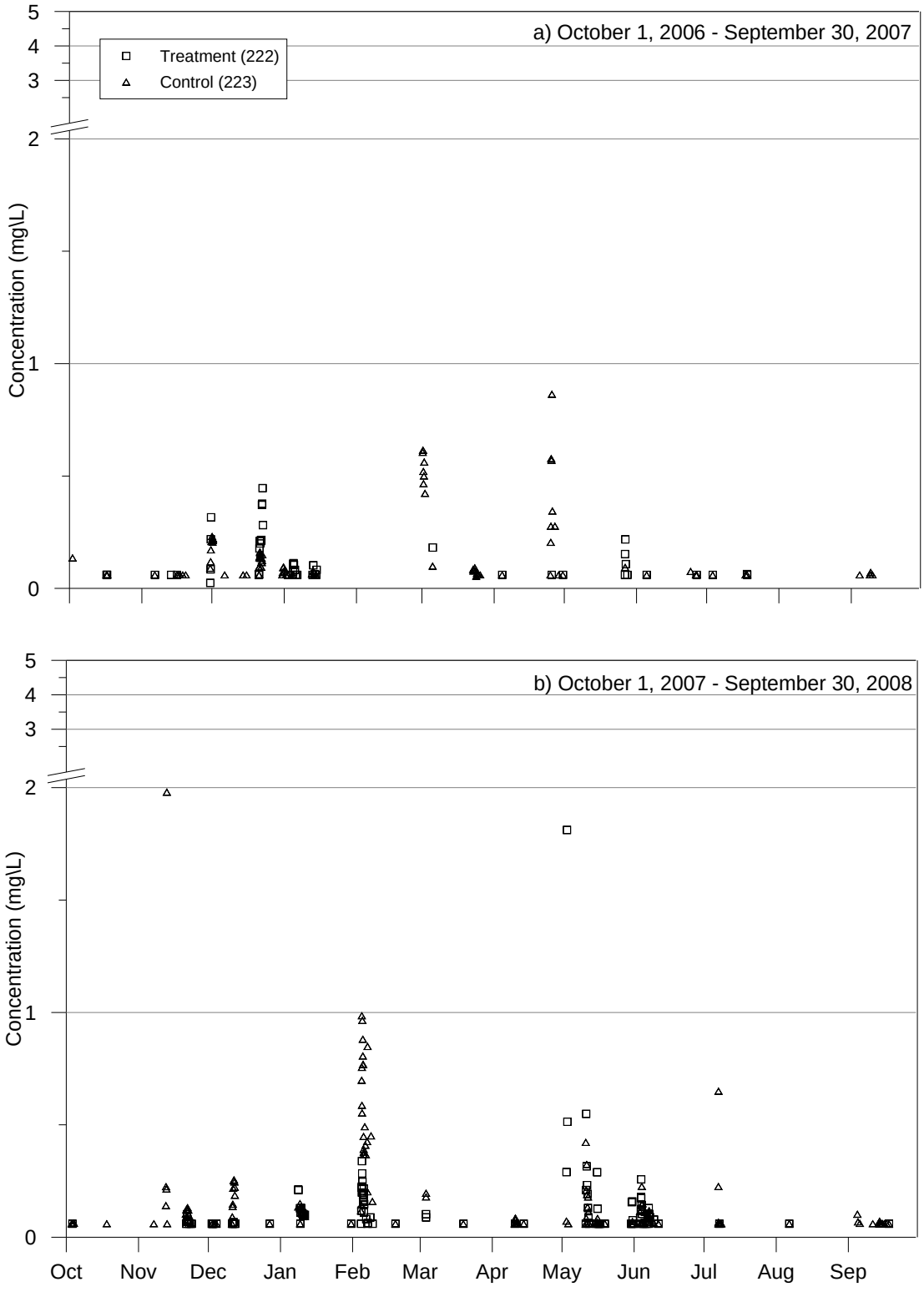


Figure 24. Ammonium-N concentrations for Champaign County stations:
a) WY2007 and b) WY2008

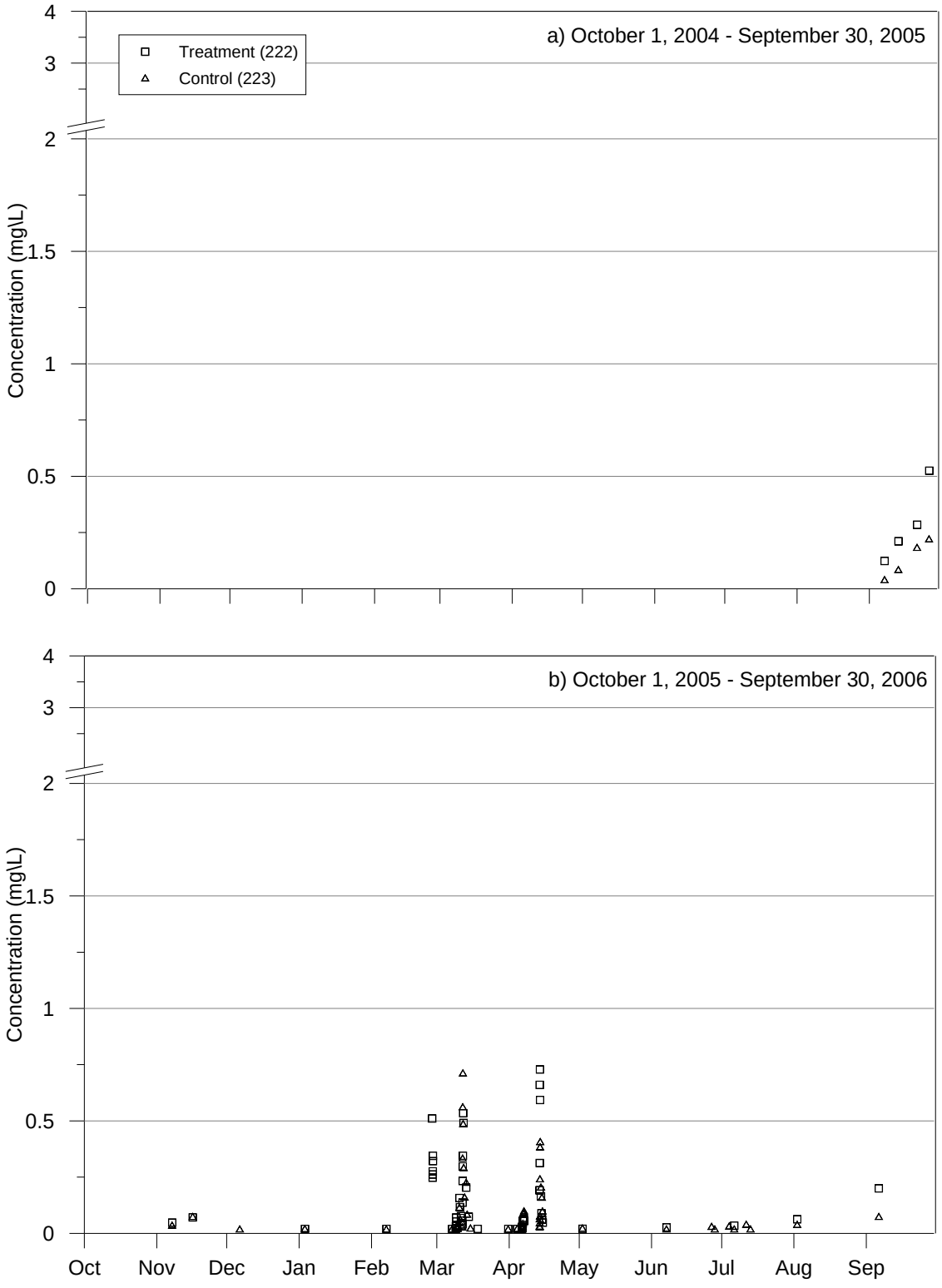


Figure 25. Ortho-phosphate concentrations for Champaign County stations:
a) WY2005 and b) WY2006

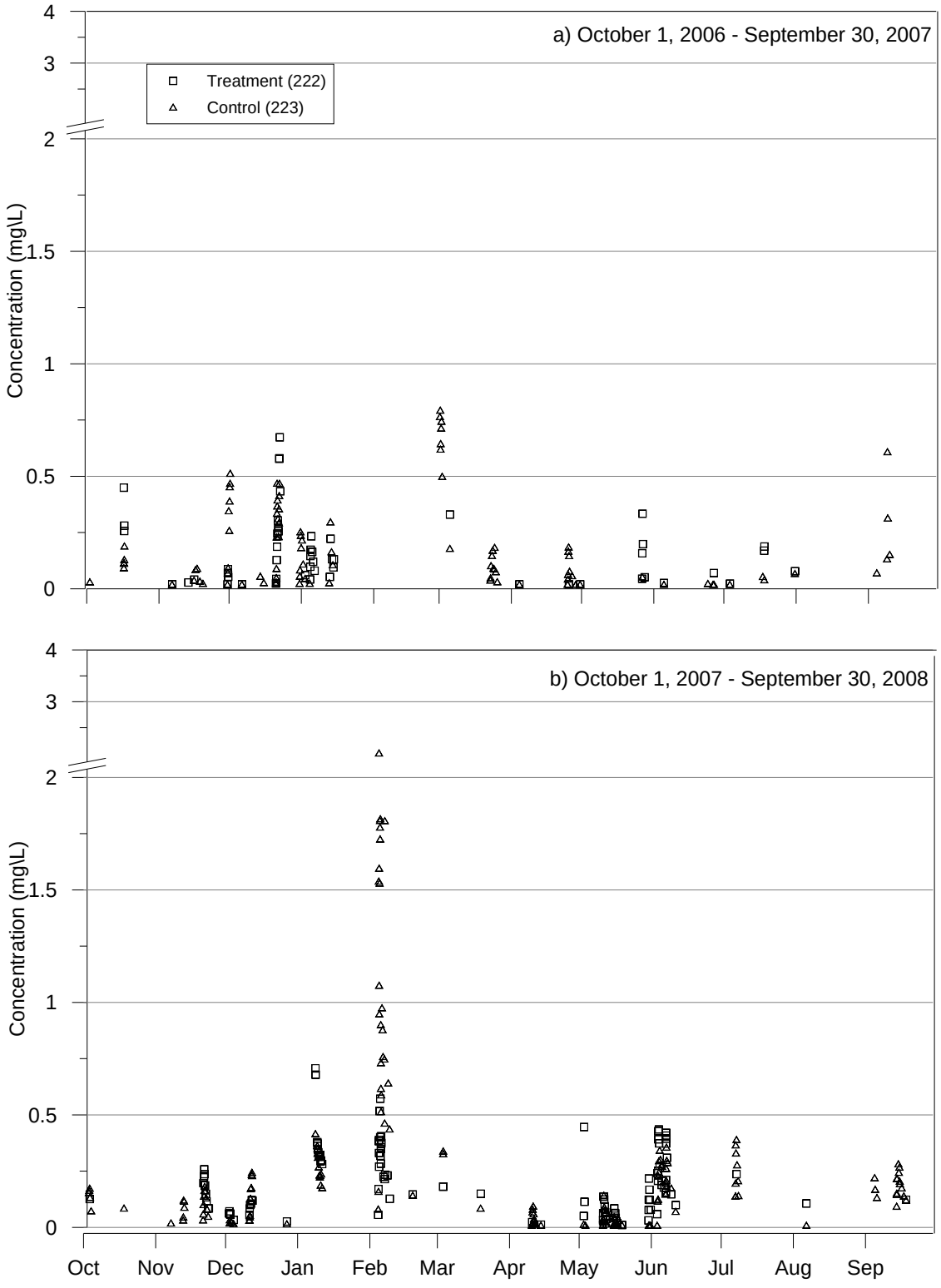


Figure 26. Ortho-phosphate concentrations for Champaign County stations: a) WY2007 and b) WY2008

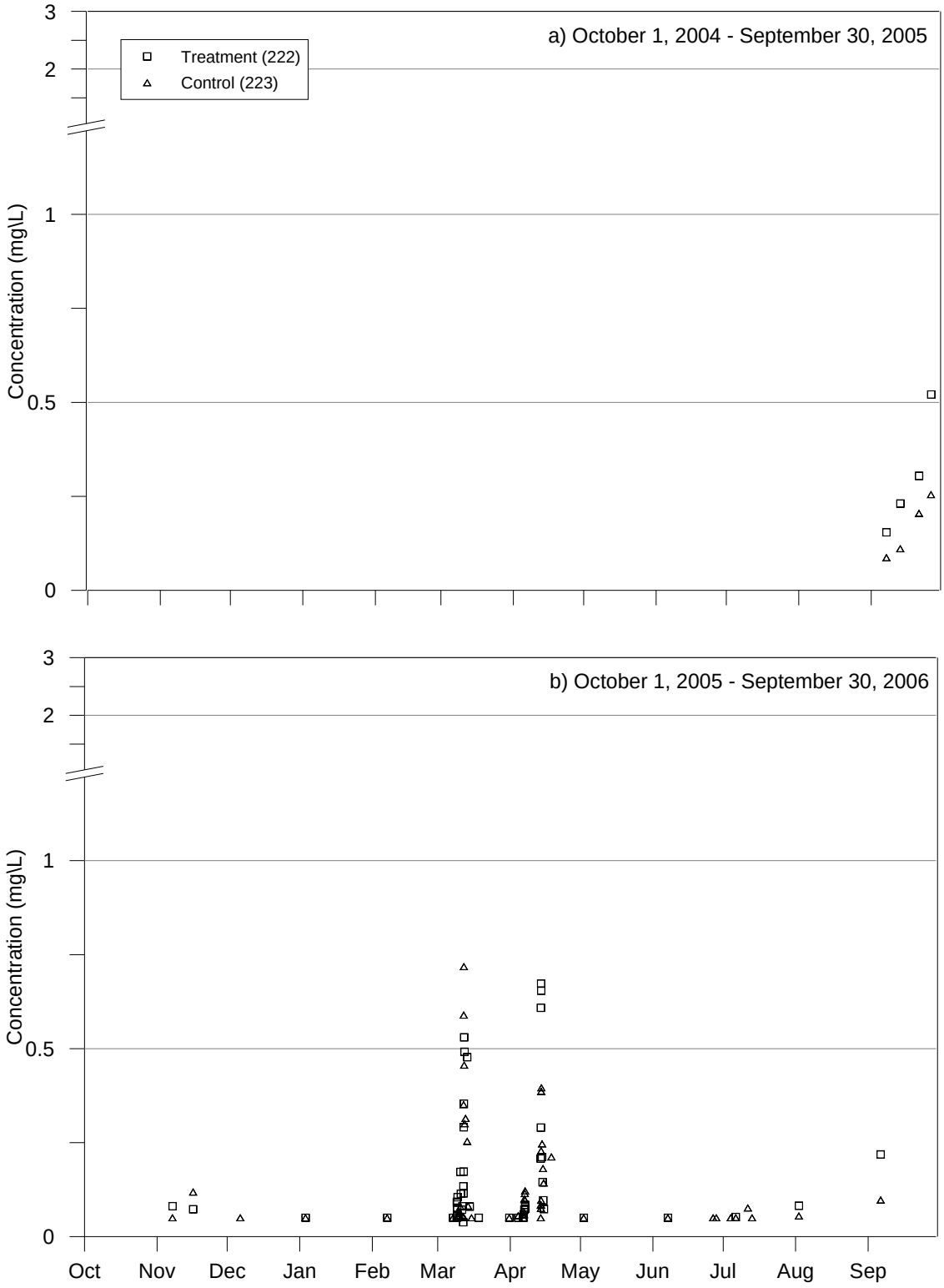


Figure 27. Total dissolved phosphorus concentrations for Champaign County stations: a) WY2005 and b) WY2006

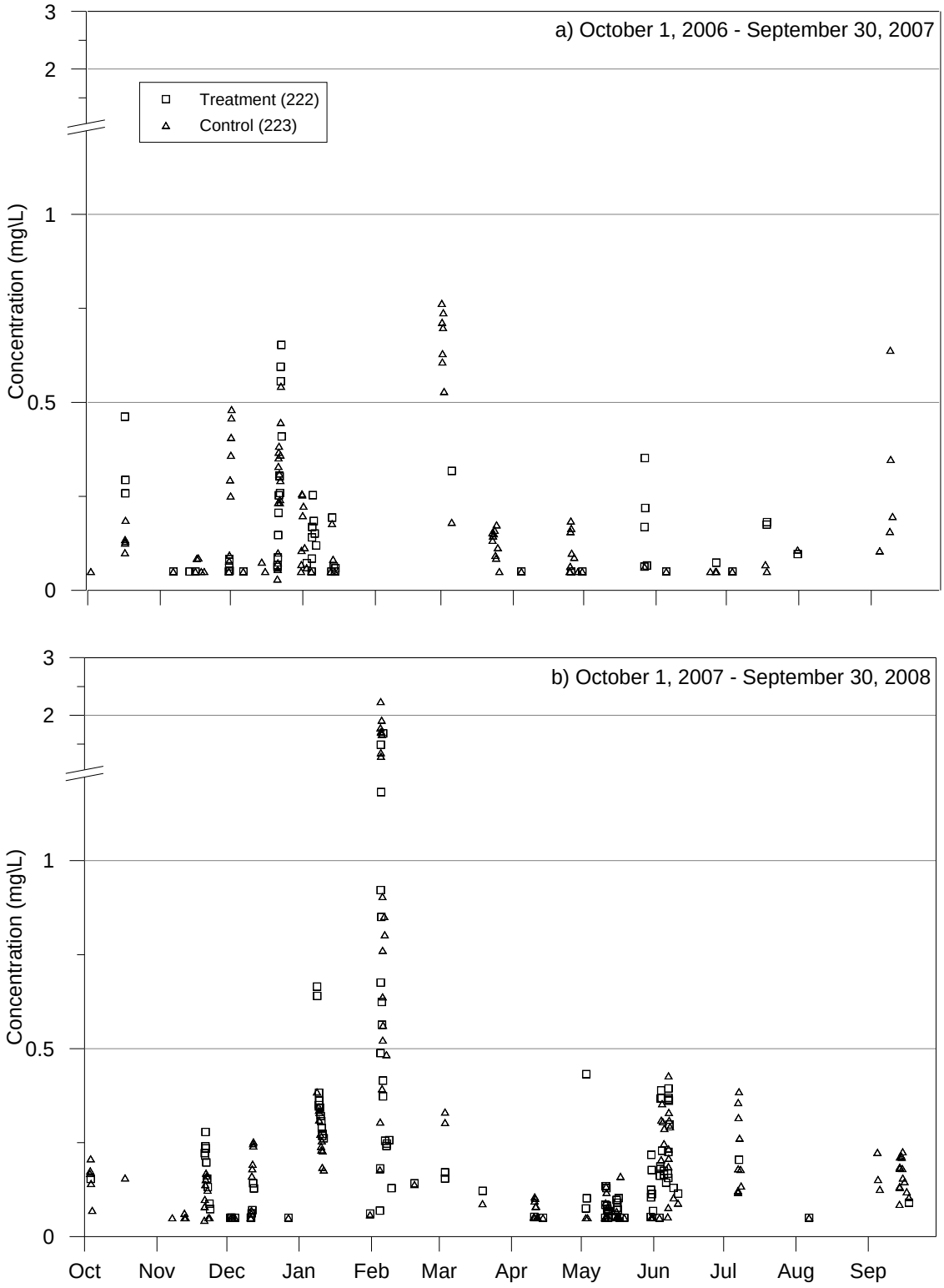


Figure 28. Total dissolved phosphorus concentrations for Champaign County stations: a) WY2007 and b) WY2008

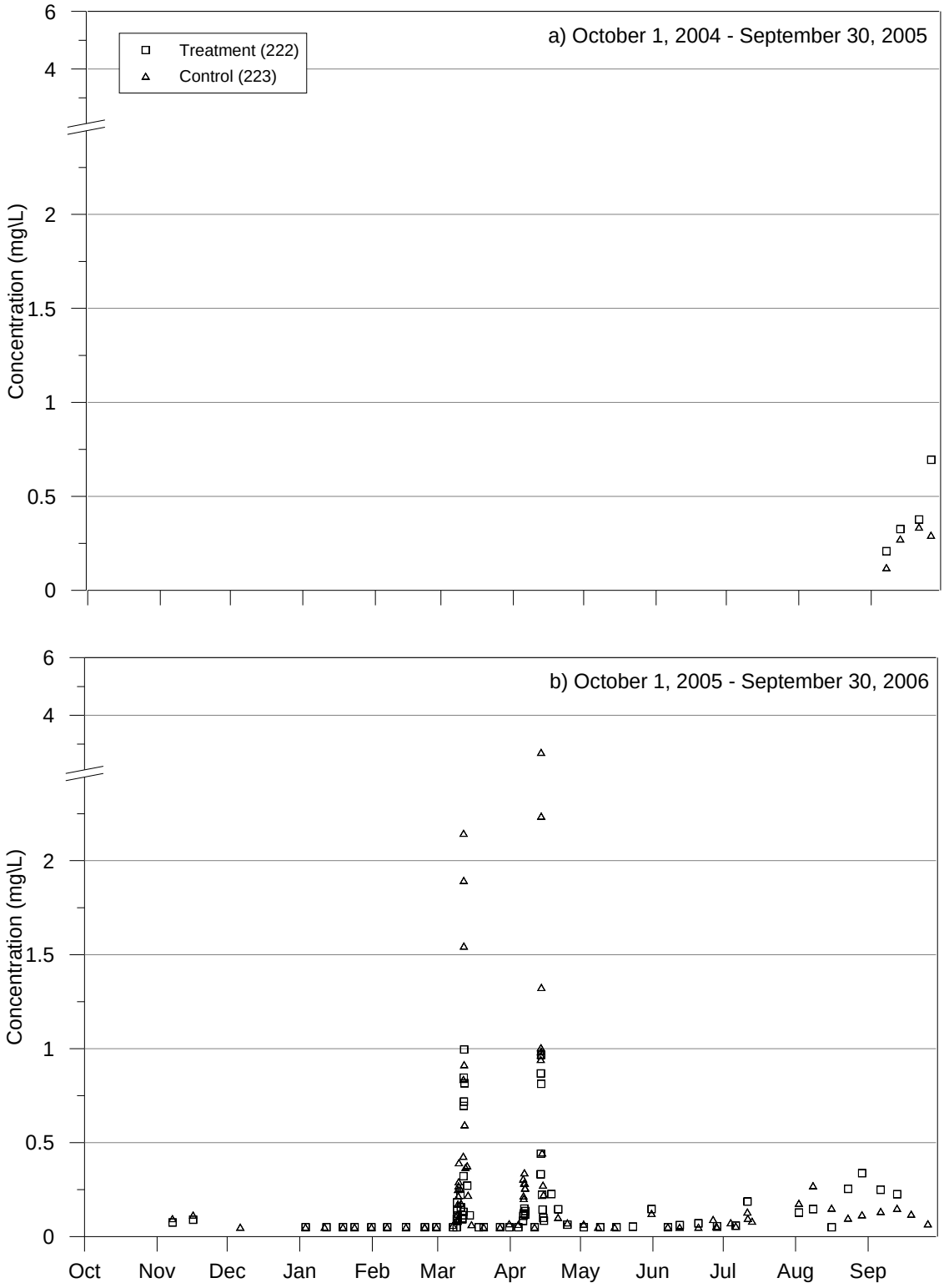


Figure 29. Total phosphorus concentrations for Champaign County stations: a) WY2005 and b) WY2006

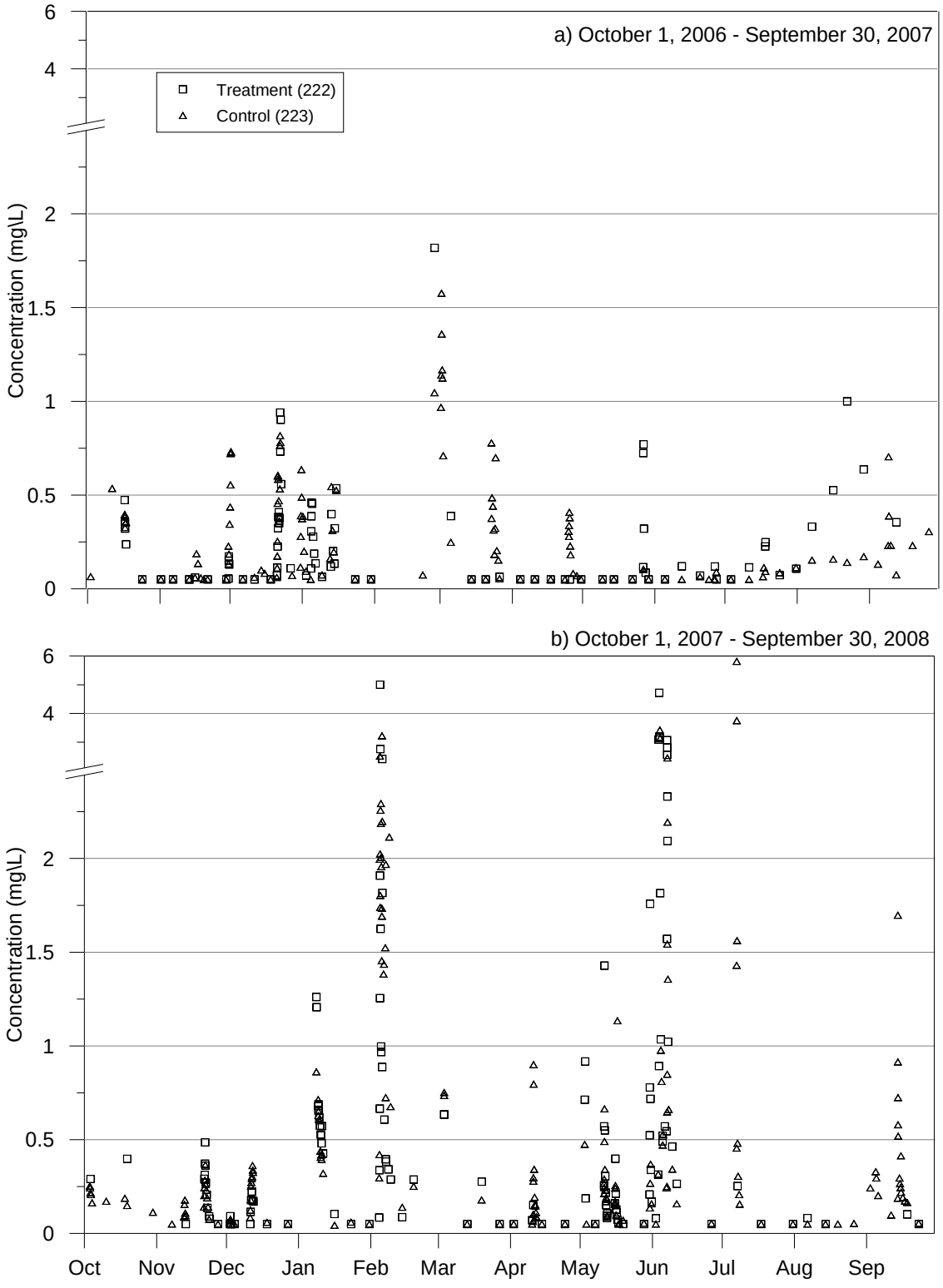
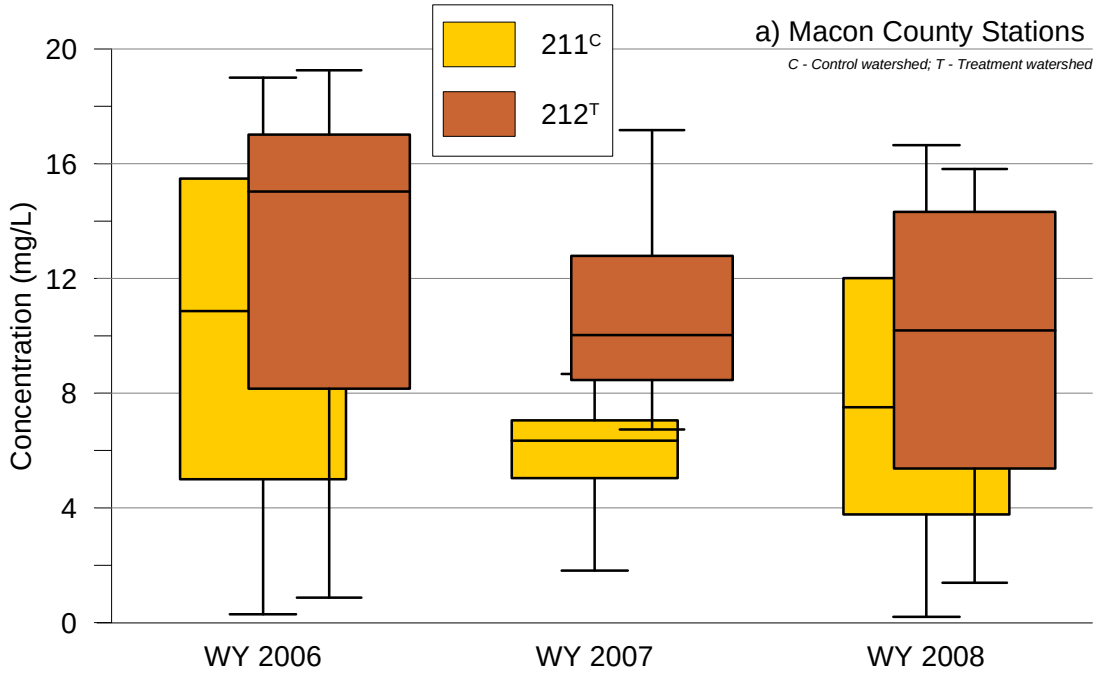


Figure 30. Total phosphorus concentrations for Champaign County stations: a) WY2007 and b) WY2008

Nitrogen and Phosphorus Concentration and Yield Distributions

The previous section presented nutrient sample concentration data over time (Figures 15–30), illustrating the variability of concentrations throughout the year. The following figures illustrate the annual distribution of the nutrient concentration data using general summary statistics in the form of box plots. The box plot divides the annual (water year) concentration data into quartiles and shows the minimum, maximum, and median values as lines and the lower and upper quartiles (interquartile) as a box. This division can reveal whether the observed data are skewed or evenly split in distribution around the median (central tendency). Therefore, the character of these distributions can facilitate broad comparisons of data between stations for discrete time periods.

Box plots were constructed for the nitrogen and phosphorus sample concentration data by water year (WY2006–WY2008) and are shown in Figures 31–36. Tables 10 and 11 show the annual minimum, 1st quartile, median, 3rd quartile, and maximum concentration (5-point) values. Nitrogen and phosphorus yields in grams per hectare (g/ha) were computed for each sample concentration data point using the associated discharge value from the streamflow record; they appear in Appendix C and D, respectively. In cases where a method detection limit (MDL) is reported as the sample concentration value (e.g., <0.06 mg/L), the less-than sign is disregarded and the MDL value is used to compute the yield for that sample. Box plots were then constructed for the yield data that are shown in Figures 37–42, and 5-point values are shown in Tables 12 and 13.



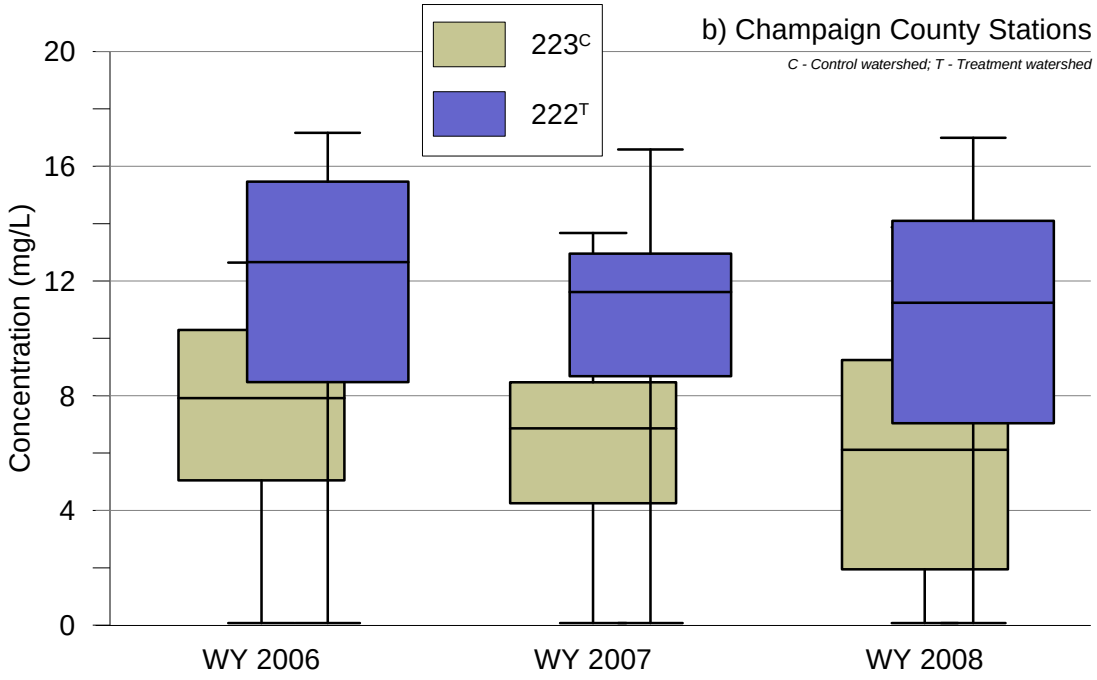


Figure 31. Quartile distribution of instantaneous nitrate-N concentrations: a) Macon County stations and b) Champaign County stations

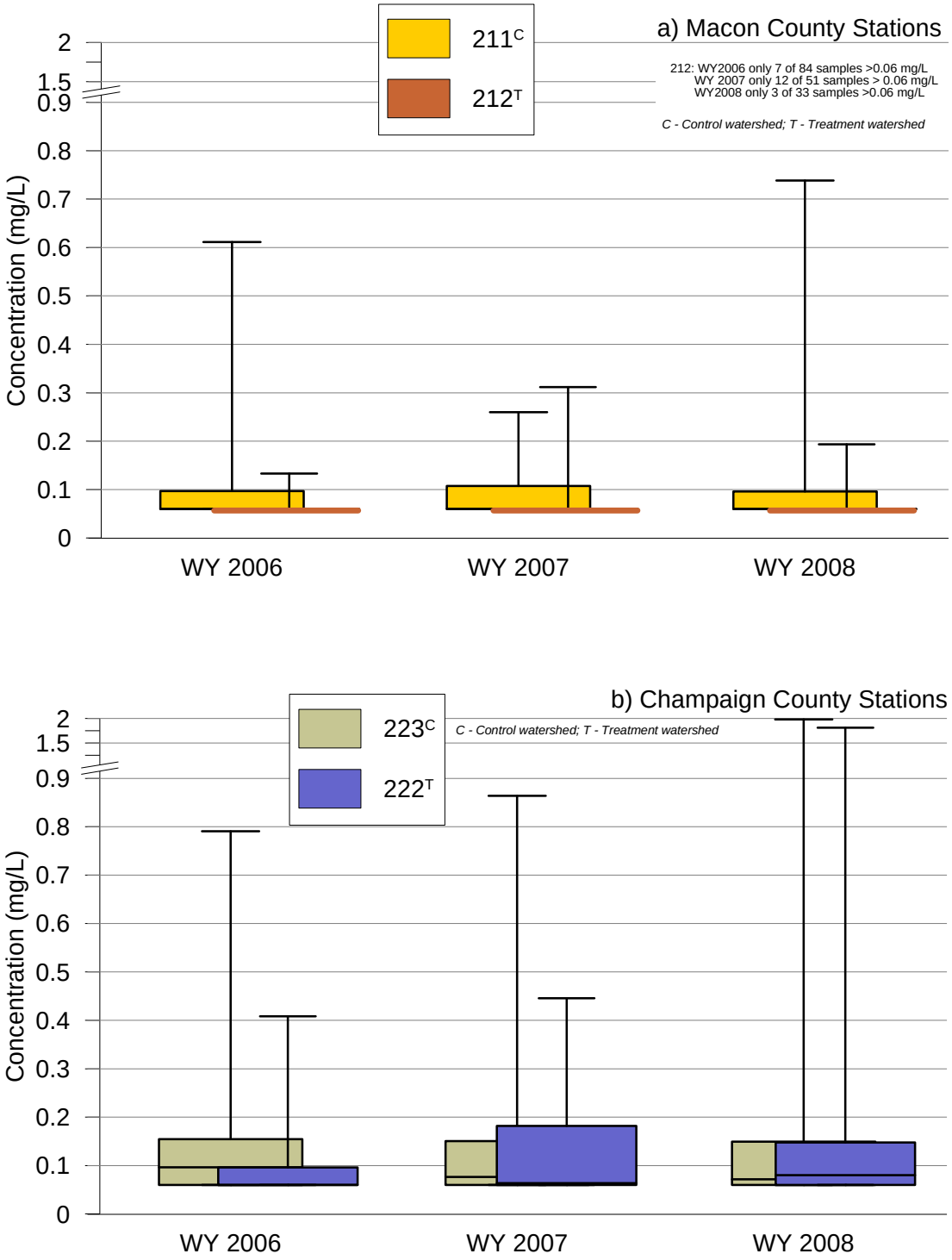


Figure 32. Quartile distribution of instantaneous ammonium-N concentrations: a) Macon County stations and b) Champaign County stations

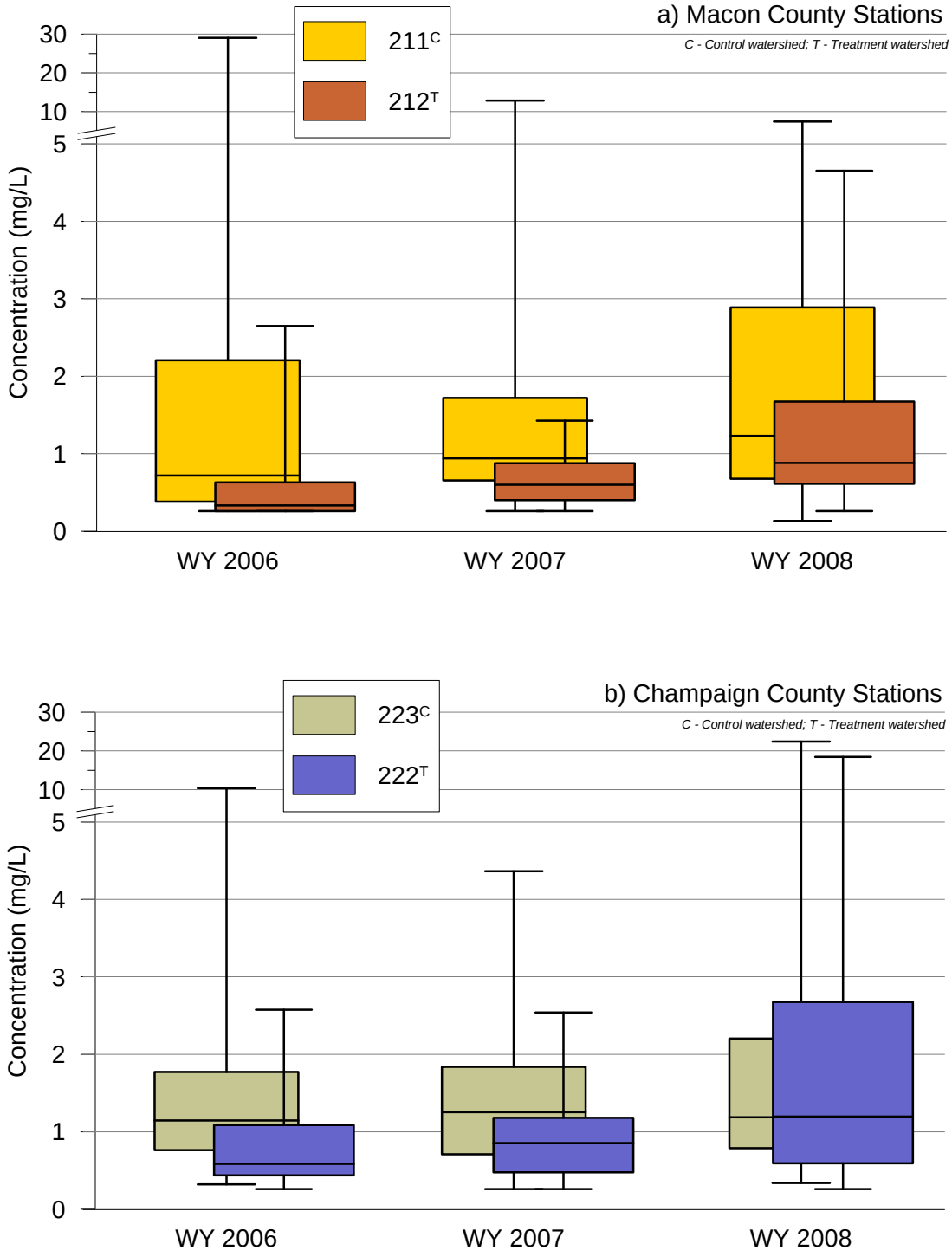


Figure 33. Quartile distribution of instantaneous TKN concentrations:
a) Macon County stations and b) Champaign County stations

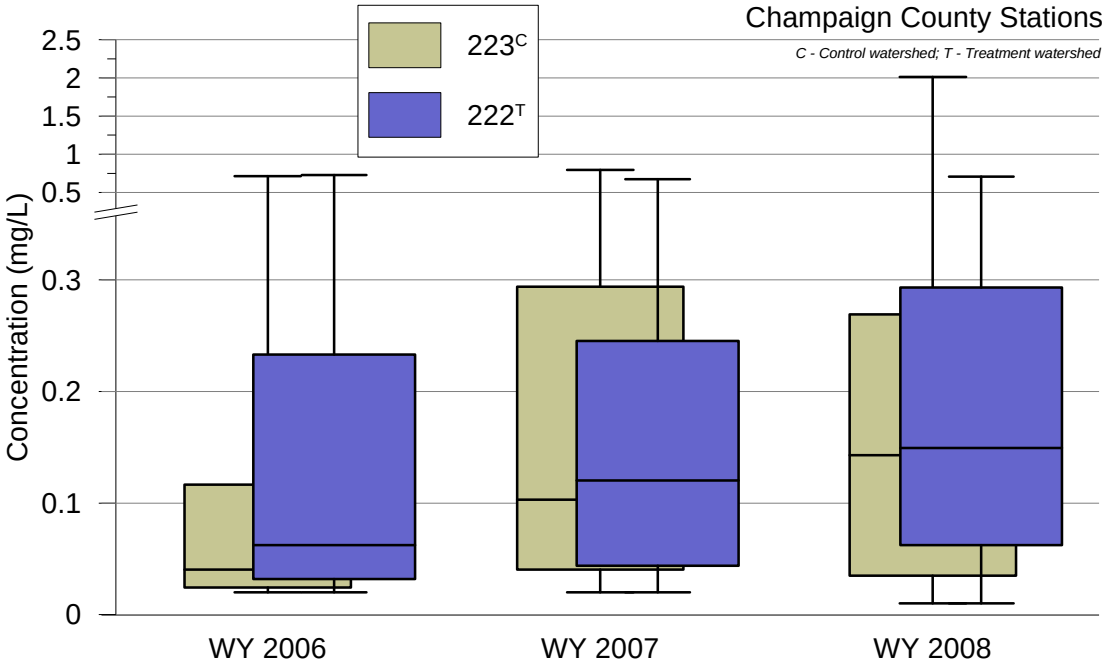


Figure 34. Quartile distribution of instantaneous ortho-phosphate concentrations at Champaign County stations

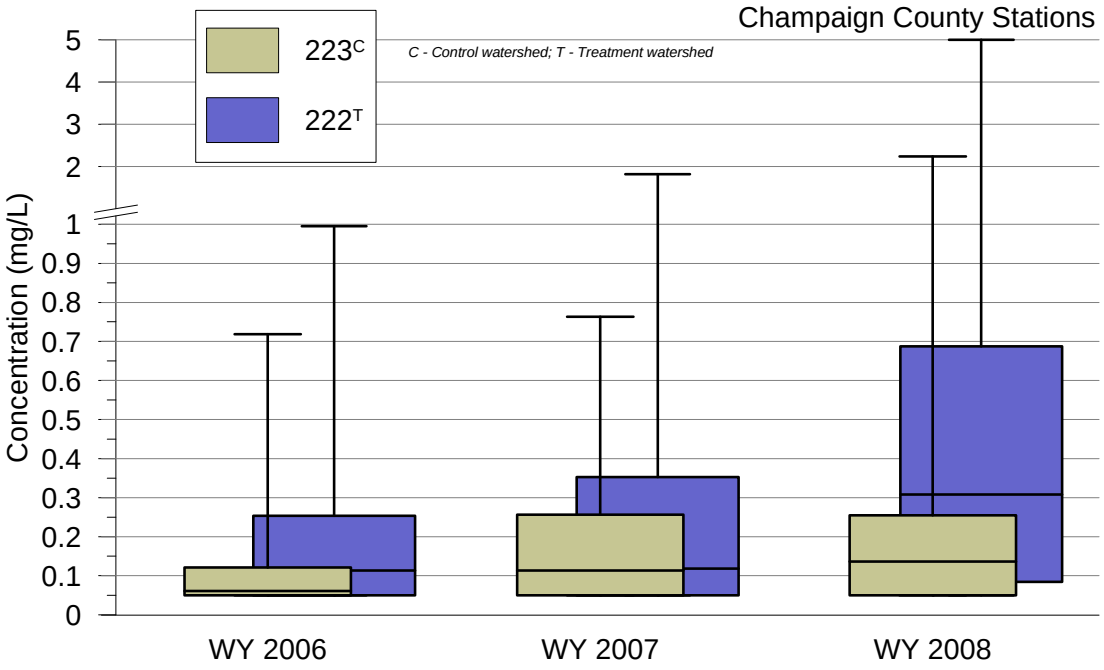


Figure 35. Quartile distribution of instantaneous total dissolved phosphorus concentrations at Champaign County stations

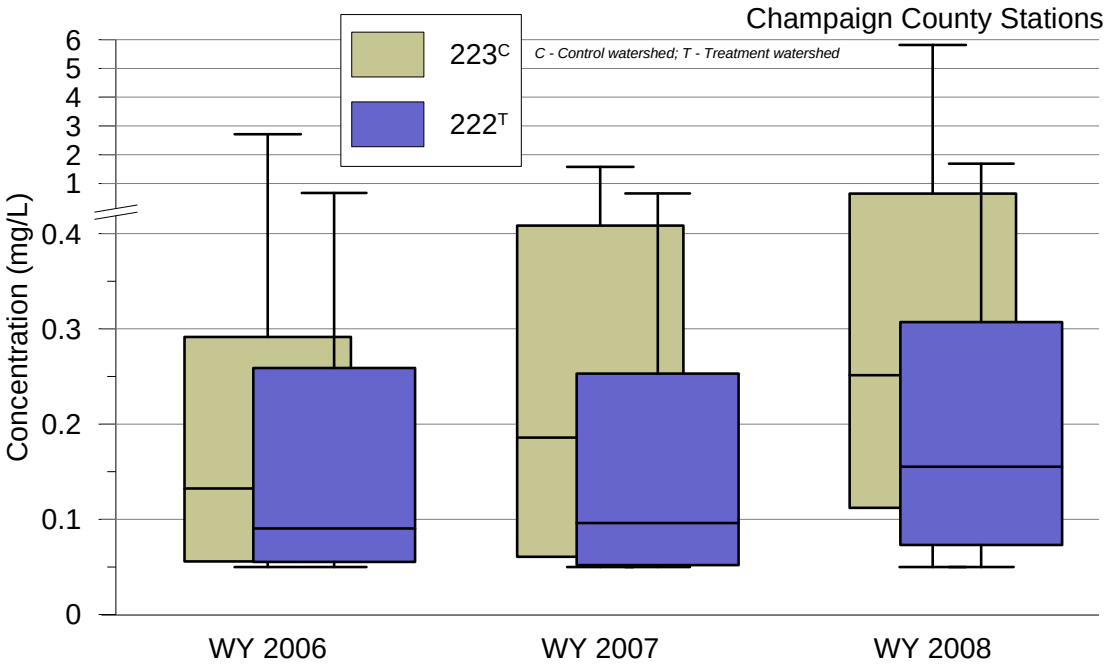


Figure 36. Quartile distribution of instantaneous total phosphorus concentrations at Champaign County stations

Table 10. Nitrogen Concentration Quartile Distribution

Water Year	*Station*	*Quartiles*				
		Minimum	*1st*	*Median*	*3rd*	*Maximum*
		NO_3^--N (mg/L)				
2006	211^C	0.29	5.07	10.86	15.48	19.00
	212^T	**0.87**	**8.17**	**15.03**	**16.97**	**19.26**
	223^C	0.07	5.22	7.92	10.26	12.64
	222^T	**0.07**	**8.54**	**12.66**	**15.43**	**17.16**
2007	211^C	1.81	5.14	6.35	7.03	8.67
	212^T	**6.74**	**8.46**	**10.02**	**12.72**	**17.17**
	223^C	0.07	4.25	6.86	8.41	13.67
	222^T	**0.07**	**8.89**	**11.61**	**12.95**	**16.59**
2008	211^C	0.20	3.90	7.51	11.77	16.65
	212^T	**1.39**	**5.37**	**10.19**	**14.28**	**15.82**
	223^C	0.07	1.98	6.12	9.23	13.87
	222^T	**0.07**	**7.14**	**11.24**	**14.07**	**16.99**
		TKN (mg/L)				
2006	211^C	0.26	0.38	0.72	2.09	29.04
	212^T	**0.26**	**0.26**	**0.33**	**0.62**	**2.65**
	223^C	0.32	0.77	1.15	1.67	10.38
	222^T	**0.26**	**0.44**	**0.59**	**1.08**	**2.57**
2007	211^C	0.26	0.68	0.94	1.62	12.80
	212^T	**0.26**	**0.41**	**0.60**	**0.80**	**1.43**
	223^C	0.26	0.71	1.25	1.82	4.36
	222^T	**0.26**	**0.47**	**0.85**	**1.17**	**2.54**
2008	211^C	0.13	0.69	1.23	2.86	7.42
	212^T	**0.26**	**0.61**	**0.88**	**1.55**	**4.65**
	223^C	0.34	0.79	1.19	2.13	22.42
	222^T	**0.26**	**0.59**	**1.20**	**2.67**	**18.42**
		NH_4-N (mg/L)				
2006	211^C	0.06	0.06	0.06	0.09	0.61
	212^T	**0.06**	**0.06**	**0.06**	**0.06**	**0.13**
	223^C	0.06	0.06	0.10	0.14	0.79
	222^T	**0.06**	**0.06**	**0.06**	**0.09**	**0.41**
2007	211^C	0.06	0.06	0.06	0.11	0.26
	212^T	**0.06**	**0.06**	**0.06**	**0.06**	**0.31**
	223^C	0.06	0.06	0.08	0.15	0.86
	222^T	**0.06**	**0.06**	**0.06**	**0.18**	**0.45**
2008	211^C	0.06	0.06	0.06	0.09	0.74
	212^T	**0.06**	**0.06**	**0.06**	**0.06**	**0.19**
	223^C	0.06	0.06	0.07	0.15	1.98
	222^T	**0.06**	**0.06**	**0.08**	**0.14**	**1.81**

Table 11. Phosphorus Concentration Quartile Distribution

Water Year	*Station*	*Quartiles*				
		Minimum	*1st*	*Median*	*3rd*	*Maximum*
				oPO_4-P (mg/L)		
2006	223[C]	0.02	0.02	0.04	0.10	0.71
	222[T]	**0.02**	**0.03**	**0.06**	**0.21**	**0.73**
2007	223[C]	0.02	0.04	0.10	0.26	0.79
	222[T]	**0.02**	**0.04**	**0.12**	**0.23**	**0.67**
2008	223[C]	0.01	0.04	0.14	0.27	2.01
	222[T]	**0.01**	**0.06**	**0.15**	**0.28**	**0.71**
				t-d-P (mg/L)		
2006	223[C]	0.05	0.05	0.06	0.12	0.72
	222[T]	**0.05**	**0.05**	**0.11**	**0.25**	**1.00**
2007	223[C]	0.05	0.05	0.11	0.25	0.76
	222[T]	**0.05**	**0.05**	**0.12**	**0.35**	**1.82**
2008	223[C]	0.05	0.05	0.14	0.25	2.24
	222[T]	**0.05**	**0.09**	**0.31**	**0.68**	**5.00**
				t-P (mg/L)		
2006	223[C]	0.05	0.06	0.13	0.29	2.71
	222[T]	**0.05**	**0.06**	**0.09**	**0.25**	**0.67**
2007	223[C]	0.05	0.06	0.19	0.40	1.58
	222[T]	**0.05**	**0.05**	**0.10**	**0.25**	**0.65**
2008	223[C]	0.05	0.11	0.25	0.63	5.81
	222[T]	**0.05**	**0.07**	**0.16**	**0.30**	**1.69**

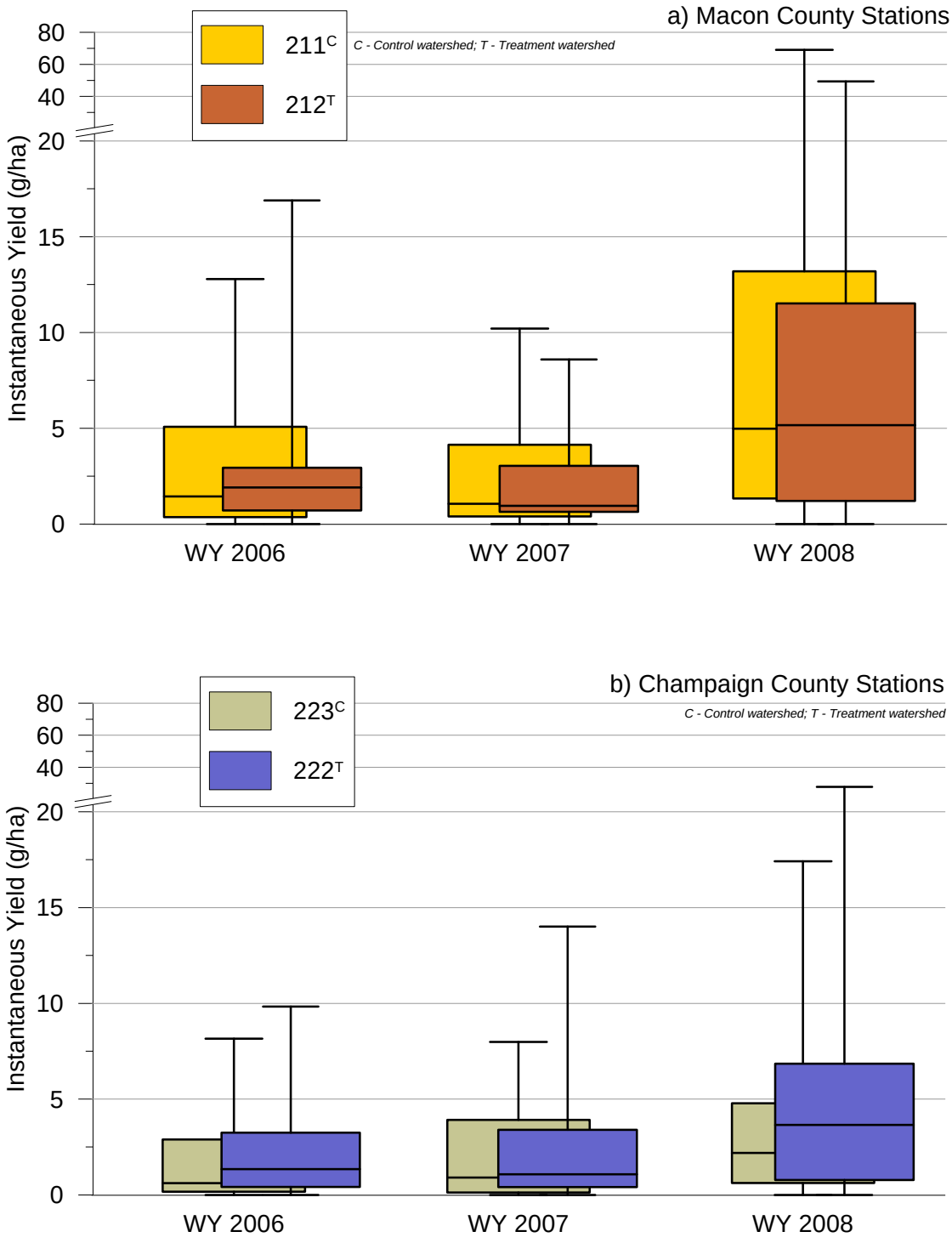


Figure 37. Quartile distribution of instantaneous nitrate-N yields: a) Macon County stations and b) Champaign County stations

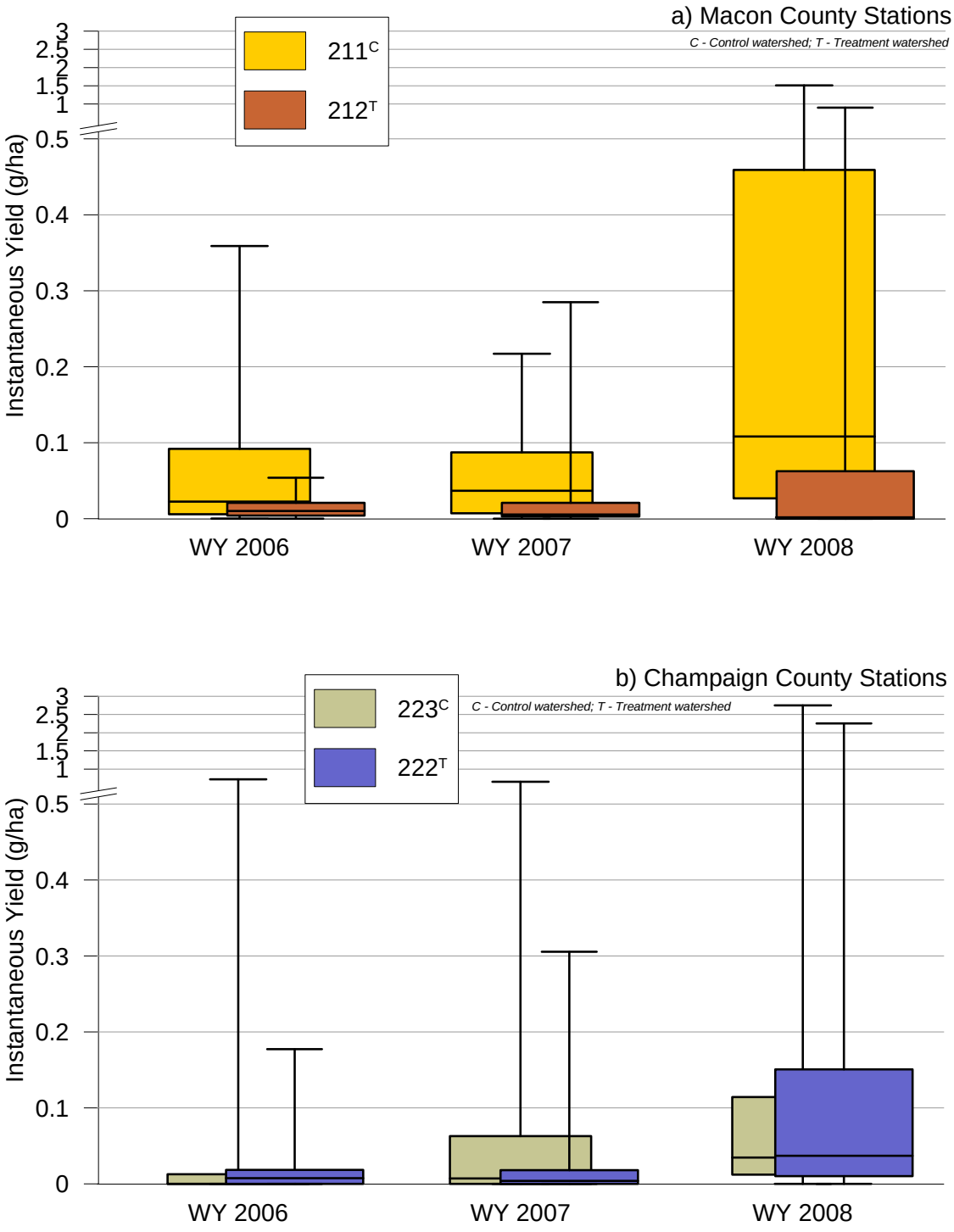


Figure 38. Quartile distribution of instantaneous ammonium-N yields: a) Macon County stations and b) Champaign County stations

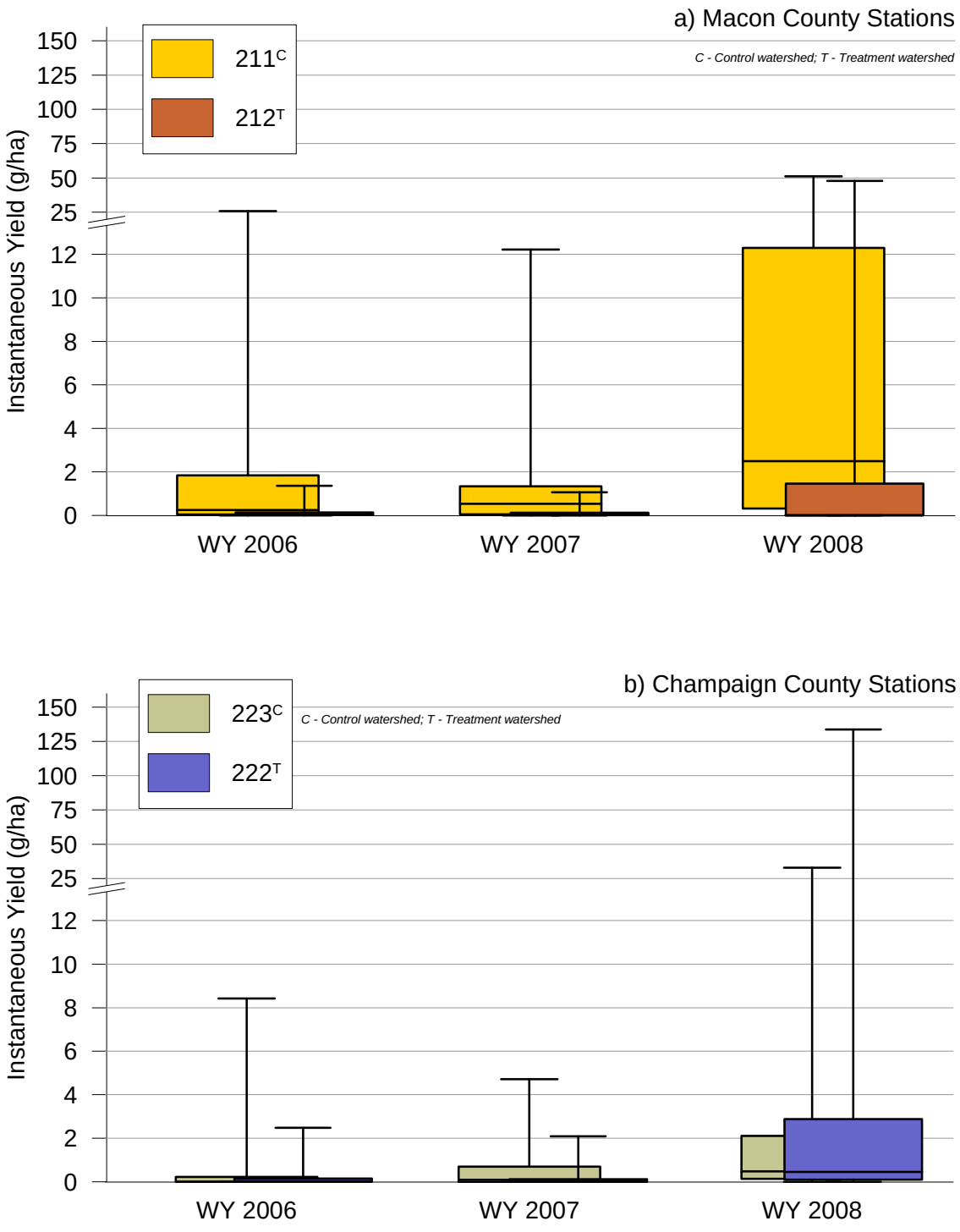


Figure 39. Quartile distribution of instantaneous TKN yields: a) Macon County stations and b) Champaign County stations

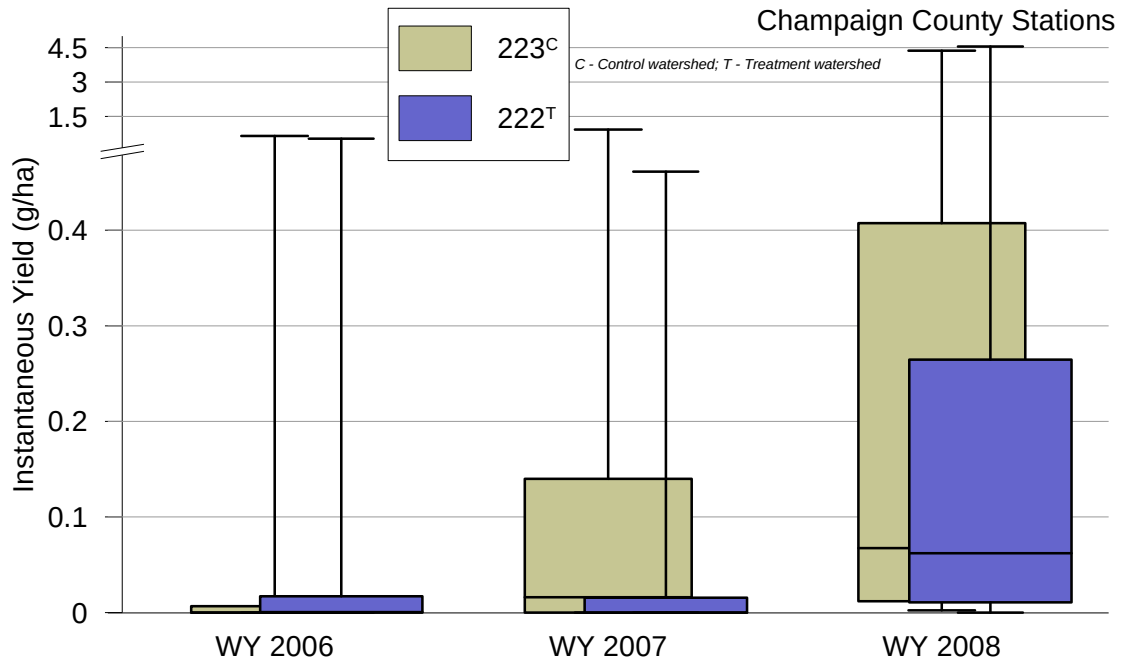


Figure 40. Quartile distribution of instantaneous ortho-phosphate yields at Champaign County stations

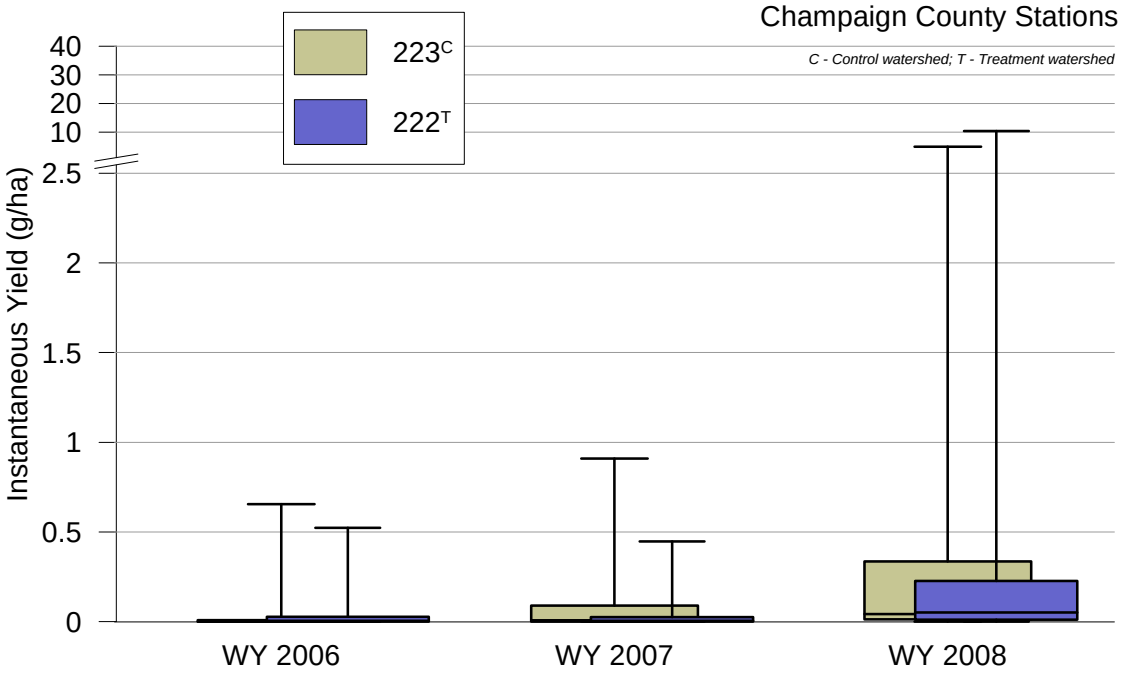


Figure 41. Quartile distribution of instantaneous total dissolved phosphorus yields at Champaign County stations

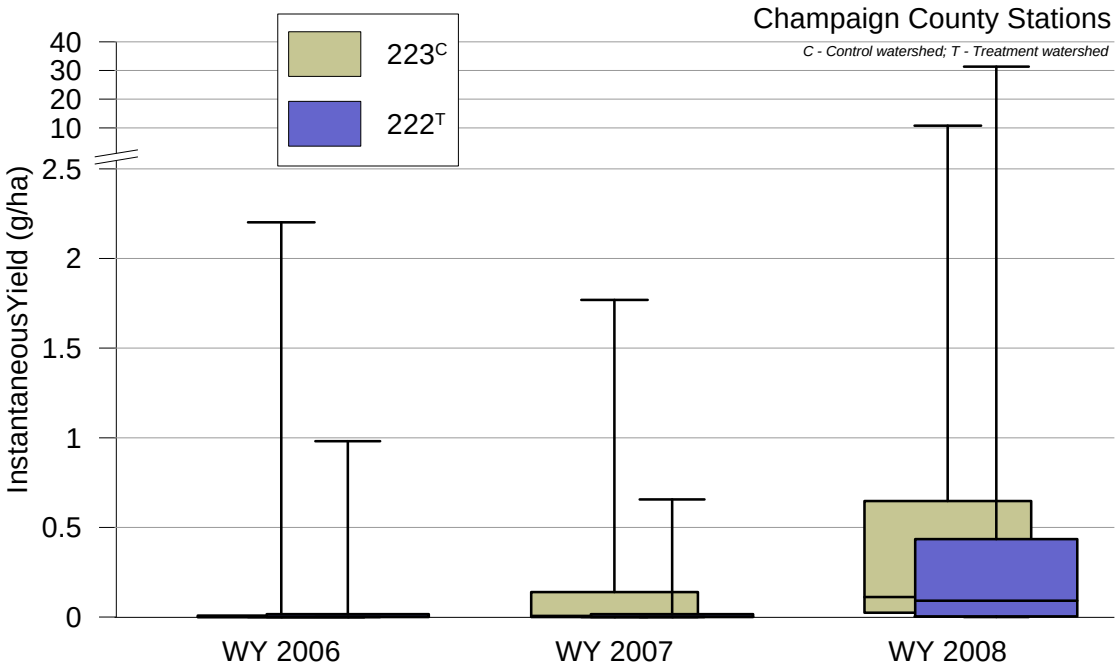


Figure 42. Quartile distribution of instantaneous total phosphorus yields at Champaign County stations

Table 12. Nitrogen Yield Quartile Distribution

Water Year	*Station*	*Quartiles*				
		Minimum	*1st*	*Median*	*3rd*	*Maximum*
		NO_3^--N (mg/L)				
2006	211[C]	0.00	0.37	1.44	5.02	12.79
	212[T]	**0.00**	**0.71**	**1.91**	**2.94**	**16.89**
	223[C]	0.00	0.17	0.61	2.90	8.16
	222[T]	**0.00**	**0.44**	**1.35**	**3.20**	**9.83**
2007	211[C]	0.00	0.40	1.05	4.12	10.21
	212[T]	**0.00**	**0.64**	**0.94**	**2.94**	**8.59**
	223[C]	0.00	0.12	0.91	3.83	7.99
	222[T]	**0.00**	**0.41**	**1.08**	**3.31**	**14.00**
2008	211[C]	0.00	1.42	4.98	12.13	69.07
	212[T]	**0.00**	**1.21**	**5.16**	**10.84**	**49.43**
	223[C]	0.00	0.63	2.19	4.77	17.42
	222[T]	**0.00**	**0.79**	**3.65**	**6.84**	**27.77**
		TKN (g/ha)				
2006	211[C]	0.00	0.04	0.25	1.66	25.77
	212[T]	**0.00**	**0.02**	**0.05**	**0.12**	**1.36**
	223[C]	0.00	0.00	0.00	0.22	8.42
	222[T]	**0.00**	**0.00**	**0.03**	**0.15**	**2.48**
2007	211[C]	0.00	0.05	0.51	1.32	12.22
	212[T]	**0.00**	**0.02**	**0.04**	**0.12**	**1.06**
	223[C]	0.00	0.00	0.09	0.69	4.71
	222[T]	**0.00**	**0.00**	**0.01**	**0.11**	**2.09**
2008	211[C]	0.00	0.31	2.40	12.26	51.26
	212[T]	**0.00**	**0.00**	**0.01**	**1.37**	**47.76**
	223[C]	0.00	0.13	0.48	2.02	32.94
	222[T]	**0.00**	**0.09**	**0.45**	**2.28**	**133.70**
		NH_4-N (mg/L)				
2006	211[C]	0.00	0.01	0.02	0.07	0.36
	212[T]	**0.00**	**0.00**	**0.01**	**0.02**	**0.05**
	223[C]	0.00	0.00	0.00	0.01	0.72
	222[T]	**0.00**	**0.00**	**0.01**	**0.02**	**0.18**
2007	211[C]	0.00	0.01	0.04	0.08	0.22
	212[T]	**0.00**	**0.00**	**0.01**	**0.02**	**0.29**
	223[C]	0.00	0.00	0.01	0.06	0.65
	222[T]	**0.00**	**0.00**	**0.00**	**0.02**	**0.31**
2008	211[C]	0.00	0.03	0.10	0.33	1.51
	212[T]	**0.00**	**0.00**	**0.00**	**0.06**	**0.90**
	223[C]	0.00	0.01	0.03	0.11	2.75
	222[T]	**0.00**	**0.01**	**0.04**	**0.14**	**2.26**

Table 13. Phosphorus Yield Quartile Distribution

Water Year	*Station*	*Quartiles*				
		Minimum	*1st*	*Median*	*3rd*	*Maximum*
				oPO_4-P (mg/L)		
2006	223[C]	0.00	0.00	0.00	0.00	0.65
	222[T]	**0.00**	**0.00**	**0.00**	**0.01**	**0.53**
2007	223[C]	0.00	0.00	0.01	0.09	0.93
	222[T]	0.00	0.00	0.00	0.01	0.46
2008	223[C]	0.00	0.01	0.05	0.35	4.36
	222[T]	0.00	0.01	0.06	0.25	4.55
				t-d-P (mg/L)		
2006	223[C]	0.00	0.00	0.00	0.01	0.65
	222[T]	**0.00**	**0.00**	**0.00**	**0.03**	**0.52**
2007	223[C]	0.00	0.00	0.01	0.09	0.91
	222[T]	**0.00**	**0.00**	**0.00**	**0.03**	**0.45**
2008	223[C]	0.00	0.01	0.04	0.33	4.88
	222[T]	**0.00**	**0.01**	**0.05**	**0.23**	**10.39**
				NH_4-N (mg/L)		
2006	223[C]	0.00	0.00	0.00	0.00	2.20
	222[T]	**0.00**	**0.00**	**0.00**	**0.01**	**0.98**
2007	223[C]	0.00	0.00	0.00	0.08	1.77
	222[T]	**0.00**	**0.00**	**0.00**	**0.01**	**0.66**
2008	223[C]	0.00	0.01	0.07	0.53	10.67
	222[T]	**0.00**	**0.00**	**0.08**	**0.41**	**31.37**

Nitrogen and Phosphorus Concentration and Yield for Events

The following figures graphically illustrate concentrations and yields for significant storm events when both stations of each project were affected. During WY2008, there were several events that resulted in increased sampling due to precipitation that was much above the 30-year mean. Conversely, Water Years 2005–2007 were below the mean, which contributed to infrequent sampling. It was also observed that the spatial distribution of precipitation events was inconsistent between stations within each county. For example, many times the Control (211) and Treatment (212) station watersheds had precipitation events occur over one and not the other watershed even though they are next to one another. Based on the above criteria and observations, a total of seven storm events were selected. Table 13 reports the storm period, station, and total nitrogen and/or phosphorus yield (g/ha) for each storm. Figures 43–54 show the concentration data and associated computed yields for each event. The figures appear in chronological order and are organized by nitrogen concentrations and yields and then phosphorous concentrations and yields. The storm yield data were a product of the 15-minute discharge data from the continuous streamgage record and an interpolation of 15-minute values between observed concentration data. This is the reason the instantaneous storm yield plots appear smoother than the concentrations. Also the total storm yields in Table 14 are the sum of the computed 15-minute instantaneous yields.

Table 14. Storm Period, Station, and Estimated Total Nitrogen and Phosphorus Yields for Selected Storms During Monitoring Period

		Total grams/hectare					
Storm period	*Station number*	*Nitrate-Nitrogen*	*Total Kjeldahl Nitrogen*	*Ammonia*	*Ortho-Phosphate*	*Total Phosphorus*	*Total dissolved-Phosphorus*
3/11/2006 21:00 to 3/12/2006 10:15							
	211[C]	319	18	1			
	212[T]	**547**	**26**	**3**			
3/11/2006 22:30 to 3/12/2006 10:30							
	223[C]	287	133	17	15	41	15
	222[T]	**420**	**84**	**4**	**14**	**29**	**14**
4/14/2006 01:30 to 4/15/2006 00:15							
	223[C]	467	163	9	13	48	14
	222[T]	**384**	**22**	**6**	**9**	**12**	**9**
2/4/2008 15:00 to 2/5/2008 11:45							
	223[C]	110	179	41	75	109	85
	222[T]	**413**	**1093**	**37**	**60**	**351**	**142**
5/11/2008 5:00 to 5/12/2008 13:00							
	223[C]	633	70	9	4	15	5
	222[T]	**627**	**83**	**12**	**4**	**24**	**5**
5/15/2008 21:00 to 5/17/2008 8:45							
	223[C]	572	68	3	1	16	2
	222[T]	**444**	**18**	**3**	**1**	**5**	**2**
6/3/2008 5:00 to 6/4/2008 11:45							
	211[C]	4906	2223	NA			
	212[T]	**3454**	**1873**	**NA**			
6/3/2008 11:45 to 6/5/2008 12:00							
	223[C]	1843	1146	24	64	328	63
	222[T]	**2155**	**3426**	**51**	**131**	**1050**	**117**
6/7/2008 5:45 to 6/9/2008 10:00							
	211[C]	2714	937	30			
	212[T]	**2082**	**317**	**15**			
6/7/2008 2:00 to 6/9/2008 12:30							
	223[C]	1297	667	16	57	205	55
	222[T]	**1272**	**1319**	**23**	**84**	**444**	**79**

[C] – Control watershed; ***[T] – Treatment watershed***

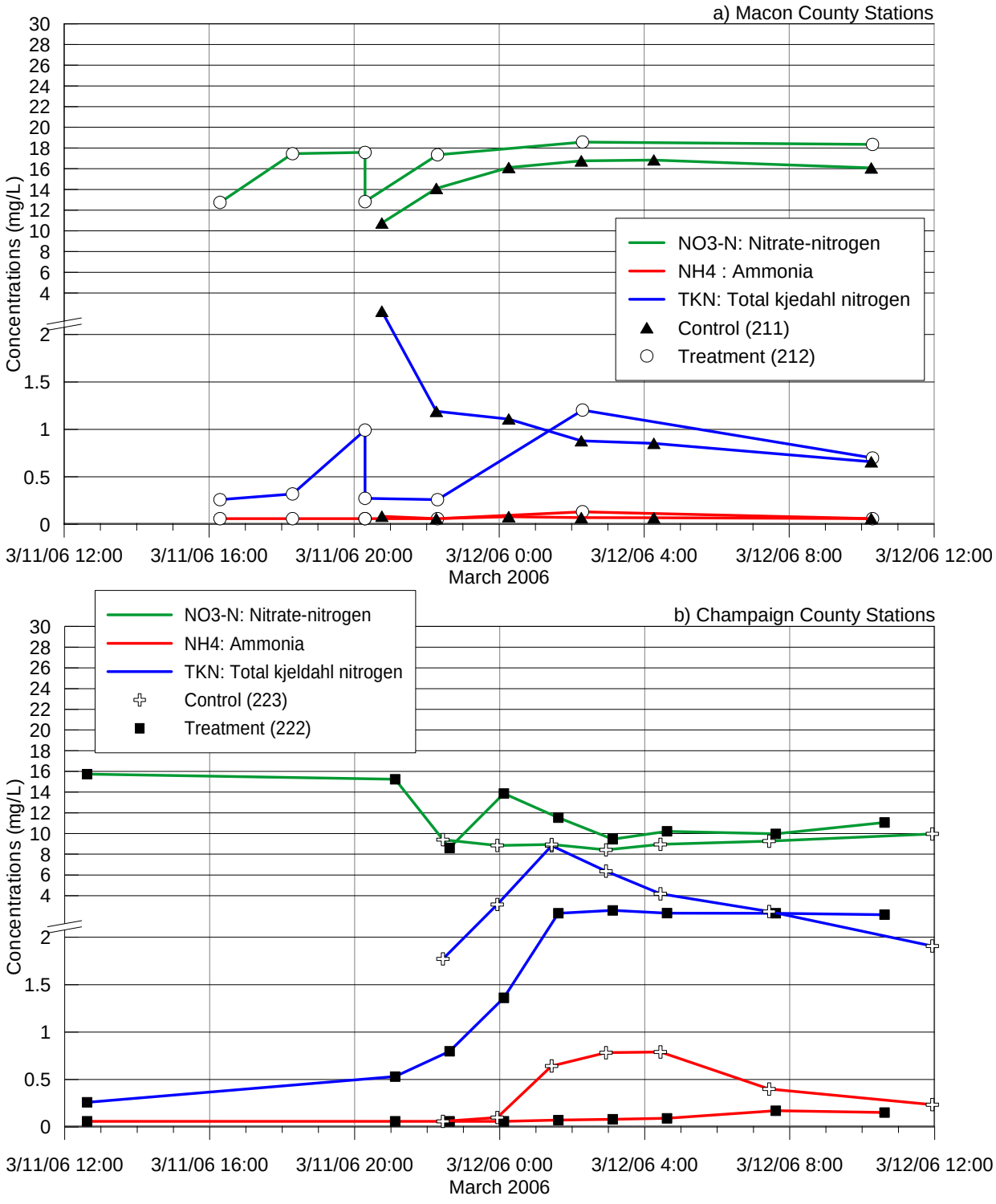


Figure 43. Nitrogen species concentrations for March 11-12, 2006 storm event:
a) Macon County stations and b) Champaign County stations

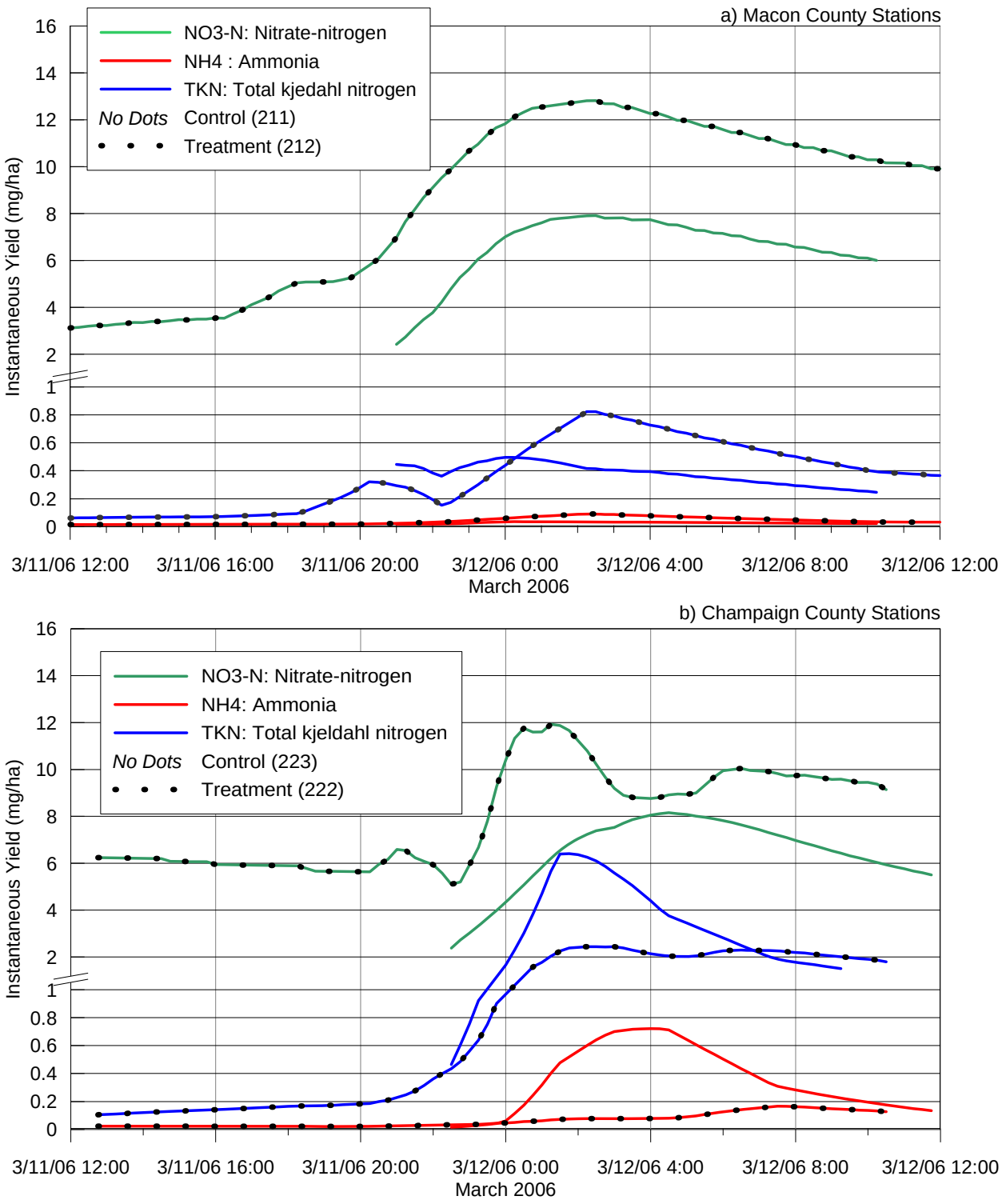


Figure 44. Nitrogen species yields for March 11-12, 2006 storm event:
a) Macon County stations and b) Champaign County stations

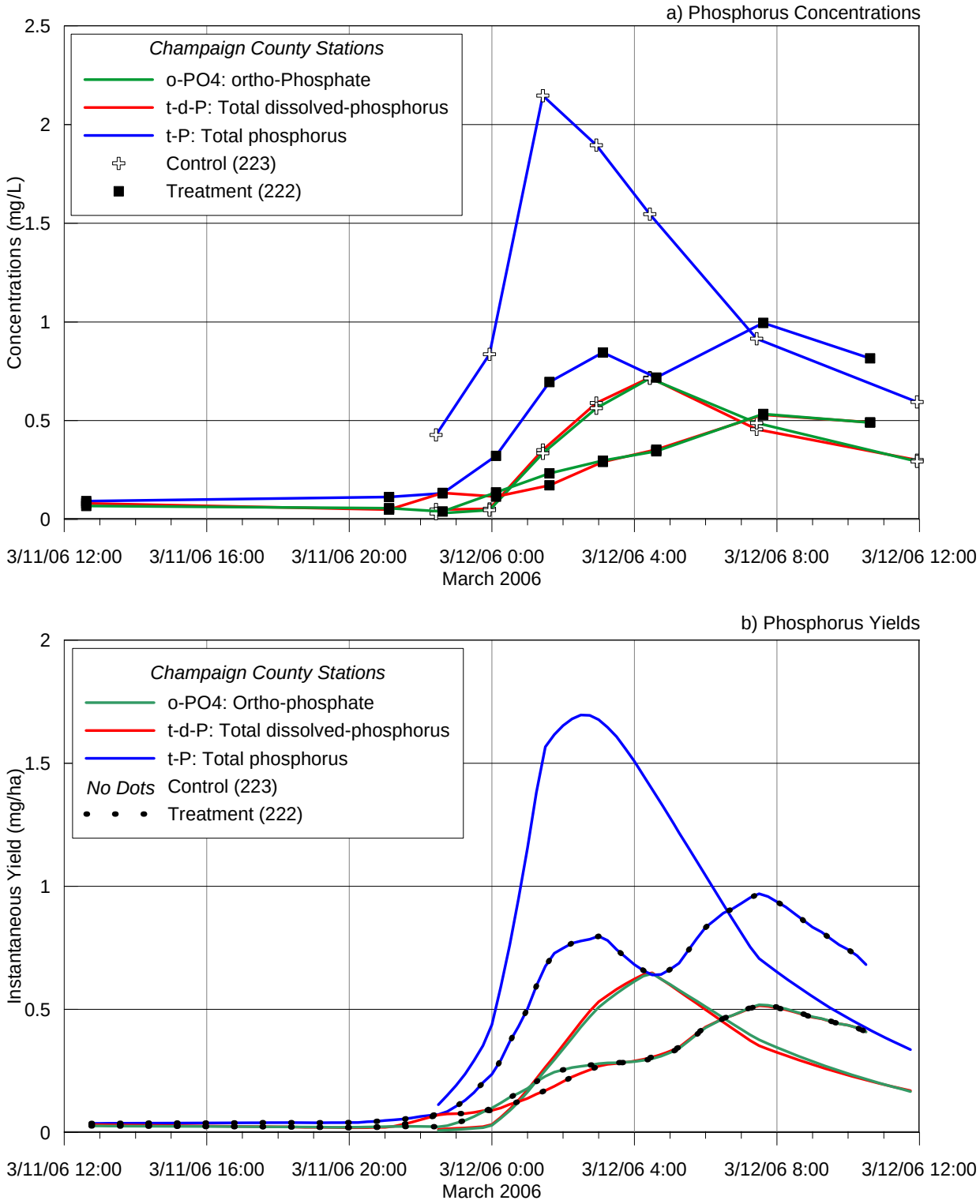
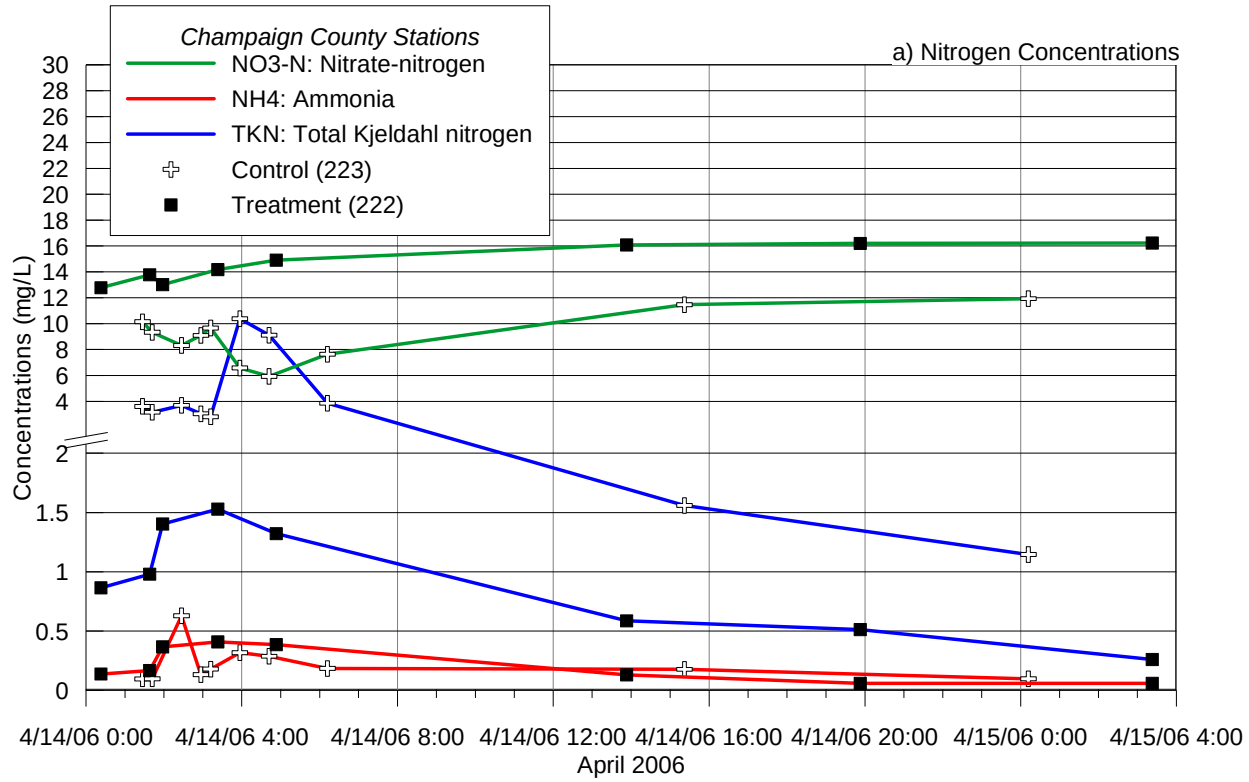


Figure 45. Phosphorus species concentrations and yields for March 11-12, 2006 storm event for Champaign County stations



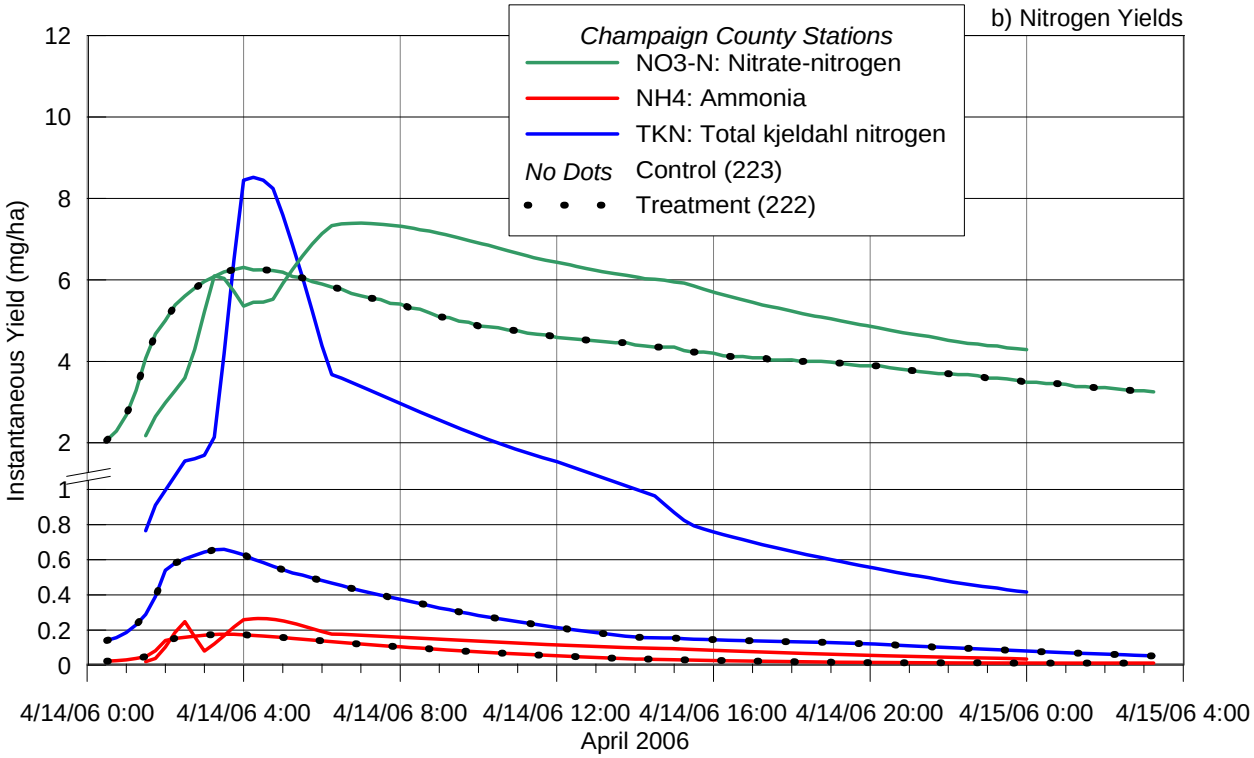


Figure 46. Nitrogen species concentrations and yields for April 14-15, 2006 storm event for Champaign County stations

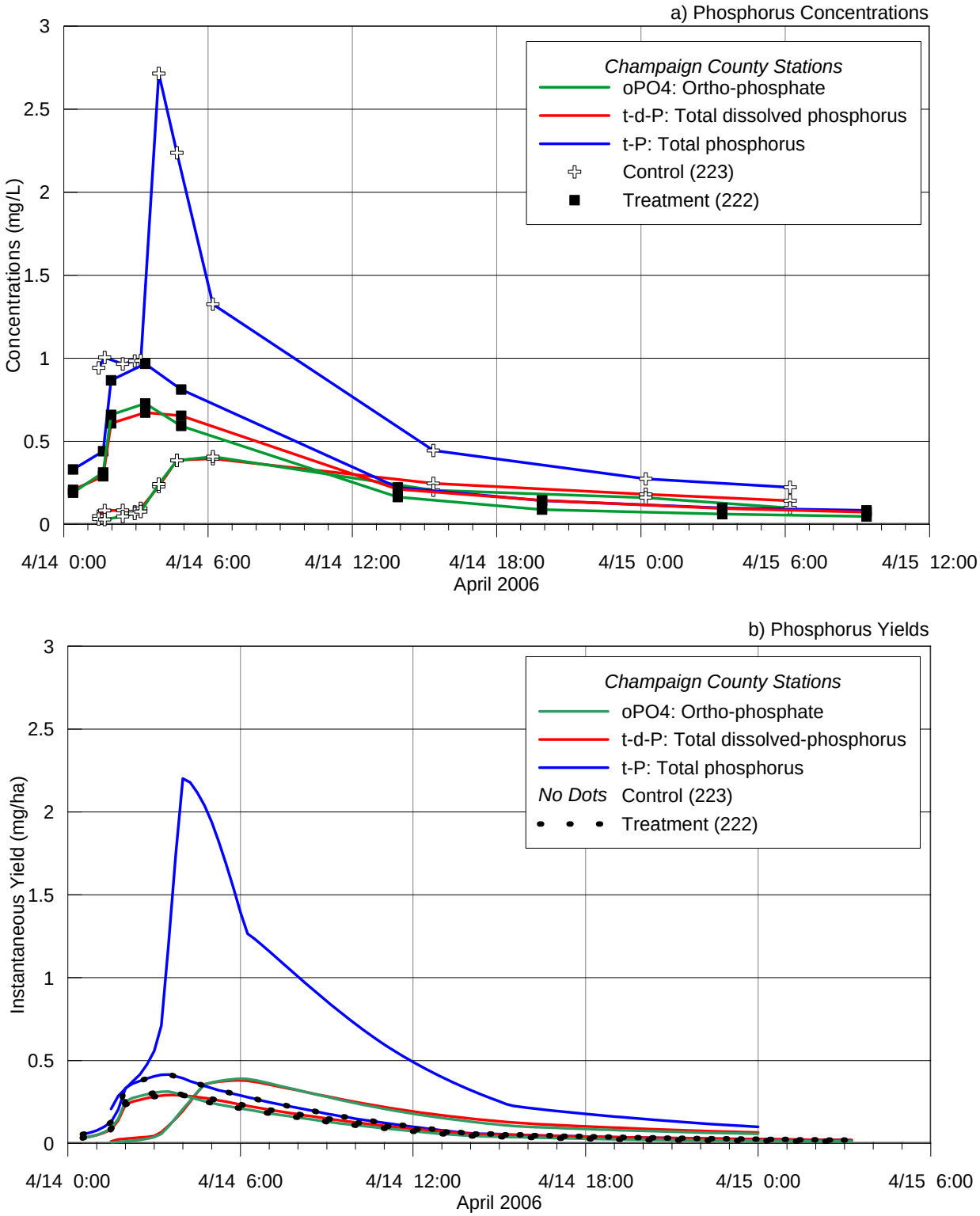


Figure 47. Phosphorus species concentrations and yields for April 14-15, 2006 storm event for Champaign County stations

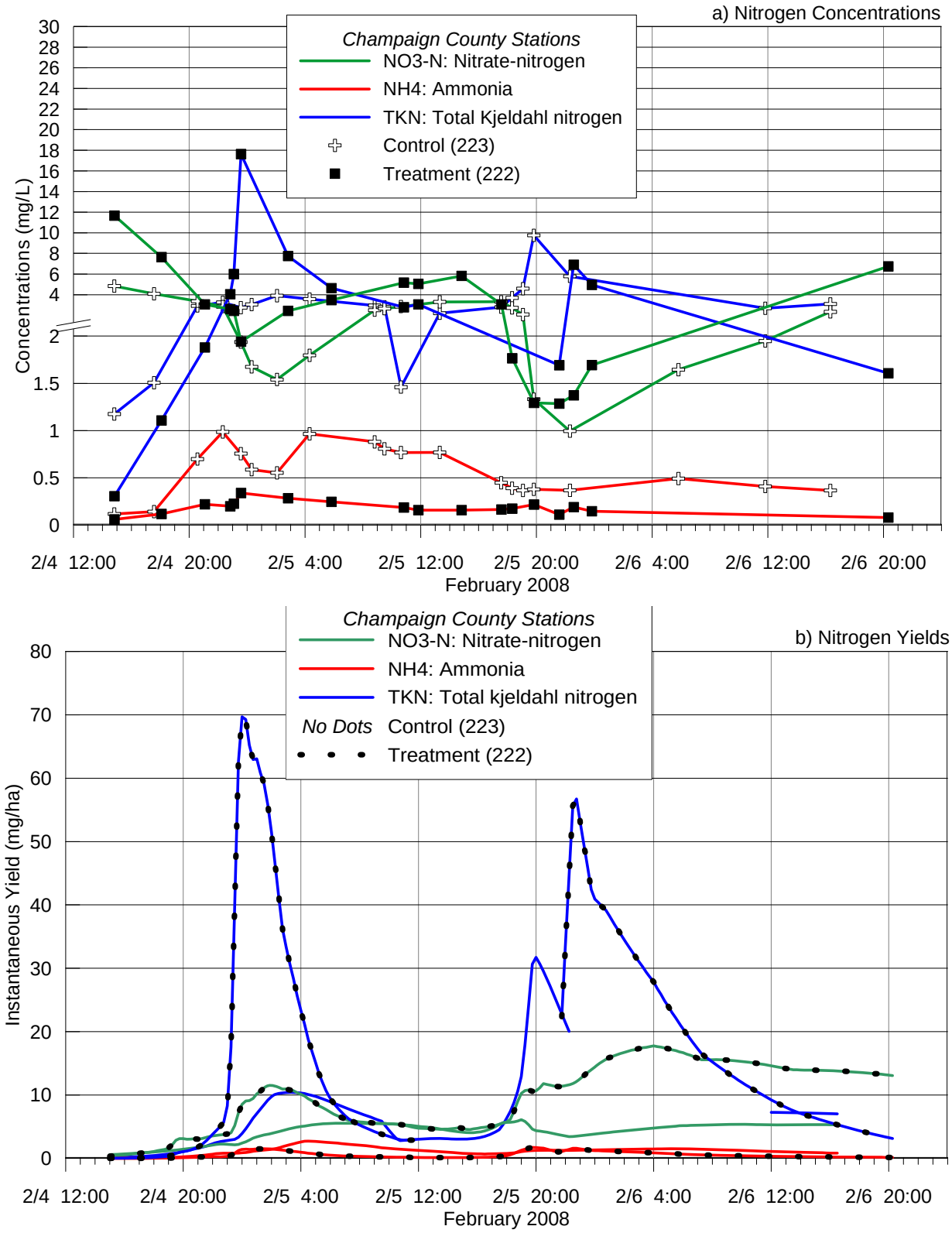


Figure 48. Nitrogen species concentrations and yields for February 4-6, 2008 storm events for Champaign County stations

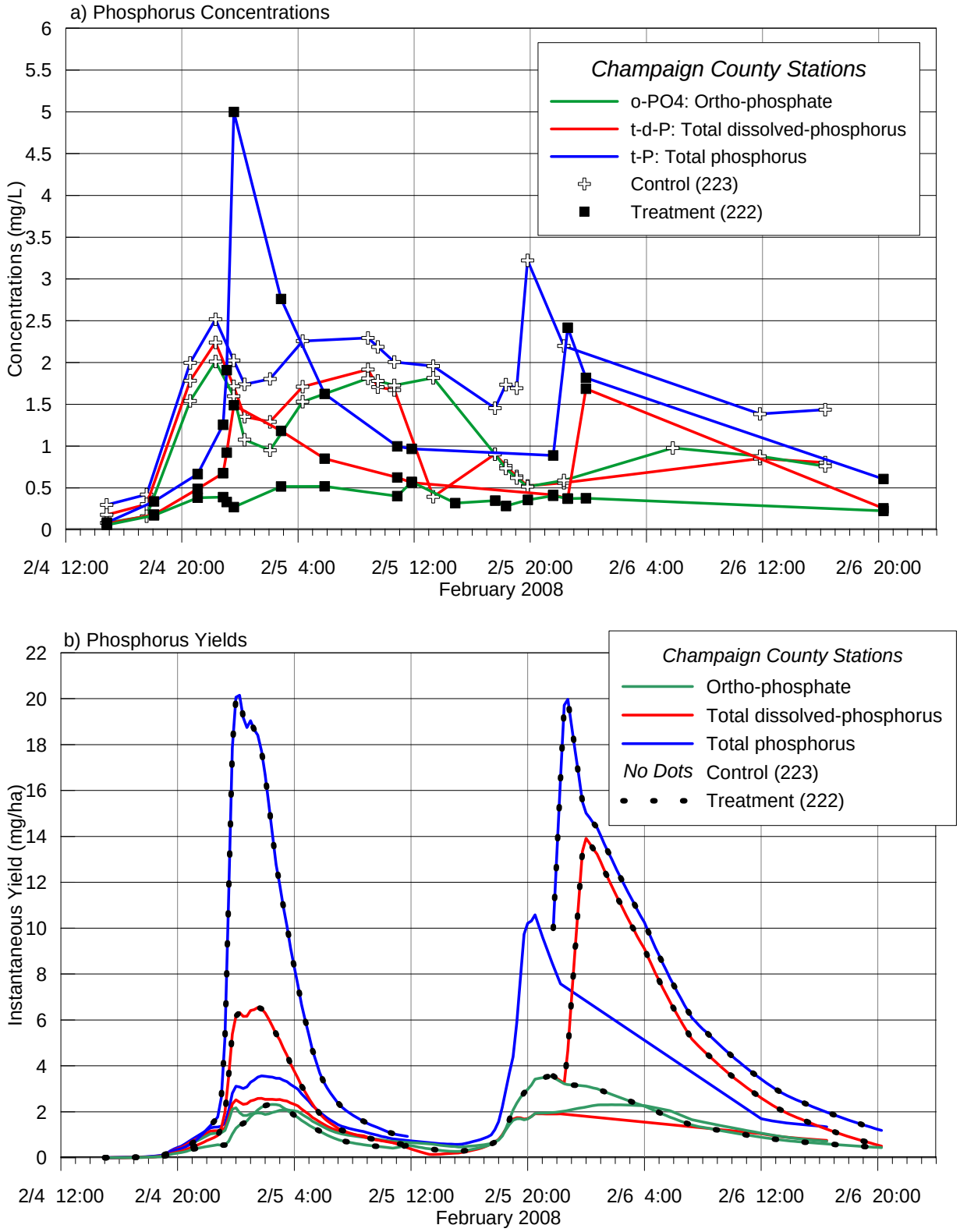


Figure 49. Phosphorus species concentrations and yields for February 4-6, 2008 storm events for Champaign County stations

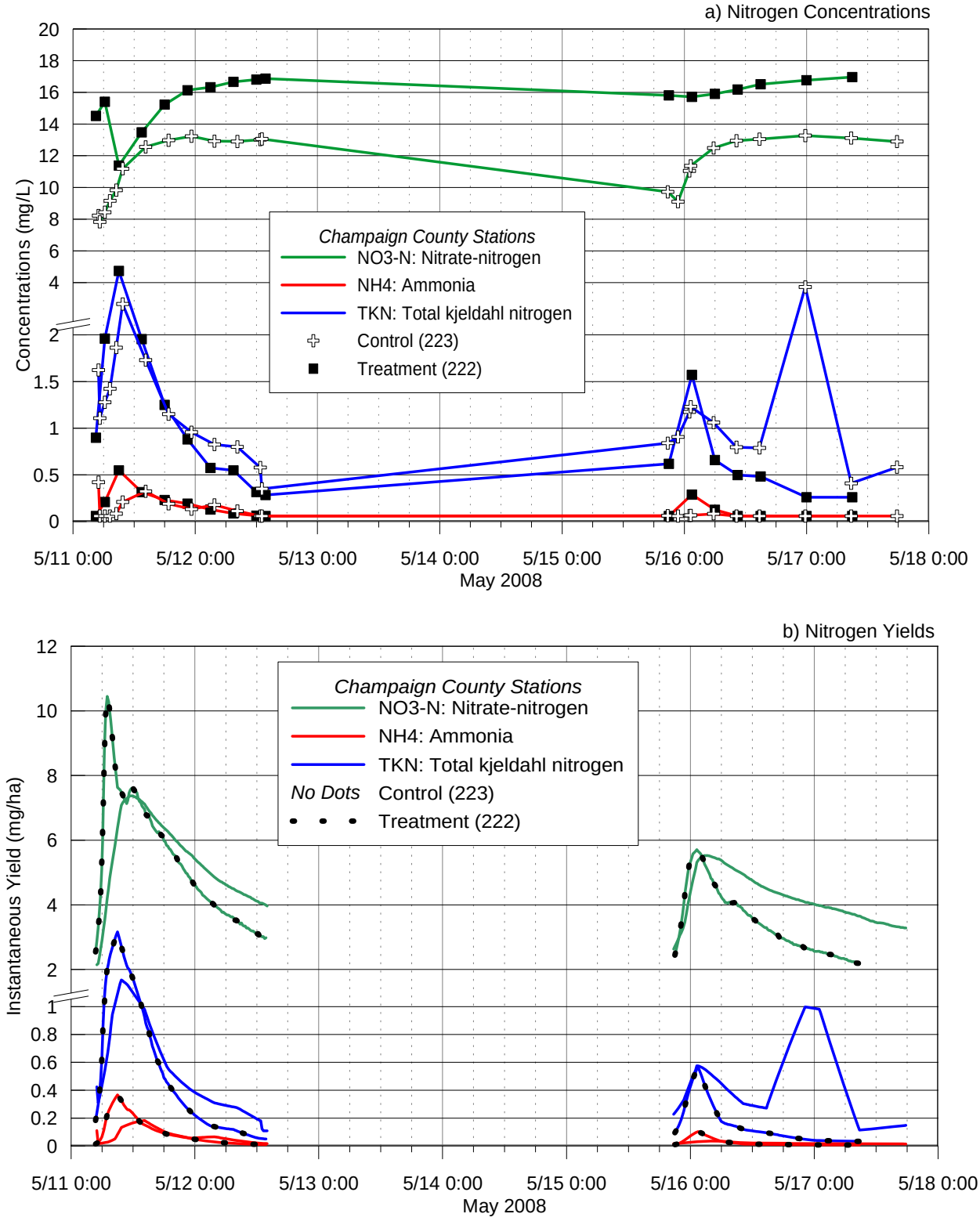


Figure 50. Nitrogen species concentrations and yields for May 11-12, 2008 and May 15-17, 2008 storm events for Champaign County stations

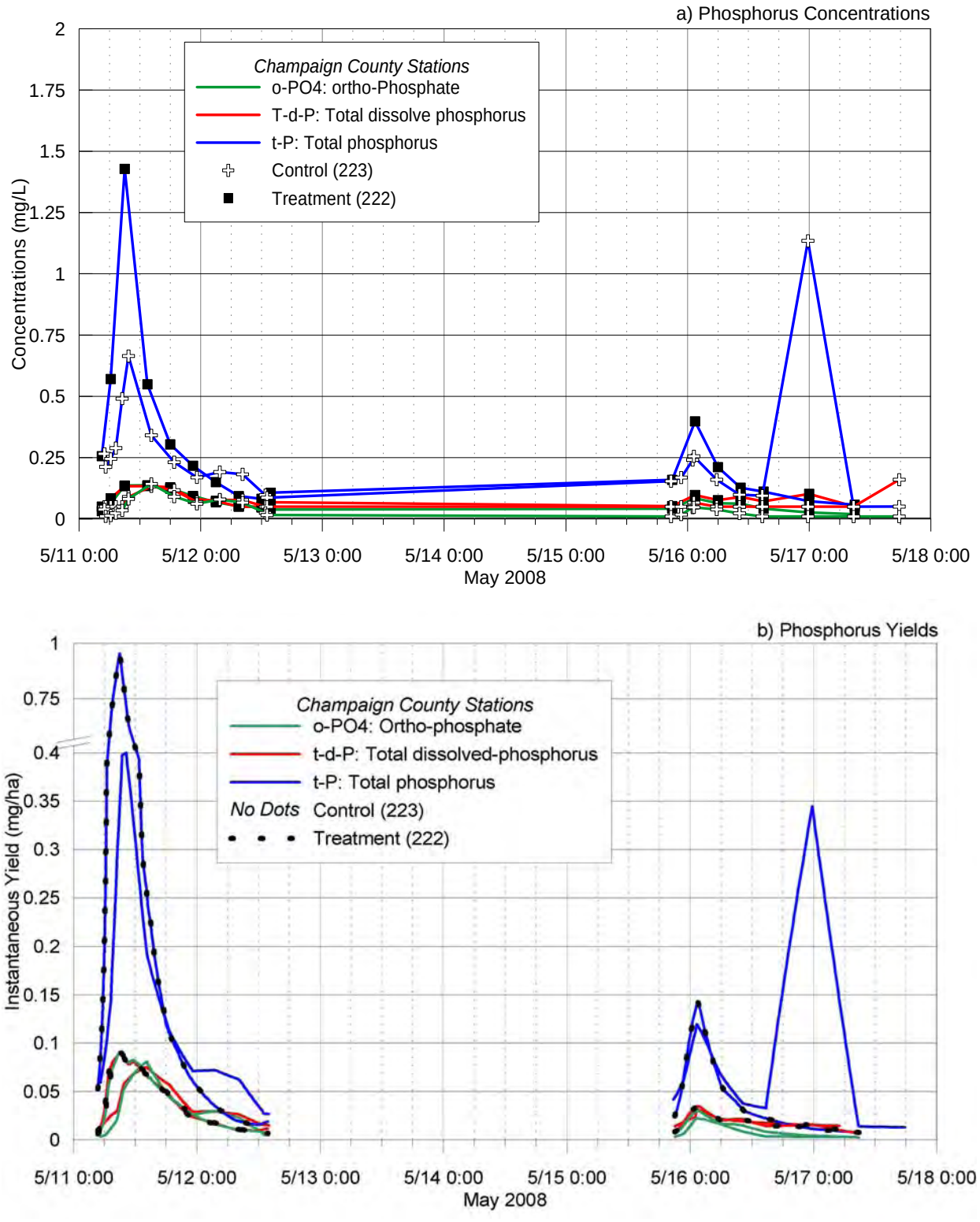


Figure 51. Phosphorus species concentrations and yields for May 11-12, 2008 and May 15-17, 2008 storm events for Champaign County stations

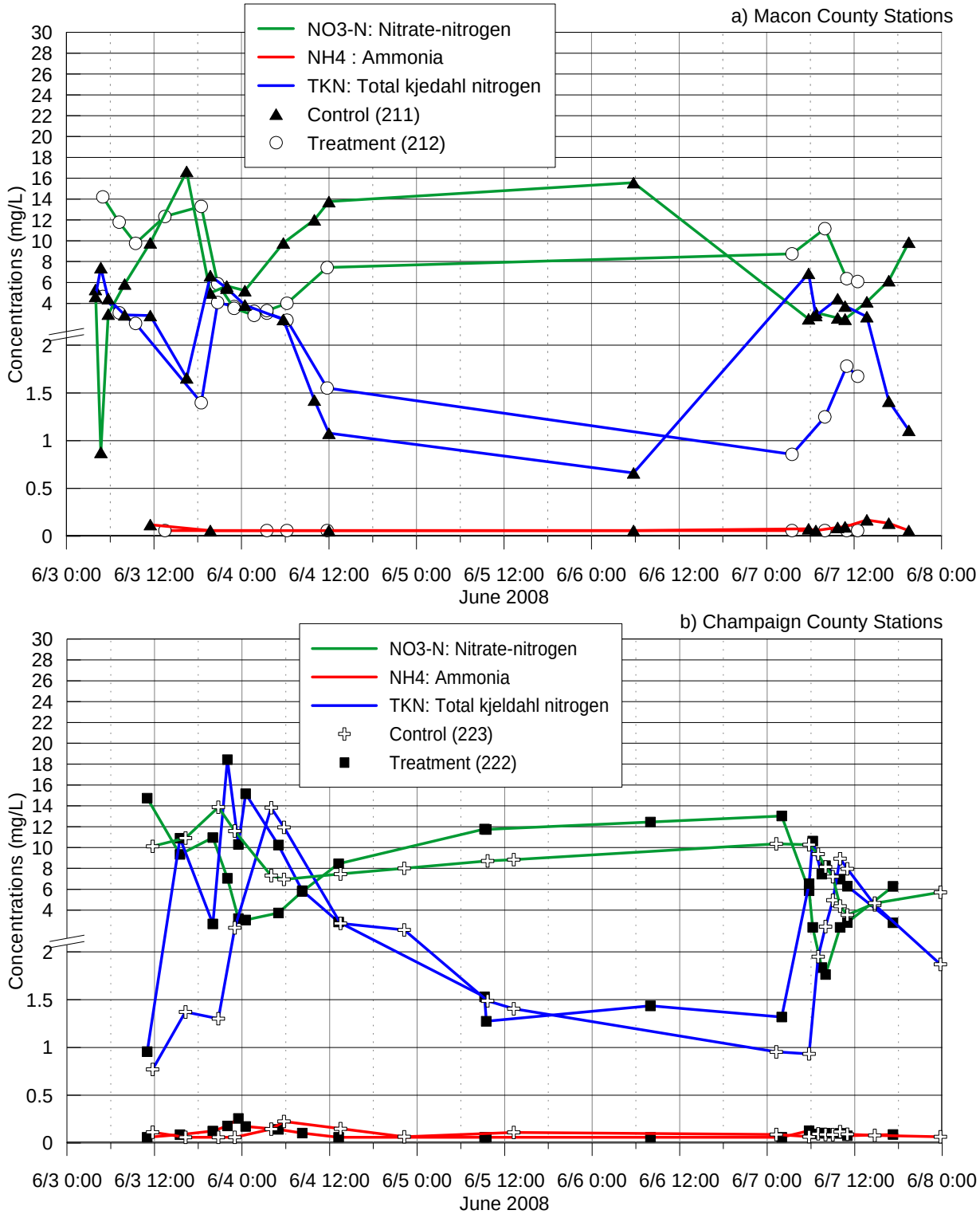


Figure 52. Nitrogen species concentrations for June 3-4 and June 7-8, 2008 storm events: a) Macon County stations and b) Champaign County stations

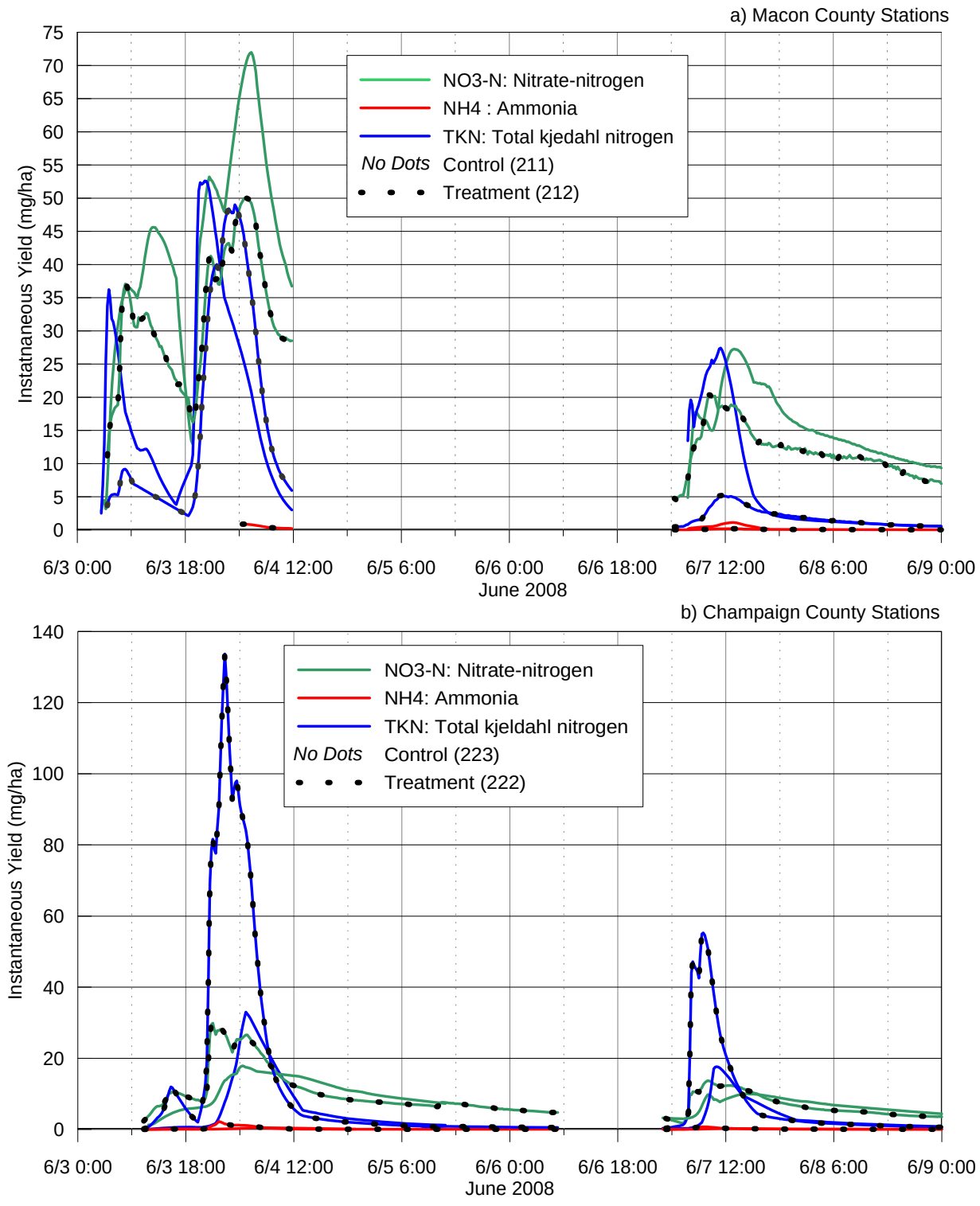


Figure 53. Nitrogen species yields for June 3-4 and June 7-8, 2008 storm events:
a) Macon County stations and b) Champaign County stations

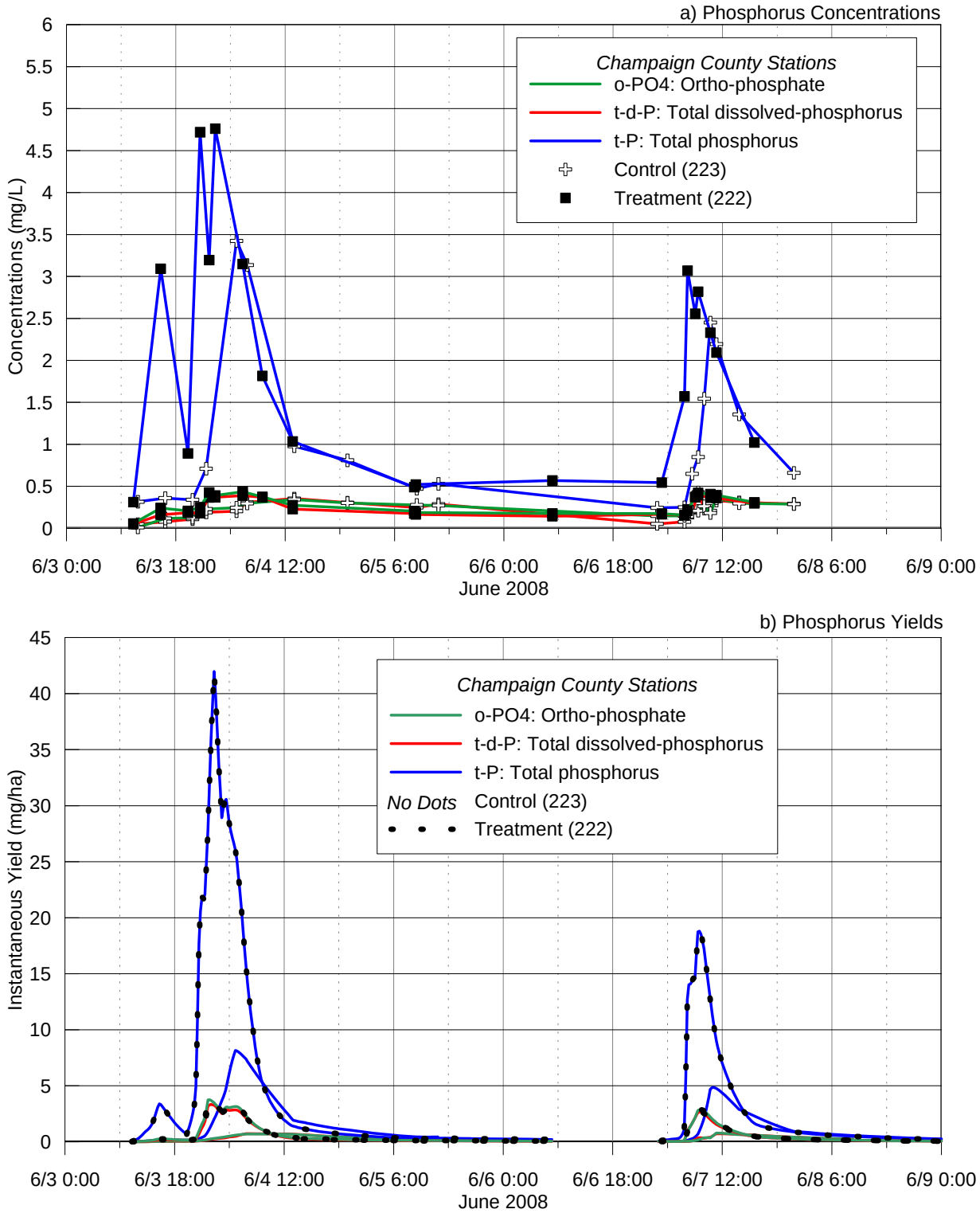


Figure 54. Phosphorus species concentrations and yields for June 3-4 and June 7-8, 2008 storm events for Champaign County stations

Summary

The ISWS established four streamgaging stations in selected tributaries in Macon and Champaign Counties to monitor streamflow and nutrients for the Agricultural Watershed Institute (AWI). AWI received a grant from the U.S. Environmental Protection Agency (USEPA) to conduct the Upper Sangamon River Targeted Watershed Project (USRTWP) to address behavioral, technical, and economic aspects of nutrient management associated with agricultural crop production. The goal of the USRTWP study was to determine if water quality would improve by reducing nutrient discharges from agricultural areas by incorporating market-based implementation mechanisms. Additional data were acquired from a separate monitoring study conducted by the ISWS in the Sangamon River watershed funded by the City of Decatur. This report presented additional streamflow and nutrient data for stations in the two counties.

The four stations established for this study were evenly divided between Sangamon River tributaries in Champaign and Macon Counties. Nitrogen fertilizer management trials were conducted in both counties, whereas phosphorus management trials were conducted only in Champaign County. Management trials were conducted on fields in only one of the two watersheds in each county and were identified as the treatment watershed station; conversely, the other watersheds were identified as the control watershed stations. Nitrate-N and total phosphorus samples were collected weekly; ammonium-N, total Kjeldahl nitrogen, total dissolved phosphorus, and ortho-phosphate were collected monthly; and all nitrogen and phosphorus species were sampled during storms.

Annual precipitation data were obtained, as well as the 30-year mean annual precipitation data, for stations representative of rainfall in Champaign and Macon Counties for WY2005 to WY2008. Since WY2005 was an incomplete water year, annual discharge and runoff were computed only for WY2006–WY2008.

Nitrogen and phosphorus concentration data were presented as time-series (Figures 13–30 and Tables 8–9) and summary statistics using box plots (Figures 31–36 and Tables 10–11). Yield data were illustrated as summary statistics using box plots (Figures 37–42 and Tables 12–13). Concentration and individual storm yields were also presented (Figures 43–54) as well as total nutrient storm yields (Table 14). Discrete data can be found in the appendices, including discharge measurements (Appendix A), stage-discharge rating curves (Appendix B), and instantaneous discharge, nitrogen and phosphorus concentrations, and yields (Appendix C and D, respectively). The data collected for this project are also available from the STORET database (http://www.epa.gov/storet/).

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APPENDIX

Appendix A-1. Discharge Measurements for Control (211) Station

Measurement (No.)	*Date*	*Width (m)*	*Area (m2)*	*Mean velocity (m/s)*	*Gage height (m)*	*Discharge (cms*100)*	*Discharge (cfs)*
1	06/01/05	1.10	0.11	0.05	NA	0.51	0.18
2	01/09/06	1.43	0.11	0.01	28.55	0.14	0.05
3	02/22/06	2.80	0.39	0.01	28.56	0.40	0.14
4	03/31/06	4.80	0.68	0.01	28.61	0.57	0.20
5	04/07/06	3.20	1.21	0.07	28.78	7.96	2.81
6	05/01/06	3.14	0.81	0.09	28.66	6.85	2.42
7	05/11/06	3.14	0.96	0.05	28.71	4.90	1.73
9	07/27/06	3.14	2.15	0.11	29.18	24.21	8.55
12	08/28/06	3.14	1.07	0.07	28.76	7.93	2.80
10	09/18/06	3.14	1.01	0.05	28.72	5.49	1.94
11	10/17/06	3.14	1.56	0.09	28.92	14.30	5.05
13	10/25/06	3.05	0.46	0.05	28.58	2.32	0.82
14	12/12/06	3.14	1.18	0.16	28.78	18.52	6.54
15	04/24/07	3.14	0.27	0.04	28.56	1.19	0.42
16	01/08/08	3.44	0.90	0.08	28.66	6.80	2.40
17	02/06/08	3.35	2.24	0.15	28.99	33.50	11.83
18	05/20/08	3.20	0.52	0.04	28.58	1.98	0.70
19	06/03/08	3.20	3.47	0.26	29.48	91.86	32.44
20	06/04/08	3.14	3.27	0.18	29.29	60.17	21.25
21	07/01/08	3.51	0.36	0.00	28.58	0.37	0.13

Appendix A-2. Discharge Measurements for Treatment (212) Station

Measurement (No.)	*Date*	*Width (m)*	*Area (m2)*	*Mean velocity (m/s)*	*Gage height (m)*	*Discharge (cms*100)*	*Discharge (cfs)*
1	02/06/06	3.41	0.73	0.01	29.15	1.10	0.39
3	03/04/06	4.57	1.69	0.03	29.39	4.81	1.70
2	03/06/06	3.44	0.67	0.01	29.13	0.42	0.15
4	03/31/06	4.48	1.66	0.01	29.37	1.50	0.53
5	04/13/06	4.05	1.64	0.02	29.40	3.48	1.23
6	04/20/06	4.27	2.15	0.06	29.50	12.74	4.50
7	04/24/06	4.39	1.57	0.04	29.36	5.55	1.96
8	06/01/06	4.88	3.18	0.07	29.78	23.02	8.13
9	06/05/06	4.57	2.26	0.05	29.55	10.22	3.61
10	06/19/06	4.30	1.39	0.01	29.33	1.27	0.45
11	07/10/06	3.11	0.48	0.00	29.08	-0.11	-0.04
12	08/31/06	5.03	3.03	0.03	29.73	8.18	2.89
13	10/17/06	4.88	3.27	0.02	29.76	6.09	2.15
14	12/12/06	4.88	3.13	0.07	29.75	21.58	7.62
15	04/16/07	4.33	1.85	0.02	29.47	3.34	1.18
16	02/05/08	2.16	0.34	0.35	28.96	12.18	4.30
17	02/06/08	2.96	1.30	0.41	29.08	48.62	17.17
18	03/26/08	2.32	0.55	0.08	28.84	4.87	1.72
19	04/03/08	2.26	0.26	0.20	28.83	5.24	1.85
20	05/08/08	1.80	0.13	0.13	28.75	1.76	0.62
21	06/03/08	3.96	1.66	0.66	29.27	108.68	38.38
22	07/01/08	2.29	0.40	0.04	28.75	1.56	0.55

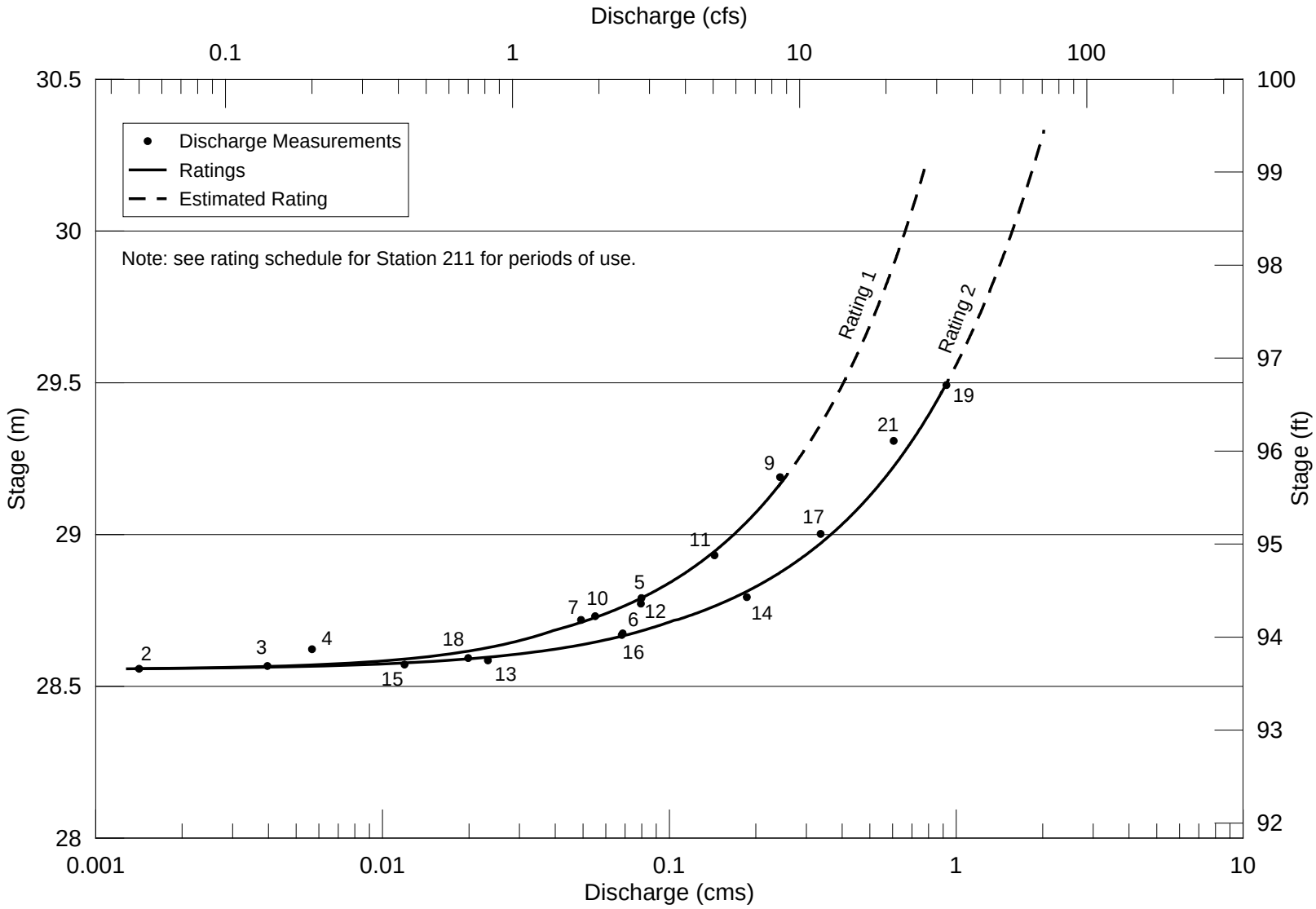
Appendix A-3. Discharge Measurements for Treatment (222) Station

Measurement (no.)	*Date*	*Width (m)*	*Area (m^2)*	*Mean velocity (m/s)*	*Gage height (m)*	*Discharge (cms*100)*	*Discharge (cfs)*
1	09/21/05	0.43	0.02	0.08	25.88	0.17	0.06
2	09/26/05	0.55	0.03	0.06	25.89	0.17	0.06
3	02/15/06	3.66	0.69	0.08	26.20	5.38	1.90
4	02/28/06	3.78	0.70	0.08	26.21	5.80	2.05
5	04/04/06	4.02	0.93	0.19	26.26	17.53	6.19
6	05/10/06	3.41	0.58	0.16	26.17	9.06	3.20
7	05/31/06	3.14	0.48	0.14	26.13	6.91	2.44
8	07/06/06	2.26	0.25	0.04	26.10	1.05	0.37
9	07/27/06	6.22	3.46	0.07	26.69	25.71	9.08
10	10/17/06	4.88	1.88	0.11	26.55	20.81	7.35
11	10/24/06	2.13	0.49	0.05	26.14	2.32	0.82
12	12/06/06	4.88	1.34	0.14	26.35	17.95	6.34
13	04/17/07	3.35	0.51	0.18	26.12	9.43	3.33
14	04/25/07	3.99	0.95	0.30	26.25	29.08	10.27
15	05/22/07	2.59	0.31	0.13	26.05	3.99	1.41
16	07/18/07	3.96	1.01	0.16	26.32	15.89	5.61
17	12/12/07	5.18	2.36	0.28	26.57	42.98	15.18
18	11/28/07	2.87	0.35	0.10	26.20	3.48	1.23
19	01/08/08	6.46	4.67	0.46	27.11	215.21	76.00
20	01/09/08	5.18	2.72	0.33	26.65	91.04	32.15

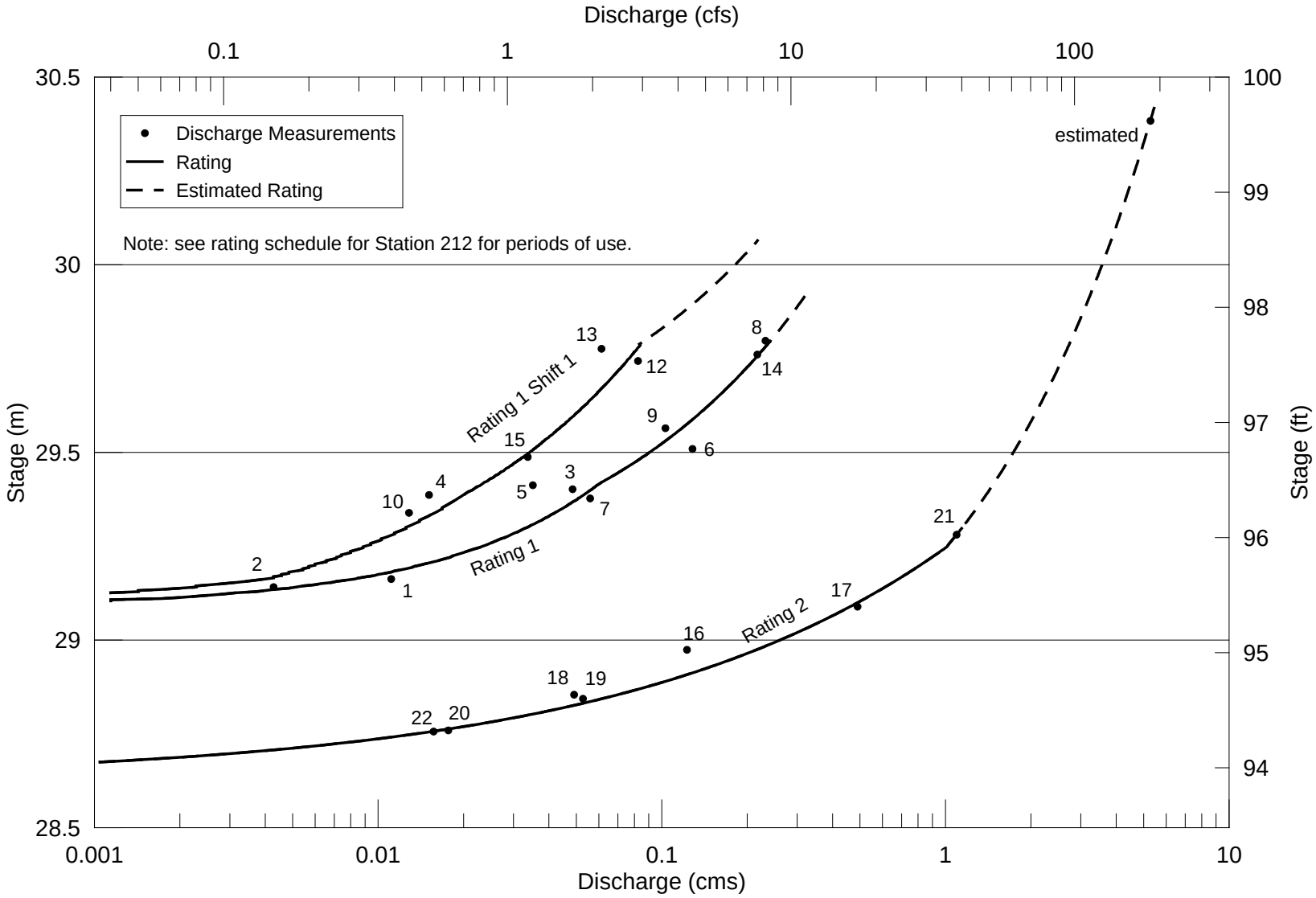
Appendix A-4. Discharge Measurements for Control (223) Station

Measurement (no.)	*Date*	*Width (m)*	*Area (m^2)*	*Mean velocity (m/s)*	*Gage height (m)*	*Discharge (cms*100)*	*Discharge (cfs)*
1	07/20/05	4.21	0.65	0.07	27.21	4.79	1.69
2	08/31/05	2.93	0.37	0.01	27.06	0.42	0.15
3	09/26/05	4.60	0.97	0.12	27.23	12.01	4.24
4	11/01/05	4.72	1.54	0.29	27.35	44.34	15.66
5	02/23/06	3.57	0.68	0.24	27.16	16.57	5.85
6	03/07/06	3.20	0.52	0.18	27.13	9.40	3.32
7	03/31/06	4.08	1.16	0.26	27.27	29.65	10.47
8	05/10/06	5.49	0.84	0.21	27.23	17.53	6.19
9	10/17/06	6.10	4.29	0.22	27.83	93.53	33.03
10	08/23/06	2.90	0.45	0.03	27.06	1.42	0.50
11	10/24/06	2.74	0.46	0.15	27.16	6.68	2.36
12	11/01/06	4.27	0.92	0.08	27.17	7.79	2.75
13	12/06/06	4.27	1.46	0.25	27.33	37.07	13.09
14	12/13/06	10.06	4.12	0.25	27.56	102.03	36.03
15	03/14/07	4.60	1.35	0.28	27.31	38.34	13.54
16	03/26/07	4.79	2.40	0.47	27.49	113.07	39.93
17	04/25/07	13.72	8.96	0.43	27.95	223.90	79.07
18	05/22/07	3.47	0.65	0.13	27.18	8.55	3.02
19	06/28/07	6.10	2.06	0.12	27.44	25.20	8.90
20	07/18/07	4.48	1.25	0.15	27.33	18.29	6.46
21	10/04/07	5.41	0.85	0.03	27.19	2.83	1.00
22	12/12/07	13.96	8.18	0.21	27.98	174.46	61.61
23	11/28/07	5.33	0.89	0.11	27.19	9.57	3.38
24	11/13/07	5.43	1.10	0.09	27.23	10.39	3.67
25	01/08/08	29.89	62.30	0.34	29.63	1045.15	369.09
26	01/09/08	17.37	16.73	0.25	28.58	418.32	147.73
27	02/05/08	19.11	26.05	0.26	29.00	686.09	242.29
28	07/07/08	19.72	27.32	0.18	29.18	495.52	174.99

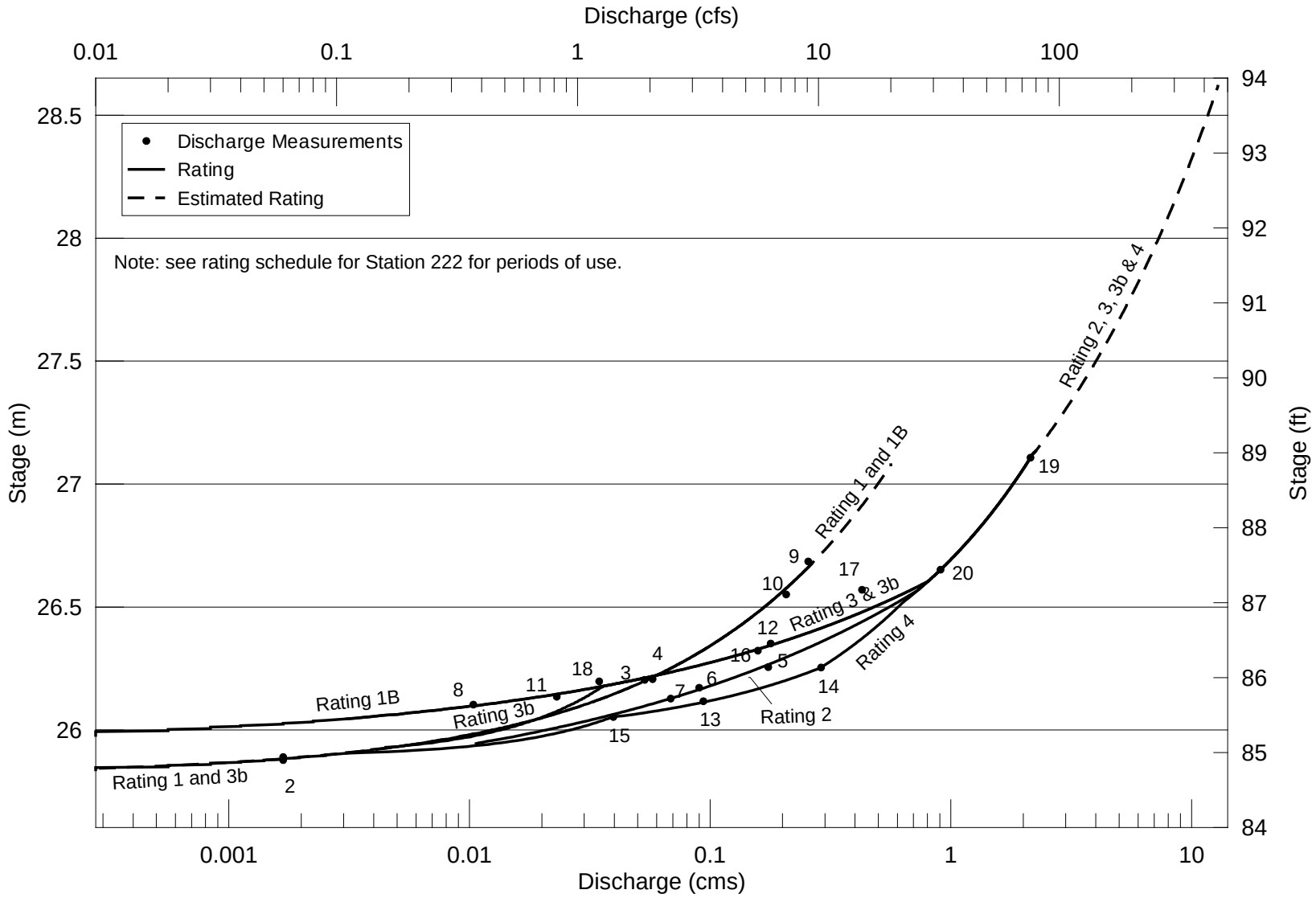
Appendix B-1. Stage-Discharge Rating Curves for Control (211) Station



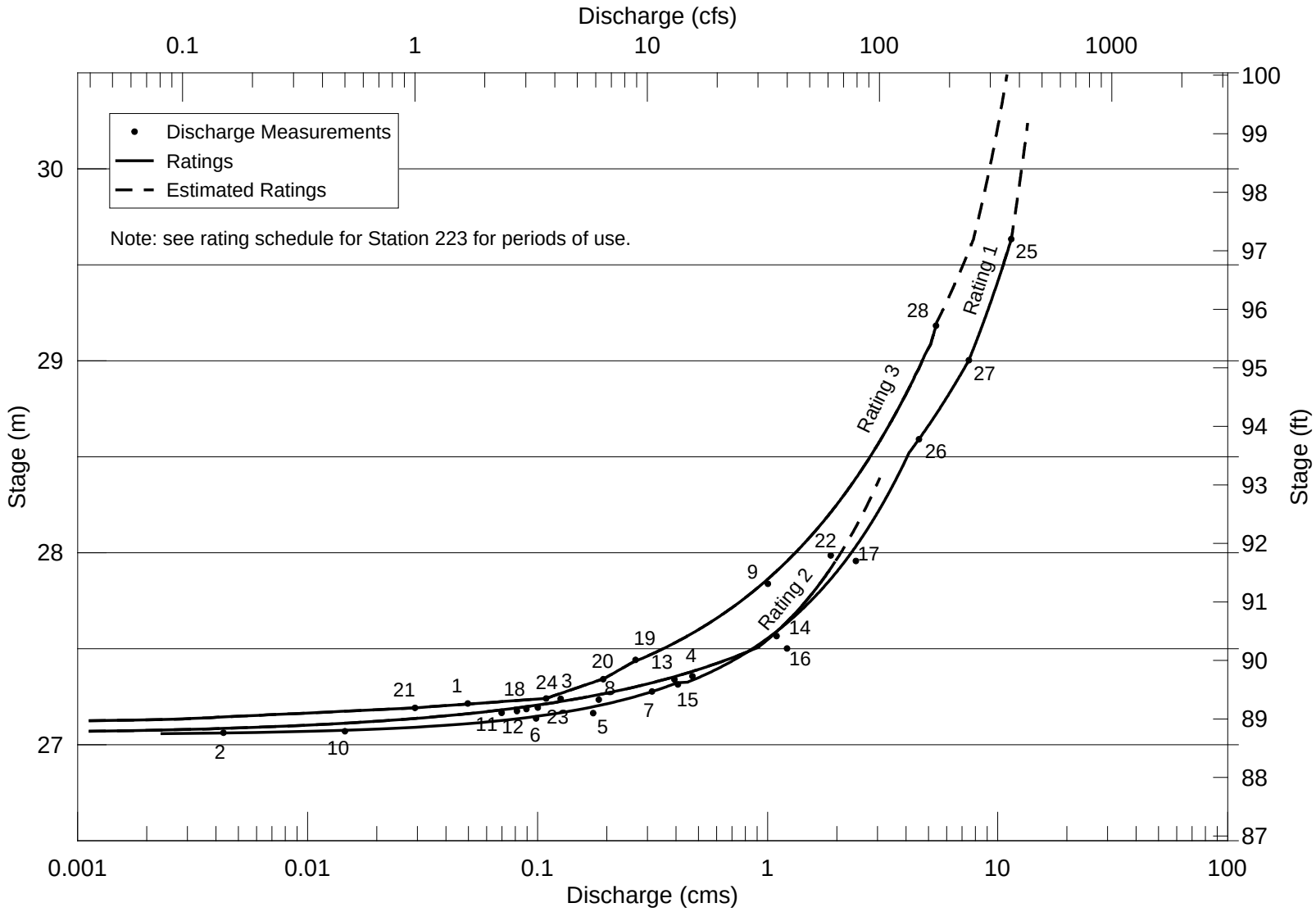
Appendix B-2. Stage-Discharge Rating Curves for Treatment (212) Station



Appendix B-3. Stage-Discharge Rating Curves for Treatment (222) Station



Appendix B-4. Stage-Discharge Rating Curves for Control (223) Station



Appendix C-1. Instantaneous Discharge and Nitrogen Concentration and Yield for Control (211) Station

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
04/12/2005 11:57	na	13	7.83	Grab	7.25	na	0.42	na	< 0.06	na
06/01/2005 11:51	na	24	7.87	Grab	5.13	na	0.66	na	0.07	na
06/08/2005 10:10	0.96e	25	7.64	Grab	4.23	0.11	0.77	20.85	0.10	2.79
06/15/2005 10:45	1.05e	23	7.54	Grab	5.37	0.16	-	-	-	-
06/22/2005 10:50	0.70e	24	7.36	Grab	4.12	0.08	-	-	-	-
06/29/2005 09:19	0.44e	23	7.64	Grab	3.57	0.04	-	-	-	-
07/05/2005 10:30	0.20e	24	7.48	Grab	0.50	0.00	1.36	7.71	0.55	3.14
07/12/2005 09:50	0.00	22	7.5	Grab	0.08	0.00	-	-	-	-
07/19/2005 10:35	0.00	26	7.62	Grab	< 0.07	0.00	-	-	-	-
11/28/2005 11:37	0.05e	14	7.4	Grab	5.39	0.01	-	-	-	-
01/03/2006 14:42	0.05	7	7.73	Grab	5.43	0.01	0.43	0.62	< 0.06	0.08
01/09/2006 12:25	0.05	3	7.98	Grab	6.64	0.01	-	-	-	-
01/17/2006 11:34	0.20	3	7.90	Grab	8.88	0.05	-	-	-	-
01/23/2006 11:17	0.12	2	8.00	Grab	7.18	0.02	-	-	-	-
01/31/2006 11:07	0.23	6	7.69	Grab	9.08	0.06	-	-	-	-
02/06/2006 11:10	0.12	3	7.69	Grab	8.51	0.03	0.32	1.10	< 0.06	0.20
02/14/2006 13:01	0.12	8	8.19	Grab	8.20	0.03	-	-	-	-
02/22/2006 11:09	0.14	5	7.77	Grab	8.44	0.03	-	-	-	-
02/27/2006 10:57	0.16	6	7.92	Grab	8.17	0.04	-	-	-	-
03/06/2006 11:12	0.03	4	7.92	Grab	8.04	0.01	0.31	0.28	< 0.06	0.05
03/08/2006 16:31	0.05	-	-	ISCO	7.36	0.01	0.35	0.50	< 0.06	0.08
03/08/2006 19:31	0.05	-	-	ISCO	7.28	0.01	0.28	0.39	< 0.06	0.08
03/08/2006 22:31	0.05	-	-	ISCO	7.37	0.01	0.29	0.40	< 0.06	0.08
03/09/2006 16:03	0.34	12	7.65	Grab	10.59	0.10	-	-	-	-
03/09/2006 17:31	0.37	-	-	ISCO	11.59	0.12	0.31	3.27	< 0.06	0.63
03/09/2006 19:31	0.44	-	-	ISCO	12.05	0.15	0.37	4.56	< 0.06	0.75
03/09/2006 21:31	0.47	-	-	ISCO	11.93	0.16	0.38	5.00	< 0.06	0.80
03/09/2006 23:31	0.44	-	-	ISCO	11.95	0.15	< 0.26	3.24	< 0.06	0.75
03/10/2006 01:31	0.51	-	-	ISCO	12.18	0.18	0.44	6.29	< 0.06	0.87
03/10/2006 03:31	0.54	-	-	ISCO	12.35	0.19	0.27	4.10	< 0.06	0.92

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
03/11/2006 20:46	1.47	-	-	ISCO	10.75	0.45	2.23	92.99	0.09	3.54
03/11/2006 22:16	2.28	-	-	ISCO	14.10	0.91	1.19	76.76	< 0.06	3.87
03/12/2006 00:16	3.37	-	-	ISCO	16.12	1.54	1.11	105.99	0.08	7.71
03/12/2006 02:16	3.55	-	-	ISCO	16.76	1.69	0.88	88.50	0.07	7.11
03/12/2006 04:16	3.41	-	-	ISCO	16.85	1.63	0.85	82.38	0.07	6.74
03/12/2006 10:16	2.81	-	-	ISCO	16.08	1.28	0.66	52.38	0.06	4.78
03/12/2006 16:16	2.47	-	-	ISCO	15.47	1.08	0.70	48.99	< 0.06	4.19
03/12/2006 22:16	2.18	-	-	ISCO	15.07	0.93	0.62	38.32	< 0.06	3.70
03/13/2006 17:09	1.50	7	7.33	Grab	14.95	0.64	0.29	12.26	< 0.06	2.55
03/17/2006 05:00	0.47	-	-	ISCO	13.65	0.18	0.31	4.14	< 0.06	0.80
03/20/2006 10:58	0.44	4	7.62	Grab	12.49	0.16	-	-	-	-
03/27/2006 11:12	0.43	7	7.99	Grab	12.19	0.15	-	-	-	-
03/31/2006 10:03	0.68	14	7.93	Grab	12.31	0.24	0.43	8.26	< 0.06	1.15
04/03/2006 11:01	0.74	-	7.38	Grab	13.63	0.29	< 0.26	5.45	< 0.06	1.26
04/06/2006 08:01	1.15	-	-	ISCO	12.81	0.42	< 0.26	8.46	< 0.06	1.95
04/06/2006 09:31	2.07	-	-	ISCO	16.41	0.96	0.38	22.42	0.07	4.03
04/06/2006 11:46	2.94	-	-	ISCO	17.11	1.43	0.56	46.91	0.08	6.63
04/06/2006 14:58	2.94	10	-	Grab	17.80	1.48	0.47	39.18	0.07	5.73
04/06/2006 15:46	2.94	-	-	ISCO	17.37	1.45	0.38	31.32	0.07	5.77
04/06/2006 21:46	3.02	-	-	ISCO	17.17	1.47	0.55	46.80	0.07	5.91
04/07/2006 03:46	2.72	-	-	ISCO	16.14	1.24	0.62	47.76	0.06	4.88
04/07/2006 11:46	2.39	-	-	ISCO	16.05	1.09	0.31	20.64	< 0.06	4.06
04/07/2006 14:34	2.73	14	7.22	Grab	16.36	1.27	0.56	43.39	< 0.06	4.64
04/07/2006 15:46	2.94	-	-	ISCO	15.79	1.32	-	-	-	-
04/07/2006 17:46	2.94	-	-	ISCO	15.61	1.30	-	-	-	-
04/07/2006 21:46	2.35	-	-	ISCO	15.53	1.03	-	-	-	-
04/08/2006 01:46	1.98	-	-	ISCO	15.32	0.86	-	-	-	-
04/09/2006 18:06	2.28	-	-	ISCO	14.96	0.97	-	-	-	-
04/10/2006 11:30	1.42	13	7.68	Grab	15.37	0.62	-	-	-	-
04/15/2006 09:01	0.74	-	-	ISCO	14.43	0.30	0.30	6.23	< 0.06	1.25

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
04/16/2006 14:01	0.80	-	-	ISCO	0.89	0.02	29.04	658.95	0.34	7.64
04/16/2006 14:16	1.79	-	-	ISCO	7.12	0.36	12.01	610.33	0.21	10.92
04/16/2006 14:46	6.99	-	-	ISCO	0.44	0.09	27.71	5488.72	0.30	59.78
04/16/2006 15:46	7.47	-	-	ISCO	5.32	1.13	14.62	3094.69	0.14	30.20
04/16/2006 16:31	5.66	-	-	ISCO	8.75	1.40	10.17	1630.41	0.46	73.41
04/16/2006 17:16	4.42	-	-	ISCO	10.96	1.37	5.35	668.51	0.61	76.47
04/16/2006 18:46	3.01	-	-	ISCO	15.48	1.32	2.21	188.17	0.55	46.90
04/17/2006 00:31	1.90	-	-	ISCO	17.17	0.92	1.27	68.21	0.15	7.92
04/17/2006 19:46	0.99	-	-	ISCO	16.08	0.45	3.14	87.81	0.45	12.61
04/18/2006 11:04	0.74	-	-	Grab	16.35	0.34	-	-	-	-
04/19/2006 01:31	1.43	-	-	ISCO	12.26	0.50	2.72	109.99	0.20	8.25
04/24/2006 10:43	0.37	16	7.77	Grab	15.35	0.16	-	-	-	-
05/01/2006 11:19	2.62	13	7.37	Grab	17.54	1.30	0.50	36.73	0.06	4.45
05/08/2006 10:01	0.86	16	7.91	Grab	16.02	0.39	-	-	-	-
05/10/2006 20:16	1.50	-	-	ISCO	3.78	0.16	8.37	354.28	0.31	13.27
05/10/2006 22:16	4.34	-	-	ISCO	15.27	1.88	3.36	412.99	0.09	11.29
05/11/2006 00:16	2.56	-	-	ISCO	17.29	1.25	0.87	62.78	< 0.06	4.35
05/11/2006 02:16	2.43	-	-	ISCO	18.50	1.27	0.72	49.37	< 0.06	4.12
05/11/2006 06:16	2.14	-	-	ISCO	19.00	1.15	0.76	45.97	< 0.06	3.63
05/15/2006 10:21	0.67	13	7.57	Grab	15.87	0.30	-	-	-	-
05/22/2006 10:34	0.43	17	7.81	Grab	14.85	0.18	-	-	-	-
05/31/2006 13:59	0.53	-	-	ISCO	1.45	0.02	9.20	137.18	0.20	3.02
05/31/2006 14:29	3.52	-	-	ISCO	2.27	0.23	6.52	649.66	0.14	13.67
05/31/2006 14:59	8.37	-	-	ISCO	0.96	0.23	6.09	1444.03	0.17	39.24
05/31/2006 15:44	14.85	-	-	ISCO	2.82	1.18	4.53	1905.62	0.15	63.08
05/31/2006 16:14	15.31	-	-	ISCO	3.19	1.38	5.09	2208.65	0.13	57.83
05/31/2006 17:59	12.13	-	-	ISCO	6.12	2.10	3.82	1313.94	0.11	36.79
05/31/2006 20:14	8.58	-	-	ISCO	11.21	2.72	1.66	404.65	0.08	19.58
06/01/2006 02:14	4.17	-	-	ISCO	17.81	2.10	0.92	108.84	< 0.06	7.09
06/01/2006 10:06	3.15	16	7.03	Grab	18.22	1.63	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
06/05/2006 10:50	0.70	21	7.2	Grab	17.18	0.34	< 0.26	5.15	< 0.06	1.19
06/13/2006 11:48	0.30	23	7.93	Grab	15.80	0.13	-	-	-	-
06/19/2006 10:36	0.27	24	7.89	Grab	14.66	0.11	-	-	-	-
06/27/2006 10:05	0.23	19	7.91	Grab	11.79	0.08	-	-	-	-
07/05/2006 10:31	0.27	23	8.31	Grab	9.63	0.07	0.66	5.07	0.06	0.46
07/10/2006 10:21	0.12	24	8.06	Grab	5.30	0.02	-	-	-	-
07/13/2006 11:16	0.23	26	8.17	Grab	8.48	0.06	0.54	3.55	0.07	0.46
07/18/2006 10:55	0.09	31	7.57	Grab	2.06	0.01	-	-	-	-
07/25/2006 11:00	0.00	32	7.8	Grab	1.64	0.00	-	-	-	-
07/26/2006 19:44	0.97	-	-	ISCO	0.63	0.02	2.09	57.30	0.06	1.64
07/26/2006 20:14	8.82	-	-	ISCO	0.72	0.18	2.29	571.16	0.06	14.99
07/26/2006 20:44	19.54	-	-	ISCO	0.29	0.16	1.71	944.58	0.06	33.19
07/26/2006 21:44	27.01	-	-	ISCO	0.45	0.34	1.07	816.41	0.06	45.89
07/26/2006 23:44	26.32	-	-	ISCO	0.49	0.37	0.79	587.47	0.06	44.72
07/27/2006 01:44	23.38	-	-	ISCO	0.71	0.47	0.65	428.68	0.06	39.73
07/27/2006 03:44	18.33	-	-	ISCO	1.24	0.64	0.76	392.38	0.06	31.14
07/27/2006 06:44	13.02	-	-	ISCO	2.59	0.96	0.74	272.95	0.06	22.12
07/27/2006 12:10	9.25	-	-	ISCO	3.62	0.95	-	-	-	-
08/01/2006 10:46	0.61	26	7.31	Grab	5.00	0.09	0.81	13.94	0.07	1.20
08/07/2006 11:30	0.12	24	7.43	Grab	4.54	0.02	-	-	-	-
08/14/2006 11:25	0.05	26	7.68	Grab	2.79	0.00	-	-	-	-
08/18/2006 06:14	0.91	-	-	ISCO	0.63	0.02	0.76	19.70	0.11	2.92
08/18/2006 07:14	6.49	-	-	ISCO	0.98	0.18	0.48	88.92	0.07	11.97
08/18/2006 08:29	19.23	-	-	ISCO	0.44	0.24	0.55	300.44	0.10	52.75
08/18/2006 10:29	19.83	-	-	ISCO	0.56	0.31	0.51	284.05	0.08	45.80
08/18/2006 16:29	10.66	-	-	ISCO	2.10	0.63	0.94	283.82	0.07	20.31
08/21/2006 09:42	1.70	21	7.25	Grab	4.25	0.20	-	-	-	-
08/28/2006 09:40	2.51	21	7.15	Grab	5.86	0.42	-	-	-	-
09/05/2006 10:35	0.23	18	7.38	Grab	4.58	0.03	0.30	1.96	0.06	0.39
09/12/2006 10:46	0.34	21	7.21	Grab	5.59	0.05	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
09/18/2006 06:14	1.98			ISCO	5.98	0.34	0.84	47.35	< 0.06	3.36
09/18/2006 11:16	2.02	19	7.23	Grab	6.28	0.36	-	-	-	-
09/25/2006 10:06	0.23	21	7.47	Grab	5.47	0.04	-	-	-	-
10/03/2006 10:20	0.20	21	7.49	Grab	4.69	0.03	0.34	1.94	0.07	0.38
10/10/2006 13:58	0.20	18	7.76	Grab	4.87	0.03	-	-	-	-
10/16/2006 11:36	0.16	12	7.8	Grab	4.99	0.02	-	-	-	-
10/16/2006 20:59	1.72	-	-	ISCO	6.12	0.30	0.65	31.79	< 0.06	2.92
10/16/2006 21:14	2.04	-	-	ISCO	6.17	0.36	0.71	40.70	< 0.06	3.46
10/16/2006 23:14	3.94	-	-	ISCO	5.77	0.64	0.84	93.54	< 0.06	6.69
10/17/2006 01:14	4.72	-	-	ISCO	6.28	0.84	1.05	140.69	< 0.06	8.01
10/17/2006 05:14	5.46	-	-	ISCO	6.08	0.94	0.90	139.16	< 0.06	9.27
10/17/2006 09:14	5.27	-	-	ISCO	5.90	0.88	0.94	139.78	< 0.06	8.96
10/17/2006 12:40	4.81	-	-	ISCO	5.97	0.81	0.80	108.80	< 0.06	8.17
10/23/2006 11:05	0.73	12	7.32	Grab	6.59	0.14	-	-	-	-
10/31/2006 10:48	0.53	12	7.57	Grab	5.99	0.09	-	-	-	-
11/08/2006 11:08	0.40	13	7.44	Grab	5.90	0.07	0.54	6.15	< 0.06	0.68
11/14/2006 12:23	0.53	10	7.38	Grab	6.05	0.09	-	-	-	-
11/20/2006 13:14	0.60	11	7.48	Grab	6.62	0.11	-	-	-	-
11/27/2006 11:35	0.47	13	7.53	Grab	6.41	0.09	-	-	-	-
11/30/2006 20:14	4.12	-	-	ISCO	7.46	0.87	0.65	75.33	< 0.06	6.97
12/01/2006 03:44	9.93	-	-	ISCO	7.24	2.04	0.82	229.52	0.13	37.14
12/01/2006 05:44	10.78	-	-	ISCO	7.12	2.17	0.94	286.90	0.15	46.24
12/01/2006 07:44	10.57	-	-	ISCO	6.53	1.96	1.09	325.01	0.13	39.29
12/01/2006 13:44	9.11	-	-	ISCO	6.88	1.77	0.96	247.71	0.11	28.21
12/01/2006 15:44	9.72	-	-	ISCO	6.22	1.71	0.97	265.91	0.11	29.03
12/01/2006 17:44	9.84	-	-	ISCO	6.26	1.74	1.08	300.45	0.12	34.65
12/01/2006 19:44	9.52	-	-	ISCO	6.36	1.71	1.03	278.78	0.12	32.02
12/02/2006 07:44	6.24	-	-	ISCO	6.55	1.16	0.85	150.87	0.09	15.43
12/02/2006 15:44	4.85	-	-	ISCO	6.91	0.95	0.63	86.72	< 0.06	7.66
12/05/2006 12:18	1.06	8	7.36	Grab	7.54	0.23	0.43	12.81	< 0.06	1.80

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
12/12/2006 11:31	6.15	9	7.17	Grab	6.41	1.12	-	-	-	-
12/17/2006 07:58	1.13	-	-	ISCO	6.87	0.22	0.86	27.52	< 0.06	1.92
12/19/2006 11:01	1.06	8	7.24	Grab	7.06	0.21	-	-	-	-
12/21/2006 09:43	5.02	-	-	ISCO	7.05	1.00	0.75	107.08	< 0.06	8.53
12/21/2006 10:58	5.48	-	-	ISCO	6.96	1.08	0.76	117.92	< 0.06	9.31
12/21/2006 16:58	7.01	-	-	ISCO	5.90	1.17	0.94	185.85	< 0.06	11.91
12/22/2006 04:58	7.36	-	-	ISCO	5.65	1.18	0.95	198.39	< 0.06	12.51
12/22/2006 06:58	10.93	-	-	ISCO	4.66	1.44	1.72	532.40	< 0.06	18.57
12/22/2006 08:58	13.78	-	-	ISCO	3.72	1.45	2.13	830.76	< 0.06	23.41
12/22/2006 10:58	14.71	-	-	ISCO	3.56	1.48	1.76	732.11	< 0.06	25.00
12/22/2006 14:58	11.76	-	-	ISCO	4.30	1.43	1.86	619.31	0.06	20.65
12/22/2006 20:58	8.41	-	-	ISCO	5.04	1.20	1.19	284.49	< 0.06	14.29
12/23/2006 06:58	5.59	-	-	ISCO	5.45	0.86	1.03	162.58	< 0.06	9.50
12/27/2006 11:11	1.13	8	7.35	Grab	6.96	0.22	-	-	-	-
01/02/2007 11:12	0.85	5	7.28	Grab	6.96	0.17	0.36	8.68	< 0.06	1.44
01/08/2007 11:36	0.76	7	7.43	Grab	6.90	0.15	-	-	-	-
01/11/2007 11:23	0.56	-	-	ISCO	6.88	0.11	0.35	5.57	< 0.06	0.95
01/12/2007 23:28	0.62	-	-	ISCO	6.43	0.11	0.35	6.22	< 0.06	1.05
01/13/2007 09:28	3.65	-	-	ISCO	6.55	0.68	0.87	89.92	< 0.06	6.20
01/15/2007 15:19	8.37	3	7.20	Grab	4.85	1.15	-	-	-	-
01/22/2007 15:05	0.56	7	7.7	Grab	7.31	0.12	-	-	-	-
01/29/2007 12:15	0.35	4	8.41	Grab	7.61	0.08	-	-	-	-
02/24/2007 20:12		-	-	ISCO	4.22	0.00	1.07	0.00	0.09	0.00
02/24/2007 21:12		-	-	ISCO	2.15	0.00	1.89	0.00	0.07	0.00
02/25/2007 11:12		-	-	ISCO	1.81	0.00	2.70	0.00	0.17	0.00
02/25/2007 17:54		-	-	ISCO	2.40	0.00	2.00	0.00	0.26	0.00
02/26/2007 06:42		-	-	ISCO	4.16	0.00	1.19	0.00	0.09	0.00
02/26/2007 11:15		1	7.57	Grab	4.51	0.00	-	-	-	-
03/01/2007 12:55	4.17	-	-	ISCO	2.53	0.30	3.47	409.82	0.11	13.40
03/01/2007 14:55	7.62	-	-	ISCO	2.24	0.48	4.46	963.03	0.16	34.15

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
03/01/2007 17:25	9.80	-	-	ISCO	2.30	0.64	4.88	1353.58	0.14	40.02
03/02/2007 22:10	0.89	-	-	ISCO	4.53	0.11	1.43	35.99	0.07	1.85
03/06/2007 12:13	0.44	2	7.47	Grab	5.64	0.07	0.51	6.36	0.11	1.35
03/13/2007 11:08	0.32	13	7.87	Grab	6.46	0.06	-	-	-	-
03/20/2007 09:36	0.23	6	7.75	Grab	6.49	0.04	-	-	-	-
03/26/2007 14:36	0.30	18	7.73	Grab	7.23	0.06	-	-	-	-
03/28/2007 18:55	2.23	-	-	ISCO	5.66	0.36	2.29	144.57	< 0.06	3.78
03/28/2007 19:55	4.14	-	-	ISCO	7.31	0.86	2.74	321.00	0.10	11.19
03/28/2007 20:40	7.18	-	-	ISCO	3.23	0.66	12.80	2603.35	0.14	29.42
03/29/2007 03:10	6.51	-	-	ISCO	4.64	0.85	2.01	370.80	0.13	23.77
03/29/2007 07:55	4.29	-	-	ISCO	5.82	0.71	1.52	184.10	0.11	13.12
03/31/2007 06:25	1.36	-	-	ISCO	6.73	0.26	0.70	27.14	< 0.06	2.31
03/31/2007 21:55	3.13	-	-	ISCO	4.91	0.43	10.62	940.37	0.08	6.99
04/01/2007 20:10	1.36	-	-	ISCO	6.33	0.24	1.05	40.37	< 0.06	2.31
04/02/2007 12:13	0.89	15	7.28	Grab	6.78	0.17	0.78	19.57	< 0.06	1.51
04/10/2007 09:56	0.23	7	7.57	Grab	7.98	0.05	-	-	-	-
04/16/2007 10:28	0.27	12	7.83	Grab	8.37	0.06	-	-	-	-
04/24/2007 10:58	0.22	18	7.74	Grab	8.09	0.05	-	-	-	-
04/26/2007 09:36	1.06	-	-	Grab	8.57	0.26	< 0.26	7.80	< 0.06	1.80
05/01/2007 09:32	0.60	17	7.63	Grab	8.67	0.15	< 0.26	4.42	< 0.06	1.02
05/09/2007 11:23	0.28	20	7.70	Grab	8.03	0.06	-	-	-	-
05/15/2007 12:43	0.60	22	7.91	Grab	7.64	0.13	-	-	-	-
05/21/2007 12:06	0.47	22	7.71	Grab	8.55	0.11	-	-	-	-
05/29/2007 11:35	0.34	23	7.71	Grab	7.93	0.08	-	-	-	-
06/04/2007 13:02	0.40	21	7.82	Grab	7.70	0.09	< 0.26	2.94	< 0.06	0.68
06/12/2007 09:59	0.47	24	7.54	Grab	6.31	0.08	-	-	-	-
06/19/2007 09:45	0.69	24	7.69	Grab	5.86	0.11	-	-	-	-
06/26/2007 08:40	0.84	20	7.28	Grab	7.54	0.18	0.43	10.17	< 0.06	1.43
07/03/2007 10:40	0.73	22	7.36	Grab	7.29	0.15	0.47	9.62	< 0.06	1.24
12/22/2007 05:56	0.00	-	-	ISCO	5.53	0.00	0.75	0.00	< 0.06	0.00

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
12/26/2007 12:25	0.22	2	8.41	Grab	6.18	0.04	0.38	2.38	< 0.06	0.37
01/08/2008 10:04	2.25	-	-	Grab	13.24	0.84	0.73	46.43	< 0.06	3.82
01/16/2008 16:25	0.34	-	-	Grab	8.89	0.09	0.13	1.28	< 0.06	0.58
01/22/2008 15:15	0.00	0	8.48	Grab	8.35	0.00	-	-	-	-
02/05/2008 17:15	13.26	-	-	ISCO	7.49	2.81	1.93	726.30	0.15	57.64
02/05/2008 17:45	25.12	-	-	ISCO	2.91	2.07	4.56	3245.91	0.22	154.77
02/05/2008 18:15	46.99	-	-	ISCO	1.88	2.51	7.15	9512.69	0.23	306.87
02/05/2008 18:45	57.98	-	-	ISCO	2.01	3.30	5.08	8332.84	0.20	320.91
02/05/2008 22:30	50.79	-	-	ISCO	2.07	2.98	4.59	6596.14	0.20	284.55
02/06/2008 01:15	33.29	-	-	ISCO	3.39	3.20	2.78	2618.01	0.13	125.81
02/06/2008 04:30	19.31	-	-	ISCO	5.35	2.92	2.02	1104.10	0.09	49.57
02/06/2008 10:45	12.82	-	-	ISCO	6.54	2.38	1.56	567.44	0.07	24.43
02/06/2008 14:45	11.31	-	-	ISCO	6.90	2.21	1.42	455.30	0.07	20.98
02/07/2008 14:45	5.03	-	-	ISCO	8.49	1.21	0.88	125.58	< 0.06	8.55
02/08/2008 14:45	3.50	-	-	ISCO	9.29	0.92	0.68	66.97	< 0.06	5.95
02/09/2008 14:45	3.13	-	-	ISCO	9.31	0.83	0.74	65.73	< 0.06	5.32
02/13/2008 16:40	0.98	5	8.18	Grab	11.69	0.32	-	-	-	-
02/17/2008 06:29	6.69	-	-	ISCO	5.80	1.10	2.91	550.73	0.11	21.72
02/17/2008 07:59	11.00	-	-	ISCO	5.54	1.73	4.43	1380.70	0.10	29.83
02/17/2008 11:59	7.89	-	-	ISCO	7.25	1.62	2.23	498.54	0.08	17.07
02/17/2008 15:59	7.21	-	-	ISCO	8.31	1.70	1.70	346.67	0.06	12.81
02/17/2008 23:59	4.14	-	-	ISCO	10.07	1.18	1.05	122.58	< 0.06	7.03
02/19/2008 12:42	1.14	-	-	Grab	10.97	0.36	0.39	12.73	< 0.06	1.94
03/03/2008 10:05	2.46	-	-	Grab	12.30	0.86	0.75	52.48	0.08	5.68
03/03/2008 10:18	2.30	5	7.80	Grab	12.12	0.79	0.80	52.25	0.07	4.43
03/13/2008 14:45	0.96	10	7.77	Grab	11.38	0.31	-	-	-	-
03/18/2008 18:28	4.91	-	-	ISCO	10.57	1.47	1.23	170.59	0.07	10.39
03/19/2008 12:57	6.07	6	8.02	Grab	10.33	1.77	1.08	186.23	0.09	15.73
03/23/2008 09:14	1.08	-	-	ISCO	12.33	0.38	0.30	9.26	< 0.06	1.84
03/26/2008 10:10	0.92	9	8.41	Grab	12.36	0.32	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
04/03/2008 10:12	0.76	8	7.78	Grab	12.96	0.28	-	-	-	-
04/09/2008 12:37	0.63	9	8.80	Grab	12.26	0.22	-	-	-	-
04/14/2008 10:26	0.83	9	8.22	Grab	13.66	0.32	-	-	-	-
04/23/2008 10:00	0.56	16	8.25	Grab	12.09	0.19	-	-	-	-
04/30/2008 13:55	0.47	17	8.23	Grab	13.81	0.18	3.26	43.44	0.74	9.83
05/08/2008 12:08	0.58	12	8.60	Grab	10.45	0.17	-	-	-	-
05/12/2008 11:37	0.79	-	-	Grab	14.04	0.31	0.57	12.72	< 0.06	1.34
05/20/2008 11:43	0.76	15	8.11	Grab	13.21	0.28	-	-	-	-
05/27/2008 09:38	0.76	14	8.08	Grab	11.45	0.25	-	-	-	-
06/03/2008 03:59	3.80	-	-	ISCO	5.32	0.57	4.66	501.16	m	-
06/03/2008 04:44	25.37	-	-	ISCO	0.88	0.63	7.42	5329.70	m	-
06/03/2008 05:44	53.73	-	-	ISCO	2.96	4.51	4.45	6775.10	m	-
06/03/2008 07:59	46.41	-	-	ISCO	5.84	7.68	2.89	3797.45	m	-
06/03/2008 11:30	32.51	-	-	Grab	9.81	9.03	2.83	2603.59	0.12	111.91
06/03/2008 16:29	17.24	-	-	ISCO	16.65	8.13	1.66	809.18	m	-
06/03/2008 19:44	34.45	-	-	ISCO	4.99	4.87	6.65	6482.66	< 0.06	58.52
06/03/2008 21:59	70.72	-	-	ISCO	5.66	11.34	5.45	10917.97	m	-
06/04/2008 00:29	68.97	-	-	ISCO	5.22	10.20	3.83	7486.52	m	-
06/04/2008 05:44	53.08	-	-	ISCO	9.79	14.71	2.45	3684.69	m	-
06/04/2008 09:59	26.43	-	-	ISCO	12.01	8.99	1.42	1066.22	m	-
06/04/2008 11:59	19.82	-	-	ISCO	13.76	7.72	1.08	605.25	< 0.06	35.36
06/06/2008 05:45	5.03	-	-	ISCO	15.58	2.22	0.66	94.44	< 0.06	8.97
06/07/2008 05:45	14.70	-	-	ISCO	2.50	1.04	6.87	2860.33	0.08	32.59
06/07/2008 06:45	41.32	-	-	ISCO	3.11	3.64	2.82	3304.98	< 0.06	70.20
06/07/2008 09:45	43.38	-	-	ISCO	2.59	3.19	4.44	5458.99	0.09	113.98
06/07/2008 10:45	53.65	-	-	ISCO	2.49	3.78	3.74	5676.73	0.10	150.43
06/07/2008 13:45	49.38	-	-	ISCO	4.14	5.79	2.72	3800.91	0.17	239.19
06/07/2008 16:45	27.12	-	-	ISCO	6.17	4.74	1.41	1085.79	0.14	104.24
06/07/2008 19:30	16.28	-	-	ISCO	9.85	4.54	1.11	511.15	< 0.06	27.66
06/09/2008 10:44	4.51	-	-	Grab	13.65	1.74	0.63	80.21	0.07	8.95

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
06/10/2008 15:22	3.24	-	-	Grab	13.01	1.19	0.64	58.56	< 0.06	5.51
06/17/2008 14:13	0.60	-	7.33	Grab	15.85	0.27	-	-	-	-
06/25/2008 13:25	0.28	22	7.54	Grab	14.64	0.12	-	-	-	-
07/01/2008 14:25	0.30	26	7.66	Grab	13.89	0.12	-	-	-	-
07/09/2008 11:20	1.31	22	7.57	Grab	11.43	0.42	0.66	24.48	< 0.06	2.23
07/17/2008 13:30	0.34	-	7.22	Grab	11.13	0.11	-	-	-	-
07/30/2008 12:30	0.34	21	7.61	Grab	9.83	0.09	0.45	4.37	-	-
08/06/2008 11:40	0.16	28	7.44	Grab	7.52	0.03	0.75	3.39	0.15	0.69
08/12/2008 13:45	0.05	26	7.74	Grab	3.77	0.01	-	-	-	-
09/14/2008 06:00	1.40	-	-	ISCO	4.88	0.19	0.47	18.71	< 0.06	2.38
09/14/2008 08:00	30.05	-	-	ISCO	0.57	0.48	1.37	1161.90	< 0.06	51.06
09/14/2008 09:00	60.61	-	-	ISCO	0.47	0.82	1.25	2152.54	< 0.06	102.98
09/14/2008 11:00	68.34	-	-	ISCO	0.20	0.38	1.16	2241.34	< 0.06	116.11
09/14/2008 15:15	65.05	-	-	ISCO	0.22	0.41	1.04	1919.76	< 0.06	110.52
09/14/2008 18:15	57.55	-	-	ISCO	0.43	0.69	0.75	1216.33	< 0.06	97.78
09/14/2008 21:45	38.07	-	-	ISCO	1.00	1.08	0.74	798.40	< 0.06	64.68
09/15/2008 07:15	17.90	-	-	ISCO	2.98	1.51	0.71	358.17	< 0.06	30.41
09/15/2008 10:44	16.28	-	-	Grab	3.15	1.45	0.61	282.29	< 0.06	27.66
09/15/2008 15:15	14.70	-	-	ISCO	3.38	1.41	0.52	214.41	< 0.06	24.98
09/15/2008 23:15	12.38	-	-	ISCO	3.95	1.38	0.48	168.74	< 0.06	21.03
09/16/2008 07:15	10.99	-	-	ISCO	4.35	1.36	0.47	146.76	< 0.06	18.67
09/22/2008 13:05	1.40	20	7.55	Grab	5.70	0.23	-	-	-	-
09/30/2008 11:00	0.28	17	8.03	Grab	5.98	0.05	0.36	2.82	< 0.06	0.48

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Instantaneous Discharge and Nitrogen Concentration and Yield for Treatment (212) Station

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
04/12/2005 12:28	0.74e	13	7.45	Grab	10.93	0.23	0.51	10.68	< 0.06	1.26
06/01/2005 12:58	0.49e	19	7.27	Grab	8.77	0.12	0.34	4.77	< 0.06	0.83
06/08/2005 10:35	0.47e	22	7.3	Grab	8.12	0.11	0.30	4.04	< 0.06	0.80
06/15/2005 10:22	0.00	19	7.22	Grab	9.55	0.00	-	-	-	-
06/22/2005 11:20	0.00	21	7.02	Grab	7.90	0.00	-	-	-	-
06/29/2005 09:43	0.00	23	7.56	Grab	3.58	0.00	-	-	-	-
07/05/2005 11:04	0.00	23	7.53	Grab	0.14	0.00	1.12	0.00	< 0.06	0.00
07/12/2005 10:20	0.00	21	7.49	Grab	0.13	0.00	-	-	-	-
07/19/2005 11:00	0.00	27	8.06	Grab	< 0.07	0.00	-	-	-	-
11/16/2005 12:52	0.00	3	7.81	Grab	3.06	0.00	0.51	0.00	< 0.06	0.00
11/28/2005 08:20	0.14e	-	-	ISCO	6.09	0.02	-	-	-	-
11/28/2005 12:15	0.14e	12	7.54	Grab	7.06	0.03	-	-	-	-
12/27/2005 12:25	0.09e	2	7.23	Grab	5.41	0.01	-	-	-	-
01/03/2006 15:38	0.00	7	7.47	Grab	6.95	0.00	0.41	0.00	< 0.06	0.00
01/09/2006 13:03	0.00	4	7.68	Grab	7.36	0.00	-	-	-	-
01/17/2006 12:15	0.00	3	7.68	Grab	9.26	0.00	-	-	-	-
01/23/2006 11:51	0.00	3	7.72	Grab	8.64	0.00	-	-	-	-
01/31/2006 11:56	0.00	7	7.41	Grab	9.55	0.00	-	-	-	-
02/06/2006 12:08	0.30	4	8.02	Grab	8.98	0.08	< 0.26	2.21	< 0.06	0.51
02/14/2006 13:32	0.25	-	8.00	Grab	9.00	0.06	-	-	-	-
02/22/2006 13:07	0.30	7	7.89	Grab	8.76	0.07	-	-	-	-
02/27/2006 11:36	0.27	6	8.16	Grab	8.47	0.06	-	-	-	-
03/06/2006 11:53	0.19	4	7.93	Grab	8.73	0.05	0.19	1.04	< 0.06	0.32
03/08/2006 13:18	0.29	-	-	ISCO	8.15	0.07	0.32	2.66	< 0.06	0.49
03/08/2006 16:18	0.30	-	-	ISCO	8.16	0.07	0.27	2.28	< 0.06	0.51
03/08/2006 19:18	0.32	-	-	ISCO	8.05	0.07	< 0.26	2.36	< 0.06	0.54
03/08/2006 22:18	0.34	-	-	ISCO	8.18	0.08	0.47	4.57	< 0.06	0.58
03/09/2006 15:00	1.61	8	7.4	Grab	14.49	0.66	0.32	14.67	< 0.06	2.74
03/09/2006 16:18	1.79	-	-	ISCO	14.11	0.71	0.33	16.85	< 0.06	3.03
03/09/2006 18:18	1.91	-	-	ISCO	14.49	0.79	0.25	13.71	< 0.06	3.25

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
03/09/2006 20:18	1.94	-	-	ISCO	15.11	0.83	0.20	10.72	< 0.06	3.29
03/09/2006 22:18	1.99	-	-	ISCO	14.53	0.82	< 0.26	14.68	< 0.06	3.39
03/10/2006 00:18	2.04	-	-	ISCO	15.05	0.87	0.37	21.10	< 0.06	3.47
03/10/2006 02:18	2.09	-	-	ISCO	15.29	0.91	0.28	16.43	< 0.06	3.55
03/10/2006 18:18	2.64	-	-	ISCO	14.08	1.05	< 0.26	19.44	< 0.06	4.49
03/11/2006 02:18	2.18	-	-	ISCO	13.51	0.83	< 0.26	16.06	< 0.06	3.71
03/11/2006 16:18	2.10	-	-	ISCO	12.75	0.76	< 0.26	15.43	< 0.06	3.56
03/11/2006 18:18	2.19	-	-	ISCO	17.45	1.08	0.32	19.86	< 0.06	3.72
03/11/2006 20:18	2.50	-	-	ISCO	17.57	1.25	0.99	70.40	< 0.06	4.25
03/11/2006 20:18	2.50	-	-	ISCO	12.82	0.91	0.27	19.45	< 0.06	4.25
03/11/2006 22:18	4.16	-	-	ISCO	17.35	2.04	< 0.26	30.61	< 0.06	7.06
03/12/2006 02:18	5.19	-	-	ISCO	18.58	1.00	1.20	64.80	0.13	7.16
03/12/2006 10:18	4.22	-	-	ISCO	18.35	0.81	0.70	30.83	< 0.06	2.64
03/13/2006 16:14	3.43	8	7.25	Grab	17.17	0.63	< 0.26	9.50	< 0.06	2.19
03/14/2006 00:18	3.09	-	-	ISCO	17.37	0.56	0.30	9.73	< 0.06	1.95
03/14/2006 04:18	2.92	-	-	ISCO	17.22	0.53	0.29	8.85	< 0.06	1.83
03/14/2006 08:18	2.76	-	-	ISCO	16.92	0.48	0.27	7.58	< 0.06	1.72
03/14/2006 12:18	2.60	-	-	ISCO	16.40	0.44	< 0.26	6.98	< 0.06	1.61
03/14/2006 16:18	2.45	-	-	ISCO	16.78	0.45	< 0.26	6.92	< 0.06	1.60
03/14/2006 20:18	2.33	-	-	ISCO	16.45	0.44	< 0.26	6.92	< 0.06	1.60
03/15/2006 00:18	2.26	-	-	ISCO	16.44	0.40	< 0.26	6.39	< 0.06	1.47
03/15/2006 04:18	2.06	-	-	ISCO	16.02	0.36	< 0.26	5.86	< 0.06	1.35
03/15/2006 08:18	1.93	-	-	ISCO	15.69	0.32	0.26	5.43	< 0.06	1.24
03/15/2006 12:18	1.86	-	-	ISCO	15.46	0.31	< 0.26	5.15	< 0.06	1.19
03/20/2006 11:57	1.58	6	7.55	Grab	14.39	0.24	-	-	-	-
03/27/2006 12:23	0.38	7	7.74	Grab	13.39	0.14	-	-	-	-
03/31/2006 11:16	0.58	14	7.45	Grab	14.72	0.24	0.51	8.45	< 0.06	0.99
03/31/2006 11:34	0.59	-	-	ISCO	14.91	0.25	0.81	13.60	< 0.06	1.00
03/31/2006 17:04	0.72	-	-	ISCO	15.37	0.31	0.43	8.85	< 0.06	1.23
03/31/2006 23:04	0.70	-	-	ISCO	14.99	0.30	0.29	5.75	< 0.06	1.18

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
04/02/2006 21:04	0.72	-	-	ISCO	13.90	0.28	< 0.26	5.32	< 0.06	1.23
04/03/2006 01:04	0.77	-	-	ISCO	14.38	0.31	< 0.26	5.67		
04/03/2006 07:04	0.66	-	-	ISCO	15.48	0.29	< 0.26	4.86		
04/03/2006 12:04	0.62	-	-	ISCO	15.42	0.27	< 0.26	4.56	< 0.06	1.05
04/03/2006 12:14	0.62	8	7.54	Grab	15.29	0.27	0.28	4.96	< 0.06	1.05
04/06/2006 16:46	1.71	-	-	ISCO	18.99	0.92	0.63	30.53	0.10	4.66
04/06/2006 21:34	2.56	-	-	ISCO	18.98	1.37	0.41	29.59	< 0.06	4.34
04/07/2006 01:34	2.36	-	-	ISCO	18.73	1.25	0.41	27.04	< 0.06	4.01
04/07/2006 09:34	1.94	-	-	ISCO	18.26	1.00	0.33	18.22	0.07	3.65
04/07/2006 13:34	1.75	-	-	ISCO	18.01	0.90	0.29	14.30	< 0.06	2.98
04/07/2006 15:48	1.66	13	7.27	Grab	17.60	0.83	0.33	15.65	< 0.06	2.82
04/08/2006 01:34	1.35	-	-	ISCO	17.52	0.67	-	-	-	-
04/08/2006 11:34	1.06	-	-	ISCO	17.15	0.52	-	-	-	-
04/08/2006 17:34	1.27	-	-	ISCO	16.68	0.60	-	-	-	-
04/09/2006 09:34	0.85	-	-	ISCO	16.53	0.40	-	-	-	-
04/10/2006 12:32	0.99	13	7.32	Grab	15.94	0.45	-	-	-	-
04/16/2006 15:32	1.35	-	-	ISCO	17.02	0.65	0.82	31.36	< 0.06	2.29
04/16/2006 15:47	1.49	-	-	ISCO	15.58	0.66	0.59	24.95	< 0.06	2.52
04/16/2006 17:47	2.03	-	-	ISCO	15.60	0.90	0.48	27.71	< 0.06	3.45
04/16/2006 19:47	1.95	-	-	ISCO	19.26	1.06	0.77	42.37	< 0.06	3.31
04/17/2006 05:47	3.93	-	-	ISCO	18.51	2.06	0.29	32.50	< 0.06	6.68
04/18/2006 11:22	2.60	13	-	Grab	17.29	1.27	-	-	-	-
04/19/2006 00:32	3.76	-	-	ISCO	16.15	1.72	0.56	59.87	< 0.06	6.39
04/19/2006 00:47	4.23	-	-	ISCO	15.76	1.89	0.32	37.99	< 0.06	7.19
04/19/2006 02:47	6.18	-	-	ISCO	10.10	1.77	2.65	463.62	0.10	18.35
04/19/2006 12:47	4.77	-	-	ISCO	17.30	2.34	0.95	127.94	0.08	11.36
04/19/2006 14:09	4.75	-	-	Grab	17.19	2.31	-	-	-	-
04/19/2006 14:24	4.74	13	7.07	Grab	17.55	2.36	-	-	-	-
04/20/2006 00:02	4.08	-	-	ISCO	16.49	1.90	0.93	107.01	0.07	7.79
04/24/2006 12:23	1.78	16	7.56	Grab	16.07	0.81	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
04/30/2006 17:32	2.69	-	-	ISCO	15.03	1.15	0.62	46.94	< 0.06	4.57
05/01/2006 12:13	2.68	13	7.24	Grab	17.75	1.35	< 0.26	19.73	< 0.06	4.55
05/08/2006 10:49	1.78	14	7.58	Grab	16.41	0.83	-	-	-	-
05/15/2006 10:57	2.01	13	7.25	Grab	16.90	0.96	-	-	-	-
05/22/2006 11:37	1.58	16	7.65	Grab	16.10	0.72	-	-	-	-
05/31/2006 14:32	2.47	-	-	ISCO	17.58	1.23	0.58	40.44	< 0.06	4.20
05/31/2006 15:17	5.90	-	-	ISCO	15.99	2.67	0.73	121.66	< 0.06	10.03
05/31/2006 16:47	8.79	-	-	ISCO	17.81	4.43	0.87	216.35	< 0.06	14.93
05/31/2006 18:47	10.58	-	-	ISCO	19.17	5.74	0.93	279.59	< 0.06	17.98
05/31/2006 20:47	10.78	-	-	ISCO	18.77	5.73	0.81	247.72	< 0.06	18.32
06/01/2006 02:47	9.62	-	-	ISCO	17.03	4.64	0.96	262.03	< 0.06	16.35
06/01/2006 12:07	8.33	16	7.18	Grab	16.55	3.90	-	-	-	-
06/05/2006 13:05	4.22	20	7.26	Grab	17.29	2.07	< 0.26	31.07	< 0.06	7.17
06/13/2006 12:45	0.87	19	7.43	Grab	17.26	0.43	-	-	-	-
06/19/2006 11:21	0.55	21	7.89	Grab	15.73	0.24	-	-	-	-
06/27/2006 10:54	0.32	19	7.26	Grab	13.11	0.12	-	-	-	-
07/05/2006 11:23	0.11	23	7.56	Grab	10.15	0.03	0.60	1.88	-	-
07/10/2006 11:05	0.00	24	7.83	Grab	5.82	0.00	-	-	-	-
07/13/2006 11:45	0.13	25	7.48	Grab	8.50	0.03	0.45	1.67	-	-
07/26/2006 19:47	0.09	-	-	ISCO	2.92	0.01	1.46	3.80	0.06	0.16
07/26/2006 20:47	0.64	-	-	ISCO	8.39	0.15	0.54	9.90	0.06	1.09
07/26/2006 22:17	2.12	-	-	ISCO	6.78	0.41	0.59	35.14	0.07	4.28
07/26/2006 23:47	3.87	-	-	ISCO	5.98	0.66	0.52	56.80	0.06	6.58
07/27/2006 01:47	4.73	-	-	ISCO	6.24	0.84	0.60	80.91	0.06	8.03
07/27/2006 03:47	4.93	-	-	ISCO	6.39	0.89	0.58	81.57	0.06	8.38
07/27/2006 11:10	4.52	-	-	ISCO	6.53	0.84	0.68	86.99	0.06	7.68
08/01/2006 12:05	1.03	23	7.16	Grab	10.61	0.31	0.27	8.00	< 0.06	1.75
08/07/2006 07:02	0.00	-	-	ISCO	6.90	0.00	-	-	-	-
08/18/2006 07:02	0.10	-	-	ISCO	0.87	0.00	0.73	2.13	0.06	0.18
08/18/2006 09:32	3.80	-	-	ISCO	4.77	0.51	0.70	74.88	0.06	6.45

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
08/18/2006 14:32	7.63	-	-	ISCO	5.04	1.09	0.74	159.48	0.06	12.96
08/18/2006 16:32	7.57	-	-	ISCO	4.60	0.99	0.76	163.33	0.06	12.86
08/18/2006 18:32	7.56	-	-	ISCO	4.72	1.01	0.80	172.20	0.06	12.85
08/21/2006 10:59	3.13	22	7.02	Grab	6.48	0.57			-	-
08/28/2006 13:10	5.32	21	7.02	Grab	6.46	0.97			-	-
08/28/2006 22:17	5.46	-	-	ISCO	7.41	1.15	0.42	64.18	0.06	9.28
08/29/2006 02:17	5.39	-	-	ISCO	7.04	1.07	0.42	63.56	0.06	9.16
08/29/2006 18:17	4.32	-	-	ISCO	7.73	0.95	0.27	33.64	0.06	7.34
08/30/2006 10:17	3.52	-	-	ISCO	7.81	0.78	< 0.26	25.92	0.06	5.98
09/05/2006 11:09	0.59	18	7.24	Grab	7.63	0.13	0.27	4.54	0.06	1.01
09/12/2006 11:48	0.23	20	7.38	Grab	7.68	0.05	-	-	-	-
09/18/2006 12:22	0.31	19	7.42	Grab	7.76	0.07	-	-	-	-
10/16/2006 12:33	0.07	12	7.74	Grab	7.19	0.01	-	-	-	-
10/16/2006 21:17	0.45	-	-	ISCO	6.74	0.09	0.78	9.87	< 0.06	0.76
10/16/2006 23:02	1.00	-	-	ISCO	7.49	0.21	0.62	17.53	< 0.06	1.70
10/17/2006 00:17	1.55	-	-	ISCO	7.55	0.33	0.59	26.18	< 0.06	2.64
10/17/2006 10:36	2.87	-	-	ISCO	8.57	0.70	0.64	52.38	< 0.06	4.88
10/23/2006 12:16	1.02	12	7.27	Grab	7.43	0.21	-	-	-	-
10/31/2006 11:20	0.81	12	7.17	Grab	7.53	0.17	-	-	-	-
11/08/2006 12:02	0.53	14	7.38	Grab	7.48	0.11	0.41	6.16	< 0.06	0.90
11/14/2006 12:55	0.82	11	7.28	Grab	7.09	0.16	-	-	-	-
11/15/2006 19:32	1.24	-	-	ISCO	6.78	0.24	0.63	22.16	< 0.06	2.11
11/15/2006 21:47	1.60	-	-	ISCO	6.95	0.32	0.46	20.83	< 0.06	2.73
11/17/2006 03:47	1.70	-	-	ISCO	8.01	0.39	0.47	22.65	< 0.06	2.89
11/18/2006 09:47	1.36	-	-	ISCO	7.85	0.30	0.36	13.90	< 0.06	2.31
11/19/2006 15:47	1.11	-	-	ISCO	7.66	0.24	0.35	11.04	< 0.06	1.89
11/20/2006 14:14	0.97	11	7.41	Grab	7.96	0.22	-	-	-	-
11/27/2006 12:00	0.55	13	7.4	Grab	7.22	0.11	-	-	-	-
11/30/2006 10:47	1.74	-	-	ISCO	7.66	0.38	0.65	32.29	0.13	6.47
11/30/2006 19:47	7.78	-	-	ISCO	8.85	1.95	0.75	164.67	0.18	40.66

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N (NO^{-}_{3} - N) Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Total Kjeldahl nitrogen (TKN) Load (mg)	Ammonium (NH_4 - N) Conc.** (mg/L)	Ammonium (NH_4 - N) Load (mg)
12/01/2006 00:02	9.58	-	-	ISCO	9.31	2.53	0.95	256.66	0.28	74.80
12/01/2006 04:02	11.01	-	-	ISCO	8.75	2.73	1.10	341.43	0.31	96.91
12/01/2006 08:02	10.93	-	-	ISCO	8.42	2.61	1.17	361.13	0.29	89.51
12/01/2006 16:02	10.06	-	-	ISCO	8.56	2.44	0.96	273.86	0.30	85.45
12/02/2006 00:02	9.70	-	-	ISCO	8.24	2.26	0.99	270.60	0.31	85.59
12/02/2006 12:02	8.67	-	-	ISCO	8.46	2.08	0.88	215.26	0.25	61.43
12/05/2006 13:19	4.82	9	7.37	Grab	8.67	1.18	0.40	54.51	< 0.06	8.19
12/12/2006 12:37	7.70	9	7.14	Grab	9.34	2.04	-	-	-	-
12/16/2006 07:16	4.17	-	-	ISCO	8.75	1.03	0.35	41.52	< 0.06	7.08
12/19/2006 11:33	2.35	8	7.35	Grab	9.15	0.61	-	-	-	-
12/20/2006 17:16	2.21	-	-	ISCO	9.11	0.57	< 0.26	16.25	< 0.06	3.75
12/21/2006 03:46	4.16	-	-	ISCO	8.84	1.04	0.34	40.45	< 0.06	7.07
12/21/2006 11:01	7.04	-	-	ISCO	11.16	2.23	0.40	80.02	0.10	19.69
12/26/2006 08:16	4.39	-	-	ISCO	9.21	1.14	0.32	40.13	< 0.06	7.45
12/27/2006 11:49	3.43	8	7.24	Grab	9.31	0.90	-	-	-	-
12/31/2006 07:00	3.75	-	-	ISCO	9.27	0.98	0.47	50.24	< 0.06	6.37
01/02/2007 11:40	3.75	8	7.26	Grab	9.99	1.06	0.31	33.29	< 0.06	6.37
01/08/2007 11:55	3.35	8	7.45	Grab	10.52	1.00	-	-	-	-
01/14/2007 20:01	6.15	-	-	ISCO	10.32	1.80	0.46	80.05	< 0.06	10.44
01/15/2007 01:16	9.28	-	-	ISCO	11.11	2.92	1.03	270.80	0.08	22.02
01/15/2007 03:16	9.42	-	-	ISCO	10.90	2.91	1.02	272.08	0.08	22.48
01/15/2007 15:16	8.67	-	-	ISCO	10.26	2.52	1.00	245.40	0.07	18.32
01/15/2007 15:39	8.61	6	7.18	Grab	9.83	2.40	-	-	-	-
01/22/2007 15:21	2.06	6	7.6	Grab	11.12	0.65	-	-	-	-
01/29/2007 12:43	1.64	5	8.11	Grab	10.97	0.51	-	-	-	-
02/26/2007 11:46		1	7.53	Grab	7.19	0.00	-	-	-	-
03/06/2007 12:55	0.81	3	7.67	Grab	8.63	0.20	0.48	11.11	< 0.06	1.38
03/13/2007 11:36	0.67	12	7.42	Grab	10.31	0.20	-	-	-	-
03/20/2007 10:00	0.39	6	7.46	Grab	10.57	0.12	-	-	-	-
03/26/2007 14:15	0.89	15	7.75	Grab	11.38	0.29	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
03/28/2007 20:44	1.53	-	-	ISCO	17.17	0.74	1.11	48.19	< 0.06	2.59
04/02/2007 11:28	1.61	13	7.68	Grab	14.88	0.68	0.29	13.09	< 0.06	2.74
04/10/2007 10:29	0.70	7	7.65	Grab	13.84	0.27	-	-	-	-
04/16/2007 11:14	1.14	12	7.59	Grab	13.83	0.45	-	-	-	-
04/24/2007 11:58	0.78	18	7.71	Grab	13.98	0.31	-	-	-	-
04/26/2007 09:46	1.20	-	-	Grab	12.91	0.44	0.29	9.80	< 0.06	2.04
05/01/2007 09:58	1.17	14	7.52	Grab	13.71	0.45	< 0.26	8.61	< 0.06	1.99
05/09/2007 12:09	0.75	18	7.56	Grab	13.23	0.28	-	-	-	-
05/15/2007 13:13	0.63	18	7.62	Grab	12.60	0.22	-	-	-	-
05/16/2007 07:44	1.04	-	-	ISCO	14.60	0.43	0.72	21.27	< 0.06	1.77
05/17/2007 07:44	0.98	-	-	ISCO	13.97	0.39	0.52	14.31	< 0.06	1.67
05/18/2007 07:44	0.90	-	-	ISCO	13.49	0.34	0.60	15.20	< 0.06	1.53
05/19/2007 07:44	0.86	-	-	ISCO	13.18	0.32	0.64	15.57	< 0.06	1.46
05/20/2007 07:44	0.83	-	-	ISCO	13.12	0.31	1.18	27.75	< 0.06	1.41
05/21/2007 07:44	0.78	-	-	ISCO	12.78	0.28	0.92	20.23	< 0.06	1.33
05/21/2007 12:25	0.77	17	7.54	Grab	13.27	0.29	-	-	-	-
05/22/2007 07:44	0.73	-	-	ISCO	13.31	0.28	0.41	8.57	< 0.06	1.24
05/23/2007 07:44	0.70	-	-	ISCO	13.08	0.26	0.77	15.33	< 0.06	1.19
05/24/2007 07:44	0.67	-	-	ISCO	12.96	0.25	0.60	11.42	< 0.06	1.14
05/25/2007 07:44	0.65	-	-	ISCO	12.68	0.23	0.60	11.10	< 0.06	1.10
05/26/2007 07:44	0.64	-	-	ISCO	12.83	0.23	0.59	10.63	< 0.06	1.09
05/27/2007 07:44	0.62	-	-	ISCO	12.55	0.22	1.43	25.04	< 0.06	1.05
05/28/2007 07:44	0.59	-	-	ISCO	12.72	0.21	0.66	10.98	< 0.06	1.00
05/29/2007 07:44	0.57	-	-	ISCO	12.61	0.20	0.68	10.99	< 0.06	0.97
05/29/2007 12:11	0.55	20	7.6	Grab	12.54	0.20	-	-	-	-
06/04/2007 13:15	0.49	18	7.53	Grab	12.52	0.17	0.43	5.98	< 0.06	0.83
06/12/2007 10:48	0.35	18	7.52	Grab	11.91	0.12	-	-	-	-
06/26/2007 09:20	0.40	20	7.34	Grab	10.02	0.11	0.41	4.70	< 0.06	0.68
07/03/2007 11:33	0.40	19	7.31	Grab	9.40	0.11	0.31	3.48	< 0.06	0.68
12/23/2007 00:22	0.00	-	-	ISCO	3.63	0.00	1.07	0.00	0.19	0.00

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
01/16/2008 17:22	0.36	-	-	Grab	10.05	0.10	0.19	1.87	< 0.06	0.60
02/06/2008 13:00	12.35	-	-	ISCO	8.70	3.04	1.42	497.05	< 0.06	20.98
02/06/2008 13:15	12.35	-	-	ISCO	8.51	2.98	1.30	455.14	< 0.06	20.98
02/06/2008 21:06	9.73	-	-	ISCO	9.14	2.52	0.76	209.09	0.08	21.25
02/13/2008 17:16	1.96	1	-	Grab	14.02	0.78	-	-	-	-
02/19/2008 13:20	2.72	4	7.97	Grab	12.90	0.99	0.27	20.48	< 0.06	4.62
03/03/2008 11:00	4.50	6	7.78	Grab	14.54	1.85	0.83	105.98	0.08	9.63
03/13/2008 15:30	1.60	8	7.87	Grab	13.74	0.62	-	-	-	-
03/19/2008 08:34	4.84	-	-	ISCO	14.70	2.01	0.95	130.49	< 0.06	8.42
03/19/2008 12:20	4.35	-	-	Grab	14.74	1.82	0.88	108.69	< 0.06	7.39
03/26/2008 12:41	2.30	11	7.89	Grab	14.98	0.98	-	-	-	-
04/03/2008 09:30	2.24	8	7.88	Grab	15.42	0.98	-	-	-	-
04/09/2008 13:25	1.03	11	8.32	Grab	15.09	0.44	-	-	-	-
04/14/2008 09:55	1.52	11	8.35	Grab	15.78	0.68	-	-	-	-
04/23/2008 11:08	0.59	19	7.94	Grab	15.07	0.25	-	-	-	-
04/30/2008 13:08	0.65	21	8.12	Grab	15.15	0.28	0.27	4.91	< 0.06	1.11
05/08/2008 11:30	0.58	12	8.29	Grab	14.56	0.24	-	-	-	-
05/12/2008 11:22	0.94	-	-	Grab	15.51	0.41	< 0.26	6.90	< 0.06	1.59
05/20/2008 12:20	0.77	14	7.87	Grab	15.82	0.34	-	-	-	-
05/27/2008 10:20	0.73	14	8.31	Grab	15.38	0.32	-	-	-	-
06/03/2008 04:59	9.16	-	-	ISCO	14.21	3.68	4.65	1206.48	m	-
06/03/2008 07:14	29.89	-	-	ISCO	11.79	9.98	3.09	2616.59	m	-
06/03/2008 09:29	37.87	-	-	ISCO	9.75	10.46	2.07	2223.11	m	-
06/03/2008 13:30	27.54	-	-	Grab	12.33	9.61	-	-	< 0.06	46.79
06/03/2008 18:29	18.08	-	-	ISCO	13.30	6.81	1.40	715.34	m	-
06/03/2008 20:44	54.93	-	-	ISCO	5.88	9.14	4.08	6349.07	m	-
06/03/2008 22:59	128.67	-	-	ISCO	3.52	12.82	3.70	13468.48	m	-
06/04/2008 01:44	177.03	-	-	ISCO	2.85	14.26	3.24	16239.75	m	-
06/04/2008 03:29	179.78	-	-	ISCO	3.30	16.81	3.06	15562.94	< 0.06	305.44
06/04/2008 06:14	128.01	-	-	Grab	4.01	14.52	2.39	8660.22	< 0.06	217.50

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
06/04/2008 11:45	46.10	-	-	Grab	7.43	9.70	1.55	2025.54	< 0.06	78.32
06/07/2008 03:29	6.53	-	-	ISCO	8.75	1.62	0.86	158.55	< 0.06	11.09
06/07/2008 07:59	15.16	-	-	ISCO	11.16	4.79	1.25	536.27	< 0.06	25.76
06/07/2008 10:59	34.66	-	-	ISCO	6.37	6.25	1.78	1747.58	< 0.06	58.89
06/07/2008 12:29	35.57	-	-	ISCO	6.09	6.13	1.67	1686.61	< 0.06	60.43
06/08/2008 15:29	10.74	-	-	ISCO	10.78	3.28	0.86	260.18	< 0.06	18.25
06/09/2008 10:07	7.02	-	-	Grab	8.83	1.75	0.73	146.02	< 0.06	11.92
06/10/2008 14:50	3.34	21	7.2	Grab	9.34	0.88	0.62	58.46	< 0.06	5.68
06/17/2008 13:45	1.25	22	7.38	Grab	13.94	0.49	-	-	-	-
06/25/2008 12:43	0.87	21	7.92	Grab	14.32	0.35	-	-	-	-
07/01/2008 13:20	0.58	27	7.59	Grab	14.28	0.23	-	-	-	-
07/09/2008 10:50	2.06	21	7.80	Grab	12.71	0.74	0.40	23.06	< 0.06	3.49
07/17/2008 13:05	0.96	27	7.68	Grab	13.62	0.37	-	-	-	-
07/30/2008 12:55	0.63	23	7.95	Grab	12.19	0.22	< 0.26	4.64	-	-
08/06/2008 11:15	0.29	32	7.68	Grab	10.19	0.08	0.29	2.40	< 0.06	0.49
09/14/2008 07:30	8.96	-	-	ISCO	4.60	1.17	0.88	223.09	< 0.06	15.22
09/14/2008 09:30	47.18	-	-	ISCO	2.93	3.92	0.72	956.31	< 0.06	80.16
09/14/2008 12:00	89.84	-	-	ISCO	1.39	3.53	1.21	3066.48	< 0.06	152.64
09/14/2008 16:30	75.74	-	-	ISCO	1.39	2.98	0.90	1923.35	< 0.06	128.68
09/15/2008 01:30	38.81	-	-	ISCO	2.50	2.75	0.76	831.17	< 0.06	65.94
09/15/2008 10:10	28.95	-	-	Grab	2.73	2.24	0.61	502.27	< 0.06	49.19
09/15/2008 15:00	25.41	-	-	ISCO	2.93	2.11	0.61	436.97	< 0.06	43.17
09/16/2008 00:00	19.17	-	-	ISCO	3.37	1.83	0.52	280.05	< 0.06	32.57
09/16/2008 09:00	13.72	-	-	ISCO	3.59	1.40	0.50	193.02	< 0.06	23.31
09/22/2008 12:40	1.56	23	7.52	Grab	5.37	0.24	-	-	-	-
09/30/2008 10:03	1.63	18	8.62	Grab	6.38	0.29	0.64	29.51	< 0.06	2.77

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Instantaneous Discharge and Nitrogen Concentration and Yield for Treatment (222) Station

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
07/26/2005 09:56	0.03e	22	7.45	Grab	7.53	0.01	-	-	-	-
09/07/2005 11:58	0.03e	21	7.54	Grab	0.16	0.00	0.63	0.54	< 0.06	0.05
09/13/2005 10:06	0.06e	22	7.43	Grab	0.12	0.00	0.78	1.33	< 0.06	0.09
09/21/2005 10:40	0.06	19	7.37	Grab	< 0.07	0.00	0.75	1.28	0.06	0.11
09/26/2005 15:15	0.06e	20	7.46	Grab	< 0.07	0.00	0.80	1.35	0.08	0.14
10/03/2005 14:36	0.06e	20	7.38	Grab	0.08	0.00	-	-	-	-
10/11/2005 14:50	0.06e	14	7.41	Grab	0.09	0.00	-	-	-	-
10/17/2005 13:18	0.06e	14	7.64	Grab	0.11	0.00	-	-	-	-
10/26/2005 14:36	0.06e	9	7.43	Grab	< 0.07	0.00	-	-	-	-
10/31/2005 14:49	0.07e	11	7.48	Grab	0.21	0.00	-	-	-	-
11/07/2005 14:50	0.53e	13	7.48	Grab	7.14	0.11	0.53	8.01	< 0.06	0.90
11/14/2005 14:14	0.07e	8	7.77	Grab	5.81	0.01	-	-	-	-
11/16/2005 09:59	2.34e	7	7.47	Grab	8.36	0.55	0.59	38.78	< 0.06	3.98
11/22/2005 09:54	0.30e	7	7.75	Grab	7.06	0.06	-	-	-	-
11/28/2005 15:20	24.24e	11	7.36	Grab	11.96	8.21	-	-	-	-
12/12/2005 10:58	0.68e	3	7.94	Grab	8.47	0.16	-	-	-	-
12/20/2005 14:30	0.94e	0	7.79	Grab	8.39	0.22	-	-	-	-
12/27/2005 15:37	5.36e	6	7.64	Grab	9.48	1.44	-	-	-	-
01/03/2006 12:09	3.58	7	7.43	Grab	10.95	1.11	< 0.26	26.36	< 0.06	6.08
01/12/2006 10:10	2.47	6	7.95	Grab	10.64	0.74	-	-	-	-
01/19/2006 11:50	2.53	6	7.82	Grab	10.61	0.76	-	-	-	-
01/24/2006 10:45	3.19	4	7.92	Grab	11.74	1.06	-	-	-	-
01/31/2006 15:13	3.57	7	7.92	Grab	12.21	1.23	-	-	-	-
02/07/2006 10:10	2.44	3	7.92	Grab	11.89	0.82	< 0.26	17.96	< 0.06	4.15
02/15/2006 10:14	1.99	5	7.82	Grab	11.81	0.67	-	-	-	-
02/23/2006 11:38	2.35	6	7.98	Grab	12.66	0.84	-	-	-	-
02/28/2006 11:16	2.13	4	7.97	Grab	12.46	0.75	-	-	-	-
03/07/2006 14:18	3.53	7	8.14	Grab	12.20	0.59	< 0.26	12.59	< 0.06	2.91
03/09/2006 02:22	5.80	-	-	ISCO	11.72	0.77	0.39	25.91	< 0.06	3.95
03/09/2006 03:52	16.24	-	-	ISCO	11.66	1.45	0.66	81.38	0.07	9.18

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
03/09/2006 05:22	24.72	-	-	ISCO	13.24	2.48	0.71	132.61	< 0.06	11.25
03/09/2006 06:52	28.25	-	-	ISCO	15.59	3.43	0.96	211.52	0.08	17.61
03/09/2006 07:52	27.90	-	-	ISCO	15.59	3.42	0.98	214.79	0.10	21.12
03/09/2006 09:52	26.13	-	-	ISCO	16.01	3.33	0.98	202.77	0.12	25.87
03/09/2006 11:22	25.07	-	-	ISCO	16.08	3.25	0.93	188.60	0.09	17.39
03/10/2006 17:07	28.60	-	-	ISCO	15.06	3.39	1.03	232.08	< 0.06	13.51
03/10/2006 21:37	26.48	-	-	ISCO	15.82	3.27	0.77	159.37	< 0.06	12.42
03/11/2006 08:07	21.54	-	-	ISCO	15.93	2.88	0.45	81.08	< 0.06	10.84
03/11/2006 12:37	19.97	-	-	ISCO	15.74	2.70	< 0.26	44.62	< 0.06	10.30
03/11/2006 21:07	21.80	-	-	ISCO	15.24	2.67	0.53	93.10	< 0.06	10.51
03/11/2006 22:37	28.30	-	-	ISCO	8.60	1.86	0.80	172.90	< 0.06	13.00
03/12/2006 00:07	39.40	-	-	ISCO	13.87	4.06	1.36	398.54	< 0.06	17.57
03/12/2006 01:37	50.95	-	-	ISCO	11.54	4.44	2.30	884.99	0.07	27.93
03/12/2006 03:07	47.10	-	-	ISCO	9.45	12.84	2.57	3499.96	0.08	110.48
03/12/2006 04:37	43.79	-	-	ISCO	10.21	12.70	2.31	2873.61	0.09	114.90
03/12/2006 07:37	48.73	-	-	ISCO	9.97	13.87	2.30	3201.10	0.17	238.54
03/12/2006 10:37	42.21	-	-	ISCO	11.07	13.20	2.16	2579.20	0.15	181.72
03/13/2006 14:32	21.71	10	7.27	Grab	13.92	8.55	0.87	535.73	< 0.06	36.89
03/14/2006 16:07	13.74	-	-	ISCO	14.91	5.80	0.44	170.29	< 0.06	23.35
03/18/2006 12:22	6.37	-	-	ISCO	15.21	2.74	< 0.26	46.90	< 0.06	10.82
03/20/2006 15:34	6.37	6	8.11	Grab	15.04	2.71	-	-	-	-
03/27/2006 15:44	4.64	6	8.09	Grab	14.50	1.90	-	-	-	-
03/31/2006 14:25	4.82	15	8.48	Grab	13.54	1.85	0.58	78.95	< 0.06	8.19
04/04/2006 10:21	5.91	8	7.82	Grab	14.69	2.46	0.31	51.31	< 0.06	10.03
04/06/2006 10:38	9.13	-	-	ISCO	14.01	3.62	< 0.26	62.72	< 0.06	15.51
04/06/2006 12:08	20.60	-	-	ISCO	14.79	8.63	-	-	-	-
04/06/2006 13:38	27.73	-	-	ISCO	15.39	12.09	0.48	377.75	< 0.06	47.12
04/06/2006 15:08	27.88	-	-	ISCO	15.71	12.40	-	-	-	-
04/06/2006 18:08	26.50	-	-	ISCO	15.41	11.56	0.55	414.45	< 0.06	45.02
04/06/2006 21:08	25.58	-	-	ISCO	15.84	11.47	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
04/07/2006 00:08	24.33	-	-	ISCO	16.05	11.06	0.47	324.69	< 0.06	41.34
04/07/2006 03:08	22.90	-	-	ISCO	15.79	10.24	-	-	-	-
04/07/2006 06:08	21.41	-	-	ISCO	15.82	9.59	-	-	-	-
04/07/2006 09:08	19.93	-	-	ISCO	15.78	8.91	0.54	303.89	< 0.06	33.86
04/07/2006 10:55	19.39	11	7.5	Grab	16.06	8.82	0.43	237.18	< 0.06	32.94
04/11/2006 10:24	5.65	11	7.99	Grab	15.65	2.50	-	-	-	-
04/14/2006 00:23	7.64	-	-	ISCO	12.77	2.77	0.87	187.29	0.14	30.06
04/14/2006 01:38	16.13	-	-	ISCO	13.77	6.29	0.98	447.31	0.17	76.24
04/14/2006 01:58	18.86	-	-	ISCO	13.01	6.95	1.40	749.92	0.37	195.67
04/14/2006 03:23	21.64	-	-	ISCO	14.17	8.68	1.53	936.89	0.41	250.20
04/14/2006 04:53	20.77	-	-	ISCO	14.91	8.77	1.32	777.34	0.39	226.88
04/14/2006 13:53	13.73	-	-	ISCO	16.08	6.26	0.59	227.89	0.13	51.21
04/14/2006 19:53	11.97	-	-	ISCO	16.20	5.49	0.51	173.87	< 0.06	20.34
04/15/2006 03:23	9.98	-	-	ISCO	16.23	4.59	< 0.26	73.48	< 0.06	16.96
04/15/2006 09:23	8.62	-	-	ISCO	16.14	3.94	0.34	83.92	< 0.06	14.65
04/18/2006 14:08	15.14	-	-	Grab	15.83	6.79	-	-	-	-
04/21/2006 11:39	9.39	13	7.56	Grab	15.18	4.04	-	-	-	-
04/25/2006 10:08	5.56	9	7.6	Grab	15.89	2.50	-	-	-	-
05/02/2006 11:03	5.51	16	7.89	Grab	16.00	2.50	< 0.26	40.57	< 0.06	9.36
05/09/2006 11:31	3.34	15	8.01	Grab	15.78	1.49	-	-	-	-
05/16/2006 09:51	5.41	13	7.89	Grab	17.16	2.63	-	-	-	-
05/23/2006 11:21	2.86	15	7.76	Grab	15.46	1.25	-	-	-	-
05/31/2006 09:48	2.43	21	7.71	Grab	14.97	1.03	-	-	-	-
06/07/2006 10:13	2.29	18	7.54	Grab	14.84	0.96	< 0.26	16.86	< 0.06	3.89
06/12/2006 11:14	1.97	17	7.84	Grab	14.32	0.80	-	-	-	-
06/20/2006 10:32	1.84	18	7.75	Grab	12.57	0.65	-	-	-	-
06/28/2006 09:48	1.33	18	7.77	Grab	10.19	0.38	-	-	-	-
07/06/2006 10:41	0.06	19	7.59	Grab	8.31	0.01	0.44	0.75	-	-
07/11/2006 10:05	0.59	21	7.32	Grab	4.72	0.08	-	-	-	-
07/19/2006 09:52	0.00	24	7.45	Grab	1.82	0.00	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
07/26/2006 23:37	0.42	-	-	ISCO	1.20	0.01	2.54	30.06	0.10	1.21
07/27/2006 04:37	2.72	-	-	ISCO	9.85	0.76	1.13	86.62	0.07	5.20
07/27/2006 05:37	4.69	-	-	ISCO	3.86	0.51	1.16	154.22	0.09	11.67
07/27/2006 05:52	5.47	-	-	ISCO	9.25	1.43	1.08	166.99	0.10	15.79
07/27/2006 07:07	8.75	-	-	ISCO	3.17	0.79	1.22	303.18	0.07	17.06
07/27/2006 07:52	9.57	-	-	ISCO	4.16	1.13	1.09	294.66	0.10	26.16
07/28/2006 08:11	9.56	22	6.83	Grab	10.69	2.89	-	-	-	-
08/02/2006 09:45	0.29	26	7.52	Grab	7.89	0.06	0.56	4.63	< 0.06	0.49
08/08/2006 11:30	0.00	23	7.61	Grab	1.22	0.00	-	-	-	-
08/16/2006 10:08	0.00	21	7.43	Grab	0.09	0.00	-	-	-	-
08/23/2006 10:40	0.00	21	7.56	Grab	0.14	0.00	-	-	-	-
08/29/2006 09:48	0.00	21	7.45	Grab	0.09	0.00	-	-	-	-
09/06/2006 08:30	0.00	18	7.87	Grab	0.20	0.00	0.55	0.00	-	-
09/13/2006 10:05	0.03	18	7.55	Grab	0.11	0.00	-	-	-	-
10/16/2006 21:51	0.69	-	-	ISCO	0.58	0.01	0.63	12.36	< 0.06	1.18
10/17/2006 02:21	2.98	-	-	ISCO	6.86	0.58	1.03	86.63	< 0.06	5.06
10/17/2006 03:06	5.21	-	-	ISCO	4.53	0.67	0.71	104.56	< 0.06	8.85
10/17/2006 12:15	7.05	13	7.44	Grab	10.72	2.14	-	-	-	-
10/24/2006 10:47	0.76	8	7.85	Grab	8.49	0.18	-	-	-	-
11/01/2006 11:38	0.91	6	8	Grab	8.68	0.22	-	-	-	-
11/06/2006 15:10	0.73	10	7.92	Grab	9.10	0.19	0.33	6.72	< 0.06	1.24
11/13/2006 13:53	2.12	-	-	ISCO	9.69	0.58	0.33	19.85	< 0.06	3.60
11/13/2006 14:06	2.10	7	7.94	Grab	9.65	0.57	-	-	-	-
11/16/2006 01:36	5.51	-	-	ISCO	9.83	1.53	0.48	75.56	< 0.06	9.36
11/21/2006 11:30	3.87	8	7.91	Grab	10.96	1.20	-	-	-	-
11/29/2006 10:16	2.23	13	7.75	Grab	10.00	0.63	-	-	-	-
11/30/2006 08:36	2.23	-	-	ISCO	9.93	0.63	0.54	33.86	< 0.06	1.55
11/30/2006 11:36	2.23	-	-	ISCO	11.34	0.72	0.93	58.70	0.08	5.35
11/30/2006 13:06	2.23	-	-	ISCO	12.01	0.76	1.06	67.14	0.22	13.80
11/30/2006 16:06	2.23	-	-	ISCO	12.40	0.78	1.15	72.80	0.32	19.97

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
12/06/2006 13:10	7.38	7	7.69	Grab	< 0.07	0.01	< 0.26	54.33	-	-
12/11/2006 12:14	3.23	7	7.75	Grab	12.69	1.16	-	-	-	-
12/18/2006 12:32	4.28	8	7.8	Grab	12.85	1.56	-	-	-	-
12/21/2006 03:35	4.17	-	-	ISCO	12.93	1.53	0.38	44.80	< 0.06	7.08
12/21/2006 04:05	4.17	-	-	ISCO	12.95	1.53	0.30	35.94	< 0.06	7.08
12/21/2006 06:05	4.17	-	-	ISCO	13.47	1.59	0.53	62.20	0.06	7.38
12/21/2006 10:05	4.17	-	-	ISCO	13.25	1.56	0.85	100.77	0.18	20.96
12/21/2006 14:05	4.17	-	-	ISCO	12.59	1.49	1.18	139.64	0.21	24.89
12/21/2006 18:05	4.17	-	-	ISCO	11.46	1.35	1.25	147.77	0.20	23.60
12/21/2006 22:05	4.17	-	-	ISCO	11.17	1.32	1.15	135.92	0.21	25.15
12/22/2006 02:05	34.31	-	-	ISCO	11.61	11.28	1.01	984.59	0.21	204.04
12/22/2006 06:05	34.27	-	-	ISCO	11.08	10.75	1.36	1320.48	0.22	208.99
12/22/2006 12:05	34.21	-	-	ISCO	8.46	8.19	2.54	2460.89	0.37	359.73
12/22/2006 14:05	34.19	-	-	ISCO	8.47	8.20	2.03	1965.81	0.38	364.60
12/22/2006 18:05	34.14	-	-	ISCO	7.80	7.54	2.28	2203.72	0.45	430.94
12/22/2006 22:05	34.10	-	-	ISCO	9.73	9.40	1.52	1465.45	0.28	271.73
12/27/2006 00:00	6.46	7	-	Grab	13.16	2.41	-	-	-	-
01/02/2007 15:35	14.55	7	7.52	Grab	13.54	5.58	0.41	169.95	< 0.06	24.72
01/04/2007 17:35	6.61	-	-	ISCO	13.11	2.45	0.39	73.55	< 0.06	11.23
01/04/2007 19:35	6.61	-	-	ISCO	12.22	2.29	1.01	188.48	0.07	13.98
01/04/2007 21:35	6.61	-	-	ISCO	11.65	2.18	1.18	221.08	0.11	20.17
01/04/2007 23:35	6.61	-	-	ISCO	10.19	1.91	1.55	289.21	0.11	20.94
01/05/2007 05:35	31.67	-	-	ISCO	10.08	9.04	1.46	1307.92	0.10	93.02
01/05/2007 15:35	31.67	-	-	ISCO	11.21	10.05	0.86	769.52	0.08	74.02
01/06/2007 01:35	18.98	-	-	ISCO	11.92	6.41	0.58	312.07	< 0.06	32.25
01/06/2007 15:35	18.98	-	-	ISCO	12.79	6.87	0.42	226.33	< 0.06	32.25
01/09/2007 11:12	6.32	4	7.51	Grab	13.72	2.46	-	-	-	-
01/13/2007 05:05	12.04	-	-	ISCO	13.31	4.54	0.55	187.96	< 0.06	20.46
01/13/2007 12:05	12.43	-	-	ISCO	10.24	3.60	1.26	443.58	0.10	36.06
01/14/2007 04:05	25.26	-	-	ISCO	11.87	8.49	0.68	484.87	0.06	45.40

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
01/14/2007 18:05	25.05	-	-	ISCO	12.78	9.07	0.47	336.88	< 0.06	42.55
01/14/2007 22:05	24.99	-	-	ISCO	11.31	8.00	1.04	738.45	0.08	58.28
01/15/2007 13:29	60.96	4	7.53	Grab	7.56	13.05	-	-	-	-
01/23/2007 15:26	8.25	6	7.98	Grab	13.38	3.13	-	-	-	-
01/30/2007 10:23	6.13	1	8.11	Grab	13.63	2.37	-	-	-	-
02/26/2007 15:44		1	7.59	Grab	3.20	0.00	-	-	-	-
03/05/2007 15:50	7.81	3	7.78	Grab	8.59	1.90	0.74	162.85	0.18	40.25
03/14/2007 12:06	5.46	13	7.88	Grab	12.11	1.87	-	-	-	-
03/20/2007 13:20	4.22	10	8.17	Grab	11.81	1.41	-	-	-	-
03/26/2007 12:05	12.53	13	7.85	Grab	14.08	4.99	-	-	-	-
04/04/2007 09:46	4.34	4	8.03	Grab	13.78	1.69	< 0.26	31.95	< 0.06	7.37
04/10/2007 14:47	3.31	12	8.58	Grab	13.44	1.26	-	-	-	-
04/17/2007 10:20	3.77	12	8.19	Grab	13.27	1.42	-	-	-	-
04/23/2007 13:15	2.77	18	8.47	Grab	12.62	0.99	-	-	-	-
04/25/2007 15:39	25.95	-	-	Grab	15.15	11.13	0.31	226.10	< 0.06	44.09
04/30/2007 11:27	7.84	17	8.1	Grab	14.38	3.19	< 0.26	57.69	< 0.06	13.31
05/09/2007 14:32	3.36	20	8.35	Grab	13.37	1.27	-	-	-	-
05/14/2007 11:13	2.45	18	8.25	Grab	12.95	0.90	-	-	-	-
05/22/2007 11:33	1.55	18	8.14	Grab	12.26	0.54	-	-	-	-
05/26/2007 23:46	20.93	-	-	ISCO	11.99	7.10	0.58	341.54	< 0.06	35.57
05/27/2007 01:16	42.06	-	-	ISCO	16.59	19.76	2.48	2948.09	0.15	181.46
05/27/2007 04:46	23.31	-	-	ISCO	12.28	8.11	2.13	1409.20	0.22	143.71
05/27/2007 08:46	16.10	-	-	ISCO	16.37	7.46	1.12	511.24	0.11	49.19
05/28/2007 01:16	10.23	-	-	ISCO	16.54	4.79	0.51	147.96	< 0.06	17.38
05/29/2007 08:05	4.92	17	7.87	Grab	14.84	2.07	-	-	-	-
06/05/2007 08:30	2.93	17	7.8	Grab	13.09	1.09	< 0.26	21.57	< 0.06	4.98
06/12/2007 14:19	1.37	22	7.99	Grab	12.77	0.50	-	-	-	-
06/20/2007 09:25	0.65	20	7.8	Grab	10.12	0.19	-	-	-	-
06/26/2007 16:48	3.15	-	-	ISCO	11.04	0.98	0.50	44.46	< 0.06	5.35
06/27/2007 10:15	1.19	22	7.69	Grab	11.77	0.40	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
07/03/2007 15:23	0.78	22	7.66	Grab	11.60	0.26	0.26	5.84	< 0.06	1.33
07/11/2007 09:20	0.40	20	7.64	Grab	6.93	0.08	-	-	-	-
07/18/2007 07:24	1.06	-	-	ISCO	3.63	0.11	1.17	35.13	0.06	1.90
07/18/2007 10:00	3.21	19	7.58	Grab	4.06	0.37	0.89	80.90	< 0.06	5.45
07/24/2007 11:38	0.35	20	7.71	Grab	6.41	0.06	-	-	-	-
07/31/2007 12:45	0.14	24	7.55	Grab	1.09	0.00	0.97	3.85	-	-
08/07/2007 08:38	0.07	21	7.55	Grab	0.29	0.00	-	-	-	-
08/16/2007 10:10	0.11	23	7.53	Grab	0.22	0.00	-	-	-	-
08/22/2007 09:24	0.10	25	7.28	Grab	0.19	0.00	-	-	-	-
08/29/2007 12:10	0.00	26	7.46	Grab	< 0.07	0.00	-	-	-	-
09/12/2007 10:46	0.00	17	7.5	Grab	0.25	0.00	-	-	-	-
10/03/2007 16:00	0.00	18	7.29	Grab	< 0.07	0.00	1.26	0.00	< 0.06	0.00
10/19/2007 09:35	0.00	14	7.6	Grab	< 0.07	0.00	-	-	-	-
11/13/2007 13:25	0.14	11	7.42	Grab	< 0.07	0.00	0.58	2.28	-	-
11/21/2007 12:48	1.00	-	-	ISCO	7.38	0.21	0.83	23.63	< 0.06	1.71
11/21/2007 16:48	1.60	-	-	ISCO	10.25	0.46	0.84	38.01	< 0.06	2.71
11/21/2007 19:48	8.73	-	-	ISCO	10.47	2.59	0.98	241.64	0.07	17.99
11/21/2007 20:48	12.44	-	-	ISCO	9.72	3.42	1.53	539.12	0.10	35.77
11/22/2007 00:48	13.07	-	-	ISCO	11.46	4.24	1.20	442.45	0.08	29.44
11/22/2007 04:48	10.12	-	-	ISCO	11.67	3.35	0.90	259.27	0.07	19.80
11/22/2007 12:48	5.32	-	-	ISCO	12.19	1.84	0.68	101.83	0.07	10.14
11/22/2007 20:48	3.10	-	-	ISCO	11.97	1.05	0.59	52.04	< 0.06	5.27
11/23/2007 12:48	1.27	-	-	ISCO	11.35	0.41	0.32	11.44	< 0.06	2.15
11/23/2007 20:48	1.17	-	-	ISCO	11.36	0.38	0.27	9.11	< 0.06	1.99
11/27/2007 10:39	1.09	7	8.02	Grab	10.59	0.33	-	-	-	-
12/02/2007 12:17	0.85	-	-	ISCO	9.93	0.24	0.43	10.35	< 0.06	1.44
12/02/2007 16:17	1.13	-	-	ISCO	10.52	0.34	0.57	18.36	< 0.06	1.92
12/02/2007 20:17	1.21	-	-	ISCO	11.09	0.38	0.51	17.51	< 0.06	2.06
12/03/2007 00:17	1.21	-	-	ISCO	10.34	0.35	0.47	16.18	< 0.06	2.06
12/03/2007 04:17	1.15	-	-	ISCO	10.91	0.36	0.43	14.01	< 0.06	1.95

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
12/04/2007 12:15	1.05	6	8.18	Grab	11.05	0.33	0.31	9.26	< 0.06	1.78
12/11/2007 06:30	2.12	-	-	ISCO	11.30	0.68	< 0.26	15.61	< 0.06	3.60
12/11/2007 10:00	8.28	-	-	ISCO	11.90	2.79	0.59	138.03	< 0.06	14.07
12/11/2007 14:30	19.41	-	-	ISCO	13.15	7.23	0.87	480.29	< 0.06	32.98
12/11/2007 22:30	29.33	-	-	ISCO	13.50	11.21	0.89	742.93	0.07	55.15
12/12/2007 06:30	29.10	-	-	ISCO	14.03	11.56	0.83	683.91	< 0.06	49.44
12/12/2007 14:45	24.07	7	7.53	Grab	14.16	9.65	0.59	402.94	< 0.06	40.90
12/18/2007 10:50	1.89	-	-	Grab	13.57	0.73	-	-	-	-
12/27/2007 09:45	2.98	6	7.99	Grab	13.93	1.18	0.25	20.92	< 0.06	5.06
01/08/2008 16:14	74.34	-	-	Grab	5.87	12.36	3.71	7812.10	0.21	446.99
01/08/2008 17:16	67.92	-	-	Grab	6.22	11.96	2.80	5385.14	0.21	402.32
01/09/2008 10:55	35.04	8	6.78	Grab	9.71	9.63	1.80	1788.56	0.13	127.96
01/09/2008 12:52	33.49	-	-	Grab	9.74	9.24	1.56	1476.54	< 0.06	56.90
01/09/2008 13:00	33.36	-	-	ISCO	9.72	9.18	1.74	1642.18	0.11	103.75
01/09/2008 17:00	31.25	-	-	ISCO	10.10	8.93	1.58	1394.90	0.11	98.06
01/09/2008 21:00	29.33	-	-	ISCO	10.26	8.52	1.37	1137.65	0.13	108.22
01/10/2008 04:59	24.96	-	-	ISCO	10.53	7.44	1.34	944.70	0.11	75.68
01/10/2008 12:20	21.67	-	-	Grab	11.07	6.79	1.11	681.79	0.10	63.51
01/10/2008 16:59	21.16	-	-	ISCO	11.19	6.70	1.19	710.91	0.09	56.32
01/10/2008 20:59	28.93	-	-	ISCO	11.17	9.15	1.33	1091.63	0.10	84.02
01/11/2008 00:59	26.88	-	-	ISCO	9.84	7.49	1.55	1181.22	0.10	73.88
01/11/2008 12:59	18.55	-	-	ISCO	11.80	6.20	1.09	570.80	0.10	52.08
01/16/2008 09:45	2.65	3	8.04	Grab	13.97	1.05	-	-	-	-
01/23/2008 13:55	1.08	4	8.4	Grab	14.48	0.44	-	-	-	-
01/31/2008 10:20	0.88	1	8.56	Grab	13.71	0.34	< 0.26	6.48	< 0.06	1.50
02/04/2008 14:50	1.42	-	-	ISCO	11.67	0.47	0.31	12.32	< 0.06	2.41
02/04/2008 18:05	7.34	-	-	ISCO	7.64	1.59	1.11	230.03	0.12	24.53
02/04/2008 21:05	49.09	-	-	ISCO	3.05	4.25	1.88	2612.50	0.22	306.12
02/04/2008 22:50	73.79	-	-	ISCO	2.59	5.42	4.05	8456.02	0.20	415.57
02/04/2008 23:05	81.04	-	-	ISCO	2.43	5.58	5.99	13743.19	0.23	517.83

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
02/04/2008 23:35	145.59	-	-	ISCO	1.94	8.00	17.63	72695.72	0.34	1397.51
02/05/2008 02:50	223.72	-	-	ISCO	2.43	15.37	7.74	49057.07	0.28	1797.90
02/05/2008 05:50	108.39	-	-	ISCO	3.47	10.64	4.63	14211.93	0.25	755.48
02/05/2008 10:50	51.49	-	-	ISCO	5.16	7.53	2.78	4055.06	0.19	272.58
02/05/2008 11:50	47.47	-	-	ISCO	5.05	6.79	3.05	4103.03	0.16	212.50
02/05/2008 14:50	41.70	-	-	ISCO	5.82	6.87	m	-	0.16	186.63
02/05/2008 17:35	90.74	-	-	ISCO	3.06	7.87	m	-	0.16	423.73
02/05/2008 18:20	179.98	-	-	ISCO	1.76	8.99	m	-	0.18	892.55
02/05/2008 19:50	403.18	-	-	ISCO	1.29	14.77	m	-	0.22	2477.51
02/05/2008 21:35	437.82	-	-	ISCO	1.28	15.93	1.69	20966.11	0.11	1366.33
02/05/2008 22:35	428.02	-	-	ISCO	1.37	16.64	6.90	83578.30	0.19	2311.26
02/05/2008 23:50	415.49	-	-	ISCO	1.69	19.93	4.95	58236.88	0.15	1736.98
02/06/2008 20:20	96.48	-	-	ISCO	6.74	18.43	1.61	4385.14	0.08	220.40
02/07/2008 10:45	45.88	-	-	Grab	8.44	10.96	0.74	960.04	< 0.06	77.95
02/07/2008 14:20	41.07	-	-	ISCO	7.40	8.61	0.82	949.33	0.06	72.93
02/08/2008 14:20	25.39	-	-	ISCO	8.04	5.78	0.80	572.10	0.09	63.20
02/09/2008 14:20	17.03	-	-	ISCO	9.29	4.48	0.74	356.31	< 0.06	28.94
02/14/2008 12:15	0.98	4	7.87	Grab	12.51	0.35	-	-	-	-
02/19/2008 10:16	3.81	-	-	Grab	10.20	1.10	0.70	75.37	< 0.06	6.47
03/03/2008 13:15	17.37	5	7.76	Grab	8.01	3.94	2.23	1095.79	0.10	50.34
03/03/2008 13:28	17.60	-	-	Grab	7.92	3.94	2.31	1151.06	0.09	44.01
03/13/2008 11:55	4.11	8	7.98	Grab	13.34	1.55	-	-	-	-
03/19/2008 16:00	16.23	-	-	Grab	11.90	5.47	0.98	452.44	< 0.06	27.58
03/27/2008 09:10	2.12	6	8.21	Grab	14.24	0.85	-	-	-	-
04/02/2008 09:50	2.62	7	7.86	Grab	14.23	1.06	-	-	-	-
04/10/2008 09:05	1.53	8	8.06	Grab	13.94	0.60	-	-	-	-
04/10/2008 18:59	6.61	-	-	ISCO	13.54	2.53	0.70	131.46	< 0.06	11.23
04/14/2008 13:00	2.69	11	8.21	Grab	14.73	1.12	< 0.26	19.80	< 0.06	4.57
04/24/2008 11:00	1.24	15	8.42	Grab	14.02	0.49	-	-	-	-
05/02/2008 21:59	7.54	-	-	ISCO	14.06	3.00	2.67	570.50	0.29	61.94

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
05/03/2008 02:29	5.63	-	-	ISCO	15.89	2.53	4.56	725.97	1.81	288.74
05/03/2008 06:59	4.55	-	-	ISCO	14.95	1.93	1.15	148.21	0.51	66.26
05/07/2008 10:30	1.64	15	8.33	Grab	14.16	0.66	-	-	-	-
05/11/2008 04:29	7.55	-	-	ISCO	14.51	3.10	0.90	192.12	< 0.06	12.82
05/11/2008 06:14	22.83	-	-	ISCO	15.41	9.96	1.96	1266.83	0.21	135.61
05/11/2008 08:59	33.40	-	-	ISCO	11.39	10.77	4.74	4481.24	0.55	518.90
05/11/2008 13:29	26.47	-	-	ISCO	13.48	10.11	1.95	1464.78	0.32	236.53
05/11/2008 17:59	19.60	-	-	ISCO	15.23	8.46	1.25	693.55	0.23	128.45
05/11/2008 22:29	15.33	-	-	ISCO	16.14	7.01	0.88	382.23	0.19	83.63
05/12/2008 02:59	12.49	-	-	ISCO	16.33	5.78	0.57	203.32	0.13	45.95
05/12/2008 07:29	10.78	-	-	ISCO	16.67	5.09	0.55	167.57	0.09	26.81
05/12/2008 11:59	9.20	-	-	ISCO	16.81	4.38	0.32	82.71	0.06	16.88
05/12/2008 13:47	8.79	-	-	ISCO	16.87	4.20	0.28	70.85	< 0.06	14.93
05/15/2008 20:59	7.68	-	-	ISCO	15.81	3.44	0.62	134.42	< 0.06	13.04
05/16/2008 01:29	17.93	-	-	ISCO	15.72	7.98	1.57	797.79	0.29	146.88
05/16/2008 05:59	13.32	-	-	ISCO	15.91	6.00	0.66	248.94	0.13	47.84
05/16/2008 10:29	11.73	-	-	ISCO	16.18	5.37	0.50	165.44	< 0.06	19.92
05/16/2008 14:59	9.78	-	-	ISCO	16.52	4.58	0.48	133.70	< 0.06	16.62
05/16/2008 23:59	7.62	-	-	ISCO	16.77	3.62	< 0.26	56.11	< 0.06	12.95
05/17/2008 08:59	6.39	-	-	ISCO	16.96	3.07	< 0.26	47.05	< 0.06	10.86
05/19/2008 09:04	3.01	11	7.95	Grab	16.70	1.42	0.30	25.66	< 0.06	5.11
05/28/2008 09:22	3.98	-	8.31	Grab	16.39	1.85	-	-	-	-
05/30/2008 18:45	9.20	-	-	ISCO	16.92	4.41	2.44	634.51	< 0.06	15.63
05/30/2008 20:00	24.21	-	-	ISCO	14.30	9.80	1.81	1237.92	< 0.06	41.13
05/30/2008 20:45	43.13	-	-	ISCO	14.88	18.17	2.64	3221.99	< 0.06	73.28
05/30/2008 23:15	41.36	-	-	ISCO	12.57	14.72	4.88	5714.79	0.16	182.59
05/31/2008 03:45	30.14	-	-	ISCO	13.69	11.69	2.44	2081.45	0.16	135.90
05/31/2008 08:15	20.86	-	-	ISCO	15.43	9.11	1.02	604.28	0.08	44.68
05/31/2008 17:15	12.14	-	-	ISCO	16.67	5.73	0.57	194.31	< 0.06	20.63
06/02/2008 11:15	4.61	18	7.59	Grab	16.99	2.22	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO_3^- - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO_3^- - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_4 - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_4 - N) Load (mg)
06/03/2008 11:00	7.96	-	-	ISCO	14.73	3.32	0.96	215.69	< 0.06	13.52
06/03/2008 15:30	54.67	-	-	ISCO	9.34	14.46	10.89	16864.05	0.09	136.08
06/03/2008 20:00	37.72	-	-	ISCO	10.96	11.71	2.67	2856.42	0.12	133.43
06/03/2008 22:00	186.95	-	-	ISCO	7.04	37.28	18.42	97538.91	0.18	944.18
06/03/2008 23:30	436.17	-	-	ISCO	3.17	39.19	10.29	127130.57	0.26	3181.98
06/04/2008 00:30	439.46	-	-	ISCO	3.05	37.90	15.16	188649.63	0.17	2159.75
06/04/2008 05:00	328.41	-	-	ISCO	3.73	34.67	10.24	95201.53	0.14	1333.54
06/04/2008 08:15	153.05	-	-	ISCO	5.77	25.03	5.86	25417.77	0.10	449.41
06/04/2008 13:15	69.20	-	-	ISCO	8.45	16.55	2.85	5590.69	< 0.06	117.57
06/05/2008 09:15	29.22	-	-	ISCO	11.78	9.74	1.53	1265.97	< 0.06	52.13
06/05/2008 09:30	29.10	-	-	ISCO	11.73	9.67	1.27	1049.65	< 0.06	49.44
06/06/2008 08:00	18.98	-	-	ISCO	12.46	6.70	1.44	771.44	< 0.06	32.25
06/07/2008 02:00	11.72	-	-	ISCO	13.03	4.32	1.32	437.95	< 0.06	19.91
06/07/2008 05:45	35.32	-	-	ISCO	5.84	5.85	6.54	6537.82	0.13	129.68
06/07/2008 06:15	206.26	-	-	ISCO	2.34	13.69	10.62	62025.27	0.10	555.30
06/07/2008 07:30	284.23	-	-	ISCO	1.84	14.78	7.45	59992.44	0.11	847.21
06/07/2008 08:00	331.33	-	-	ISCO	1.76	16.54	8.27	77545.95	0.10	957.76
06/07/2008 10:00	272.55	-	-	ISCO	2.33	18.01	6.97	53824.60	0.10	780.79
06/07/2008 11:00	214.69	-	-	ISCO	2.81	17.09	6.28	38204.01	0.08	459.06
06/07/2008 17:15	79.24	-	-	ISCO	6.28	14.09	2.78	6243.71	0.09	199.84
06/09/2008 12:30	14.03	-	-	Grab	11.62	4.62	1.28	508.22	0.08	31.02
06/11/2008 11:10	5.33	20	7.78	Grab	14.10	2.13	0.78	118.33	< 0.06	9.06
06/26/2008 09:20	1.14	20	7.79	Grab	15.53	0.50	-	-	-	-
07/07/2008 13:21	12.94	-	-	Grab	14.24	5.22	0.96	353.11	< 0.06	21.98
07/17/2008 15:40	1.22	-	7.5	Grab	13.94	0.48	-	-	-	-
07/31/2008 09:15	1.04	20	7.84	Grab	12.53	0.37	-	-	-	-
08/06/2008 13:44	0.82	24	7.6	Grab	10.85	0.25	0.37	8.62	< 0.06	1.39
08/14/2008 09:27	0.00	21	7.5	Grab	6.44	0.00	-	-	-	-
09/18/2008 10:35	10.54	-	-	Grab	4.63	1.38	0.51	151.57	< 0.06	17.91
09/23/2008 09:42	1.82	18	7.93	Grab	7.39	0.38	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-3. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
09/30/2008 15:58	1.13	16	8.41	Grab	7.18	0.23	0.18	5.75	< 0.06	1.92

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Instantaneous Discharge and Nitrogen Concentration and Yield for Control (223) Station

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
07/26/2005 09:23	1.91e	27	7.7	Grab	3.45	0.19	-	-	-	-
09/07/2005 11:15	0.03e	28	8.22	Grab	0.21	0.00	1.09	0.92	0.29	0.25
09/13/2005 09:15	0.03e	24	7.91	Grab	0.14	0.00	1.83	1.55	0.45	0.39
09/21/2005 09:10	0.46e	21	7.75	Grab	0.14	0.00	0.89	11.55	< 0.06	0.73
09/26/2005 12:51	4.24	23	7.75	Grab	0.39	0.05	0.77	92.87	< 0.06	7.20
10/03/2005 15:00	0.33e	28	8.58	Grab	< 0.07	0.00	-	-	-	-
10/11/2005 13:40	0.13e	19	8.3	Grab	0.13	0.00	-	-	-	-
10/17/2005 12:47	0.02e	17	8.19	Grab	0.13	0.00	-	-	-	-
10/26/2005 14:00	0.03e	13	8.4	Grab	0.18	0.00	-	-	-	-
10/31/2005 15:27	0.08e	12	8.04	Grab	0.32	0.00	-	-	-	-
11/07/2005 14:05	2.64e	14	8.32	Grab	3.97	0.30	0.86	63.97	< 0.06	4.49
11/14/2005 14:42	0.37e	7	8.41	Grab	2.96	0.03	-	-	-	-
11/16/2005 09:18	5.56e	5	7.68	Grab	5.05	0.79	0.73	114.45	0.14	21.27
11/22/2005 09:24	1.09e	3	7.87	Grab	4.54	0.14	-	-	-	-
11/28/2005 14:51	41.53e	12	7.49	Grab	6.61	7.77	-	-	-	-
12/06/2005 13:53	2.64e	0	8.17	Grab	5.81	0.43	0.34	25.35	0.07	5.44
12/27/2005 15:08	4.73e	7	7.91	Grab	6.44	0.86	-	-	-	-
01/03/2006 11:02	9.46	7	7.86	Grab	7.08	1.90	0.39	104.13	< 0.06	16.07
01/11/2006 15:04	5.52	7	8.3	Grab	6.36	0.99	-	-	-	-
01/19/2006 10:51	6.32	6	7.92	Grab	6.55	1.17	-	-	-	-
01/24/2006 09:33	8.71	4	7.97	Grab	7.83	1.93	-	-	-	-
01/31/2006 15:49	10.31	6	7.67	Grab	7.81	2.28	-	-	-	-
02/07/2006 09:17	5.10	1	7.95	Grab	7.17	1.03	0.32	46.33	< 0.06	8.66
02/15/2006 09:25	3.23	4	7.55	Grab	6.66	0.61	-	-	-	-
02/23/2006 09:29	5.04	3	8.04	Grab	11.10	1.58	-	-	-	-
02/23/2006 09:48	5.04	16	8.09	Grab	7.51	1.07	-	-	-	-
02/28/2006 10:34	3.81	4	8.03	Grab	7.34	0.79	-	-	-	-
03/07/2006 11:27	3.05	8	8.12	Grab	6.55	0.57	0.39	33.71	< 0.06	5.19
03/09/2006 10:09	16.31	9	7.77	Grab	7.64	3.53	0.91	420.96	< 0.06	27.71
03/09/2006 11:40	15.21	-	-	ISCO	7.63	3.29	0.78	334.63	< 0.06	25.85

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
03/09/2006 12:16	14.91	-	-	ISCO	7.67	3.24	0.76	322.33	< 0.06	25.33
03/09/2006 14:26	16.23	-	-	ISCO	8.01	3.68	1.12	514.34	< 0.06	27.58
03/09/2006 16:26	21.58	-	-	ISCO	8.77	5.36	1.41	862.01	0.07	42.94
03/09/2006 18:26	23.55	-	-	ISCO	9.38	6.25	1.17	777.78	0.06	42.78
03/09/2006 20:26	23.10	-	-	ISCO	9.63	6.30	1.31	858.98	0.06	40.84
03/09/2006 22:26	25.26	-	-	ISCO	10.29	7.36	1.27	909.36	0.11	77.60
03/10/2006 00:26	37.78	-	-	ISCO	10.93	11.70	1.47	1576.42	0.15	165.23
03/10/2006 16:26	33.22	-	-	ISCO	11.01	10.36	1.23	1155.41	0.13	124.31
03/10/2006 22:26	24.78	-	-	ISCO	10.80	7.58	1.01	708.24	< 0.06	42.10
03/11/2006 22:26	30.70	-	-	ISCO	9.41	8.18	1.77	1540.07	< 0.06	52.16
03/11/2006 23:56	60.60	-	-	ISCO	8.85	15.19	3.15	5400.83	0.10	171.83
03/12/2006 01:26	91.60	-	-	ISCO	8.95	23.21	8.83	22899.46	0.64	1668.35
03/12/2006 02:56	112.54	-	-	ISCO	8.42	26.83	6.36	20275.22	0.78	2497.87
03/12/2006 04:26	115.34	-	-	ISCO	8.95	29.24	4.18	13641.56	0.79	2582.48
03/12/2006 07:26	98.78	-	-	ISCO	9.27	25.92	2.47	6899.95	0.40	1120.04
03/12/2006 11:56	69.36	-	-	ISCO	9.96	19.57	1.91	3745.86	0.24	461.92
03/12/2006 20:56	46.48	-	-	ISCO	10.38	13.66	1.39	1833.54	0.13	164.90
03/13/2006 13:27	40.45	12	7.52	Grab	10.43	11.94	1.26	1440.05	0.22	246.63
03/13/2006 22:26	26.64	-	-	ISCO	10.46	7.89	1.05	795.80	< 0.06	45.27
03/15/2006 10:56	14.49	-	-	ISCO	10.34	4.24	0.52	212.85	< 0.06	24.63
03/20/2006 14:34	7.63	6	8.06	Grab	9.82	2.12	-	-	-	-
03/27/2006 15:00	5.37	7	8.33	Grab	8.90	1.35	-	-	-	-
03/31/2006 13:15	11.24	18	8.38	Grab	7.47	2.38	0.79	250.46	< 0.06	19.10
04/04/2006 09:41	15.10	9	7.9	Grab	10.42	4.46	0.53	225.41	< 0.06	25.66
04/06/2006 12:27	27.66	-	-	ISCO	8.19	6.42	1.46	1143.10	0.06	48.22
04/06/2006 15:27	30.26	-	-	ISCO	9.19	7.87	1.09	930.04	0.07	62.71
04/06/2006 18:27	35.55	-	-	ISCO	10.32	10.39	1.04	1050.18	0.08	85.53
04/06/2006 21:27	44.88	-	-	ISCO	11.07	14.07	1.24	1576.75	0.07	86.71
04/07/2006 00:27	44.85	-	-	ISCO	12.29	15.61	1.18	1500.20	0.12	157.13
04/07/2006 04:57	45.67	-	-	ISCO	11.77	15.22	1.46	1887.45	0.10	124.57

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
04/07/2006 07:57	44.60	-	-	ISCO	12.42	15.68	1.13	1426.40	0.10	124.95
04/07/2006 09:15	43.28	13	7.54	Grab	12.64	15.49	0.94	1150.92	0.12	145.88
04/11/2006 09:12	11.85	11	7.53	Grab	10.68	3.58	-	-	-	-
04/14/2006 01:27	26.31	-	-	ISCO	10.15	7.56	3.60	2682.39	0.10	72.21
04/14/2006 01:42	34.45	-	-	ISCO	9.33	9.10	3.15	3074.62	0.10	95.83
04/14/2006 02:27	53.06	-	-	ISCO	8.31	12.49	3.69	5542.01	0.63	946.03
04/14/2006 02:57	69.79	-	-	ISCO	9.09	17.96	3.03	5995.73	0.13	263.14
04/14/2006 03:12	79.71	-	-	ISCO	9.66	21.80	2.81	6337.90	0.18	405.46
04/14/2006 03:57	102.70	-	-	ISCO	6.57	19.11	10.38	30198.36	0.32	925.31
04/14/2006 04:42	116.24	-	-	ISCO	5.92	19.50	9.10	29952.90	0.29	949.27
04/14/2006 06:12	121.41	-	-	ISCO	7.63	26.24	3.85	13232.07	0.19	637.01
04/14/2006 15:22	65.17	-	-	ISCO	11.46	21.15	1.56	2878.60	0.18	327.57
04/15/2006 00:12	45.22	-	-	ISCO	11.93	15.28	1.15	1467.62	0.10	125.82
04/15/2006 06:12	39.20	-	-	ISCO	11.72	13.01	0.89	984.10	0.11	116.90
04/18/2006 13:25	43.91	-	-	Grab	10.56	13.13	-	-	-	-
04/21/2006 10:36	20.01	13	7.62	Grab	10.94	6.20	-	-	-	-
04/25/2006 09:18	10.73	8	7.78	Grab	11.25	3.42	-	-	-	-
05/02/2006 09:49	6.02	16	8.05	Grab	11.07	1.89	0.65	110.79	< 0.06	10.23
05/08/2006 13:18	2.51	21	8.11	Grab	10.87	0.77	-	-	-	-
05/15/2006 14:03	4.07	15	8.09	Grab	9.60	1.11	-	-	-	-
05/31/2006 09:10	3.91	22	8.15	Grab	9.94	1.10	-	-	-	-
06/07/2006 09:05	4.23	22	8.24	Grab	9.37	1.12	0.35	41.41	< 0.06	7.19
06/12/2006 10:33	3.90	20	8.39	Grab	9.06	1.00	-	-	-	-
06/20/2006 09:48	3.69	23	8.43	Grab	5.75	0.60	-	-	-	-
06/26/2006 17:41	8.35	-	-	ISCO	7.07	1.67	0.79	186.66	0.07	16.76
06/28/2006 02:11	4.27	-	-	ISCO	7.51	0.91	0.50	60.65	< 0.06	7.26
06/28/2006 09:14	3.96	21	8.25	Grab	6.99	0.79	-	-	-	-
07/04/2006 05:41	8.01	-	-	ISCO	2.78	0.63	0.92	208.43	-	-
07/06/2006 09:52	3.71	23	8.27	Grab	3.22	0.34	0.48	50.81	-	-
07/11/2006 09:18	4.06	22	7.5	Grab	4.20	0.48	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
07/11/2006 14:11	8.05	-	-	ISCO	2.81	0.64	0.60	136.79	-	-
07/13/2006 08:53	4.50	-	7.67	Grab	4.23	0.54	0.50	63.32	-	-
07/19/2006 08:53	2.41	28	7.81	Grab	1.70	0.12	-	-	-	-
07/28/2006 07:54	5.52	23	7.31	Grab	1.27	0.20	-	-	-	-
08/02/2006 08:45	0.01	28	7.81	Grab	0.67	0.00	1.22	0.35	0.30	0.09
08/08/2006 10:40	0.00	26	8.05	Grab	0.23	0.00	-	-	-	-
08/16/2006 08:46	0.00	22	8.05	Grab	0.77	0.00	-	-	-	-
08/23/2006 09:08	0.00	23	8.19	Grab	0.18	0.00	-	-	-	-
08/29/2006 08:58	0.40	21	7.74	Grab	0.24	0.00	-	-	-	-
09/06/2006 09:14	0.00	18	7.87	Grab	0.33	0.00	0.59	0.00	0.06	0.00
09/13/2006 09:03	0.51	18	7.89	Grab	0.38	0.01	-	-	-	-
09/19/2006 09:36	1.76	16	7.87	Grab	0.52	0.03	-	-	-	-
09/26/2006 12:57	0.00	22	8.15	Grab	0.63	0.00	-	-	-	-
10/02/2006 08:55	0.00	18	7.94	Grab	0.35	0.00	0.61	0.00	0.14	0.00
10/11/2006 12:12	0.01	14	8.02	Grab	1.51	0.00	-	-	-	-
10/16/2006 22:43	6.08	-	-	ISCO	3.13	0.54	1.90	326.97	< 0.06	10.34
10/16/2006 22:58	7.18	-	-	ISCO	3.19	0.65	1.74	353.27	< 0.06	12.19
10/17/2006 00:13	12.43	-	-	ISCO	3.77	1.33	1.78	627.03	< 0.06	21.11
10/17/2006 02:28	21.05	-	-	ISCO	5.36	3.20	1.34	798.24	< 0.06	35.76
10/17/2006 04:58	30.97	13	7.32	ISCO	5.71	5.01	1.25	1099.54	< 0.06	52.62
10/17/2006 11:30	36.66	-	-	Grab	5.30	5.50	-	-	-	-
10/24/2006 10:12	0.38	6	8.07	Grab	5.95	0.06	-	-	-	-
11/01/2006 10:23	0.57	7	7.99	Grab	4.82	0.08	-	-	-	-
11/06/2006 14:12	0.10	11	8.39	Grab	4.94	0.01	0.44	1.26	< 0.06	0.17
11/13/2006 14:40	0.94	8	7.97	Grab	5.75	0.15	-	-	-	-
11/16/2006 00:55	5.84	-	-	ISCO	5.61	0.93	0.48	80.04	< 0.06	9.92
11/16/2006 15:25	10.76	-	-	ISCO	6.76	2.06	1.02	311.42	0.06	18.38
11/17/2006 06:55	9.24	-	-	ISCO	7.36	1.93	0.93	243.47	< 0.06	15.70
11/18/2006 12:55	5.31	-	-	ISCO	7.03	1.06	0.46	69.63	< 0.06	9.02
11/19/2006 18:55	4.11	-	-	ISCO	6.69	0.78	0.51	59.33	< 0.06	6.98

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
11/21/2006 10:40	2.00	5	7.99	Grab	6.98	0.39	-	-	-	-
11/29/2006 09:38	0.31	14	8.04	Grab	5.88	0.05	-	-	-	-
11/30/2006 08:10	6.99	-	-	ISCO	4.75	0.94	1.15	227.16	0.09	17.74
11/30/2006 11:55	20.51	-	-	ISCO	7.19	4.17	0.86	497.23	0.12	69.16
11/30/2006 14:10	33.63	-	-	ISCO	7.28	6.93	1.09	1035.70	0.17	163.42
11/30/2006 20:10	51.10	-	-	ISCO	7.90	11.42	1.43	2074.95	0.21	301.07
12/01/2006 02:10	70.00	-	-	ISCO	7.93	15.73	1.46	2885.30	0.23	458.21
12/01/2006 06:10	104.31	-	-	ISCO	7.29	21.54	1.63	4821.79	0.22	655.95
12/01/2006 08:10	122.57	-	-	ISCO	6.60	22.91	2.20	7634.83	0.21	717.14
12/01/2006 10:10	127.78	-	-	ISCO	6.46	23.38	2.22	8029.87	0.21	772.40
12/01/2006 12:10	121.94	-	-	ISCO	6.64	22.93	2.13	7342.65	0.22	761.46
12/06/2006 11:33	6.33	7	7.8	Grab	8.77	1.57	0.33	59.86	< 0.06	10.75
12/11/2006 11:15	3.35	6	7.79	Grab	8.09	0.77	-	-	-	-
12/14/2006 09:39	10.74	-	-	ISCO	9.14	2.78	0.45	137.88	< 0.06	18.25
12/15/2006 21:39	6.92	-	-	ISCO	8.88	1.74	0.34	66.58	< 0.06	11.76
12/18/2006 11:20	4.68	7	7.96	Grab	8.55	1.13	-	-	-	-
12/21/2006 02:24	16.48	-	-	ISCO	7.79	3.64	0.96	450.21	0.09	43.04
12/21/2006 04:24	24.98	-	-	ISCO	8.11	5.74	0.71	501.85	< 0.06	42.44
12/21/2006 06:24	43.40	-	-	ISCO	8.98	11.03	0.90	1107.99	< 0.06	73.73
12/21/2006 08:24	62.10	-	-	ISCO	9.16	16.10	1.13	1979.99	0.10	167.28
12/21/2006 10:24	81.53	-	-	ISCO	7.99	18.44	1.67	3854.19	0.14	316.16
12/21/2006 12:24	96.37	-	-	ISCO	7.35	20.05	1.84	5018.35	0.14	387.97
12/21/2006 14:24	107.38	-	-	ISCO	7.05	21.44	1.94	5893.86	0.16	493.46
12/21/2006 16:24	111.10	-	-	ISCO	6.95	21.86	1.78	5615.58	0.16	499.17
12/21/2006 18:24	108.20	-	-	ISCO	7.13	21.85	1.33	4074.92	0.15	461.13
12/21/2006 22:24	92.52	-	-	ISCO	7.70	20.16	1.29	3392.09	0.13	350.29
12/22/2006 04:24	77.70	-	-	ISCO	8.25	18.14	0.96	2111.66	0.09	208.18
12/22/2006 06:24	90.43	-	-	ISCO	8.28	21.20	1.35	3452.81	0.12	297.19
12/22/2006 08:24	118.36	-	-	ISCO	7.19	24.09	1.81	6055.00	0.13	449.08
12/22/2006 10:24	170.09	-	-	ISCO	5.22	25.16	3.03	14571.15	0.11	552.83

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
12/22/2006 12:24	204.05	-	-	ISCO	4.88	28.18	2.54	14687.95	0.12	714.59
12/22/2006 14:24	197.13	-	-	ISCO	5.13	28.64	2.25	12547.87	0.15	835.73
12/27/2006 14:55	15.30	7	7.59	Grab	8.80	3.81	-	-	-	-
12/31/2006 05:54	17.08	-	-	ISCO	8.29	4.01	0.58	279.65	< 0.06	29.03
12/31/2006 07:54	39.86	-	-	ISCO	8.18	9.24	0.96	1086.70	< 0.06	67.72
12/31/2006 09:54	63.02	-	-	ISCO	8.08	14.42	1.32	2358.21	0.07	126.29
12/31/2006 13:54	86.23	-	-	ISCO	6.37	15.55	1.98	4836.35	0.09	224.83
12/31/2006 17:54	77.93	-	-	ISCO	6.86	15.14	1.53	3374.83	0.10	209.85
12/31/2006 21:54	69.42	-	-	ISCO	7.55	14.85	1.27	2489.55	0.08	148.53
01/01/2007 05:54	63.72	-	-	ISCO	7.39	13.34	1.38	2485.34	0.08	148.75
01/01/2007 17:54	42.75	-	-	ISCO	8.27	10.01	0.89	1081.94	< 0.06	72.63
01/02/2007 14:36	26.60	-	-	Grab	8.88	6.69	0.46	350.04	< 0.06	45.19
01/04/2007 13:54	18.78	-	-	ISCO	9.00	4.79	< 0.26	138.27	< 0.06	31.91
01/09/2007 09:56	17.88	5	7.75	Grab	9.24	4.68	-	-	-	-
01/12/2007 22:10	25.18	-	-	ISCO	8.47	6.04	0.81	576.50	0.07	46.41
01/13/2007 10:10	119.75	-	-	ISCO	5.51	18.69	1.62	5487.45	0.08	259.82
01/13/2007 22:10	64.26	-	-	ISCO	7.71	14.03	1.07	1946.06	0.07	120.71
01/14/2007 12:10	48.73	-	-	ISCO	8.41	11.61	0.79	1085.58	< 0.06	82.79
01/15/2007 12:54	137.17	4	7.71	Grab	5.67	22.02	-	-	-	-
01/23/2007 14:48	14.17	6	8.12	Grab	7.48	3.00	-	-	-	-
01/30/2007 09:55	15.38	0	7.74	Grab	9.40	4.09	-	-	-	-
02/21/2007 15:12		1	7.65	Grab	6.40	0.00	-	-	-	-
02/26/2007 15:20		1	7.39	Grab	2.52	0.00	-	-	-	-
03/01/2007 09:23	35.96	-	-	ISCO	2.83	2.88	2.21	2254.89	0.61	616.65
03/01/2007 11:53	50.36	-	-	ISCO	2.28	3.25	2.91	4143.70	0.62	877.50
03/01/2007 14:38	101.80	-	-	ISCO	1.33	3.83	4.36	12580.63	0.52	1499.27
03/01/2007 17:08	164.80	-	-	ISCO	1.22	5.71	3.62	16896.18	0.47	2174.61
03/01/2007 21:08	164.55	-	-	ISCO	1.71	7.97	2.80	13067.66	0.50	2332.44
03/02/2007 01:08	109.17	-	-	ISCO	2.46	7.60	2.80	8640.69	0.56	1739.32
03/02/2007 08:53	50.91	-	-	ISCO	4.14	5.97	1.75	2516.87	0.42	609.72

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
03/05/2007 14:40	13.71	-	-	Grab	5.79	2.25	0.95	370.82	0.10	38.37
03/14/2007 10:23	12.74	12	7.87	Grab	7.89	2.85	-	-	-	-
03/20/2007 12:53	7.74	12	8.3	Grab	6.86	1.50	-	-	-	-
03/22/2007 23:38	34.54	-	-	ISCO	6.37	6.23	2.90	2838.60	0.08	82.87
03/23/2007 01:53	47.58	-	-	ISCO	7.54	10.15	1.44	1938.59	0.08	103.93
03/23/2007 06:38	68.31	-	-	ISCO	8.33	16.12	1.94	3744.24	0.08	158.52
03/23/2007 15:23	75.99	-	-	ISCO	8.39	18.06	1.74	3753.15	0.09	197.74
03/23/2007 23:23	63.39	-	-	ISCO	8.98	16.12	1.24	2229.24	0.08	140.71
03/24/2007 07:23	49.74	-	-	ISCO	8.95	12.61	0.85	1200.86	0.05	77.14
03/24/2007 15:23	56.57	-	-	ISCO	9.01	14.43	1.31	2099.39	0.07	107.15
03/24/2007 19:23	73.03	-	-	ISCO	6.64	13.73	2.47	5104.01	0.06	125.89
03/25/2007 07:23	46.90	-	-	ISCO	8.88	11.79	0.87	1151.72	< 0.06	79.69
03/25/2007 23:23	35.21	-	-	ISCO	9.40	9.37	0.73	728.19	< 0.06	59.82
03/26/2007 10:55	30.33	13	7.72	Grab	9.79	8.40	-	-	-	-
04/04/2007 09:10	4.57	4	8.23	Grab	8.68	1.12	< 0.26	33.65	< 0.06	7.76
04/10/2007 14:15	1.73	13	8.49	Grab	8.87	0.43	-	-	-	-
04/17/2007 09:24	4.17	12	8.22	Grab	9.12	1.08	-	-	-	-
04/23/2007 12:32	3.19	22	8.44	Grab	8.64	0.78	-	-	-	-
04/25/2007 01:38	14.14	-	-	ISCO	6.83	2.73	2.04	816.41	< 0.06	24.03
04/25/2007 04:38	43.76	-	-	ISCO	9.51	11.78	1.47	1827.25	0.21	254.02
04/25/2007 05:53	55.66	-	-	ISCO	12.23	19.28	1.96	3096.91	0.28	436.20
04/25/2007 09:53	67.12	-	-	ISCO	13.44	25.55	2.54	4826.03	0.58	1098.32
04/25/2007 13:03	61.50	-	-	Grab	13.54	23.58	2.32	4041.67	0.57	992.76
04/25/2007 17:53	49.95	-	-	ISCO	13.67	19.34	2.26	3193.71	0.86	1222.09
04/25/2007 21:53	43.91	-	-	ISCO	13.36	16.61	1.28	1589.94	0.34	428.36
04/26/2007 23:37	32.33	-	-	ISCO	12.26	11.22	0.68	620.10	0.28	253.76
04/28/2007 14:22	16.05	-	-	ISCO	11.40	5.18	0.31	143.03	< 0.06	27.28
04/30/2007 10:10	9.67	18	8.27	Grab	11.12	3.05	0.23	62.79	< 0.06	16.43
05/09/2007 14:00	3.14		8.49	Grab	9.51	0.85	-	-	-	-
05/14/2007 10:29	1.14	19	8.68	Grab	9.32	0.30	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
05/22/2007 10:20	0.98	23	8.6	Grab	7.91	0.22	-	-	-	-
05/27/2007 02:07	7.20	-	-	ISCO	5.45	1.11	0.72	147.31	0.09	19.02
05/29/2007 07:20	4.37	19	8.22	Grab	8.66	1.07	-	-	-	-
06/05/2007 07:52	4.64	20	7.9	Grab	6.48	0.85	0.45	58.97	< 0.06	7.88
06/12/2007 13:39	2.15	27	8.59	Grab	4.25	0.26	-	-	-	-
06/20/2007 08:53	3.82	23	8	Grab	2.22	0.24	-	-	-	-
06/24/2007 04:21	7.85	-	-	ISCO	2.95	0.66	0.52	115.26	0.08	16.79
06/26/2007 10:21	3.83	-	-	ISCO	4.35	0.47	0.46	50.20	< 0.06	6.51
06/26/2007 19:06	7.68	-	-	ISCO	4.28	0.93	0.58	125.15	< 0.06	13.05
06/27/2007 08:25	9.52	23	7.77	Grab	5.76	1.55	-	-	-	-
07/03/2007 14:45	1.61	26	8.15	Grab	4.60	0.21	0.62	28.17	< 0.06	2.74
07/11/2007 08:40	0.06	23	7.97	Grab	0.22	0.00	-	-	-	-
07/17/2007 08:21	0.06	-	-	Grab	< 0.07	0.00	-	-	-	-
07/17/2007 16:36	3.77	-	-	ISCO	0.09	0.01	0.54	57.12	< 0.06	6.40
07/18/2007 08:12	4.33	21	7.73	Grab	0.40	0.05	0.57	69.66	< 0.06	7.36
07/24/2007 12:02	0.05	27	8.34	Grab	0.10	0.00	-	-	-	-
07/31/2007 11:49	0.31	26	7.94	Grab	< 0.07	0.00	1.24	10.88	< 0.06	0.53
08/07/2007 07:50	0.00	26	7.42	Grab	< 0.07	0.00	-	-	-	-
08/16/2007 09:10	0.00	26	8.04	Grab	< 0.07	0.00	-	-	-	-
08/22/2007 08:40	0.02	27	7.67	Grab	< 0.07	0.00	-	-	-	-
08/29/2007 11:35	0.00	31	8.65	Grab	< 0.07	0.00	-	-	-	-
09/04/2007 13:27	0.00	31	8.72	Grab	< 0.07	0.00	0.71	0.00	< 0.06	0.00
09/08/2007 23:05	0.30	-	-	ISCO	< 0.07	0.00	0.75	6.32	< 0.06	0.50
09/09/2007 03:05	4.26	-	-	ISCO	0.11	0.01	0.68	82.41	< 0.06	7.23
09/09/2007 07:05	5.40	-	-	ISCO	0.18	0.03	0.57	86.64	0.07	10.82
09/10/2007 03:05	3.00	-	-	ISCO	0.09	0.01	0.56	47.40	< 0.06	5.09
09/12/2007 09:48	0.15	16	7.83	Grab	< 0.07	0.00	-	-	-	-
09/12/2007 10:03	0.15	16	7.83	Grab	< 0.07	0.00	-	-	-	-
09/19/2007 09:25	0.00	22	7.72	Grab	< 0.07	0.00	-	-	-	-
09/26/2007 09:32	0.00	18	7.43	Grab	< 0.07	0.00	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	TKN Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium Load (mg)
10/03/2007 07:05	2.19	-	-	ISCO	< 0.07	0.00	0.63	38.99	< 0.06	3.72
10/03/2007 11:05	4.71	-	-	ISCO	0.21	0.03	0.70	93.21	< 0.06	8.00
10/03/2007 15:10	5.05	23	8.1	Grab	0.08	0.01	0.50	71.69	< 0.06	8.58
10/03/2007 19:05	4.62	-	-	ISCO	0.08	0.01	0.57	74.32	< 0.06	7.84
10/04/2007 07:05	1.27	-	-	ISCO	0.08	0.00	0.45	16.18	0.06	2.27
10/10/2007 09:25	0.00	11	7.93	Grab	< 0.07	0.00	-	-	-	-
10/18/2007 08:50	3.63	-	-	ISCO	0.20	0.02	0.34	34.86	< 0.06	6.17
10/19/2007 08:40	0.62	14	7.48	Grab	0.10	0.00	-	-	-	-
10/24/2007 16:08	0.00	12	8.43	Grab	< 0.07	0.00	-	-	-	-
10/30/2007 09:52	0.00	8	7.72	Grab	< 0.07	0.00	-	-	-	-
11/07/2007 13:32	0.00	6	8.11	Grab	< 0.07	0.00	0.39	0.00	< 0.06	0.00
11/12/2007 19:50	2.54	-	-	ISCO	0.38	0.03	0.92	66.30	0.14	10.14
11/12/2007 20:20	4.44	-	-	ISCO	0.21	0.03	0.89	111.50	0.23	28.33
11/13/2007 00:20	6.48	-	-	ISCO	0.86	0.16	0.79	144.52	0.21	39.41
11/13/2007 04:20	6.13	-	-	ISCO	0.72	0.13	0.79	137.24	0.13	343.75
11/13/2007 08:20	4.92	-	-	ISCO	0.65	0.09	0.69	95.78	< 0.06	8.35
11/13/2007 11:10	3.90	11	7.61	Grab	0.63	0.07	0.63	69.57	-	-
11/21/2007 09:35	2.05	-	-	ISCO	0.20	0.01	0.69	40.00	0.10	5.98
11/21/2007 11:50	8.73	-	-	ISCO	1.27	0.31	1.06	262.04	0.09	22.30
11/21/2007 14:05	14.79	-	-	ISCO	1.66	0.70	1.17	488.24	0.12	51.13
11/21/2007 18:05	30.78	-	-	ISCO	2.23	1.94	1.34	1165.87	0.09	76.05
11/21/2007 22:05	37.20	-	-	ISCO	3.16	3.33	1.35	1416.95	0.12	129.74
11/22/2007 02:05	32.07	-	-	ISCO	3.87	3.52	1.15	1045.93	0.13	119.36
11/22/2007 10:05	16.73	-	-	ISCO	5.61	2.66	1.08	509.57	0.12	57.30
11/22/2007 18:05	9.14	-	-	ISCO	5.52	1.43	0.98	252.71	0.10	24.79
11/23/2007 02:05	6.81	-	-	ISCO	5.36	1.03	0.82	158.12	0.08	14.69
11/23/2007 14:05	4.83	-	-	ISCO	5.04	0.69	0.73	99.47	< 0.06	8.21
11/27/2007 09:27	2.76	4	8.29	Grab	4.58	0.36	-	-	-	-
12/02/2007 17:35	4.73	-	-	ISCO	2.78	0.37	0.69	92.70	< 0.06	8.04
12/02/2007 21:35	5.46	-	-	ISCO	3.26	0.50	0.51	78.43	0.06	9.62

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
12/03/2007 13:35	4.43	-	-	ISCO	4.53	0.57	0.38	47.19	< 0.06	7.52
12/04/2007 10:40	1.51	-	8.23	Grab	5.84	0.25	0.57	24.47	< 0.06	2.56
12/11/2007 05:19	4.76	-	-	ISCO	5.34	0.72	0.56	75.66	< 0.06	8.08
12/11/2007 08:34	8.90	-	-	ISCO	6.06	1.53	0.86	217.98	0.09	22.83
12/11/2007 11:04	18.50	-	-	ISCO	6.76	3.54	1.08	566.79	0.14	71.74
12/11/2007 13:04	28.83	-	-	ISCO	7.28	5.94	1.33	1086.96	0.15	119.89
12/11/2007 17:19	41.76	-	-	ISCO	8.22	9.72	1.29	1529.85	0.22	257.36
12/11/2007 21:19	45.54	-	-	ISCO	8.26	10.66	1.33	1710.95	0.25	323.42
12/12/2007 01:19	55.23	-	-	ISCO	7.95	12.43	1.28	2003.00	0.26	399.27
12/12/2007 05:19	58.90	-	-	ISCO	7.66	12.78	1.45	2425.84	0.25	409.77
12/12/2007 09:19	50.78	-	-	ISCO	7.72	11.11	1.18	1700.06	0.22	320.15
12/12/2007 10:50	46.72	5	8.48	Grab	7.92	10.48	1.29	1703.18	0.19	246.93
12/18/2007 10:15	5.22	-	-	Grab	8.80	1.30	-	-	-	-
12/27/2007 09:05	15.71	5	7.77	Grab	8.78	3.90	0.37	165.29	< 0.06	26.70
01/08/2008 15:30	364.84	11	7.88	Grab	3.56	36.81	2.71	28027.10	0.13	1391.52
01/09/2008 09:26	160.11	6	7.51	Grab	5.26	23.84	1.99	9034.49	0.15	680.03
01/09/2008 11:36	144.00	8	7.24	Grab	5.40	22.04	1.97	8018.27	< 0.06	244.67
01/09/2008 13:34	137.34	-	-	ISCO	5.53	21.51	2.29	8912.54	0.13	512.29
01/09/2008 17:34	126.63	-	-	ISCO	5.74	20.60	1.64	5871.82	0.13	477.44
01/10/2008 01:34	105.95	-	-	ISCO	6.17	18.52	1.73	5190.49	0.12	369.17
01/10/2008 09:34	87.61	-	-	ISCO	6.77	16.80	1.12	2767.32	0.11	279.63
01/10/2008 12:56	82.41	-	-	Grab	7.16	16.70	1.19	2767.85	0.11	247.36
01/10/2008 17:34	79.29	-	-	ISCO	7.34	16.49	1.74	3916.29	0.10	214.89
01/10/2008 21:34	92.80	-	-	ISCO	7.37	19.38	1.34	3531.18	0.09	243.51
01/11/2008 01:34	93.84	-	-	ISCO	6.91	18.37	1.31	3486.53	0.12	322.94
01/11/2008 13:34	69.76	-	-	ISCO	8.05	15.91	1.06	2100.50	0.09	184.30
01/16/2008 10:40	17.92	3	8.01	Grab	9.82	4.98	-	-	-	-
01/23/2008 13:15	10.38	2	8.4	Grab	9.24	2.72	-	-	-	-
01/31/2008 09:25	10.74	-1	8.32	Grab	8.10	2.46	0.37	112.91	< 0.06	18.25
02/04/2008 14:49	10.32	-	-	ISCO	4.83	1.41	1.18	343.56	0.12	34.37

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Nitrate - N (NO^{-}_{3} - N) Load (g)	Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Total Kjeldahl nitrogen (TKN) Load (mg)	Ammonium (NH_{4} - N) Conc.** (mg/L)	Ammonium (NH_{4} - N) Load (mg)
02/04/2008 17:34	28.91	-	-	ISCO	4.08	3.34	1.51	1233.85	0.14	116.86
02/04/2008 20:34	60.62	-	-	ISCO	3.36	5.77	2.91	5000.49	0.70	1198.66
02/04/2008 22:19	99.86	-	-	ISCO	2.84	8.03	3.25	9201.92	0.99	2787.14
02/04/2008 23:34	140.55	-	-	ISCO	1.94	7.71	2.74	10917.60	0.76	3008.86
02/05/2008 00:19	201.59	-	-	ISCO	1.67	9.56	3.05	17421.29	0.59	3350.94
02/05/2008 02:04	323.07	-	-	ISCO	1.54	14.09	3.90	35674.52	0.55	5060.02
02/05/2008 04:19	360.88	-	-	ISCO	1.80	18.36	3.57	36474.69	0.96	9860.22
02/05/2008 08:49	277.20	-	-	ISCO	2.50	19.61	2.95	23175.79	0.88	6913.50
02/05/2008 09:30	263.51	2	8.56	Grab	2.64	19.73	2.82	21047.37	0.81	6017.89
02/05/2008 10:38	240.41	-	-	Grab	2.85	19.38	1.46	9938.17	0.77	5225.21
02/05/2008 13:19	181.50	-	-	ISCO	3.30	16.94	2.20	11322.92	0.77	3951.88
02/05/2008 17:34	209.93	-	-	ISCO	3.31	19.69	2.80	16625.67	0.45	2666.65
02/05/2008 18:19	267.01	-	-	ISCO	2.72	20.54	3.69	27936.00	0.39	2954.42
02/05/2008 19:04	369.99	-	-	ISCO	2.07	21.74	4.59	48042.41	0.37	3850.27
02/05/2008 19:49	419.18	-	-	ISCO	1.33	15.81	9.76	115829.96	0.38	4493.03
02/05/2008 22:19	431.10	-	-	ISCO	0.99	12.15	5.78	70589.40	0.37	4495.97
02/06/2008 05:49	396.61	-	-	ISCO	1.64	18.46	-	-	0.49	5523.57
02/06/2008 11:49	342.48	-	-	ISCO	1.95	18.89	2.69	26081.46	0.41	3966.36
02/06/2008 16:19	287.76	-	-	ISCO	2.33	19.01	3.10	25270.60	0.37	2991.62
02/07/2008 05:49	113.82	-	-	ISCO	2.58	8.32	4.17	13436.40	0.43	1370.92
02/07/2008 09:47	109.63	2	7.83	Grab	3.81	11.82	1.40	4354.49	0.20	628.00
02/07/2008 10:19	109.86	-	-	ISCO	2.83	8.80	2.66	8280.26	0.85	2640.32
02/08/2008 22:19	78.81	-	-	ISCO	1.84	4.11	4.98	11120.25	0.45	1006.81
02/09/2008 11:49	69.63	-	-	ISCO	4.93	9.72	1.33	2623.77	0.16	313.55
02/14/2008 12:58	13.31	4	7.75	Grab	7.84	2.95	-	-	-	-
02/19/2008 09:51	23.77	1	8.62	Grab	7.06	4.75	0.71	476.67	< 0.06	40.39
03/03/2008 12:45	87.75	6	7.69	Grab	5.45	13.53	2.43	6045.01	0.18	445.55
03/13/2008 10:25	14.74	7	7.98	Grab	9.33	3.90	-	-	-	-
03/19/2008 14:47	66.35	7	7.86	Grab	9.55	17.94	0.87	1630.96	< 0.06	112.73
03/27/2008 08:25	13.11	6	7.76	Grab	9.65	3.58	-	-	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
04/02/2008 09:00	14.98	7	8.3	Grab	9.84	4.17	-	-	-	-
04/10/2008 08:30	8.90	8	7.99	Grab	9.21	2.32	-	-	-	-
04/10/2008 15:15	25.74	-	-	ISCO	7.96	5.80	0.46	333.26	< 0.06	43.73
04/10/2008 19:15	38.24	-	-	ISCO	7.18	7.77	0.63	683.75	< 0.06	64.97
04/10/2008 20:15	51.02	-	-	ISCO	7.39	10.68	1.29	1857.69	< 0.06	86.68
04/10/2008 21:15	63.38	-	-	ISCO	8.01	14.37	1.56	2802.46	< 0.06	107.68
04/10/2008 23:00	75.78	-	-	ISCO	8.14	17.48	3.52	7548.39	0.09	183.02
04/10/2008 23:45	78.15	-	-	ISCO	7.87	17.43	3.15	6960.55	0.08	170.18
04/11/2008 04:15	65.99	-	-	ISCO	9.17	17.14	1.48	2756.32	< 0.06	112.12
04/11/2008 08:45	53.21	-	-	ISCO	10.12	15.25	0.83	1257.85	< 0.06	90.40
04/11/2008 13:15	47.46	-	-	ISCO	10.50	14.11	0.62	837.70	< 0.06	80.64
04/11/2008 17:45	41.62	-	-	ISCO	10.95	12.91	0.67	787.48	< 0.06	70.71
04/11/2008 22:15	37.04	-	-	ISCO	11.09	11.63	0.57	599.26	< 0.06	62.93
04/12/2008 02:45	34.22	-	-	ISCO	11.08	10.74	0.52	507.79	< 0.06	58.14
04/12/2008 07:15	32.38	-	-	ISCO	11.08	10.16	0.52	478.09	< 0.06	55.01
04/14/2008 12:15	17.05	12	8.1	Grab	10.55	5.09	< 0.26	125.53	< 0.06	28.97
04/24/2008 10:25	9.62	16	8.31	Grab	9.63	2.62	-	-	-	-
05/02/2008 21:45	32.18	-	-	ISCO	5.94	5.42	2.22	2025.67	0.07	65.28
05/03/2008 15:45	15.94	-	-	ISCO	10.77	4.86	< 0.26	117.36	< 0.06	27.08
05/07/2008 09:45	11.37	15	8.01	Grab	9.83	3.16	-	-	-	-
05/11/2008 05:00	33.06	-	-	ISCO	8.23	7.70	1.62	1520.02	0.42	395.29
05/11/2008 05:15	35.34	-	-	ISCO	7.83	7.84	1.11	1109.02	< 0.06	60.04
05/11/2008 06:15	48.24	-	-	ISCO	8.44	11.53	1.28	1745.95	< 0.06	81.96
05/11/2008 07:15	62.50	-	-	ISCO	9.17	16.22	1.42	2517.06	< 0.06	106.19
05/11/2008 08:30	74.91	-	-	ISCO	9.83	20.86	1.86	3951.57	0.09	180.98
05/11/2008 09:45	80.14	-	-	ISCO	11.18	25.38	2.65	6010.47	0.21	477.13
05/11/2008 14:15	71.72	-	-	ISCO	12.56	25.52	1.73	3511.48	0.32	657.92
05/11/2008 18:45	61.12	-	-	ISCO	12.98	22.47	1.15	1991.62	0.19	329.96
05/11/2008 23:15	53.09	-	-	ISCO	13.23	19.89	0.96	1439.32	0.13	201.34
05/12/2008 03:45	47.53	-	-	ISCO	12.92	17.39	0.83	1110.38	0.18	240.62

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
05/12/2008 08:15	43.37	-	-	ISCO	12.90	15.85	0.80	983.79	0.11	139.17
05/12/2008 12:45	39.44	-	-	ISCO	13.02	14.54	0.58	647.53	< 0.06	67.01
05/12/2008 13:04	39.26	-	-	Grab	13.06	14.52	0.35	390.53	< 0.06	66.71
05/15/2008 20:45	34.24	-	-	ISCO	9.72	9.43	0.84	814.59	0.06	61.99
05/15/2008 22:45	46.40	-	-	ISCO	9.10	11.96	0.91	1191.54	< 0.06	78.83
05/16/2008 01:00	58.60	-	-	ISCO	11.05	18.33	1.17	1949.54	0.07	108.90
05/16/2008 01:15	59.20	-	-	ISCO	11.37	19.05	1.23	2061.97	0.07	113.48
05/16/2008 05:45	54.77	-	-	ISCO	12.49	19.38	1.06	1644.83	0.08	129.34
05/16/2008 10:15	48.36	-	-	ISCO	12.95	17.73	0.80	1091.52	< 0.06	82.16
05/16/2008 14:45	43.67	-	-	ISCO	13.05	16.14	0.79	975.33	< 0.06	74.20
05/16/2008 23:45	38.44	-	-	ISCO	13.28	14.45	3.73	4055.74	< 0.06	65.31
05/17/2008 08:45	35.25	-	-	ISCO	13.12	13.10	0.41	410.12	< 0.06	59.89
05/17/2008 17:45	32.24	-	-	ISCO	12.90	11.78	0.58	531.90	< 0.06	54.78
05/19/2008 09:45	21.66	12	8.17	Grab	12.43	7.62	0.56	345.09	< 0.06	36.80
05/28/2008 08:40	10.33	14	7.97	Grab	11.30	3.31	-	-	-	-
05/30/2008 20:30	15.97	-	-	ISCO	12.08	5.46	0.81	365.94	< 0.06	27.13
05/31/2008 01:00	19.04	-	-	ISCO	10.07	5.43	1.42	765.96	< 0.06	32.35
05/31/2008 05:30	16.48	-	-	ISCO	11.34	5.29	1.52	711.66	0.07	32.58
05/31/2008 14:30	14.22	-	-	ISCO	11.67	4.70	0.91	366.23	< 0.06	24.16
06/02/2008 10:20	11.07	20	7.71	Grab	11.69	3.66	-	-	-	-
06/03/2008 11:45	15.24	-	-	ISCO	10.12	4.37	0.77	332.60	0.11	49.00
06/03/2008 16:15	56.57	-	-	ISCO	10.91	17.47	1.37	2196.60	< 0.06	96.11
06/03/2008 20:45	57.56	-	-	ISCO	13.87	22.61	1.30	2121.67	< 0.06	97.80
06/03/2008 23:00	95.57	-	-	ISCO	11.58	31.34	2.30	6216.82	< 0.06	162.38
06/04/2008 04:00	301.81	-	-	ISCO	7.31	62.45	13.82	118104.62	0.15	1248.64
06/04/2008 05:45	297.74	-	-	ISCO	6.95	58.57	11.93	100591.46	0.23	1906.39
06/04/2008 13:30	248.80	-	-	ISCO	7.46	52.55	2.72	19191.53	0.15	1051.41
06/04/2008 22:15	169.86	-	-	ISCO	8.01	38.52	2.10	10094.24	0.07	318.16
06/05/2008 09:40	116.03	-	-	ISCO	8.71	28.63	1.49	4886.81	< 0.06	197.13
06/05/2008 13:15	103.97	-	-	ISCO	8.84	26.02	1.41	4137.39	0.11	327.32

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

					Instantaneous					
					Nitrate - N (NO^-_3 - N)		Total Kjeldahl nitrogen (TKN)		Ammonium (NH_4 - N)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (g)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
06/07/2008 01:15	39.31	-	-	ISCO	10.36	11.53	0.95	1061.89	0.09	98.76
06/07/2008 05:45	38.84	-	-	ISCO	10.27	11.29	0.93	1026.74	0.07	72.86
06/07/2008 07:00	54.03	-	-	ISCO	9.37	14.34	1.95	2982.91	0.10	145.92
06/07/2008 08:00	101.67	-	-	ISCO	8.14	23.44	2.41	6950.88	0.09	255.21
06/07/2008 09:00	171.63	-	-	ISCO	7.20	35.00	4.94	24025.37	0.09	426.59
06/07/2008 10:00	242.01	-	-	ISCO	4.37	29.97	8.93	61200.95	0.12	806.50
06/07/2008 11:00	275.28	-	-	ISCO	3.53	27.52	7.95	61982.35	0.09	713.58
06/07/2008 14:45	270.28	-	-	ISCO	4.66	35.70	4.49	34392.63	0.08	613.05
06/07/2008 23:45	179.12	-	-	ISCO	5.70	28.92	1.87	9483.64	0.07	333.92
06/09/2008 13:06	52.60	-	-	Grab	8.81	13.13	1.13	1677.42	< 0.06	89.38
06/11/2008 10:15	25.41	19	7.62	Grab	10.92	7.86	0.60	429.91	< 0.06	43.17
06/26/2008 08:43	13.65	21	7.24	Grab	10.58	4.09	-	-	-	-
07/07/2008 03:30	14.81	-	-	ISCO	6.28	2.63	1.89	793.74	< 0.06	25.16
07/07/2008 04:15	42.72	-	-	ISCO	6.57	7.95	7.14	8635.33	0.23	273.02
07/07/2008 04:30	81.57	-	-	ISCO	2.62	6.06	22.42	51792.66	0.65	1501.10
07/07/2008 05:45	163.45	-	-	ISCO	3.26	15.08	13.16	60902.17	0.07	306.23
07/07/2008 08:00	202.05	-	-	ISCO	3.59	20.55	5.82	33289.79	< 0.06	343.29
07/07/2008 13:00	170.38	-	-	Grab	7.41	35.73	1.58	7636.18	< 0.06	289.48
07/07/2008 19:45	116.82	-	-	ISCO	7.69	25.43	1.05	3482.70	< 0.06	198.48
07/08/2008 06:30	69.83	-	-	ISCO	8.34	16.48	0.80	1579.88	< 0.06	118.64
07/08/2008 11:00	60.29	-	-	ISCO	8.59	14.67	0.78	1335.11	< 0.06	102.43
07/17/2008 16:25	17.71	26	7.93	Grab	8.72	4.37	-	-	-	-
07/31/2008 08:45	14.53	22	7.53	Grab	4.67	1.92	-	-	-	-
08/06/2008 14:16	10.23	27	8.09	Grab	3.32	0.96	0.59	169.75	< 0.06	17.38
08/14/2008 08:33	6.65	21	7.28	Grab	1.16	0.22	-	-	-	-
08/19/2008 14:30	5.69	26	7.54	Grab	0.20	0.03	-	-	-	-
08/26/2008 14:02	4.05	26	8.12	Grab	< 0.07	0.01	-	-	-	-
09/02/2008 14:34	1.27	32	8.18	Grab	< 0.07	0.00	-	-	-	-
09/04/2008 20:45	6.93	-	-	ISCO	0.10	0.02	0.93	181.69	0.10	20.07
09/05/2008 03:30	21.29	-	-	ISCO	0.66	0.40	0.96	581.07	0.07	41.20

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix C-4. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Nitrate - N (NO^{-}_{3} - N) Conc.** (mg/L)	Instantaneous Nitrate - N (NO^{-}_{3} - N) Load (g)	Instantaneous Total Kjeldahl nitrogen (TKN) Conc.** (mg/L)	Instantaneous Total Kjeldahl nitrogen (TKN) Load (mg)	Instantaneous Ammonium (NH_{4} - N) Conc.** (mg/L)	Instantaneous Ammonium (NH_{4} - N) Load (mg)
09/05/2008 21:30	8.00	-	-	ISCO	0.58	0.13	0.82	185.42	0.06	13.90
09/11/2008 13:02	2.24	23	7.99	Grab	0.28	0.02	-	-	< 0.06	3.81
09/14/2008 08:45	14.17	-	-	ISCO	1.38	0.55	0.87	350.80	< 0.06	24.08
09/14/2008 09:30	92.71	-	-	ISCO	0.58	1.53	5.45	14300.37	0.07	187.02
09/14/2008 10:15	229.33	-	-	ISCO	0.63	4.12	2.89	18742.52	< 0.06	389.64
09/14/2008 11:15	308.07	-	-	ISCO	0.26	2.23	2.13	18586.93	< 0.06	523.42
09/14/2008 12:15	327.04	-	-	ISCO	0.25	2.35	1.58	14635.33	< 0.06	555.65
09/14/2008 13:15	329.82	-	-	ISCO	0.30	2.79	1.38	12916.28	< 0.06	560.37
09/15/2008 02:45	275.64	-	-	ISCO	0.75	5.86	0.70	5463.02	< 0.06	468.32
09/15/2008 07:15	253.17	-	-	ISCO	0.84	6.02	0.67	4779.63	< 0.06	430.14
09/15/2008 13:58	210.59	-	-	Grab	0.92	5.48	0.61	3633.86	< 0.06	357.80
09/15/2008 17:45	188.24	-	-	ISCO	0.41	2.21	0.99	5273.94	< 0.06	319.82
09/15/2008 18:45	182.52	-	-	ISCO	0.98	5.04	0.69	3546.59	< 0.06	310.11
09/16/2008 12:45	111.81	-	-	ISCO	1.32	4.19	0.68	2140.51	< 0.06	189.97
09/17/2008 11:15	49.77	-	-	ISCO	1.72	2.42	0.75	1059.54	< 0.06	84.56
09/18/2008 09:45	30.68	-	-	ISCO	2.11	1.83	0.80	694.67	< 0.06	52.13
09/23/2008 09:05	6.86	18	7.34	Grab	3.87	0.75	-	-	-	-
09/30/2008 16:43	3.09	17	8.52	Grab	4.06	0.36	0.37	32.45	< 0.06	5.25

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Instantaneous Discharge and Phosphorus Concentration and Yield for Treatment (222) Station

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
09/07/2005 11:58	0.03e	21	7.54	Grab	0.12	0.10	0.21	0.18	0.15	0.13
09/13/2005 10:06	0.06e	22	7.43	Grab	0.21	0.36	0.33	0.55	0.23	0.39
09/21/2005 10:40	0.06	19	7.37	Grab	0.28	0.48	0.38	0.64	0.30	0.52
09/26/2005 15:15	0.06e	20	7.46	Grab	0.52	0.89	0.69	1.18	0.52	0.89
11/07/2005 14:50	0.53e	13	7.48	Grab	0.05	0.72	0.08	1.13	0.08	1.21
11/16/2005 09:59	2.34e	7	7.47	Grab	0.07	4.69	0.09	5.93	0.07	4.82
01/03/2006 12:09	3.58	7	7.43	Grab	< 0.02	2.03	< 0.05	5.07	< 0.05	5.07
01/12/2006 10:10	2.47	6	7.95	Grab	-	-	< 0.05	3.50	-	-
01/19/2006 11:50	2.53	6	7.82	Grab	-	-	< 0.05	3.59	-	-
01/24/2006 10:45	3.19	4	7.92	Grab	-	-	< 0.05	4.52	-	-
01/31/2006 15:13	3.57	7	7.92	Grab	-	-	< 0.05	5.05	-	-
02/07/2006 10:10	2.44	3	7.92	Grab	< 0.02	1.38	< 0.05	3.45	< 0.05	3.45
02/15/2006 10:14	1.99	5	7.82	Grab	-	-	< 0.05	2.82	-	-
02/23/2006 11:38	2.35	6	7.98	Grab	-	-	< 0.05	3.33	-	-
02/28/2006 11:16	2.13	4	7.97	Grab	-	-	< 0.05	3.01	-	-
03/07/2006 14:18	3.53	7	8.14	Grab	< 0.02	0.97	< 0.05	2.42	< 0.05	2.42
03/09/2006 02:22	5.80	-	-	ISCO	< 0.02	1.32	< 0.05	3.29	< 0.05	3.29
03/09/2006 03:52	16.24	-	-	ISCO	0.03	3.95	0.10	11.85	0.09	11.22
03/09/2006 05:22	24.72	-	-	ISCO	0.02	4.13	0.08	15.59	0.06	10.36
03/09/2006 06:52	28.25	-	-	ISCO	0.07	15.41	0.18	40.07	0.09	20.38
03/09/2006 07:52	27.90	-	-	ISCO	0.05	11.51	0.14	31.28	0.08	16.88
03/09/2006 09:52	26.13	-	-	ISCO	0.04	7.46	0.11	23.18	0.06	11.96
03/09/2006 11:22	25.07	-	-	ISCO	0.03	6.55	0.10	19.53	0.10	21.23
03/10/2006 17:07	28.60	-	-	ISCO	0.16	35.41	0.22	50.16	0.17	38.69
03/10/2006 21:37	26.48	-	-	ISCO	0.12	24.06	0.16	32.30	0.11	23.60
03/11/2006 08:07	21.54	-	-	ISCO	0.08	13.90	0.10	17.77	0.07	12.92
03/11/2006 12:37	19.97	-	-	ISCO	0.07	11.71	0.09	15.84	0.08	13.82
03/11/2006 21:07	21.80	-	-	ISCO	0.06	9.96	0.11	19.87	0.04	6.72
03/11/2006 22:37	28.30	-	-	ISCO	0.04	8.65	0.13	28.58	0.13	28.96
03/12/2006 00:07	39.40	-	-	ISCO	0.14	40.08	0.32	94.10	0.12	33.71

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Ortho-phosphate (oPO_4 - P) Load (mg)	Total phosphate (t-P) Conc.** (mg/L)	Total phosphate (t-P) Load (mg)	Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Total dissolved phosphate (t- dissolved P) Load (mg)
03/12/2006 01:37	50.95	-	-	ISCO	0.23	89.75	0.70	267.76	0.17	66.52
03/12/2006 03:07	47.10	-	-	ISCO	0.30	404.73	0.85	1149.45	0.29	395.63
03/12/2006 04:37	43.79	-	-	ISCO	0.34	429.28	0.72	893.91	0.35	439.90
03/12/2006 07:37	48.73	-	-	ISCO	0.53	743.22	1.00	1384.72	0.53	737.43
03/12/2006 10:37	42.21	-	-	ISCO	0.49	585.34	0.82	972.75	0.49	586.19
03/13/2006 14:32	21.71	10	7.27	Grab	0.20	125.14	0.27	166.61	0.48	293.41
03/14/2006 16:07	13.74	-	-	ISCO	0.07	28.90	0.11	43.92	0.08	31.04
03/18/2006 12:22	6.37	-	-	ISCO	< 0.02	3.61	< 0.05	9.02	< 0.05	9.02
03/20/2006 15:34	6.37	6	8.11	Grab	-	-	< 0.05	9.02	-	-
03/27/2006 15:44	4.64	6	8.09	Grab	-	-	< 0.05	6.57	-	-
03/31/2006 14:25	4.82	15	8.48	Grab	< 0.02	2.73	< 0.05	6.82	< 0.05	6.82
04/04/2006 10:21	5.91	8	7.82	Grab	< 0.02	3.34	< 0.05	8.36	< 0.05	8.36
04/06/2006 10:38	9.13	-	-	ISCO	0.02	5.30	0.08	21.61	< 0.05	12.93
04/06/2006 12:08	20.60	-	-	ISCO	0.03	16.05	-	-	-	-
04/06/2006 13:38	27.73	-	-	ISCO	0.03	23.93	0.11	86.84	< 0.05	39.27
04/06/2006 15:08	27.88	-	-	ISCO	0.03	19.77	-	-	-	-
04/06/2006 18:08	26.50	-	-	ISCO	0.04	28.10	0.12	92.37	0.06	43.98
04/06/2006 21:08	25.58	-	-	ISCO	0.06	40.81	-	-	-	-
04/07/2006 00:08	24.33	-	-	ISCO	0.06	38.10	0.15	102.42	0.07	49.06
04/07/2006 03:08	22.90	-	-	ISCO	0.05	35.65	-	-	-	-
04/07/2006 06:08	21.41	-	-	ISCO	0.06	38.16	-	-	-	-
04/07/2006 09:08	19.93	-	-	ISCO	0.06	31.83	0.12	65.76	0.08	47.48
04/07/2006 10:55	19.39	11	7.5	Grab	0.06	30.32	0.14	74.65	0.07	40.75
04/11/2006 10:24	5.65	11	7.99	Grab	-	-	0.05	8.00	-	-
04/14/2006 00:23	7.64	-	-	ISCO	0.19	41.45	0.33	71.73	0.21	44.93
04/14/2006 01:38	16.13	-	-	ISCO	0.31	142.80	0.44	201.34	0.29	132.38
04/14/2006 01:58	18.86	-	-	ISCO	0.66	352.68	0.87	463.64	0.61	325.04
04/14/2006 03:23	21.64	-	-	ISCO	0.73	446.47	0.97	592.32	0.67	412.29
04/14/2006 04:53	20.77	-	-	ISCO	0.59	348.71	0.81	477.99	0.65	384.88
04/14/2006 13:53	13.73	-	-	ISCO	0.16	64.15	0.22	86.64	0.21	82.36

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
04/14/2006 19:53	11.97	-	-	ISCO	0.09	30.37	0.14	48.59	0.14	49.13
04/15/2006 03:23	9.98	-	-	ISCO	0.06	17.44	0.10	28.08	0.10	27.26
04/15/2006 09:23	8.62	-	-	ISCO	0.05	11.76	0.08	20.55	0.07	17.90
04/18/2006 14:08	15.14	-	-	Grab	-	-	0.23	96.94	-	-
04/21/2006 11:39	9.39	13	7.56	Grab	-	-	0.15	38.66	-	-
04/25/2006 10:08	5.56	9	7.6	Grab	-	-	0.06	10.01	-	-
05/02/2006 11:03	5.51	16	7.89	Grab	0.02	3.21	< 0.05	7.80	< 0.05	7.80
05/09/2006 11:31	3.34	15	8.01	Grab	-	-	< 0.05	4.73	-	-
05/16/2006 09:51	5.41	13	7.89	Grab	-	-	< 0.05	7.66	-	-
05/23/2006 11:21	2.86	15	7.76	Grab	-	-	0.05	4.27	-	-
05/31/2006 09:48	2.43	21	7.71	Grab	-	-	0.15	10.07	-	-
06/07/2006 10:13	2.29	18	7.54	Grab	0.03	1.74	< 0.05	3.24	< 0.05	3.24
06/12/2006 11:14	1.97	17	7.84	Grab	-	-	0.06	3.41	-	-
06/20/2006 10:32	1.84	18	7.75	Grab	-	-	0.07	3.68	-	-
06/28/2006 09:48	1.33	18	7.77	Grab	-	-	0.06	2.07	-	-
07/06/2006 10:41	0.06	19	7.59	Grab	0.03	0.06	0.06	0.10	0.05	0.09
07/11/2006 10:05	0.59	21	7.32	Grab	-	-	0.19	3.11	-	-
07/26/2006 23:37	0.42	-	-	ISCO	0.51	6.06	0.93	11.05	0.54	6.38
07/27/2006 04:37	2.72	-	-	ISCO	0.25	19.07	0.30	23.47	0.25	19.02
07/27/2006 05:37	4.69	-	-	ISCO	0.26	34.77	0.31	40.80	0.26	34.37
07/27/2006 05:52	5.47	-	-	ISCO	0.28	42.70	0.33	51.83	0.27	42.23
07/27/2006 07:07	8.75	-	-	ISCO	0.34	85.47	0.41	102.69	0.34	83.08
07/27/2006 07:52	9.57	-	-	ISCO	0.32	87.12	0.37	101.06	0.31	84.46
08/02/2006 09:45	0.29	26	7.52	Grab	0.06	0.52	0.13	1.05	0.08	0.67
08/08/2006 11:30	0.00	23	7.61	Grab	-	-	0.15	0.00	-	-
08/16/2006 10:08	0.00	21	7.43	Grab	-	-	< 0.05	0.00	-	-
08/23/2006 10:40	0.00	21	7.56	Grab	-	-	0.25	0.00	-	-
08/29/2006 09:48	0.00	21	7.45	Grab	-	-	0.34	0.00	-	-
09/06/2006 08:30	0.00	18	7.87	Grab	0.20	0.00	0.25	0.00	0.22	0.00
09/13/2006 10:05	0.03	18	7.55	Grab		0.00	0.23	0.19	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o} C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
10/16/2006 21:51	0.69	-	-	ISCO	0.45	8.81	0.47	9.28	0.46	9.05
10/17/2006 02:21	2.98	-	-	ISCO	0.26	21.65	0.35	29.74	0.26	21.76
10/17/2006 03:06	5.21	-	-	ISCO	0.28	41.36	0.32	47.35	0.29	43.30
10/17/2006 12:15	7.05	13	7.44	Grab	-	-	0.24	47.31	-	-
10/24/2006 10:47	0.76	8	7.85	Grab	-	-	< 0.05	1.08	-	-
11/01/2006 11:38	0.91	6	8	Grab	-	-	< 0.05	1.29	-	-
11/06/2006 15:10	0.73	10	7.92	Grab	< 0.02	0.41	< 0.05	1.03	< 0.05	1.03
11/13/2006 13:53	2.12	-	-	ISCO	0.03	1.68	< 0.05	3.00	< 0.05	3.00
11/13/2006 14:06	2.10	7	7.94	Grab	-	-	< 0.05	2.97	-	-
11/16/2006 01:36	5.51	-	-	ISCO	0.04	6.36	0.06	9.30	< 0.05	7.80
11/21/2006 11:30	3.87	8	7.91	Grab	-	-	< 0.05	5.48	-	-
11/29/2006 10:16	2.23	13	7.75	Grab	-	-	< 0.05	3.16	-	-
11/30/2006 08:36	2.23	-	-	ISCO	< 0.02	1.26	0.05	3.42	< 0.05	3.16
11/30/2006 11:36	2.23	-	-	ISCO	0.07	4.41	0.15	9.50	0.06	4.04
11/30/2006 13:06	2.23	-	-	ISCO	0.09	5.49	0.17	10.88	0.08	5.25
11/30/2006 16:06	2.23	-	-	ISCO	0.05	3.39	0.13	8.17	0.05	3.28
12/06/2006 13:10	7.38	7	7.69	Grab	< 0.02	4.18	< 0.05	10.45	< 0.05	10.45
12/11/2006 12:14	3.23	7	7.75	Grab	-	-	< 0.05	4.57	-	-
12/18/2006 12:32	4.28	8	7.8	Grab	-	-	< 0.05	6.06	-	-
12/21/2006 03:35	4.17	-	-	ISCO	0.02	2.74	0.07	8.36	0.06	7.33
12/21/2006 04:05	4.17	-	-	ISCO	0.02	2.83	0.07	8.37	0.07	7.87
12/21/2006 06:05	4.17	-	-	ISCO	0.04	5.16	0.11	13.37	0.09	10.29
12/21/2006 10:05	4.17	-	-	ISCO	0.13	15.05	0.23	26.63	0.15	17.36
12/21/2006 14:05	4.17	-	-	ISCO	0.19	22.05	0.32	38.16	0.21	24.32
12/21/2006 18:05	4.17	-	-	ISCO	0.25	28.96	0.38	45.15	0.25	29.85
12/21/2006 22:05	4.17	-	-	ISCO	0.30	35.84	0.41	48.19	0.30	35.99
12/22/2006 02:05	34.31	-	-	ISCO	0.27	262.89	0.35	340.37	0.30	294.25
12/22/2006 06:05	34.27	-	-	ISCO	0.26	248.08	0.38	366.17	0.26	251.16
12/22/2006 12:05	34.21	-	-	ISCO	0.58	559.63	0.94	910.40	0.59	575.99
12/22/2006 14:05	34.19	-	-	ISCO	0.58	561.37	0.73	708.70	0.56	538.26

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
12/22/2006 18:05	34.14	-	-	ISCO	0.67	651.17	0.90	871.38	0.65	631.07
12/22/2006 22:05	34.10	-	-	ISCO	0.43	418.53	0.56	538.93	0.41	395.17
12/27/2006 00:00	6.46	7	-	Grab	-	-	0.11	19.94	-	-
01/02/2007 15:35	14.55	7	7.52	Grab	0.06	24.93	0.07	29.09	0.07	29.82
01/04/2007 17:35	6.61	-	-	ISCO	0.04	7.76	0.11	20.30	< 0.05	9.36
01/04/2007 19:35	6.61	-	-	ISCO	0.10	18.31	0.31	57.36	0.08	15.80
01/04/2007 21:35	6.61	-	-	ISCO	0.15	27.24	0.39	72.43	0.14	26.34
01/04/2007 23:35	6.61	-	-	ISCO	0.17	32.42	0.46	86.04	0.17	31.56
01/05/2007 05:35	31.67	-	-	ISCO	0.23	209.46	0.45	406.96	0.25	226.97
01/05/2007 15:35	31.67	-	-	ISCO	0.16	147.04	0.28	249.47	0.18	165.35
01/06/2007 01:35	18.98	-	-	ISCO	0.12	64.57	0.19	100.63	0.15	81.17
01/06/2007 15:35	18.98	-	-	ISCO	0.08	43.16	0.14	72.74	0.12	64.17
01/09/2007 11:12	6.32	4	7.51	Grab	-	-	0.06	11.35	-	-
01/13/2007 05:05	12.04	-	-	ISCO	0.05	18.00	0.12	40.35	< 0.05	17.05
01/13/2007 12:05	12.43	-	-	ISCO	0.22	78.28	0.40	140.14	0.19	68.15
01/14/2007 04:05	25.26	-	-	ISCO	0.13	93.74	0.20	143.45	0.06	45.23
01/14/2007 18:05	25.05	-	-	ISCO	0.10	67.52	0.13	94.84	< 0.05	35.46
01/14/2007 22:05	24.99	-	-	ISCO	0.13	92.93	0.32	228.28	0.06	41.54
01/15/2007 13:29	60.96	4	7.53	Grab	-	-	0.54	924.62	-	-
01/23/2007 15:26	8.25	6	7.98	Grab	-	-	< 0.05	11.68	-	-
01/30/2007 10:23	6.13	1	8.11	Grab	-	-	< 0.05	8.68	-	-
02/26/2007 15:44		1	7.59	Grab	-	-	1.82	0.00	-	-
03/05/2007 15:50	7.81	-	-	Grab	0.33	72.95	0.39	85.78	0.32	70.27
03/14/2007 12:06	5.46	13	7.88	Grab	-	-	< 0.05	7.74	-	-
03/20/2007 13:20	4.22	10	8.17	Grab	-	-	< 0.05	5.97	-	-
03/26/2007 12:05	12.53	13	7.85	Grab	-	-	0.06	22.64	-	-
04/04/2007 09:46	4.34	4	8.03	Grab	< 0.02	2.46	< 0.05	6.14	< 0.05	6.14
04/10/2007 14:47	3.31	12	8.58	Grab	-	-	< 0.05	4.68	-	-
04/17/2007 10:20	3.77	12	8.19	Grab	-	-	< 0.05	5.34	-	-
04/23/2007 13:15	2.77	18	8.47	Grab	-	-	< 0.05	3.92	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
04/25/2007 15:39	25.95	-	-	Grab	< 0.02	14.70	< 0.05	36.74	< 0.05	36.74
04/30/2007 11:27	7.84	17	8.1	Grab	< 0.02	4.44	< 0.05	11.09	< 0.05	11.09
05/09/2007 14:32	3.36	-	8.35	Grab	-	-	< 0.05	4.76	-	-
05/14/2007 11:13	2.45	18	8.25	Grab	-	-	< 0.05	3.47	-	-
05/22/2007 11:33	1.55	18	8.14	Grab	-	-	< 0.05	2.19	-	-
05/26/2007 23:46	20.93	-	-	ISCO	0.04	26.41	0.12	68.17	0.06	37.42
05/27/2007 01:16	16.10	-	-	ISCO	0.16	71.93	0.72	329.95	0.17	76.76
05/27/2007 04:46	20.58	-	-	ISCO	0.33	194.29	0.77	449.07	0.35	205.13
05/27/2007 08:46	24.50	-	-	ISCO	0.20	137.69	0.32	222.57	0.22	151.90
05/28/2007 01:16	10.23	-	-	ISCO	0.05	14.88	0.09	24.89	0.07	19.11
05/29/2007 08:05	4.92	17	7.87	Grab	-	-	< 0.05	6.97	-	-
06/05/2007 08:30	2.93	17	7.8	Grab	0.03	2.17	< 0.05	4.15	< 0.05	4.15
06/12/2007 14:19	1.37	22	7.99	Grab	-	-	0.12	4.64	-	-
06/20/2007 09:25	0.65	20	7.8	Grab	-	-	0.07	1.30	-	-
06/26/2007 16:48	3.15	-	-	ISCO	0.07	6.22	0.12	10.60	0.07	6.55
06/27/2007 10:15	1.19	22	7.69	Grab	-	-	< 0.05	1.68	-	-
07/03/2007 15:23	0.78	22	7.66	Grab	0.02	0.50	< 0.05	1.10	< 0.05	1.10
07/11/2007 09:20	0.40	20	7.64	Grab	-	-	0.11	1.28	-	-
07/18/2007 07:24	1.06	-	-	ISCO	0.17	5.08	0.23	6.77	0.17	5.24
07/18/2007 10:00	3.21	19	7.58	Grab	0.19	17.07	0.25	22.58	0.18	16.48
07/24/2007 11:38	0.35	20	7.71	Grab	-	-	0.07	0.72	-	-
07/31/2007 12:45	0.14	24	7.55	Grab	0.08	0.31	0.11	0.43	0.10	0.38
08/07/2007 08:38	0.07	21	7.55	Grab	-	-	0.33	0.66	-	-
08/16/2007 10:10	0.11	23	7.53	Grab	-	-	0.53	1.64	-	-
08/22/2007 09:24	0.10	25	7.28	Grab	-	-	1.00	2.83	-	-
08/29/2007 12:10	0.00	26	7.46	Grab	-	-	0.64	0.00	-	-
09/12/2007 10:46	0.00	17	7.5	Grab	-	-	0.35	0.00	-	-
10/03/2007 16:00	0.00	18	7.29	Grab	0.13	0.00	0.29	0.00	0.15	0.00
10/19/2007 09:35	0.00	14	7.6	Grab	-	-	0.40	0.00	-	-
11/13/2007 13:25	0.14	11	7.42	Grab	-	-	< 0.05	0.20	-	-

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
11/21/2007 12:48	1.00	-	-	ISCO	0.20	5.59	0.29	8.29	0.22	6.31
11/21/2007 16:48	1.60	-	-	ISCO	0.22	10.06	0.31	14.09	0.22	9.74
11/21/2007 19:48	8.73	-	-	ISCO	0.23	56.34	0.37	91.87	0.24	59.38
11/21/2007 20:48	12.44	-	-	ISCO	0.26	90.85	0.49	171.16	0.28	98.06
11/22/2007 00:48	13.07	-	-	ISCO	0.24	87.59	0.36	133.70	0.23	86.77
11/22/2007 04:48	5.32	-	-	ISCO	0.19	28.13	0.27	40.79	0.20	29.73
11/22/2007 12:48	3.10	-	-	ISCO	0.15	13.10	0.21	18.14	0.15	13.56
11/22/2007 20:48	10.12	-	-	ISCO	0.12	33.15	0.14	38.93	0.13	37.76
11/23/2007 12:48	1.27	-	-	ISCO	0.09	3.06	0.09	3.26	0.09	3.14
11/23/2007 20:48	1.17	-	-	ISCO	0.08	2.79	0.08	2.59	0.07	2.42
11/27/2007 10:39	1.09	7	8.02	Grab	-	-	< 0.05	1.54	-	-
12/02/2007 12:17	1.13	-	-	ISCO	0.06	1.98	< 0.05	1.60	< 0.05	1.60
12/02/2007 16:17	1.21	-	-	ISCO	0.07	2.44	0.09	3.13	< 0.05	1.71
12/02/2007 20:17	0.85	-	-	ISCO	0.06	1.41	0.05	1.20	< 0.05	1.20
12/03/2007 00:17	1.21	-	-	ISCO	0.06	2.11	0.05	1.71	< 0.05	1.71
12/03/2007 04:17	1.15	-	-	ISCO	0.06	1.85	0.05	1.63	< 0.05	1.63
12/04/2007 12:15	1.05	6	8.18	Grab	0.03	0.99	0.05	1.49	< 0.05	1.49
12/11/2007 06:30	2.12	-	-	ISCO	0.06	3.35	0.05	3.00	< 0.05	3.00
12/11/2007 10:00	8.28	-	-	ISCO	0.08	19.63	0.11	26.95	< 0.05	11.72
12/11/2007 14:30	19.41	-	-	ISCO	0.10	54.64	0.18	97.74	0.06	33.91
12/11/2007 22:30	29.33	-	-	ISCO	0.11	87.75	0.22	185.88	0.07	58.28
12/12/2007 06:30	24.07	-	-	ISCO	0.12	82.53	0.18	119.87	0.14	96.71
12/12/2007 14:45	29.10	7	7.53	Grab	0.12	97.76	0.17	139.57	0.13	105.57
12/18/2007 10:50	1.89	-	-	Grab	-	-	0.05	2.68	-	-
12/27/2007 09:45	2.98	6	7.99	Grab	0.03	2.22	0.05	4.22	< 0.05	4.22
01/08/2008 16:14	67.92	-	-	Grab	0.71	1359.50	1.26	2425.33	0.66	1278.99
01/08/2008 17:16	74.34	-	-	Grab	0.68	1428.84	1.21	2540.05	0.64	1347.60
01/09/2008 10:55	35.04	-	-	Grab	0.38	375.89	0.68	673.16	0.35	347.00
01/09/2008 12:52	33.49	-	-	Grab	0.37	354.06	0.66	624.77	0.36	343.04
01/09/2008 13:00	33.36	-	-	ISCO	0.36	342.56	0.69	649.69	0.38	361.39

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
01/09/2008 17:00	31.25	-	-	ISCO	0.35	306.11	0.65	579.50	0.36	319.79
01/09/2008 21:00	29.33	-	-	ISCO	0.33	277.37	0.62	514.41	0.34	285.06
01/10/2008 04:59	24.96	-	-	ISCO	0.32	225.08	0.57	406.07	0.32	226.67
01/10/2008 12:20	28.93	-	-	Grab	0.32	260.91	0.53	431.67	0.31	251.63
01/10/2008 16:59	21.16	-	-	ISCO	0.32	193.03	0.52	312.72	0.29	173.04
01/10/2008 20:59	21.67	-	-	ISCO	0.29	179.92	0.48	294.96	0.27	164.07
01/11/2008 00:59	26.88	-	-	ISCO	0.30	226.54	0.57	435.64	0.27	207.71
01/11/2008 12:59	18.55	-	-	ISCO	0.28	147.74	0.43	223.78	0.26	137.41
01/16/2008 09:45	2.65	3	8.04	Grab	-	-	0.10	7.74	-	-
01/23/2008 13:55	1.08	4	8.4	Grab	-	-	< 0.05	1.53	-	-
01/31/2008 10:20	0.88	1	8.56	Grab	0.01	0.25	< 0.05	1.25	0.06	1.52
02/04/2008 14:50	81.04	-	-	ISCO	0.06	127.90	0.08	193.25	0.07	158.64
02/04/2008 18:05	73.79	-	-	ISCO	0.17	355.69	0.34	704.59	0.18	378.34
02/04/2008 21:05	1.42	-	-	ISCO	0.38	15.40	0.67	26.76	0.49	19.63
02/04/2008 22:50	145.59	-	-	ISCO	0.39	1605.05	1.25	5173.47	0.68	2785.91
02/04/2008 23:05	49.09	-	-	ISCO	0.33	459.71	1.91	2653.26	0.92	1281.28
02/04/2008 23:35	7.34	-	-	ISCO	0.27	56.11	5.00	1039.40	1.49	309.52
02/05/2008 02:50	437.82	-	-	ISCO	0.52	6414.26	2.76	34219.26	1.18	14661.54
02/05/2008 05:50	403.18	-	-	ISCO	0.52	5912.15	1.62	18546.98	0.85	9708.40
02/05/2008 10:50	179.98	-	-	ISCO	0.40	2043.37	1.00	5082.14	0.62	3180.45
02/05/2008 11:50	90.74	-	-	Grab	0.57	1469.38	0.97	2486.21	0.56	1448.19
02/05/2008 14:50	47.47	-	-	ISCO	0.32	428.13	-	-	-	-
02/05/2008 17:35	223.72	-	-	ISCO	0.35	2207.36	-	-	-	-
02/05/2008 18:20	108.39	-	-	ISCO	0.28	869.22	-	-	-	-
02/05/2008 19:50	428.02	-	-	ISCO	0.36	4316.15		0.00		0.00
02/05/2008 21:35	415.49	-	-	ISCO	0.41	4770.39	0.89	10443.68	0.41	4882.31
02/05/2008 22:35	51.49	-	-	ISCO	0.37	541.58	2.42	3523.86	0.37	543.99
02/05/2008 23:50	41.70	-	-	ISCO	0.38	443.08	1.82	2144.60	1.69	1990.07
02/06/2008 20:20	96.48	-	-	ISCO	0.22	613.15	0.61	1657.89	0.25	696.56
02/07/2008 10:45	41.07	-	-	Grab	0.21	249.58	0.40	459.89	0.24	280.48

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
02/07/2008 14:20	45.88	-	-	ISCO	0.23	304.04	0.38	497.69	0.25	321.29
02/08/2008 14:20	25.39	-	-	ISCO	0.23	166.32	0.34	245.46	0.26	184.46
02/09/2008 14:20	17.03	-	-	ISCO	0.13	61.36	0.29	138.54	0.13	62.15
02/14/2008 12:15	0.98	4	7.87	Grab	-	-	0.09	2.39	-	-
02/19/2008 10:16	3.81	0	8.42	Grab	0.15	15.80	0.29	30.95	0.14	15.28
03/03/2008 13:15	17.37	5	7.76	Grab	0.18	88.77	0.64	312.53	0.15	76.02
03/03/2008 13:28	17.60	5	7.76	Grab	0.18	90.50	0.63	315.22	0.17	85.03
03/13/2008 11:55	4.11	8	7.98	Grab	-	-	< 0.05	5.82	-	-
03/19/2008 16:00	16.23	-	-	Grab	0.15	68.70	0.28	126.70	0.12	55.88
03/27/2008 09:10	2.12	6	8.21	Grab	-	-	< 0.05	3.00	-	-
04/02/2008 09:50	2.62	7	7.86	Grab	-	-	< 0.05	3.71	-	-
04/10/2008 09:05	1.53	8	8.06	Grab	-	-	0.07	3.05	-	-
04/10/2008 18:59	6.61	-	-	ISCO	0.02	4.30	0.15	28.27	0.05	9.77
04/14/2008 13:00	2.69	11	8.21	Grab	0.01	0.91	< 0.05	3.81	< 0.05	3.81
04/24/2008 11:00	1.24	15	8.42	Grab	-	-	< 0.05	1.76	-	-
05/02/2008 21:59	7.54	-	-	ISCO	0.05	10.84	0.71	152.32	0.07	15.96
05/03/2008 02:29	5.63	-	-	ISCO	0.45	71.13	0.92	146.14	0.43	68.88
05/03/2008 06:59	4.55	-	-	ISCO	0.11	14.68	0.19	24.05	0.10	13.14
05/07/2008 10:30	1.64	15	8.33	Grab	-	-	< 0.05	2.32	-	-
05/11/2008 04:29	19.60	-	-	ISCO	0.03	17.71	0.26	142.04	< 0.05	27.75
05/11/2008 06:14	26.47	-	-	ISCO	0.06	46.78	0.57	427.77	0.08	63.43
05/11/2008 08:59	7.55	-	-	ISCO	0.14	29.17	1.43	305.23	0.13	28.56
05/11/2008 13:29	33.40	-	-	ISCO	0.14	129.97	0.55	519.51	0.13	126.82
05/11/2008 17:59	15.33	-	-	ISCO	0.12	53.76	0.30	132.04	0.13	55.97
05/11/2008 22:29	22.83	-	-	ISCO	0.09	60.56	0.22	140.28	0.08	53.14
05/12/2008 02:59	10.78	-	-	ISCO	0.07	20.77	0.15	45.84	0.07	22.57
05/12/2008 07:29	9.20	-	-	ISCO	0.05	13.60	0.09	24.38	0.05	13.16
05/12/2008 11:59	8.79	-	-	ISCO	0.05	11.63	0.08	20.48	< 0.05	12.44
05/12/2008 13:47	12.49	-	-	ISCO	0.04	13.41	0.11	37.81	0.07	24.09
05/15/2008 20:59	7.68	-	-	ISCO	0.04	9.08	0.16	34.63	0.05	11.43

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
05/16/2008 01:29	9.78	-	-	ISCO	0.08	23.42	0.40	110.27	0.10	27.03
05/16/2008 05:59	11.73	-	-	ISCO	0.06	21.31	0.21	70.28	0.08	25.45
05/16/2008 10:29	7.62	-	-	ISCO	0.06	13.46	0.13	27.50	0.09	19.39
05/16/2008 14:59	17.93	-	-	ISCO	0.04	21.20	0.11	56.71	0.07	36.39
05/16/2008 23:59	13.32	-	-	ISCO	0.03	9.97	0.07	27.37	0.10	38.58
05/17/2008 08:59	6.39	-	-	ISCO	0.02	3.46	0.06	10.49	< 0.05	9.05
05/19/2008 09:04	3.01	11	7.95	Grab	0.01	0.90	< 0.05	4.26	< 0.05	4.26
05/28/2008 09:22	3.98	-	8.31	Grab	-	-	< 0.05	5.64	-	-
05/30/2008 18:45	9.20	-	-	ISCO	0.03	8.14	0.21	54.10	0.05	13.58
05/30/2008 20:00	24.21	-	-	ISCO	0.08	52.81	0.52	358.93	0.10	71.62
05/30/2008 20:45	43.13	-	-	ISCO	0.12	150.66	0.78	950.98	0.12	151.64
05/30/2008 23:15	41.36	-	-	ISCO	0.22	254.45	1.76	2059.15	0.22	254.81
05/31/2008 03:45	30.14	-	-	ISCO	0.17	142.90	0.72	612.26	0.18	151.21
05/31/2008 08:15	20.86	-	-	ISCO	0.12	71.99	0.34	200.03	0.11	66.85
05/31/2008 17:15	12.14	-	-	ISCO	0.08	27.10	0.17	57.95	0.07	23.39
06/02/2008 11:15	4.61	18	7.59	Grab	-	-	0.08	10.53	-	-
06/03/2008 11:00	7.96	-	-	ISCO	0.06	13.23	0.31	70.65	< 0.05	11.27
06/03/2008 15:30	54.67	-	-	ISCO	0.24	373.56	3.09	4785.57	0.16	250.54
06/03/2008 20:00	37.72	-	-	ISCO	0.21	221.09	0.89	953.30	0.19	198.99
06/03/2008 22:00	186.95	-	-	ISCO	0.25	1331.42	4.72	24980.20	0.18	953.85
06/03/2008 23:30	436.17	-	-	ISCO	0.43	5279.20	3.19	39458.59	0.37	4536.96
06/04/2008 00:30	328.41	-	-	ISCO	0.39	3641.91	4.76	44266.03	0.37	3440.85
06/04/2008 05:00	153.05	-	-	ISCO	0.44	1886.87	3.15	13641.77	0.39	1686.31
06/04/2008 08:15	69.20	-	-	ISCO	0.37	732.26	1.82	3556.67	0.37	723.44
06/04/2008 13:15	439.46	-	-	ISCO	0.27	3411.53	1.03	12879.21	0.23	2840.60
06/05/2008 09:15	29.22	-	-	ISCO	0.21	170.27	0.49	405.51	0.17	144.73
06/05/2008 09:30	29.10	-	-	ISCO	0.19	154.95	0.52	429.40	0.17	136.01
06/06/2008 08:00	18.98	-	-	ISCO	0.18	95.10	0.57	306.61	0.14	77.01
06/07/2008 02:00	11.72	-	-	ISCO	0.18	58.22	0.54	180.83	0.17	55.53
06/07/2008 05:45	35.32	-	-	ISCO	0.16	155.48	1.57	1571.08	0.16	155.95

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-1. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
06/07/2008 06:15	206.26	-	-	ISCO	0.21	1232.22	3.07	17927.63	0.23	1316.32
06/07/2008 07:30	284.23	-	-	ISCO	0.37	2999.69	2.56	20570.82	0.37	2973.08
06/07/2008 08:00	331.33	-	-	ISCO	0.42	3947.06	2.82	26439.52	0.39	3696.57
06/07/2008 10:00	272.55	-	-	ISCO	0.41	3149.19	2.33	17986.12	0.36	2816.26
06/07/2008 11:00	214.69	-	-	ISCO	0.39	2400.79	2.09	12724.18	0.36	2199.20
06/07/2008 17:15	79.24	-	-	ISCO	0.31	694.39	1.02	2293.90	0.30	669.23
06/09/2008 12:30	14.03	-	-	Grab	0.15	58.48	0.46	184.04	0.13	51.45
06/11/2008 11:10	5.33	20	7.78	Grab	0.10	14.97	0.26	39.94	0.11	17.26
06/26/2008 09:20	1.14	20	7.79	Grab	-	-	< 0.05	1.62	-	-
07/07/2008 13:21	12.94	-	-	Grab	0.24	86.81	0.25	92.57	0.20	74.83
07/17/2008 15:40	1.22	23	7.5	Grab	-	-	< 0.05	1.73	-	-
07/31/2008 09:15	1.04	20	7.84	Grab	-	-	< 0.05	1.47	-	-
08/06/2008 13:44	0.82	24	7.6	Grab	0.11	2.46	0.08	1.90	< 0.05	1.16
08/14/2008 09:27	0.00	21	7.5	Grab	-	-	< 0.05	0.00	-	-
09/18/2008 10:35	10.54	-	-	Grab	0.12	36.57	0.10	30.25	0.09	26.87
09/23/2008 09:42	1.82	18	7.93	Grab	-	-	< 0.05	2.58	-	-
09/30/2008 15:58	1.13	16	8.41	Grab	0.01	0.38	< 0.05	1.60	< 0.05	1.60

Notes: *e - estimated; ** < - MDL; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Instantaneous Discharge and Phosphorus Concentration and Yield for Control (223) Station

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
09/07/2005 11:15	0.03e	28	8.22	Grab	0.04	0.03	0.12	0.10	0.09	0.07
09/13/2005 09:15	0.03e	24	7.91	Grab	0.09	0.07	0.27	0.23	0.11	0.09
09/21/2005 09:10	0.46e	21	7.75	Grab	0.18	2.40	0.34	4.38	0.20	2.67
09/26/2005 12:51	4.24	23	7.75	Grab	0.22	26.71	0.29	35.25	0.25	30.59
11/07/2005 14:05	2.64e	14	8.32	Grab	0.04	2.79	0.10	7.16	< 0.05	3.74
11/16/2005 09:18	5.56e	5	7.68	Grab	0.08	11.87	0.11	18.06	0.12	18.67
12/06/2005 13:53	2.64e	0	8.17	Grab	< 0.02	1.50	< 0.05	3.74	< 0.05	3.74
01/03/2006 11:02	9.46	7	7.86	Grab	0.02	5.74	< 0.05	13.39	< 0.05	13.39
01/11/2006 15:04	5.52	7	8.30	Grab	-	-	< 0.05	7.81	-	-
01/19/2006 10:51	6.32	6	7.92	Grab	-	-	< 0.05	8.95	-	-
01/24/2006 09:33	8.71	4	7.97	Grab	-	-	< 0.05	12.33	-	-
01/31/2006 15:49	10.31	6	7.67	Grab	-	-	< 0.05	14.60	-	-
02/07/2006 09:17	5.10	1	7.95	Grab	< 0.02	2.89	< 0.05	7.22	< 0.05	7.22
02/15/2006 09:25	3.23	4	7.55	Grab	-	-	< 0.05	4.57	-	-
02/23/2006 09:48	5.04	3	8.04	Grab	-	-	< 0.05	7.14	-	-
02/28/2006 10:34	3.81	4	8.03	Grab	-	-	< 0.05	5.39	-	-
03/07/2006 11:27	3.05	8	8.12	Grab	< 0.02	1.73	0.06	5.19	< 0.05	4.32
03/09/2006 10:09	16.31			ISCO	0.03	15.28	0.12	54.53	0.05	24.18
03/09/2006 11:40	15.21	9	7.77	Grab	0.03	13.79	0.09	40.70	< 0.05	21.54
03/09/2006 12:16	14.91	-	-	ISCO	0.03	10.94	0.08	34.16	< 0.05	21.11
03/09/2006 14:26	16.23	-	-	ISCO	0.03	12.40	0.17	79.52	< 0.05	22.98
03/09/2006 16:26	21.58	8	8.12	Grab	0.02	15.22	0.25	153.43	0.05	32.30
03/09/2006 18:26	23.55	-	-	ISCO	0.03	17.24	0.22	144.57	< 0.05	33.34
03/09/2006 20:26	23.10	-	-	ISCO	0.02	14.62	0.27	176.70	< 0.05	32.71
03/09/2006 22:26	25.26	-	-	ISCO	0.02	17.22	0.29	208.53	0.06	44.81
03/10/2006 00:26	37.78	-	-	ISCO	0.03	34.99	0.39	420.43	0.07	73.49
03/10/2006 16:26	33.22	-	-	ISCO	0.12	109.53	0.25	238.45	0.08	75.06
03/10/2006 22:26	24.78	-	-	ISCO	0.07	46.26	0.18	124.58	< 0.05	35.08
03/11/2006 22:26	30.70	-	-	ISCO	0.03	25.90	0.43	371.91	< 0.05	43.46
03/11/2006 23:56	60.60	-	-	ISCO	0.05	80.61	0.84	1435.45	0.05	91.63

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
03/12/2006 01:26	91.60	-	-	ISCO	0.33	868.29	2.15	5567.26	0.35	910.50
03/12/2006 02:56	112.54	-	-	ISCO	0.56	1794.38	1.90	6039.64	0.59	1877.94
03/12/2006 04:26	115.34	-	-	ISCO	0.71	2331.99	1.55	5048.74	0.72	2346.31
03/12/2006 07:26	98.78	-	-	ISCO	0.49	1365.58	0.91	2559.27	0.46	1276.54
03/12/2006 11:56	69.36	-	-	ISCO	0.29	576.05	0.59	1168.39	0.30	590.04
03/12/2006 20:56	46.48	-	-	ISCO	0.16	212.36	0.37	484.90	0.31	413.94
03/13/2006 13:27	40.45	12	7.52	Grab	0.23	260.07	0.38	432.36	0.25	290.12
03/13/2006 22:26	26.64	-	-	ISCO	0.09	64.75	0.22	166.07	0.08	61.52
03/15/2006 10:56	14.49	-	-	ISCO	0.02	9.91	0.06	26.22	< 0.05	20.52
03/20/2006 14:34	7.63	-	-	ISCO	-	-	< 0.05	10.80	-	-
03/27/2006 15:00	5.37	6	8.06	Grab	-	-	< 0.05	7.60	-	-
03/31/2006 13:15	11.24	7	8.33	Grab	< 0.02	6.37	0.07	21.83	< 0.05	15.91
04/04/2006 09:41	15.10	18	8.38	Grab	0.02	9.48	0.07	27.83	0.06	23.89
04/06/2006 12:27	27.66	-	-	ISCO	< 0.02	15.67	0.31	240.64	0.06	45.57
04/06/2006 15:27	30.26	-	-	ISCO	0.02	18.85	0.22	185.73	0.07	57.31
04/06/2006 18:27	35.55	9	7.90	Grab	0.03	31.93	0.20	203.96	< 0.05	50.34
04/06/2006 21:27	44.88	-	-	ISCO	0.04	56.88	0.28	361.40	0.06	75.04
04/07/2006 00:27	44.85	-	-	ISCO	0.09	112.81	0.34	431.66	0.10	127.44
04/07/2006 04:57	45.67	-	-	ISCO	0.09	115.73	0.28	366.74	0.11	148.19
04/07/2006 07:57	44.60	-	-	ISCO	0.09	119.03	0.26	326.18	0.10	122.20
04/07/2006 09:15	43.28	-	-	ISCO	0.10	122.59	0.26	317.75	0.12	149.11
04/11/2006 09:12	11.85	13	7.54	Grab	-	-	< 0.05	16.78	-	-
04/14/2006 01:27	26.31	-	-	ISCO	0.03	24.30	0.94	702.40	< 0.05	37.26
04/14/2006 01:42	34.45	-	-	ISCO	0.03	29.47	1.01	980.81	0.08	81.47
04/14/2006 02:27	53.06	-	-	ISCO	0.05	71.95	0.97	1451.70	0.08	126.83
04/14/2006 02:57	69.79	-	-	ISCO	0.07	128.75	0.98	1944.52	0.08	148.66
04/14/2006 03:12	79.71	-	-	ISCO	0.08	174.89	0.99	2225.18	0.10	218.48
04/14/2006 03:57	102.70	-	-	ISCO	0.24	706.37	2.71	7895.42	0.23	664.19
04/14/2006 04:42	116.24	-	-	ISCO	0.38	1266.81	2.24	7363.41	0.39	1271.75
04/14/2006 06:12	121.41	-	-	ISCO	0.41	1403.69	1.33	4558.18	0.40	1361.25

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
04/14/2006 15:22	65.17	11	7.53	Grab	0.21	380.32	0.45	822.24	0.25	455.20
04/15/2006 00:12	45.22	-	-	ISCO	0.16	206.12	0.27	351.20	0.18	232.02
04/15/2006 06:12	39.20	-	-	ISCO	0.10	110.72	0.22	248.27	0.14	158.20
04/18/2006 13:25	43.91	-	-	ISCO	-	-	0.21	261.09	-	-
04/21/2006 10:36	20.01	-	-	Grab	-	-	0.10	57.96	-	-
04/25/2006 09:18	10.73	13	7.62	Grab	-	-	0.07	22.24	-	-
05/02/2006 09:49	6.02	8	7.78	Grab	0.02	4.14	0.07	11.28	< 0.05	8.53
05/08/2006 13:18	2.51	16	8.05	Grab	-	-	< 0.05	3.55	-	-
05/15/2006 14:18	4.75	15	8.09	Grab	-	-	< 0.05	6.73	-	-
05/23/2006 09:29	3.69	15	8.09	Grab	-	-	< 0.05	5.22	-	-
05/31/2006 09:10	3.91	22	8.15	Grab	-	-	0.12	13.68	-	-
06/07/2006 09:05	4.23	22	8.24	Grab	< 0.02	2.40	0.05	6.19	< 0.05	5.99
06/12/2006 10:33	3.90	20	8.39	Grab	-	-	< 0.05	5.52	-	-
06/20/2006 09:48	3.69	23	8.43	Grab	-	-	< 0.05	5.22	-	-
06/26/2006 17:41	8.35	-	-	ISCO	0.03	7.53	0.09	21.65	< 0.05	11.83
06/28/2006 02:11	4.27	-	-	ISCO	< 0.02	2.42	0.05	6.59	< 0.05	6.05
06/28/2006 09:14	3.96	21	8.25	Grab	-	-	< 0.05	5.61	-	-
07/04/2006 05:41	8.01	-	-	ISCO	0.03	7.51	0.07	16.81	< 0.05	11.34
07/06/2006 09:52	3.71	23	8.27	Grab	< 0.02	2.10	0.06	5.85	0.05	5.26
07/11/2006 09:18	4.06	-	-	ISCO	-	-	0.13	15.06	-	-
07/11/2006 14:11	8.05	22	7.50	Grab	0.04	9.37	0.10	22.09	0.08	17.40
07/13/2006 08:53	4.50	-	7.67	Grab	< 0.02	2.55	0.08	10.47	< 0.05	6.37
07/19/2006 08:53	2.41	28	7.81	Grab	-	-	0.20	13.65	-	-
07/28/2006 07:54	5.52	23	7.31	Grab	0.15	23.45	-	-	-	-
08/02/2006 08:45	0.01	28	7.81	Grab	0.04	0.01	0.18	0.05	0.06	0.02
08/08/2006 10:40	0.00	26	8.05	Grab	-	-	0.27	0.00	-	-
08/16/2006 08:46	0.00	22	8.05	Grab	-	-	0.15	0.00	-	-
08/23/2006 09:08	0.00	23	8.19	Grab	-	-	0.10	0.00	-	-
08/29/2006 08:58	0.40	21	7.74	Grab	-	-	0.12	1.33	-	-
09/06/2006 09:14	0.00	18	7.87	Grab	0.08	0.00	0.13	0.00	0.10	0.00

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
09/13/2006 09:03	0.51	18	7.89	Grab	-	-	0.15	2.18	-	-
09/19/2006 09:36	1.76	16	7.87	Grab	-	-	0.12	5.95	-	-
09/26/2006 12:57	0.00	22	8.15	Grab	-	-	0.07	0.00	-	-
10/02/2006 08:55	0.00	18	7.94	Grab	0.03	0.00	0.07	0.00	< 0.05	0.00
10/11/2006 12:12	0.01	14	8.02	Grab	-	-	0.54	0.15	-	-
10/16/2006 22:43	6.08	-	-	ISCO	0.09	16.19	0.40	68.36	0.10	17.30
10/16/2006 22:58	7.18	-	-	ISCO	0.11	23.07	0.38	77.98	0.13	25.61
10/17/2006 00:13	12.43	-	-	Grab	0.12	40.77	0.40	139.16	0.14	47.53
10/17/2006 02:28	21.05	-	-	ISCO	0.13	77.63	0.33	194.97	0.13	77.53
10/17/2006 04:58	30.97	13	7.32	ISCO	0.19	167.07	0.35	306.88	0.19	163.38
10/17/2006 11:30	36.66	-	-	ISCO	-	-	0.35	368.36	-	-
10/24/2006 10:12	0.38	6	8.07	Grab	-	-	< 0.05	0.53	-	-
11/01/2006 10:23	0.57	7	7.99	Grab	-	-	< 0.05	0.81	-	-
11/06/2006 14:12	0.10	11	8.39	Grab	< 0.02	0.06	< 0.05	0.14	< 0.05	0.14
11/13/2006 14:40	0.94	8	7.97	Grab	-	-	< 0.05	1.33	-	-
11/16/2006 00:55	5.84	-	-	ISCO	0.04	6.30	0.06	9.86	< 0.05	8.26
11/16/2006 15:25	10.76	-	-	ISCO	0.09	26.15	0.19	56.94	0.09	25.91
11/17/2006 06:55	9.24	-	-	ISCO	0.09	23.89	0.14	35.33	0.09	22.58
11/18/2006 12:55	5.31	-	-	ISCO	0.03	5.20	0.06	8.67	< 0.05	7.52
11/19/2006 18:55	4.11	-	-	ISCO	0.02	2.83	0.05	5.86	< 0.05	5.82
11/21/2006 10:40	2.00	5	7.99	Grab	-	-	< 0.05	2.83	-	-
11/29/2006 09:38	0.31	14	8.04	Grab	-	-	< 0.05	0.44	-	-
11/30/2006 08:10	6.99	-	-	ISCO	< 0.02	3.96	0.23	45.00	< 0.05	9.90
11/30/2006 11:55	20.51	-	-	ISCO	0.07	41.58	0.13	77.12	0.08	45.31
11/30/2006 14:10	33.63	-	-	ISCO	0.09	88.90	0.19	176.23	0.09	89.32
11/30/2006 20:10	51.10	-	-	ISCO	0.35	501.97	0.34	499.12	0.29	425.21
12/01/2006 02:10	70.00	-	-	ISCO	0.26	515.30	0.44	865.15	0.25	497.57
12/01/2006 06:10	104.31	-	-	ISCO	0.39	1153.55	0.55	1638.07	0.36	1061.94
12/01/2006 08:10	122.57	-	-	ISCO	0.45	1574.67	0.72	2504.25	0.41	1412.61
12/01/2006 10:10	127.78	-	-	ISCO	0.47	1696.54	0.73	2648.33	0.46	1659.98

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
12/01/2006 12:10	121.94	-	-	ISCO	0.51	1774.64	0.73	2508.33	0.48	1660.89
12/06/2006 11:33	6.33	7	7.80	Grab	< 0.02	3.58	< 0.05	8.96	< 0.05	8.96
12/11/2006 11:15	3.35	6	7.79	Grab	-	-	0.06	5.81	-	-
12/14/2006 09:39	10.74	-	-	ISCO	0.06	17.06	0.10	30.41	0.08	22.83
12/15/2006 21:39	6.92	-	-	ISCO	0.03	5.39	0.08	16.29	< 0.05	9.80
12/18/2006 11:20	4.68	7	7.96	Grab	-	-	< 0.05	6.62	-	-
12/21/2006 02:24	16.48	-	-	ISCO	0.02	10.97	0.06	28.36	0.03	14.03
12/21/2006 04:24	24.98	-	-	ISCO	0.03	21.24	0.11	78.82	0.06	39.46
12/21/2006 06:24	43.40	-	-	ISCO	0.05	61.04	0.17	214.39	0.07	89.49
12/21/2006 08:24	62.10	-	-	ISCO	0.09	158.57	0.25	445.50	0.10	174.97
12/21/2006 10:24	81.53	-	-	ISCO	0.23	532.64	0.46	1052.31	0.23	539.24
12/21/2006 12:24	96.37	-	-	ISCO	0.34	918.46	0.61	1652.40	0.33	900.11
12/21/2006 14:24	107.38	-	-	ISCO	0.47	1427.22	0.60	1827.41	0.35	1071.79
12/21/2006 16:24	111.10	-	-	ISCO	0.37	1159.01	0.58	1838.15	0.37	1156.11
12/21/2006 18:24	108.20	-	-	ISCO	0.39	1209.30	0.59	1797.09	0.38	1174.88
12/21/2006 22:24	92.52	-	-	ISCO	0.31	814.95	0.47	1230.36	0.31	810.63
12/22/2006 04:24	77.70	-	-	ISCO	0.23	508.98	0.36	796.69	0.23	512.81
12/22/2006 06:24	90.43	-	-	ISCO	0.23	596.50	0.38	984.20	0.24	618.34
12/22/2006 08:24	118.36	-	-	ISCO	0.29	984.96	0.53	1787.71	0.29	979.84
12/22/2006 10:24	170.09	-	-	ISCO	0.36	1714.73	0.76	3683.56	0.36	1734.80
12/22/2006 12:24	204.05	-	-	ISCO	0.41	2396.09	0.82	4721.57	0.45	2580.75
12/22/2006 14:24	197.13	-	-	ISCO	0.47	2617.99	0.78	4354.54	0.54	3030.56
12/27/2006 14:55	15.30	7	7.59	Grab	-	-	0.07	30.76	-	-
12/31/2006 05:54	17.08	-	-	ISCO	0.02	11.86	0.12	55.85	< 0.05	24.19
12/31/2006 07:54	39.86	-	-	ISCO	0.06	63.60	0.28	315.93	0.07	77.44
12/31/2006 09:54	63.02	-	-	ISCO	0.08	149.86	0.39	695.79	0.11	189.42
12/31/2006 13:54	86.23	-	-	ISCO	0.25	619.29	0.64	1551.99	0.26	627.08
12/31/2006 17:54	77.93	-	-	ISCO	0.24	525.17	0.49	1080.04	0.25	560.54
12/31/2006 21:54	69.42	-	-	ISCO	0.18	360.16	0.37	735.02	0.20	390.37
01/01/2007 05:54	63.72	-	-	ISCO	0.22	391.78	0.39	696.51	0.22	404.10

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
01/01/2007 17:54	42.75	-	-	ISCO	0.11	133.30	0.20	242.89	0.11	137.41
01/02/2007 14:36	26.60	-	-	Grab	0.05	34.76	0.09	70.59	0.06	45.31
01/04/2007 13:54	18.78	-	-	ISCO	0.02	13.20	< 0.05	26.59	< 0.05	26.59
01/09/2007 09:56	17.88	5	7.75	Grab	-	-	0.07	37.47	-	-
01/12/2007 22:10	25.18	-	-	ISCO	0.03	19.05	0.16	115.64	< 0.05	35.66
01/13/2007 10:10	119.75	-	-	ISCO	0.30	1009.78	0.55	1848.35	0.18	602.24
01/13/2007 22:10	64.26	-	-	ISCO	0.16	300.02	0.31	567.06	0.08	150.07
01/14/2007 12:10	48.73	-	-	ISCO	0.11	147.80	0.20	272.61	< 0.05	68.99
01/15/2007 12:54	137.17	4	7.71	Grab	-	-	0.53	2040.62	-	-
01/23/2007 14:48	14.17	6	8.12	Grab	-	-	< 0.05	20.07	-	-
01/30/2007 09:55	15.38	0	7.74	Grab	-	-	< 0.05	21.78	-	-
02/21/2007 15:12	na	1	7.65	Grab	-	-	0.07	na	-	-
02/26/2007 15:20	na	1	7.39	Grab	-	-	1.05	na	-	-
03/01/2007 09:23	35.96	-	-	ISCO	0.77	779.77	0.97	985.68	0.76	777.24
03/01/2007 11:53	50.36	-	-	ISCO	0.79	1132.87	1.14	1626.49	0.71	1016.74
03/01/2007 14:38	101.80	-	-	ISCO	0.62	1789.90	1.58	4545.74	0.61	1751.14
03/01/2007 17:08	164.80	-	-	ISCO	0.65	3012.39	1.36	6340.56	0.63	2939.49
03/01/2007 21:08	164.55	-	-	ISCO	0.71	3331.38	1.17	5440.96	0.70	3257.33
03/02/2007 01:08	109.17	-	-	ISCO	0.75	2304.07	1.12	3475.96	0.74	2283.66
03/02/2007 08:53	50.91	-	-	ISCO	0.50	720.76	0.71	1023.34	0.53	762.63
03/05/2007 14:40	13.71	-	-	Grab	0.18	69.87	0.25	96.43	0.18	70.25
03/14/2007 10:23	12.74	12	7.87	Grab	-	-	< 0.05	18.04	-	-
03/20/2007 12:53	7.74	12	8.30	Grab	-	-	< 0.05	10.95	-	-
03/22/2007 23:38	34.54	-	-	ISCO	0.04	38.20	0.78	761.01	0.15	149.94
03/23/2007 01:53	47.58	-	-	ISCO	0.05	66.33	0.38	506.52	0.13	179.26
03/23/2007 06:38	68.31	-	-	ISCO	0.10	199.34	0.49	938.51	0.14	280.02
03/23/2007 15:23	75.99	-	-	ISCO	0.15	319.11	0.44	948.67	0.15	324.20
03/23/2007 23:23	63.39	-	-	ISCO	0.17	307.95	0.31	563.54	0.16	286.59
03/24/2007 07:23	49.74	-	-	ISCO	0.09	129.14	0.18	258.34	0.09	131.17
03/24/2007 15:23	56.57	-	-	ISCO	0.09	141.12	0.32	516.77	0.09	137.02

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
03/24/2007 19:23	73.03	-	-	ISCO	0.18	381.69	0.70	1447.16	0.17	360.09
03/25/2007 07:23	46.90	-	-	ISCO	0.08	101.10	0.20	270.69	0.11	150.77
03/25/2007 23:23	35.21	-	-	ISCO	0.03	31.32	0.15	153.09	< 0.05	49.85
03/26/2007 10:55	30.33	13	7.72	Grab	-	-	0.05	46.59	-	-
04/04/2007 09:10	4.57	4	8.23	Grab	< 0.02	2.59	< 0.05	6.47	< 0.05	6.47
04/10/2007 14:15	1.73	13	8.49	Grab	-	-	< 0.05	2.45	-	-
04/17/2007 09:24	4.17	12	8.22	Grab	-	-	< 0.05	5.91	-	-
04/23/2007 12:32	3.19	22	8.44	Grab	-	-	< 0.05	4.52	-	-
04/25/2007 01:38	14.14	-	-	ISCO	< 0.02	8.01	0.31	122.82	< 0.05	20.02
04/25/2007 04:38	43.76	-	-	ISCO	0.04	53.96	0.28	346.14	< 0.05	61.95
04/25/2007 05:53	55.66	-	-	ISCO	0.06	101.81	0.34	531.81	0.06	100.45
04/25/2007 09:53	67.12	-	-	Grab	0.17	318.20	0.41	776.11	0.16	296.87
04/25/2007 13:03	61.50	-	-	ISCO	0.19	324.59	0.38	660.38	0.18	321.68
04/25/2007 17:53	49.95	-	-	ISCO	0.15	208.49	0.23	322.65	0.16	232.64
04/25/2007 21:53	43.91	-	-	ISCO	0.08	97.43	0.18	226.20	0.10	123.00
04/26/2007 23:37	32.33	-	-	ISCO	0.06	53.63	0.08	75.06	0.09	80.33
04/28/2007 14:22	16.05	-	-	ISCO	< 0.02	9.09	0.07	31.84	< 0.05	22.73
04/30/2007 10:10	9.67	18	8.27	Grab	< 0.02	5.48	< 0.05	13.69	< 0.05	13.69
05/09/2007 14:00	3.14	-	8.49	Grab	-	-	< 0.05	4.45	-	-
05/14/2007 10:29	1.14	19	8.68	Grab	-	-	< 0.05	1.61	-	-
05/22/2007 10:20	0.98	23	8.60	Grab	-	-	< 0.05	1.38	-	-
05/27/2007 02:07	7.20	-	-	ISCO	0.05	10.78	0.10	21.07	0.06	12.75
05/29/2007 07:20	4.37	19	8.22	Grab	-	-	< 0.05	6.18	-	-
06/05/2007 07:52	4.64	20	7.90	Grab	< 0.02	2.63	< 0.05	6.56	< 0.05	6.56
06/12/2007 13:39	2.15	27	8.59	Grab	-	-	< 0.05	3.04	-	-
06/20/2007 08:53	3.82	23	8.00	Grab	-	-	0.06	7.00	-	-
06/24/2007 04:21	7.85	-	-	ISCO	0.02	5.30	< 0.05	11.11	< 0.05	11.11
06/26/2007 10:21	3.83	-	-	ISCO	< 0.02	2.17	< 0.05	5.43	< 0.05	5.43
06/26/2007 19:06	7.68	-	-	ISCO	< 0.02	4.35	< 0.05	10.87	< 0.05	10.87
06/27/2007 08:25	9.52	23	7.77	Grab	-	-	0.09	24.06	-	-

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
07/03/2007 14:45	1.61	26	8.15	Grab	< 0.02	0.91	< 0.05	2.28	< 0.05	2.28
07/11/2007 08:40	0.06	23	7.97	Grab	-	-	< 0.05	0.08	-	-
07/17/2007 08:21	0.06	-	-	Grab	-	-	0.06	0.10	-	-
07/17/2007 16:36	3.77	-	-	ISCO	0.05	5.85	0.11	12.04	0.07	7.28
07/18/2007 08:12	4.33	21	7.73	Grab	0.04	4.95	0.09	11.42	< 0.05	6.13
07/24/2007 12:02	0.05	27	8.34	Grab	-	-	0.09	0.12	-	-
07/31/2007 11:49	0.31	26	7.94	Grab	0.07	0.60	0.11	0.99	0.11	0.94
08/07/2007 07:50	0.00	26	7.42	Grab	-	-	0.15	0.00	-	-
08/16/2007 09:10	0.00	26	8.04	Grab	-	-	0.16	0.00	-	-
08/22/2007 08:40	0.02	27	7.67	Grab	-	-	0.14	0.08	-	-
08/29/2007 11:35	0.00	31	8.65	Grab	-	-	0.17	0.00	-	-
09/04/2007 13:27	0.00	31	8.72	Grab	0.07	0.00	0.13	0.00	0.11	0.00
09/08/2007 23:05	0.30	-	-	ISCO	0.13	1.12	0.23	1.94	0.16	1.32
09/09/2007 03:05	4.26	-	-	ISCO	0.61	73.52	0.70	84.92	0.64	76.99
09/09/2007 07:05	5.40	-	-	ISCO	0.31	48.15	0.39	59.45	0.35	53.27
09/10/2007 03:05	3.00	-	-	ISCO	0.15	12.97	0.23	19.67	0.20	16.68
09/12/2007 09:48	0.15	16	7.83	Grab	-	-	0.08	0.32	-	-
09/19/2007 09:25	0.00	22	7.72	Grab	-	-	0.23	0.00	-	-
09/26/2007 09:32	0.00	18	7.43	Grab	-	-	0.31	0.00	-	-
10/03/2007 07:05	2.19	23	8.10	ISCO	0.16	9.64	0.25	15.67	0.17	10.39
10/03/2007 11:05	4.71	-	-	ISCO	0.17	22.03	0.24	32.36	0.18	23.35
10/03/2007 15:10	5.05	-	-	ISCO	0.17	24.94	0.22	31.06	0.21	29.63
10/03/2007 19:05	4.62	-	-	Grab	0.13	17.45	0.21	27.16	0.14	18.48
10/04/2007 07:05	1.27	-	-	ISCO	0.07	2.65	0.16	5.88	0.07	2.51
10/10/2007 09:25	0.00	11	7.93	Grab	-	-	0.17	0.00	-	-
10/18/2007 08:50	3.63	-	-	ISCO	0.09	8.85	0.19	19.31	0.16	16.04
10/19/2007 08:40	0.62	14	7.48	Grab	-	-	0.15	2.63	-	-
10/24/2007 16:08	0.00	12	8.43	Grab	-	-	0.05	0.00	-	-
10/30/2007 09:52	0.00	8	7.72	Grab	-	-	0.11	0.00	-	-
11/07/2007 13:32	0.00	6	8.11	Grab	< 0.02	0.00	< 0.05	0.00	< 0.05	0.00

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
11/12/2007 19:50	2.54	-	-	ISCO	0.03	2.38	0.09	6.30	0.06	4.47
11/12/2007 20:20	4.44	-	-	ISCO	0.05	5.86	0.09	11.22	< 0.05	6.29
11/13/2007 00:20	6.48	-	-	Grab	0.12	22.33	0.16	28.46	< 0.05	9.17
11/13/2007 04:20	6.13	-	-	ISCO	0.12	20.24	0.18	30.90	< 0.05	8.68
11/13/2007 08:20	4.92	-	-	ISCO	0.09	12.46	0.11	15.05	< 0.05	6.96
11/13/2007 11:10	3.90	11	7.61	ISCO	-	-	0.09	10.44	-	-
11/21/2007 09:35	2.05	-	-	ISCO	0.03	1.94	0.14	8.14	0.04	2.52
11/21/2007 11:50	8.73	-	-	ISCO	0.06	14.84	0.20	49.88	0.08	19.73
11/21/2007 14:05	14.79	-	-	ISCO	0.10	42.70	0.24	102.39	0.10	41.46
11/21/2007 18:05	30.78	-	-	ISCO	0.14	121.65	0.28	246.88	0.14	120.66
11/21/2007 22:05	37.20	-	-	ISCO	0.16	172.86	0.37	384.67	0.15	159.68
11/22/2007 02:05	32.07	-	-	ISCO	0.18	165.83	0.26	236.99	0.17	153.38
11/22/2007 10:05	16.73	-	-	ISCO	0.16	77.11	0.23	109.21	0.16	76.51
11/22/2007 18:05	9.14	-	-	ISCO	0.13	34.13	0.19	49.27	0.12	31.93
11/23/2007 02:05	6.81	-	-	ISCO	0.08	15.57	0.14	27.25	< 0.05	9.64
11/23/2007 14:05	4.83	-	-	ISCO	0.05	6.81	0.08	10.30	< 0.05	6.84
11/27/2007 09:27	2.76	4	8.29	Grab	-	-	< 0.05	3.91	-	-
12/02/2007 17:35	4.73	-	-	ISCO	0.02	2.73	0.08	10.13	< 0.05	6.70
12/02/2007 21:35	5.46	-	-	ISCO	0.03	5.27	0.07	10.53	< 0.05	7.73
12/03/2007 13:35	4.43	-	-	ISCO	0.03	3.15	< 0.05	6.27	< 0.05	6.27
12/04/2007 10:40	1.51		8.23	Grab	0.02	0.75	< 0.05	2.13	< 0.05	2.13
12/11/2007 05:19	4.76	-	-	ISCO	0.03	4.22	0.08	11.42	< 0.05	6.73
12/11/2007 08:34	8.90	-	-	ISCO	0.03	8.32	0.12	31.30	< 0.05	12.60
12/11/2007 11:04	18.50	-	-	ISCO	0.05	24.88	0.18	94.02	0.06	32.36
12/11/2007 13:04	28.83	-	-	ISCO	0.05	44.61	0.25	206.42	0.07	57.13
12/11/2007 17:19	41.76	-	-	ISCO	0.13	152.90	0.27	321.30	0.16	190.39
12/11/2007 21:19	45.54	-	-	ISCO	0.17	223.34	0.29	377.87	0.18	232.80
12/12/2007 01:19	55.23	-	-	ISCO	0.18	277.23	0.30	473.21	0.19	300.96
12/12/2007 05:19	58.90	-	-	ISCO	0.24	392.63	0.36	603.37	0.25	412.00
12/12/2007 09:19	50.78	5	8.48	ISCO	0.24	351.97	0.34	486.15	0.24	346.76

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
12/12/2007 10:50	46.72	-	-	Grab	0.23	305.14	0.33	431.16	0.25	333.09
12/18/2007 10:15	5.22	-	-	Grab	-	-	0.06	8.79	-	-
12/27/2007 09:05	15.71	5	7.77	Grab	0.02	7.27	< 0.05	22.25	< 0.05	22.25
01/08/2008 15:30	364.84	-	-	Grab	0.42	4309.05	0.86	8905.91	0.39	3977.50
01/09/2008 09:26	160.11	-	-	Grab	0.36	1652.12	0.71	3237.06	0.34	1563.97
01/09/2008 11:36	144.00	-	-	Grab	0.35	1432.66	0.63	2562.37	0.34	1369.94
01/09/2008 13:34	137.34	-	-	ISCO	0.33	1282.77	0.65	2535.16	0.31	1206.17
01/09/2008 17:34	126.63	-	-	ISCO	0.31	1118.38	0.61	2180.64	0.33	1184.11
01/10/2008 01:34	105.95	-	-	ISCO	0.27	807.46	0.60	1801.52	0.27	816.23
01/10/2008 09:34	87.61	-	-	Grab	0.23	577.80	0.44	1090.58	0.24	595.65
01/10/2008 12:56	82.41	-	-	ISCO	0.22	525.05	0.41	946.75	0.23	538.24
01/10/2008 17:34	79.29	-	-	ISCO	0.23	519.08	0.42	939.09	0.25	572.28
01/10/2008 21:34	92.80	-	-	ISCO	0.19	495.69	0.39	1037.28	0.18	484.47
01/11/2008 01:34	93.84	-	-	ISCO	0.24	631.72	0.42	1118.29	0.23	605.20
01/11/2008 13:34	69.76	-	-	ISCO	0.18	350.15	0.32	633.36	0.18	350.19
01/16/2008 10:40	17.92	-	-	Grab	-	-	0.04	21.97	-	-
01/23/2008 13:15	10.38	2	8.40	Grab	-	-	0.06	17.78	-	-
01/31/2008 09:25	10.74	-1	8.32	Grab	0.01	3.04	< 0.05	15.21	0.06	17.69
02/04/2008 14:49	10.32	-	-	ISCO	0.08	23.84	0.30	86.67	0.18	52.02
02/04/2008 17:34	28.91	-	-	ISCO	0.16	131.04	0.42	344.22	0.30	249.53
02/04/2008 20:34	60.62	-	-	ISCO	1.54	2642.86	2.00	3426.76	1.78	3059.08
02/04/2008 22:19	99.86	-	-	ISCO	2.01	5687.76	2.52	7118.23	2.24	6334.11
02/04/2008 23:34	140.55	-	-	ISCO	1.60	6355.31	2.02	8058.18	1.72	6828.72
02/05/2008 00:19	201.59	-	-	ISCO	1.08	6144.46	1.74	9924.67	1.35	7713.67
02/05/2008 02:04	323.07	-	-	ISCO	0.95	8690.86	1.80	16492.49	1.29	11806.13
02/05/2008 04:19	360.88	-	-	ISCO	1.53	15646.77	2.26	23069.40	1.71	17476.94
02/05/2008 08:49	277.20	-	-	ISCO	1.81	14202.05	2.29	18004.51	1.92	15042.74
02/05/2008 09:30	263.51	-	-	ISCO	1.78	13277.94	2.19	16316.36	1.71	12726.88
02/05/2008 10:38	240.41	-	-	ISCO	1.73	11755.70	2.01	13652.37	1.67	11373.28
02/05/2008 13:19	181.50	2	8.56	Grab	1.82	9334.03	1.96	10056.28	0.39	2021.60

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
02/05/2008 17:34	209.93	-	-	Grab	0.90	5362.09	1.45	8648.25	0.90	5379.02
02/05/2008 18:19	267.01	-	-	Grab	0.73	5538.78	1.74	13118.49	0.76	5757.71
02/05/2008 19:04	369.99	-	-	ISCO	0.62	6476.33	1.69	17731.43	0.64	6683.92
02/05/2008 19:49	419.18	-	-	ISCO	0.52	6113.44	3.22	38248.38	0.52	6205.95
02/05/2008 22:19	431.10	-	-	ISCO	0.59	7196.99	2.20	26833.41	0.56	6862.74
02/06/2008 05:49	396.61	-	-	ISCO	0.98	10968.25	m	-	m	-
02/06/2008 11:49	342.48	-	-	ISCO	0.88	8523.62	1.38	13421.88	0.85	8259.31
02/06/2008 16:19	287.76	-	-	ISCO	0.76	6190.21	1.44	11700.01	0.80	6542.11
02/07/2008 05:49	113.82	2	7.83	Grab	0.75	2413.28	1.52	4911.10	0.72	2320.49
02/07/2008 09:47	109.63	-	-	ISCO	0.46	1440.04	0.72	2250.25	0.48	1502.70
02/07/2008 10:19	109.86	-	-	ISCO	1.81	5626.29	1.97	6124.59	1.68	5226.23
02/08/2008 22:19	78.81	-	-	ISCO	0.64	1433.42	2.11	4718.41	0.61	1361.31
02/09/2008 11:49	69.63	-	-	ISCO	0.44	863.01	0.68	1332.99	0.43	847.84
02/14/2008 12:58	13.31	4	7.75	Grab	-	-	0.14	52.52	-	-
02/19/2008 09:51	23.77	-	-	Grab	0.14	96.22	0.25	169.18	0.14	93.41
03/03/2008 12:45	87.75	6	7.69	Grab	0.33	814.63	0.75	1867.37	0.30	754.37
03/13/2008 10:25	14.74	7	7.98	Grab	-	-	< 0.05	20.86	-	-
03/19/2008 14:47	66.35	7	7.86	Grab	0.09	161.20	0.18	335.56	0.09	164.65
03/27/2008 08:25	13.11	6	7.76	Grab	-	-	< 0.05	18.56	-	-
04/02/2008 09:00	14.98	7	8.30	Grab	-	-	< 0.05	21.21	-	-
04/10/2008 08:30	8.90	-	-	ISCO	-	-	< 0.05	12.60	-	-
04/10/2008 15:15	25.74	-	-	ISCO	0.01	7.29	0.06	46.49	0.05	38.32
04/10/2008 19:15	38.24	8	7.99	Grab	0.01	15.48	0.10	110.36	< 0.05	54.14
04/10/2008 20:15	51.02	-	-	Grab	0.02	23.83	0.28	402.25	< 0.05	72.24
04/10/2008 21:15	63.38	-	-	ISCO	0.02	33.70	0.30	533.70	0.05	91.15
04/10/2008 23:00	75.78	-	-	ISCO	0.07	147.48	0.90	1931.85	0.09	203.63
04/10/2008 23:45	78.15	-	-	ISCO	0.08	179.52	0.80	1761.73	0.11	234.13
04/11/2008 04:15	65.99	-	-	ISCO	0.09	177.52	0.34	638.66	0.10	190.47
04/11/2008 08:45	53.21	-	-	ISCO	0.06	91.82	0.19	291.27	0.08	121.00
04/11/2008 13:15	47.46	-	-	ISCO	0.04	51.29	0.15	207.64	0.08	108.84

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
04/11/2008 17:45	41.62	-	-	ISCO	0.03	38.01	0.15	173.28	< 0.05	58.93
04/11/2008 22:15	37.04	-	-	ISCO	0.02	24.56	0.11	117.65	< 0.05	52.44
04/12/2008 02:45	34.22	-	-	ISCO	0.02	18.56	0.09	85.88	0.05	49.71
04/12/2008 07:15	32.38	-	-	ISCO	0.02	15.28	0.08	75.77	< 0.05	45.85
04/14/2008 12:15	17.05	12	8.10	Grab	0.01	4.85	< 0.05	24.14	< 0.05	24.14
04/24/2008 10:25	9.62	16	8.31	Grab	-	-	0.05	14.05	-	-
05/02/2008 21:45	32.18	-	-	ISCO	0.01	12.94	0.47	432.77	< 0.05	45.56
05/03/2008 15:45	15.94	-	-	ISCO	0.01	4.51	0.05	22.57	< 0.05	22.57
05/07/2008 09:45	11.37	15	8.01	Grab	-	-	0.05	16.10	-	-
05/11/2008 05:00	33.06	-	-	ISCO	0.04	36.15	0.27	248.73	< 0.05	46.81
05/11/2008 05:15	35.34	-	-	ISCO	0.01	10.66	0.21	212.32	< 0.05	50.04
05/11/2008 06:15	48.24	-	-	ISCO	0.01	18.71	0.25	334.92	< 0.05	68.30
05/11/2008 07:15	62.50	-	-	ISCO	0.02	42.02	0.29	511.61	< 0.05	88.49
05/11/2008 08:30	74.91	-	-	ISCO	0.03	74.07	0.49	1040.59	< 0.05	106.06
05/11/2008 09:45	80.14	-	-	ISCO	0.08	185.61	0.66	1508.32	0.09	203.64
05/11/2008 14:15	71.72	-	-	ISCO	0.14	290.59	0.34	692.89	0.13	270.43
05/11/2008 18:45	61.12	-	-	ISCO	0.09	157.32	0.23	400.13	0.12	203.02
05/11/2008 23:15	53.09	-	-	ISCO	0.06	93.04	0.17	254.98	0.07	103.97
05/12/2008 03:45	47.53	-	-	ISCO	0.08	106.93	0.19	257.58	0.08	105.13
05/12/2008 08:15	43.37	-	-	ISCO	0.07	82.13	0.18	223.65	0.08	94.27
05/12/2008 12:45	39.44	-	-	ISCO	0.02	27.75	0.10	108.29	< 0.05	55.84
05/12/2008 13:04	39.26	-	-	Grab	0.02	17.52	0.09	96.63	< 0.05	55.59
05/15/2008 20:45	34.24	-	-	ISCO	0.01	9.70	0.15	149.18	< 0.05	48.48
05/15/2008 22:45	46.40	-	-	ISCO	0.02	23.10	0.17	222.12	< 0.05	65.70
05/16/2008 01:00	58.60	-	-	ISCO	0.05	76.93	0.24	399.72	< 0.05	82.97
05/16/2008 01:15	59.20	-	-	ISCO	0.05	79.75	0.26	428.80	0.07	112.16
05/16/2008 05:45	54.77	-	-	ISCO	0.04	59.90	0.16	247.89	< 0.05	77.55
05/16/2008 10:15	48.36	-	-	ISCO	0.02	31.27	0.10	135.21	< 0.05	68.47
05/16/2008 14:45	43.67	-	-	ISCO	0.01	12.37	0.09	117.39	< 0.05	61.83
05/16/2008 23:45	38.44	-	-	ISCO	0.01	10.89	1.13	1235.08	< 0.05	54.43

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		Total phosphate (t-P)		Total dissolved phosphate (t- dissolved P)	
Date	Instantaneous discharge* (cfs)	Water temp. (^oC)	pH	Type^	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)	Conc.** (mg/L)	Load (mg)
05/17/2008 08:45	35.25	-	-	ISCO	0.01	9.98	0.05	49.91	< 0.05	49.91
05/17/2008 17:45	32.24	-	-	ISCO	0.01	9.13	0.05	46.18	0.16	146.22
05/19/2008 09:45	21.66	12	8.17	Grab	0.01	6.13	0.07	42.91	< 0.05	30.67
05/28/2008 08:40	10.33	14	7.97	Grab	-	-	0.05	16.02	-	-
05/30/2008 20:30	15.97	-	-	ISCO	0.01	4.52	0.14	61.55	< 0.05	22.61
05/31/2008 01:00	19.04	-	-	ISCO	0.01	5.39	0.27	144.11	< 0.05	26.96
05/31/2008 05:30	16.48	-	-	ISCO	0.01	4.67	0.37	172.41	< 0.05	23.33
05/31/2008 14:30	14.22	-	-	ISCO	0.01	4.03	0.16	63.66	< 0.05	20.13
06/02/2008 10:20	11.07	20	7.71	Grab	-	-	< 0.05	15.67	-	-
06/03/2008 11:45	15.24	-	-	ISCO	0.01	4.32	0.32	136.49	< 0.05	21.58
06/03/2008 16:15	56.57	-	-	ISCO	0.12	188.34	0.36	576.68	0.08	128.15
06/03/2008 20:45	57.56	-	-	ISCO	0.13	204.54	0.34	554.18	0.11	179.29
06/03/2008 23:00	95.57	-	-	ISCO	0.23	620.21	0.71	1921.44	0.19	514.19
06/04/2008 04:00	301.81	-	-	ISCO	0.25	2095.53	3.42	29261.60	0.20	1747.69
06/04/2008 05:45	297.74	-	-	ISCO	0.30	2498.18	3.14	26448.28	0.31	2612.18
06/04/2008 13:30	248.80	-	-	ISCO	0.34	2418.66	0.98	6882.49	0.35	2491.98
06/04/2008 22:15	169.86	-	-	ISCO	0.30	1452.82	0.81	3898.58	0.31	1471.47
06/05/2008 09:40	116.03	-	-	ISCO	0.28	915.57	0.47	1549.29	0.25	813.31
06/05/2008 13:15	103.97	-	-	ISCO	0.27	800.70	0.53	1557.97	0.29	847.26
06/07/2008 01:15	39.31	-	-	ISCO	0.15#	164.85	0.24	271.47	0.05#	58.68
06/07/2008 05:45	38.84	-	-	ISCO	0.15	164.47	0.25	275.63	0.08	85.19
06/07/2008 07:00	54.03	-	-	ISCO	0.20	301.68	0.65	992.34	0.19	284.87
06/07/2008 08:00	101.67	-	-	ISCO	0.21	601.18	0.85	2444.43	0.43	1231.44
06/07/2008 09:00	171.63	-	-	ISCO	0.26	1273.52	1.54	7501.74	0.23	1133.99
06/07/2008 10:00	242.01	-	-	ISCO	0.18	1253.38	2.45	16798.99	0.21	1427.45
06/07/2008 11:00	275.28	-	-	ISCO	0.36	2785.51	2.19	17102.49	0.33	2575.51
06/07/2008 14:45	270.28	-	-	ISCO	0.30	2278.17	1.36	10380.83	0.31	2367.87
06/07/2008 23:45	179.12	-	-	ISCO	0.29	1461.24	0.66	3353.48	0.29	1481.55
06/09/2008 13:06	52.60	-	-	Grab	0.17	260.65	0.34	510.23	0.10	153.78
06/11/2008 10:15	25.41	19	7.62	Grab	0.07	51.40	0.16	113.79	0.09	64.02

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

Date	Instantaneous discharge* (cfs)	Water temp. (^{o}C)	pH	Type^	Instantaneous Ortho-phosphate (oPO_4 - P) Conc.** (mg/L)	Instantaneous Ortho-phosphate (oPO_4 - P) Load (mg)	Instantaneous Total phosphate (t-P) Conc.** (mg/L)	Instantaneous Total phosphate (t-P) Load (mg)	Instantaneous Total dissolved phosphate (t- dissolved P) Conc.** (mg/L)	Instantaneous Total dissolved phosphate (t- dissolved P) Load (mg)
06/26/2008 08:43	13.65	21	7.24	Grab	-	-	0.05	20.42	-	-
07/07/2008 03:30	14.81	-	-	Grab	0.14	58.22	0.46	190.85	0.12	51.40
07/07/2008 04:15	42.72	-	-	ISCO	0.14	169.08	1.43	1730.08	0.12	142.64
07/07/2008 04:30	81.57	-	-	ISCO	0.20	455.18	5.81	13427.47	0.18	416.49
07/07/2008 05:45	163.45	-	-	ISCO	0.37	1699.33	3.75	17368.13	0.36	1651.41
07/07/2008 08:00	202.05	-	-	ISCO	0.33	1894.84	1.56	8939.16	0.32	1811.35
07/07/2008 13:00	170.38	-	-	ISCO	0.39	1886.55	0.48	2320.17	0.39	1860.18
07/07/2008 19:45	116.82	-	-	ISCO	0.28	921.83	0.30	1008.50	0.26	866.32
07/08/2008 06:30	69.83	-	-	ISCO	0.21	410.81	0.21	410.30	0.18	353.33
07/08/2008 11:00	60.29	-	-	ISCO	0.14	242.36	0.16	266.86	0.13	229.99
07/17/2008 16:25	17.71	26	7.93	Grab	-	-	< 0.05	25.07	-	-
07/31/2008 08:45	14.53	22	7.53	Grab	-	-	< 0.05	20.57	-	-
08/06/2008 14:16	10.23	27	8.09	Grab	0.01	2.90	< 0.05	14.48	< 0.05	14.48
08/14/2008 08:33	6.65	21	7.28	Grab	-	-	< 0.05	9.42	-	-
08/19/2008 14:30	5.69	26	7.54	Grab	-	-	< 0.05	8.06	-	-
08/26/2008 14:02	4.05	26	8.12	Grab	-	-	0.05	6.07	-	-
09/02/2008 14:34	1.27	32	8.18	Grab	-	-	0.24	8.73	-	-
09/04/2008 20:45	6.93	-	-	ISCO	0.22	43.43	0.33	64.55	0.22	43.96
09/05/2008 03:30	21.29	-	-	ISCO	0.17	102.22	0.30	178.47	0.15	91.62
09/05/2008 21:30	8.00	-	-	ISCO	0.13	30.12	0.20	45.82	0.13	28.48
09/11/2008 13:02	2.24	23	7.99	Grab	-	-	0.10	6.24	-	-
09/14/2008 08:45	14.17	-	-	ISCO	0.09	37.84	0.19	75.43	0.09	34.36
09/14/2008 09:30	92.71	-	-	ISCO	0.15	386.18	1.70	4456.64	0.13	348.85
09/14/2008 10:15	229.33	-	-	ISCO	0.15	990.97	0.91	5941.17	0.13	851.84
09/14/2008 11:15	308.07	-	-	ISCO	0.22	1894.55	0.72	6322.57	0.18	1612.60
09/14/2008 12:15	327.04	-	-	ISCO	0.22	2015.33	0.58	5370.32	0.18	1683.75
09/14/2008 13:15	329.82	-	-	ISCO	0.22	2039.10	0.52	4847.87	0.21	1976.54
09/15/2008 02:45	275.64	-	-	Grab	0.28	2209.90	0.30	2307.82	0.22	1678.52
09/15/2008 07:15	253.17	-	-	ISCO	0.25	1757.19	0.27	1907.42	0.21	1514.49
09/15/2008 13:58	210.59	-	-	ISCO	0.27	1600.22	0.24	1456.64	0.18	1080.57

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample

Appendix D-2. Continued

					Instantaneous					
					Ortho-phosphate (oPO_4 - P)		*Total phosphate (t-P)*		*Total dissolved phosphate (t- dissolved P)*	
Date	*Instantaneous discharge* (cfs)*	*Water temp. (^oC)*	*pH*	*Type^*	*Conc.** (mg/L)*	*Load (mg)*	*Conc.** (mg/L)*	*Load (mg)*	*Conc.** (mg/L)*	*Load (mg)*
09/15/2008 17:45	188.24	-	-	ISCO	0.21	1095.52	0.41	2207.53	0.23	1203.15
09/15/2008 18:45	182.52	-	-	ISCO	0.19	1005.02	0.22	1138.11	0.16	805.79
09/16/2008 12:45	111.81	-	-	ISCO	0.18	557.41	0.19	607.04	0.15	462.72
09/17/2008 11:15	49.77	-	-	ISCO	0.14	197.65	0.17	243.93	0.12	168.19
09/18/2008 09:45	30.68	-	-	ISCO	0.12	106.00	0.17	143.45	0.10	90.71
09/23/2008 09:05	6.86	18	7.34	Grab	-	-	0.05	10.47	-	-
09/30/2008 16:43	3.09	17	8.52	Grab	0.02	1.60	< 0.05	4.37	< 0.05	4.37

Notes: *e - estimated; ** < - MDL; # - outside MDL and calibration limits; ^ Grab - Weighted bottle dip sample; ISCO - Automatic pump sample