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Data for a Regional Approach to the Development of an Effects-Based Nutrient Criterion for Wadable Streams

Data Series 257

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

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Contents

Figures

Tables

Conversion Factors

Multiply	By	To obtain
Length		
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
Area		
square inch (in^2)	6.452	square centimeter (cm^2)
square mile (mi^2)	2.590	square kilometer (km^2)
Flow rate		
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

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

$$°F=(1.8×°C)+32$$

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

$$°C=(°F-32)/1.8$$

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83) or to the North American Datum of 1927 (NAD 27).

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L).

Concentrations of chlorophyll *a* (chl *a*) and ash free dry mass (AFDM) are given in grams per meter squared (g/m^2).

Periphyton species composition densities are given in units per centimeter squared ($units/cm^2$).

Periphyton biomass is given in micrograms per centimeter squared ($µg/cm^2$).

Data for a Regional Approach to the Development of an Effects-Based Nutrient Criterion for Wadable Streams

By J. Kent Crawford, Connie A. Loper, Joseph R. Beaman, Anna G. Soehl, and Will S. Brown

Abstract

States are required by the U.S. Environmental Protection Agency to establish nutrient criteria (concentrations of nutrients above which water quality is deteriorated) as part of their water-quality regulations. A study of wadable streams in the Mid-Atlantic Region was undertaken by the U.S. Geological Survey, the U.S. Environmental Protection Agency, and the Maryland Department of the Environment, with assistance from the Pennsylvania Department of Environmental Protection, to help define current concentrations of nutrients in streams with the goal of associating different nutrient-concentration levels with their effects on water quality. During the summers of 2004 and 2005, diel concentrations of dissolved oxygen, nutrient concentrations, concentrations of chlorophyll *a* in attached algae, and algal-community structure were measured at 46 stream sites in Maryland, Pennsylvania, Virginia, and West Virginia. Data from this work can be used by individual state agencies to define nutrient criteria.

Quality-control measures for the study included submitting blank samples, duplicate samples, and reference samples for analysis of nutrients, total organic carbon, chlorophyll *a*, and algal biomass. Duplicate and split samples were submitted for periphyton identifications. Three periphyton split samples were sent to an independent lab for a check on periphyton identifications.

Neither total organic carbon nor nutrients were detected in blank samples.

Concentrations of nutrients and total organic carbon were similar for most duplicate sample pairs, with the exception of a duplicate pair from Western Run. Concentrations of ammonia plus organic nitrogen for this duplicate pair differed by as much as 34 percent. Total organic carbon for the duplicate pair from Western Run differed by 102 percent.

The U.S. Geological Survey National Water Quality Laboratory performance on the only valid reference sample submitted was excellent; the relative percent difference values were no larger than 5 percent for any constituent analyzed.

For periphyton identifications, duplicate samples had Jaccard Coefficient of Community values slightly greater than 0.5. This indicates the periphyton sampling protocol used provided a sample that was only moderately reproducible.

Jaccard Coefficients for three periphyton samples split between two independent labs were 0.2, 0.11, and 0.08. These very low values suggest a poor concurrence on species identifications performed by the two labs. As a result of these quality-control samples, the slides prepared for diatom identifications were sent to the Academy of Natural Sciences for re-identification. Caution is urged when interpreting periphyton-community information from this study.

This report and the raw data from the study are available online at *http://pubs.water.usgs.gov/ds257*.

Introduction

Nutrients frequently are cited as one of the leading causes of impairment for streams in the United States. The number of waters adversely affected by nutrients is documented in various state water-quality monitoring and assessment reports prepared by the states and submitted to the U.S. Environmental Protection Agency (USEPA). Impairment from nutrients may affect as much as 50 percent of all waters surveyed in a state.

To address these water-quality impairments caused by nutrients, the USEPA is in the process of helping states establish nutrient criteria (the concentrations of nutrients above which water quality is deteriorated). The USEPA has published nutrient-criteria technical-guidance manuals for three aquatic environments (Lakes and Reservoirs, Rivers and Streams, and Estuarine and Coastal Marine Waters) (U.S. Environmental Protection Agency, 2000a, 2000b, 2001), with a fourth document (Wetlands) still to be published. Also, USEPA has published suggested nutrient criteria for streams for all 14 nutrient ecoregions across the United States (for example, see U.S. Environmental Protection Agency, 2000c).

The suggested nutrient criteria by USEPA were established on the basis of an examination of reference conditions and concentrations of nutrients that lead to impairment. This approach has gained praise and acceptance from many in the scientific and regulatory community for its scientific validity. Yet, others have called for more of an effects-based approach

where response variables and water uses are factored into the determination of nutrient criteria (Dodds and Welch, 2000).

Therefore, in 2003, the Maryland Department of the Environment, the USEPA, and the U.S. Geological Survey (USGS), assisted by the Pennsylvania Department of Environmental Protection, entered into an agreement to develop nutrient criteria for streams in the Mid-Atlantic Region of the United States. The project would (1) use an effects-based approach to calculate nutrient criteria and (2) assess periphyton communities in Mid-Atlantic streams. An effects-based approach means that effects caused by excessive nutrients are used to develop a nutrient-criterion concentration. The nutrient criteria can be used to support the USEPA reference-condition approach or can be used as an alternative to the USEPA approach. The periphyton-community assessment can be used to evaluate the ecological health of the periphyton community for the streams studied and will provide a separate effects-based indicator for streams that are adversely affected by nutrients.

Study Objectives

There are two primary objectives for the project:

1. Use in-stream concentrations of dissolved oxygen and chlorophyll *a* in periphyton to suggest nutrient criteria for streams in USEPA Region 3[1].

2. Examine periphyton communities for streams in USEPA Region 3 to see if specific periphyton-community characteristics are associated with eutrophic conditions.

Scope

Field aspects of the study were conducted during the summer months of 2004 and 2005. A total of 46 stream sites in 4 states (Maryland, Pennsylvania, Virginia, and West Virginia) were surveyed. All but one of the sampling sites were on streams within USEPA Nutrient Ecoregions IX or XI.

Water samples were collected at each site and analyzed for dissolved phosphorus, total phosphorus, dissolved orthophosphate, ammonia nitrogen, nitrite plus nitrate nitrogen, nitrite nitrogen, total organic nitrogen, and total organic carbon.

Water-quality sondes were deployed for a 2-day period (or longer) at each site for continuous readings of dissolved oxygen, pH, specific conductance, and temperature. Continuous data were collected for two reasons. First, concentrations of dissolved oxygen are expected to be lowest at night, when photosynthesis has shut down but stream respiration continues. Placing continuous monitors in streams will provide a record of these lowest dissolved oxygen concentrations. Second, 24-hour concentrations of dissolved oxygen will allow periphyton productivity to be estimated. Productivity may be a better estimate of periphytic activity than periphyton standing crop alone.

Samples of the periphytic algal community were collected at each site for analysis of chlorophyll *a*, pheophytin, and algal biomass and for identification of species present in the periphyton community.

All sampling was done during the summer when periphyton growth was active and stream temperatures were high. This is the period when nighttime concentrations of dissolved oxygen in streams would be expected to be at their lowest.

Report Objectives

This report compiles all data from the study in a single publication. Analyses of these data and development of nutrient criteria are beyond the scope of this report. The data presented include nutrient concentrations, periphyton concentrations, periphyton community data, and continuous-monitoring data for dissolved oxygen, pH, specific conductance, and temperature. The report is available online at *http://pubs.water.usgs.gov/ds257*.

Study Methods

Stream-Water Chemistry at the Time of Sampling

Field measurements for dissolved oxygen, pH, specific conductance, and temperature were made with a multi-parameter water-quality meter manufactured by the YSI Corporation®. These measurements were taken at equal intervals across the entire width of the stream, and the readings were recorded on field data sheets. Typically, readings were made at 2-ft or 5-ft intervals across the width of the stream and at six-tenths of the depth of the stream. For some larger streams, the readings were made at 10-ft intervals. These cross-sectional readings allowed a determination to be made as to whether the stream was well-mixed from bank to bank or poorly mixed. In addition, barometric pressure was measured at each site using Thommen® field barometers.

Water-quality samples for laboratory determination of nutrients and organic carbon were collected with a DH-81 sampler using depth-integrating and equal-width-integrating methods (Wilde and others, 1999). The DH-81 sampler allows stream water to slowly fill the sample bottle at an isokinetic rate. That is, water enters the sample bottle at the same rate as the water flowing in the stream. This technique insures sediments in the water are not over-represented or under-represented in the sample (Wilde and others, 1999). Wilde and others (1999) recommend no fewer than 10 equal-width increments for streams wider than 5 ft. Only three equal-width increments were used. While this goes against accepted protocol, the approach was justified because cross-sectional measurements for field characteristics indicated that all the sampling sites were well-mixed,

[1] USEPA Region 3 includes the states of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia and the District of Columbia. For purposes of this report, the terminology "USEPA Region 3" and "Mid-Atlantic Region" are used interchangeably.

laterally. Typically, a sample included depth-integrated collections at three verticals, 25 percent, 50 percent, and 75 percent of the stream width, which were composited to make up the sample. Location of the verticals was noted on the field data sheets. Sample bottles were pre-cleaned 1-liter polyethylene bottles.

Sample processing began immediately after sample collection. Three sub-sample bottles were needed for laboratory analysis. One sub-sample was used for analysis of total nutrients. This sub-sample consisted of an unfiltered 125-mL (milliliter) bottle of stream water, preserved with 1 mL of 4.5N sulfuric acid. A second sub-sample was for the determination of filtered nutrients. For this sample, water from the original sample was filtered in the field through a 0.45 µm (micrometer) pore size filter into a 125-mL brown polyethylene bottle with no preservatives. All field samples were immediately placed on ice until they were returned to the laboratory where they were placed in a refrigerator at 4°C. The third sub-sample was for the determination of total organic carbon. The sub-sample was collected in a pre-cleaned 125-mL brown glass bottle that had been baked at 450°C to burn off any organic matter. The total organic carbon sub-sample received no filtration or preservation other than refrigeration. Within 2 days of collection, samples were shipped on ice via overnight mail to the USGS National Water Quality Laboratory (NWQL) in Denver, Colo., for laboratory analysis.

In the lab, samples were analyzed for an array of nutrients and for total organic carbon. The constituents analyzed and their detection limits are listed in table 1. Water-quality data are reported in appendix 1.

Table 1. List of nutrients and total organic carbon analyzed by the U.S. Geological Survey National Water Quality Laboratory in Denver, Colorado.

[mg/L, milligrams per liter; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; °C, degrees Celsius]

Constituent	Abbreviation	Detection limit	Method/Reference	Maximum holding time
Nitrogen, ammonia	NH_4	0.002 mg/L	USGS Method I-2252-90; colorimetric, salicylate-hypochlorite, automated (Fishman, 1993)	30 days at 4°C
Nitrogen, ammonia + organic nitrogen	TKN	0.10 mg/L	USGS Method I-2252-90; colorimetric, Microkjeldahl digestion (Patton and Truitt, 2000)	30 days at 4°C
Nitrogen, nitrite + nitrate	NO_2NO_3	0.05 mg/L	USGS Method I-2545-90; colorimetric, cadmium reduction-diazotization, automated (Fishman, 1993)	30 days at 4°C
Nitrogen, nitrite	NO_2	0.002 mg/L	USGS Method I-2540-90; colorimetric, diazotization, automated (Fishman, 1993)	30 days at 4°C
Phosphorus	TP	0.004 mg/L	USEPA Method 365.1; Colorimetric, automated, ascorbic acid (U.S. Environmental Protection Agency, 1993)	28 days at 4°C
Phosphorus, dissolved	TDP	0.004 mg/L	USGS Method I-2540-90; colorimetric, diazotization, automated (Fishman, 1993)	28 days at 4°C
Phosphorus, orthophosphate	PO_4	0.018 mg/L	USGS Method I-2601-90; colorimetric, phosphomolybdate, automated (Fishman, 1993)	30 days at 4°C
Organic carbon, total	TOC	0.1 mg/L	USGS Method O-3100-83; wet oxidation, infrared spectrometry (Wershaw and others, 1987)	14 days at 4°C

Continuous Water-Chemistry Measurements

At each sampling site, a water-quality sonde was deployed for continuous measurements of dissolved oxygen, pH, specific conductance, and water temperature. Each sonde was equipped with internal memory capable of storing the water-quality measurements. Set-up and calibration of the sondes followed the manufacturer guidelines (YSI Incorporated, 1999). In addition, a zero dissolved oxygen solution was used to check the dissolved oxygen performance of the sonde. All calibration values for each instrument were recorded in a log book dedicated to that instrument. Calibration values for each site also were recorded on field data sheets for that site.

Following a 2-day (or longer) deployment of the sondes, freshly calibrated field meters were used to collect side-by-side measurements of dissolved oxygen, pH, specific conductance, and water temperature. The deployed sonde was then cleaned and returned to the water and a second set of side-by-side readings was recorded. These measurements were used to adjust readings recorded by the deployed sondes. Adjustments were made following recommendations by Wagner and others (2006) using the USGS computer program Automated Data Processing System (ADAPS) (U.S. Geological Survey, 2003). Once the field-meter readings were made, the deployed sondes were retrieved and the data downloaded to a field computer. Back-up copies of the data files were made in case of computer failure. Some of the sondes automatically calculated values for dissolved oxygen percent saturation, based on the sonde value for temperature of the water and a barometric pressure reading supplied by the operator at the time the sonde was deployed. For other sondes, this function was not available, and dissolved oxygen percent saturation was not generated.

One sonde was deployed at most stations. However, at four locations, an upstream and a downstream sonde were deployed, approximately 500 m apart. At two other stations, an upstream sonde was deployed and a USGS continuous water-quality monitor, already deployed as part of the Chester County Water-Quality Monitoring Network, was used for the downstream location. Productivity can be calculated using a single diel curve approach; however, better estimates can be achieved by using both upstream and downstream readings (Odum, 1956).

The sondes worked well throughout the project. However, for two locations (station 01617800, Marsh Run at Grimes, Md., and station 01643880, Beaverdam Creek at Rt. 734 near Mountville, Va.), field personnel failed to set up the sondes correctly, and no data were logged. For one location (station 01576712, Little Conestoga Creek near Millersville, Pa.), the field team was unable to retrieve the sonde for 5 days following deployment. The sonde had been programmed to log for 2 days only. Therefore, the 2 days of data were intact, but there was no end-of-deployment check against a freshly calibrated field meter. The data from this sonde were used without any adjustment to the values. Data from the deployed sondes are reported in appendix 2.

Periphyton Collections

Quantitative periphyton samples were collected from rocks in riffle habitats for each stream. Five rocks were selected at random from two stream cross-sections in the targeted riffle. Three types of periphyton sub-samples were collected for this study—one for chlorophyll *a*, one for ash-free dry mass, and one for periphyton identifications. All three sub-samples were from the same stream sample.

At each sampling site, a riffle having rocks that were golf-ball size or larger was selected for periphyton sampling. Using a tagline, two transects were laid out across the entire width of the riffle; the first transect was positioned at one-third of the length of the riffle from the beginning of the riffle and the second transect was at two-thirds of the length of the riffle from the beginning of the riffle.

Ten rocks were selected at random for sampling; five of the rocks were from the first transect and five of the rocks were from the second transect. The 10 rocks were placed in a plastic dishpan and carried to the shore for processing. Care was used to avoid losing attached periphyton from the rocks. At the shore, a modified SG-92 (fig. 1) and algae brush were used to collect periphyton from the rocks (Porter and others, 1993; Moulton and others, 2002). The SG-92 allows periphyton to be scraped or brushed from a known area and collected for a quantitative sample. To make a periphyton collection, the SG-92 was pressed firmly against the rock and rotated 1/4 turn to establish a water-tight seal. While maintaining this water-tight seal, a 5-mL volume of filtered stream water was squirted into the barrel of the SG-92. Algae inside the barrel of the SG-92 was loosened by scrubbing with the algae brush. Then, using a pipette, the water and algae mixture was suctioned out of the SG-92 and dispensed into a 100 mL polyethylene graduated cylinder. This process was repeated until all the periphyton was removed from the area within the SG-92. The contents of the graduated cylinder were then poured into a 500 mL sample bottle, and the process was repeated for all 10 rocks. The area sampled by the SG-92 was 5.07 cm^2. Therefore, a complete sample from 10 rocks would result in a total sample area of 10 times 5.07 cm^2 or 50.7 cm^2.

After the periphyton from all 10 rocks was composited into the sample bottle, sub-samples for chlorophyll *a*, ash-free dry mass, and algal identification were taken. For chlorophyll *a*, a 10-mL aliquot was filtered through a 47-mm glass fiber filter. The filter was then folded, wrapped in aluminum foil, placed in a labeled Petri dish, and sealed using black electrician's tape. The sample was then sealed in a labeled zipper-seal plastic bag and frozen on dry ice until returning to the laboratory. At the lab, the sample was frozen in a laboratory freezer at -20°C. Samples were held no longer than 10 days prior to being shipped on dry ice via overnight mail to the USGS NWQL for analysis. Field procedures for ash-free dry mass were the same as for chlorophyll *a*. The only difference was in the analysis procedures of the samples in the laboratory.

In the lab, samples were analyzed for chlorophyll *a*, pheophytin, and algal biomass. The measures of periphyton standing

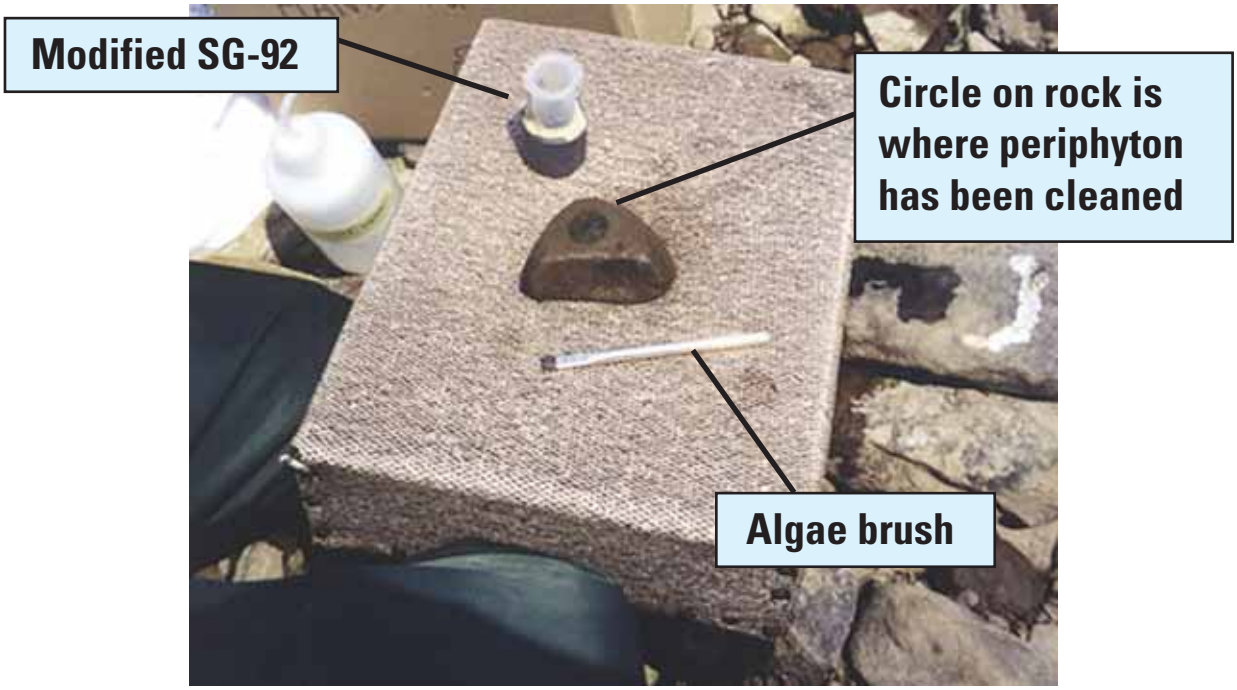


Figure 1. A modified SG-92, the device used to collect periphyton from rocks, along with an algae brush.

crop analyzed and their detection limits are listed in table 2. Data for periphyton standing crop are reported in appendix 1.

After the sub-samples for chlorophyll *a* and ash-free dry mass were extracted, the remaining sample volume was used for algal identifications. The algal-identification sub-sample was preserved with enough buffered formalin to obtain a final concentration of 3 to 5 percent buffered formalin. This required about 1 mL of buffered formalin for every 25 mL of sample. The bottle was labeled and stored in a dark place until ready for shipping to the contract laboratory for identification of species present in the algal community.

Periphyton Identifications

Periphyton identifications were done by Bio-Limno Research and Consulting, Halifax, Nova Scotia, and the Academy of Natural Sciences, Philadelphia, Pa. At Bio-Limno Research and Consulting, identification and enumeration of periphyton samples were performed using the traditional Utermöhl settling technique (Utermöhl, 1958) and an inverted microscope equipped with phase contrast. Identifications were performed at magnifications ranging between 165X and 750X.

Counting units were individual cells, filaments, or colonies, depending on the organization of the algae. A minimum of 400-500 units (usually at multiple magnifications) from randomly selected transects from the counting chamber were counted for each sample; counting at multiple magnifications allowed correct enumeration of taxa present that may vary by several orders of magnitude in size. In cases where a sample had extremely few algal units and high particulate matter (thus yielding less than 400 units), as many transects as possible were covered in order to have more than 70 percent of the chamber counted; the entire chamber was counted when possible.

Identification of diatoms to species involved boiling/digesting sub-samples in hydrogen peroxide in order to clean the frustules, followed by mounting on glass slides using Naphrax mounting medium and identification at 1,000X magnification under oil immersion. The diatoms identified on the mounted slides are matched with what was obtained in the fresh samples; where it is not possible to separate two or more species in the fresh samples, separation was done by proportion. Data from periphyton identifications are reported in appendix 3.

These same prepared diatom slides were subsequently sent to the Academy of Natural Sciences (ANSP) in Philadelphia, Pa., for re-identification of diatoms. Diatom identifications used in this report are those completed by ANSP. These diatom identifications are reported in appendix 4. Soft algae (blue-green algae and green algae) identifications used in this report are those done by Bio-Limno Research and Consulting (appendix 3).

Sampling Locations for this Study

For site selection, the initial plan was to use a goal-oriented, stratified random sampling design that would include 2^{nd}, 3^{rd}, and 4^{th} order streams in Nutrient Ecoregions IX

Table 2. Measures of periphyton standing crop analyzed by the U.S. Geological Survey National Water Quality Laboratory in Denver, Colorado.

[mg/m^2, milligrams per square meter; USEPA, U.S. Environmental Protection Agency; g/m^2, grams per square meter; °C, degrees Celsius; USGS, U.S. Geological Survey]

Parameter	Abbrev-iation	Detection limit	Method/Reference	Maximum holding time
Chlorophyll *a*, periphyton	CHLA	0.1 mg/m^2	USEPA Method 445.0; Fluorometric (Arar and Collins, 1997)	24 days at -20°C
Pheophytin a, periphyton	PHEOA	0.1 mg/m^2	USEPA Method 445.0; Fluorometric (Arar and Collins, 1997)	24 days at -20°C
Periphyton biomass, ash weight	AM	0.1 g/m^2	USGS Method B-3520-85; Gravimetric (Britton and Greeson, 1987)	24 days at -20°C
Periphyton biomass, ash-free dry weight	AFDM	0.1 g/m^2	USGS Method B-3520-85; Gravimetric (Britton and Greeson, 1987)	24 days at -20°C
Periphyton biomass, dry weight	DM	0.1 g/m^2	USGS Method B-3520-85; Gravimetric (Britton and Greeson, 1987)	24 days at -20°C

(Southeastern Temperate Forested Hills and Plains), XI (Central and Eastern Forested Uplands), and XIV (Eastern Coastal Plain). Further, existing nutrient-concentration data were reviewed for the candidate streams and those streams were separated into high, moderate, and low nutrient conditions/eutrophication potential. The goal was to have approximately equal numbers of sampling sites in each of the three ecoregions and to have those sites represent a wide spectrum of biotic types, from reference conditions to eutrophic conditions.

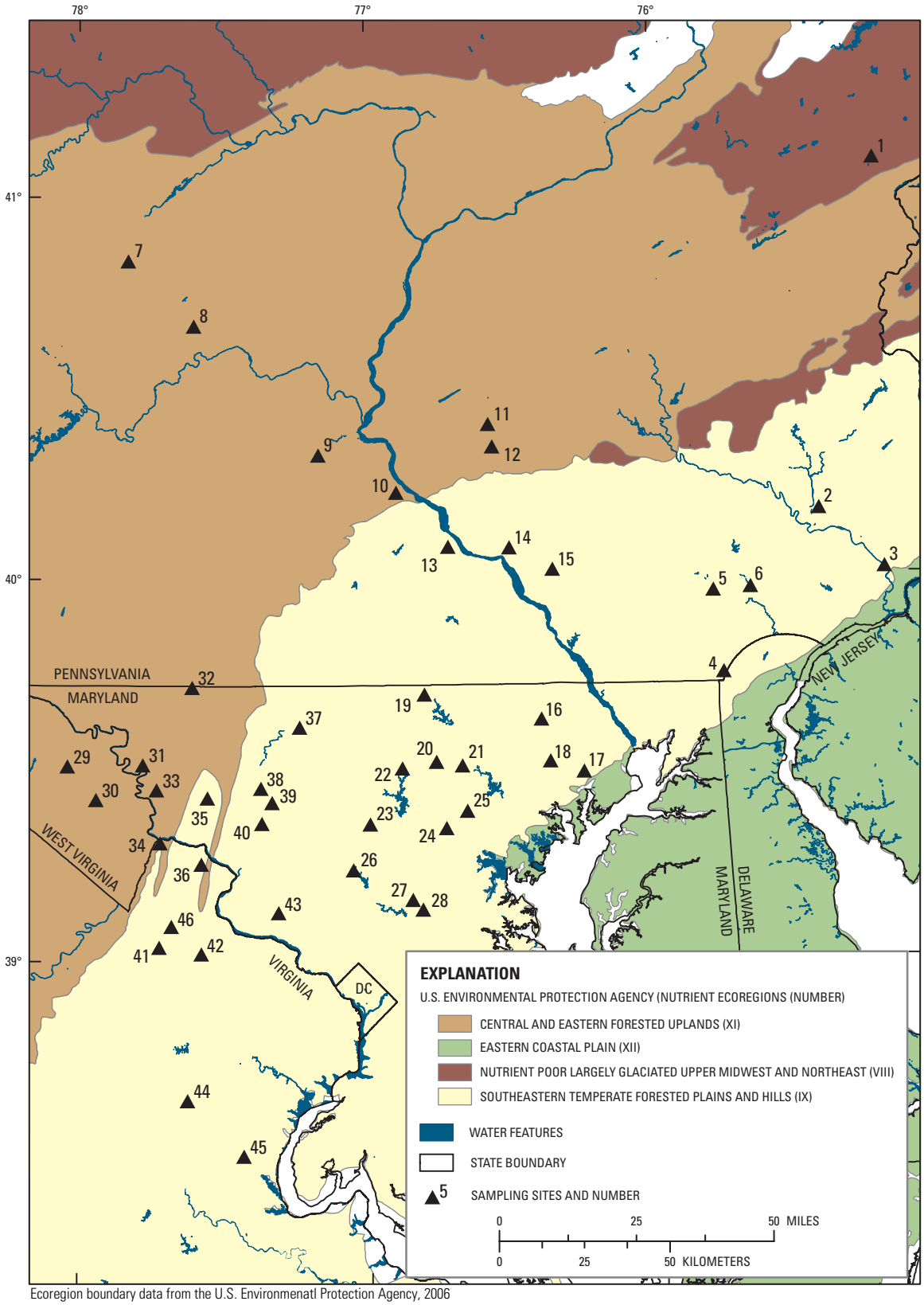
Operationally, this approach proved impossible to implement, because, logistically, work needed to be done within a reasonable driving distance of either the Maryland Department of the Environment office in Baltimore, Md., or the USGS office in New Cumberland, Pa. The need for continuous streamflow data for the sites to be selected was also a constraint. Streamflow data were needed to verify that sampling was done during a low-flow period and that flow during the 48-hour deployment of the water-quality monitors was stable. Thus, proximity to the home office and the presence of a USGS streamflow-gaging station turned out to be the major determining factors for site selection. The final list of stream sampling sites includes stations divided between Nutrient Ecoregion IX and Nutrient Ecoregion XI. One site, selected because of its relatively pristine conditions, is in Nutrient Ecoregion VIII (Nutrient Poor Largely Glaciated Upper Midwest and Northeast). The project team decided that it was not possible to sample enough stations to adequately characterize three Nutrient Ecoregions, so Nutrient Ecoregion XIV was omitted from the project. No stations are in Nutrient Ecoregion XIV. Even with this non-scientific station-selection process, the primary objective of including sites having a range of trophic conditions was achieved.

Sampling stations for this study included 2^{nd}, 3^{rd}, and 4^{th} order streams in USEPA Nutrient Ecoregions VIII, IX, and XI. These Ecoregions make up most of the land area of the states in USEPA Region 3 and extend beyond Region 3 to include most of the southeastern United States. All the sampling sites were in USEPA Region 3 in the states of Pennsylvania, Maryland, Virginia, and West Virginia. In all, 46 different sites were sampled (fig. 2 and table 3). One site was in Nutrient Ecoregion VIII, 33 were in Nutrient Ecoregion IX, and 12 were in Nutrient Ecoregion XI. Drainage areas for the streams sampled ranged from 9 mi^2 (James Run near Belcamp, Md.) to 665 mi^2 (Monocacy River near Frederick, Md.).

Quality-Assurance and Quality-Control Measures

Quality-Assurance Measures

Early in the project, a Quality Assurance Project Plan (QAPP) was developed that served as a guide for most of the activities during the project. This QAPP followed USEPA guidelines and was approved by a USEPA quality-assurance officer. Field-sampling protocols for calibrating and deploying the continuous-monitoring sondes, for collecting nutrient and total organic carbon samples, and for collecting periphyton samples were written and distributed to each member of the field team. Operation manuals for field water-quality instruments also were provided to each field team. At the beginning of each sampling season, a joint training session for all project staff was held to explain field procedures and make sure each member of the field team understood the sampling protocols. These sessions were held at a field site so the training could include actual in-stream demonstrations, in addition to classroom-style training.



Ecoregion boundary data from the U.S. Environmenatl Protection Agency, 2006
Albers Equal-Area Conic Projection: Standard Parallels 29 30 00 and 45 30 00 ;
Central Meridian -77 45 00; Latitude of Origin 23 00 00; Horizontal Datum NAD 1983

Figure 2. Location of sampling sites for this study.

Table 3. Sampling sites for this study, including U.S. Geological Survey station numbers, latitudes, longitudes, drainage areas, and Nutrient Ecoregions.

[mi^2, square miles; N, north; W, west; --, drainage area not available]

Station number	Map number (fig. 2)	Station name	Datum	Latitude	Longitude	Drainage area (mi^2)	Nutrient eco-region
01440400	1	Brodhead Creek near Analomink, Pa.	NAD 27	41 05 05 N	075 12 54 W	65.9	VIII
01473110	2	Skippack Creek at Evansburg, Pa.	NAD 27	40 10 17 N	075 25 52 W	52.9	IX
01474000	3	Wissahickon Creek at Mouth, Philadelphia, Pa.	NAD 27	40 00 55 N	075 12 26 W	64.0	IX
01478245	4	White Clay Creek near Strickersville, Pa.	NAD 83	39 44 51 N	075 46 15 W	59.2	IX
01480617	5	West Branch Brandywine Creek at Modena, Pa.	NAD 27	39 57 42 N	075 48 06 W	55.0	IX
01480870	6	East Branch Brandywine Creek below Downingtown, Pa.	NAD 27	39 58 07 N	075 40 25 W	89.9	IX
01546400	7	Spring Creek at Houserville, Pa.	NAD 27	40 50 01 N	077 49 40 W	58.5	XI
01564997	8	Kishacoquillas Creek at Lumber City, Pa.	NAD 27	40 39 42 N	077 36 01 W	57.4	XI
01568000	9	Sherman Creek at Shermans Dale, Pa.	NAD 27	40 19 24 N	077 10 09 W	207	XI
01571500	10	Yellow Breeches Creek near Camp Hill, Pa.	NAD 27	40 13 29 N	076 53 54 W	216	XI
01573000	11	Swatara Creek at Harper Tavern, Pa.	NAD 27	40 24 09 N	076 34 39 W	337	XI
01573160	12	Quittapahilla Creek near Bellegrove, Pa.	NAD 27	40 20 34 N	076 33 46 W	74.2	XI
01574000	13	West Conewago Creek near Manchester, Pa.	NAD 27	40 04 56 N	076 43 13 W	510	IX
01575825	14	Little Chickies Creek at Iron Bridge Road near Mount Joy, Pa.	NAD 83	40 04 42 N	076 30 31 W	43.6	IX
01576712	15	Little Conestoga Creek near Millersville, Pa.	NAD 83	40 01 15 N	076 21 33 W	42.3	IX
01580000	16	Deer Creek at Rocks, Md.	NAD 83	39 37 47 N	076 24 11 W	94.4	IX
01581649	17	James Run near Belcamp, Md.	NAD 83	39 29 31 N	076 15 32 W	9.15	IX
01581700	18	Winters Run near Benson, Md.	NAD 83	39 31 11 N	076 22 22 W	34.8	IX
01581800	19	Gunpowder Falls at Roller, Md.	NAD 83	39 41 46 N	076 48 23 W	--	IX
01583100	20	Piney Run at Dover, Md.	NAD 83	39 31 14 N	076 46 00 W	12.3	IX
01583500	21	Western Run at Western Run, Md.	NAD 27	39 30 38 N	076 40 35 W	59.8	IX
01586000	22	North Branch Patapsco River at Cedarhurst, Md.	NAD 83	39 30 13 N	076 53 05 W	56.6	IX
01587300	23	South Branch Patapsco River near Gaither, Md.	NAD 83	39 21 28 N	076 59 43 W	--	IX
01589300	24	Gwynns Falls at Villa Nova, Md.	NAD 83	39 20 45 N	076 43 59 W	32.5	IX
01589440	25	Jones Falls at Sorrento, Md.	NAD 83	39 23 30 N	076 39 39 W	25.2	IX
01591000	26	Patuxent River near Unity, Md.	NAD 83	39 14 17 N	077 03 20 W	34.8	IX
01593900	27	Middle Patuxent River near Savage, Md.	NAD 27	39 09 36 N	076 51 08 W	--	IX
01594000	28	Little Patuxent River at Savage, Md.	NAD 83	39 08 03 N	076 48 58 W	98.4	IX
01614000	29	Back Creek near Jones Springs, W.Va.	NAD 27	39 30 43 N	078 02 15 W	235	XI
01616500	30	Opequon Creek near Martinsburg, W.Va.	NAD 27	39 25 25 N	077 56 20 W	273	XI
01617800	31	Marsh Run at Grimes, Md.	NAD 83	39 30 52 N	077 46 38 W	18.9	XI
01619000	32	Antietam Creek near Waynesboro, Pa.	NAD 27	39 42 59 N	077 36 28 W	93.5	XI
01619500	33	Antietam Creek near Sharpsburg, Md.	NAD 83	39 26 59 N	077 43 48 W	281	XI
01636690	34	Piney Run near Lovettsville, Va.	NAD 83	39 18 39 N	077 43 06 W	13.7	XI
01637500	35	Catoctin Creek near Middletown, Md.	NAD 83	39 25 38 N	077 33 22 W	66.9	IX
01638480	36	Catoctin Creek at Taylorstown, Va.	NAD 27	39 15 16 N	077 34 36 W	89.6	IX
01639500	37	Big Pipe Creek at Bruceville, Md.	NAD 83	39 36 44 N	077 14 14 W	102	IX
01642000	38	Monocacy River near Frederick, Md.	NAD 27	39 27 09 N	077 22 16 W	665	IX
01642500	39	Linganore Creek near Frederick, Md.	NAD 27	39 24 55 N	077 20 00 W	82.3	IX
01643110	40	Bush Creek at Reels Mill, Md.	NAD 27	39 21 37 N	077 22 09 W	29.7	IX
0164380375	46	Crooked Run near Lincoln, Va.	NAD 83	39 05 31 N	077 40 51 W	--	IX
01643880	41	Beaverdam Creek at Rt. 734 near Mountville, Va.	NAD 83	39 02 15 N	077 43 20 W	47.2	IX
01644000	42	Goose Creek near Leesburg, Va.	NAD 27	39 01 10 N	077 34 40 W	332	IX
01644900	43	Great Seneca Creek at Blackrock Mill, Md.	NAD 83	39 07 37 N	077 18 47 W	--	IX
01656000	44	Cedar Run near Catlett, Va.	NAD 27	38 38 12 N	077 37 31 W	93.4	IX
01660400	45	Aquia Creek near Garrisonville, Va.	NAD 27	38 29 25 N	077 26 02 W	34.9	IX

Quality-Control Measures

Prior to each sampling season, thermistors for field instruments were checked against an NIST-certified thermometer. Other field instruments were calibrated on the day of sampling. Only certified standards and buffers were used for calibrations, and buffers and standards were discarded if their expiration date had passed. A zero dissolved oxygen solution of sodium sulfite, prepared fresh daily, was used to check that the dissolved oxygen meters were accurate at the low end of the range of expected dissolved oxygen concentrations. Any meter that would not return a dissolved oxygen reading of 0.3 mg/L or less in a zero dissolved oxygen solution was not used.

Log books for recording calibration, performance, and service information were prepared for each field instrument. These log books accompanied the field instruments at all times and were used to document calibration accuracies and to track the performance of each instrument over the course of the project. Comprehensive field data sheets were prepared for each field task and for each sampling station. These data sheets helped to insure that all necessary field observations were completed.

Quality-control measures included submitting blank samples, duplicate samples, and reference samples for analysis of nutrients and total organic carbon. Blind field duplicate samples and split samples were submitted for periphyton identifications. In addition, an external check on the periphyton identifications was made by splitting two samples; one part of the split was sent to Bio-Limno Research and Consulting and the other was sent to a second, independent lab, PhycoTech, Inc. A summary of all quality-control samples submitted for the project is presented in table 4.

Table 4. Summary of quality-control samples collected for the nutrient-criteria project.

Station	Station number	Date	Time	Analysis
Field blank samples				
White Clay Creek	01478245	July 26, 2005	1300	Nutrients
Yellow Breeches Creek	01571500	August 16, 2004	1140	Nutrients
Quittapahilla Creek	01573160	August 1, 2005	0945	Total organic carbon
Deer Creek	01580000	August 30, 2005	1035	Total organic carbon
Deer Creek	01580000	August 30, 2005	1040	Nutrients
Duplicate samples for nutrients and periphyton measures[1]				
Skippack Creek	01473110	August 24, 2004	1131	Periphyton measures
Yellow Breeches Creek	01571500	August 16, 2004	1216	Total organic carbon
West Conewago Creek	01574000	August 10, 2004	1231	Nutrients
West Branch Brandywine Creek	01480617	July 27, 2005	1305	Nutrients, total organic carbon
Sherman Creek	01568000	August 2, 2005	1035	Periphyton measures
Western Run	01583500	August 24, 2005	1005	Nutrients, total organic carbon, periphyton measures
Reference samples				
Lemoyne Station	401435076540910	August 11, 2004	0730	Nutrients
Lemoyne Station	401435076540910	July 19, 2005	1200	Nutrients (Reference sample faulty, results not used)
Lemoyne Station	401435076540910	August 10, 2005	0700	Nutrients (Reference sample faulty, results not used)
Duplicate samples for periphyton identification				
Sherman Creek	01568000	August 2, 2005	1035	Identification
Western Run	01583500	August 24, 2005	1005	Identification
Split samples for periphyton identification				
Antietam Creek	01619000	August 17, 2004	1415	Identification
Little Chickies Creek	01575825	September 1, 2004	1131	Identification
West Branch Brandywine Creek	01480617	July 27, 2005	1301	Identification
Split samples for external laboratory periphyton identification				
Aquia Creek	01660400	August 1, 2005	1100	Identification
Crooked Run	01575825	August 2, 2005	1300	Identification
Piney Run	01636690	August 31, 2004	1045	Identification

[1]Periphyton measures include chlorophyll *a*, pheophytin a, ash-free dry mass (AFDM), ash weight, and dry weight.

Blank Samples

Over the course of the project, three field blank samples for analysis of nutrients (6 percent of all nutrient samples collected) and two field blank samples for total organic carbon (4 percent of all total organic carbon samples collected) were submitted. None of the constituents analyzed in these blank samples was measured at a concentration greater than the detection limit. This indicates that sampling procedures, sample containers, lab protocols, and cleaning procedures were not contributing contamination to the samples collected for the project. Because the field blanks were clean, equipment blanks were not needed.

Duplicate Samples

Field duplicate samples were used to identify the precision (reproducibility) of analytical results. Field duplicate samples were collected and processed immediately following each associated primary environmental sample (a sequential replicate), using identical procedures. For the duplicate samples, a relative percent difference (RPD) was calculated between the two samples according to the following equation:

$$RPD = (d/x) \times 100 , \quad (1)$$

where

d is the difference in concentration between the primary environmental sample and the field replicate sample, and

x is the mean concentration of the primary environmental sample and the field duplicate sample.

For nutrients, three duplicate-sample pairs (6 percent of all nutrient samples collected) were submitted for analysis. These samples were from West Conewago Creek, West Branch Brandywine Creek, and Western Run. Except for ammonia plus organic nitrogen, the RPD for every nutrient species analyzed in each duplicate-sample pair was less than 15 percent. The RPDs for filtered ammonia plus organic nitrogen and for total ammonia plus organic nitrogen from Western Run on August 24, 2005, were 25 and 34 percent, respectively.

Three duplicate-sample pairs were submitted for analysis of total organic carbon (6 percent of all total organic carbon samples collected). These samples were from Yellow Breeches Creek, West Branch Brandywine Creek, and Western Run. The RPD was less than 15 percent for two of these samples but was 102 percent for the duplicate samples from Western Run.

Three sets of duplicate samples (6 percent of all periphyton samples collected) were submitted for the analysis of periphyton measures of standing crop and biomass. These samples were from Skippack Creek, Sherman Creek, and Western Run. For the duplicate pair from Sherman Creek, the RPDs for both ash weight and dry weight were 26 percent; the RPD for chlorophyll *a* was 30 percent. For the duplicate pair from Western Run, the RPD for chlorophyll *a* was 38 percent and all other RPDs were less than 20 percent.

These results suggest that the precision in collecting and analyzing samples for nutrients was better than for measures of periphyton. The large RPD values for the periphyton samples imply that caution should be used in interpreting these data. Data for field duplicate samples are reported in appendix 1 along with data for the environmental samples.

Reference Samples for Nutrients

Standard reference samples are used to monitor the overall performance of a laboratory. Reference samples are made up in large quantities in a laboratory and sent to many labs for analysis. Results from all the labs are compiled, and a most probable value is calculated for each analyte in the sample. For this study, standard reference samples were obtained from the USGS Branch of Quality Assurance and were submitted to the USGS NWQL for analysis. The performance of the NWQL was evaluated against the most probable value using the same RPD calculation used to evaluate duplicate samples.

For this project, three standard reference samples for nutrients were sent to the NWQL. Subsequent inquiry revealed that two of these reference samples were faulty (H. Ardourel, U.S. Geological Survey National Water Quality laboratory, written commun., July 2006). Results from the two faulty samples will not be reported here. For the one good reference sample, the NWQL performed very well; the RPD values were less than 5 percent for all nutrient analyses.

Duplicate Samples for Periphyton Identifications

Two field duplicate samples, collected sequentially, were submitted to the contract laboratory for periphyton identifications. A field duplicate sample means that the entire periphyton field-collection protocol was repeated for the duplicate sample. The duplicate samples came from Sherman Creek at Shermans Dale, Pa., and Western Run at Western Run, Md. A field duplicate sample tests the repeatability of the protocol and the competency of the laboratory identifications. Periphyton is known to be patchy. That is, at any field site, lots of algae may be growing in some locations and fewer algae may be growing at another location not far away. For that reason, field duplicate samples for periphyton are not expected to mirror each other very closely.

To evaluate duplicate samples of the periphyton community, a Jaccard Coefficient of Community (Jaccard, 1912) was calculated. This metric "measures the degree of similarity in taxonomic composition between two stations (or samples) in terms of taxa presence or absence" (Klemm and others, 1990). The metric compares the total number of species common to both samples to the total number of species in both samples combined. The equation for the calculation is:

$$\text{Jaccard Coefficient of Community} = a \div (a + b + c) \quad (2)$$

where

a is the number of species common to both samples,
b is the number of species present in the environmental sample but not in the duplicate sample, and
c is the number of species present in the duplicate sample but not in the environmental sample.

The Jaccard Coefficient of Community can range from 0 to 1.0; a value of 1.0 indicates the two samples are identical.

For the Sherman Creek and Western Run samples, the Jaccard Coefficients of Community were 0.52 and 0.56, respectively. For the diatoms only, identifications by the ANSP yielded Jaccard Coefficients of Community of 0.83 for Sherman Creek and 0.62 for Western Run. These values indicate a moderate agreement between the duplicate samples and suggests the periphyton sampling protocol used provided a sample that was only moderately reproducible. Data for field duplicate samples for periphyton identifications are reported in appendixes 3 and 4, along with data for the environmental samples.

Split Samples for Periphyton Identifications

A split sample is a single environmental sample divided into two samples. Theoretically, split samples are identical to each other. Therefore, submitting split samples to a laboratory for algal identifications is a test of the consistency of the lab. Split samples can be evaluated using the Jaccard Coefficient of Community.

For this study, three split samples were submitted to the contract lab for identification of algal species. These samples were collected from Antietam Creek near Sharpsburg, Md., from Little Chickies Creek near Mt. Joy, Pa., and from West Branch Brandywine Creek at Modena, Pa.

For the Antietam Creek, Little Chickies Creek, and West Branch Brandywine Creek samples, the Jaccard Coefficients of Community values were 0.50, 0.31, and 0.60, respectively. These Jaccard values reflect a moderate agreement between the split samples. The moderate agreement could indicate either inconsistent algal identifications by the contract laboratory or taking split samples from an incompletely mixed parent sample.

In addition, three other samples were split with one part of the split going to the contract lab for this project (Bio-Limno Research and Consulting) and one part of the split going to an independent, external lab (PhycoTech, Inc.). These samples were from Aquia Creek, Crooked Run, and Piney Run. Jaccard Coefficients of Community were 0.11 for Aquia Creek, 0.20 for Crooked Run, and 0.08 for Piney Run. Jaccard values of 1.0 would indicate complete agreement in the periphyton species identified by the two laboratories. The very low measured Jaccard values for these quality-control samples indicate a poor match between the species identified by the two laboratories.

The lack of agreement between the two contract laboratories prompted additional periphyton identification work by a third lab. All slides prepared from project samples were sent to the ANSP in Philadelphia for re-identification of the diatoms. Diatom identifications from the ANSP are reported in appendix 4.

Summary

Data on nutrients, total organic carbon, attached algae, and dissolved oxygen from 46 streams in the mid-Atlantic region of the United States were collected to support the development of nutrient criteria. All data were collected during the summers of 2004 and 2005 when temperatures were highest, algae were actively growing, and nighttime dissolved oxygen concentrations would be expected to be lowest. Periphyton samples were identified to the species level so that algal community characteristics may be used to support suggested nutrient criteria. Also, the data include continuous dissolved oxygen measurements over at least two 24-hour periods. Having 24-hour dissolved oxygen measurements will allow primary productivity to be estimated.

This entire report is available online at *http://pubs.water.usgs.gov/ds257*. Individual data tables for water chemistry, continuous dissolved oxygen measurements, and periphyton identifications are also available at the same web address.

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Appendix 1

Data for nutrients, total oragnic carbon, and periphyton standing-crop samples.

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than, E, estimated]

Station number	Station name	Date (mm-dd-yy)	Time	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)
01440400	Brodhead Creek near Analomink, Pa.	08-09-04	1400	750	10.8	114
01473110	Skippack Creek at Evansburg, Pa.	08-24-04	1130	762	8.9	101
	Skippack Creek at Evansburg, Pa.	08-24-04	1131	--	--	--
01474000	Wissahickon Creek at Mouth, Philadelphia, Pa.	08-10-05	1400	763	9.4	111
01478245	White Clay Creek near Strickersville, Pa.	07-26-05	1400	755	10.5	126
01480617	West Branch Brandywine Creek at Modena, Pa.	07-27-05	1300	752	11.9	145
	West Branch Brandywine Creek at Modena, Pa.	07-27-05	1305	--	--	--
01480870	East Branch Brandywine Creek below Downingtown, Pa.	08-23-05	1145	759	9.5	106
01546400	Spring Creek at Houserville, Pa.	07-19-05	1430	738	11.0	120
01564997	Kishacoquillas Creek at Lumber City, Pa.	08-09-05	1400	751	11.1	125
01568000	Sherman Creek at Shermans Dale, Pa.	08-02-05	1030	757	8.5	103
	Sherman Creek at Shermans Dale, Pa.	08-02-05	1035	--	--	--
01571500	Yellow Breeches Creek near Camp Hill, Pa.	08-16-04	1215	758	10.0	106
	Yellow Breeches Creek near Camp Hill, Pa.	08-16-04	1216	--	--	--
01573000	Swatara Creek at Harper Tavern, Pa.	08-26-05	1030	756	7.7	87
01573160	Quittapahilla Creek near Bellegrove, Pa.	08-01-05	1040	760	9.0	95
01574000	West Conewago Creek near Manchester, Pa.	08-10-04	1230	754	9.5	110
	West Conewago Creek near Manchester, Pa.	08-10-04	1231	--	--	--
01575825	L Chickies Cr at Iron Bridge Road nr Mount Joy, Pa.	09-01-04	1300	760	9.6	101
01576712	Little Conestoga Creek near Millersville, Pa.	09-02-04	1300	762	8.3	89
	Little Conestoga Creek near Millersville, Pa.	08-22-05	1420	752	7.8	88
01580000	Deer Creek at Rocks, Md.	09-01-04	0945	768	9.0	98
	Deer Creek at Rocks, Md.	08-30-05	1030	759	8.7	102
01581649	James Run near Belcamp, Md.	08-18-05	1230	763	7.5	86
01581700	Winters Run near Benson, Md.	09-10-04	1215	765	8.9	98
	Winters Run near Benson, Md.	08-18-05	1400	759	8.7	104
01581800	Gunpowder Falls at Roller, Md.	08-24-05	1300	751	9.6	106
01583100	Piney Run at Dover, Md.	08-16-04	0930	749	9.5	108
01583500	Western Run at Western Run, Md.	08-24-05	1000	760	8.6	94
	Western Run at Western Run, Md.	08-24-05	1005	--	--	--
01586000	North Branch Patapsco River at Cedarhurst, Md.	08-16-04	1115	761	10.2	113
01587300	South Branch Patapsco River near Gaither, Md.	09-06-05	1230	762	9.3	101
01589300	Gwynns Falls at Villa Nova, Md.	08-24-04	1315	764	9.4	107
01589440	Jones Falls at Sorrento, Md.	08-24-04	1030	764	10.0	106
01591000	Patuxent River near Unity, Md.	08-04-04	1030	749	8.6	102
01593900	Middle Patuxent River near Savage, Md.	07-27-05	1100	763	7.9	96
01594000	Little Patuxent River at Savage, Md.	07-25-05	1100	758	8.5	99
01614000	Back Creek near Jones Springs, W.Va.	08-09-05	1000	755	6.3	74
01616500	Opequon Creek near Martinsburg, W.Va.	08-31-04	1420	769	9.0	107
01617800	Marsh Run at Grimes, Md.	07-19-05	1300	762	9.7	112

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than, E, estimated]

Station number	Station name	Date (mm-dd-yy)	Time	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)
01619000	Antietam Creek near Waynesboro, Pa.	08-17-04	1300	767	9.7	102
01619500	Antietam Creek near Sharpsburg, Md.	08-17-04	1030	746	8.0	87
01636690	Piney Run near Lovettsville, Va.	08-31-04	1045	769	6.9	80
01637500	Catoctin Creek near Middletown, Md.	08-09-04	1100	754	9.7	108
01638480	Catoctin Creek at Taylorstown, Va.	08-05-04	1100	749	7.3	87
01639500	Big Pipe Creek at Bruceville, Md.	08-10-04	1045	760	9.3	106
01642000	Monocacy River near Frederick, Md.	08-23-05	1515	757	9.1	112
01642500	Linganore Creek near Frederick, Md.	08-10-04	1415	761	7.2	88
01643110	Bush Creek at Reels Mill, Md.	08-23-05	1100	758	9.0	102
0164380375	Crooked Run near Lincoln, Va.	08-02-05	1300	756	9.1	110
01643880	Beaverdam Creek at Rt. 734 near Mountville, Va.	08-02-05	1100	758	7.2	84
01644000	Goose Creek near Leesburg, Va.	08-09-05	1400	--	5.9	71
01644900	Great Seneca Creek at Blackrock Mill, Md.	09-08-05	1230	760	8.0	90
01656000	Cedar Run near Catlett, Va.	08-01-05	1400	761	8.8	105
01660400	Aquia Creek near Garrisonville, Va.	08-01-05	1100	764	9.1	107

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than; E, estimated]

Station number	Date	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unf µS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)
01440400	08-09-04	7.5	73	17.7	0.13	0.11	<0.04	--	0.17
01473110	08-24-04	7.9	677	21.6	.53	.54	E.03	4.32	4.33
	08-24-04	--	--	--	--	--	--	--	--
01474000	08-10-05	8.2	770	23.6	.47	.61	E.02	4.89	4.91
01478245	07-26-05	8.4	334	24.4	.22	.31	<.04	4.25	4.26
01480617	07-27-05	8.7	370	25.2	.28	.44	<.04	4.36	4.38
	07-27-05	--	--	--	.29	.44	<.04	4.39	4.41
01480870	08-23-05	7.8	400	20.6	.40	.41	<.04	5.65	5.67
01546400	07-19-05	8.2	578	19.2	.13	.18	<.04	3.47	3.48
01564997	08-09-05	8.5	558	21.0	.25	.35	<.04	6.28	6.29
01568000	08-02-05	8.1	227	24.8	.26	.27	<.04	--	.76
	08-02-05	--	--	--	--	--	--	--	--
01571500	08-16-04	8.2	282	18.2	.11	.26	<.04	--	2.31
	08-16-04	--	--	--	--	--	--	--	--
01573000	08-26-05	7.7	310	21.4	.39	.51	.07	3.46	3.49
01573160	08-01-05	7.8	618	17.9	.26	.26	E.03	9.07	9.10
01574000	08-10-04	7.8	291	22.5	.36	.40	<.04	--	2.36
	08-10-04	--	--	--	.36	.42	<.04	--	2.36
01575825	09-01-04	7.9	521	17.7	.25	.30	<.04	13.6	13.6
01576712	09-02-04	8.0	681	18.9	.20	.21	<.04	9.57	9.59
	08-22-05	8.0	692	21.5	.19	.24	E.03	6.62	6.64
01580000	09-01-04	7.7	149	19.9	.13	.18	<.04	--	3.92
	08-30-05	7.6	158	21.5	.17	.17	<.04	--	3.89
01581649	08-18-05	7.5	296	22.1	.21	.27	<.04	--	2.93
01581700	09-10-04	7.4	163	20.2	.14	.19	<.04	--	3.02
	08-18-05	8.2	165	24.0	.15	.24	<.04	--	2.67
01581800	08-24-05	8.0	181	20.3	.14	.17	<.04	--	3.32
01583100	08-16-04	8.7	237	21.6	.15	.19	<.04	--	4.88
01583500	08-24-05	7.8	278	19.3	.14	.17	<.04	3.20	3.21
	08-24-05	--	--	--	.18	.24	<.04	--	3.20
01586000	08-16-04	8.6	235	19.5	.13	.14	<.04	--	3.82
01587300	09-06-05	7.8	223	19.2	.12	.14	<.04	--	3.78
01589300	08-24-04	8.4	411	21.9	.12	.19	<.04	--	1.56
01589440	08-24-04	7.9	473	18.7	E.08	.15	<.04	--	1.86
01591000	08-04-04	7.5	134	23.1	.15	.16	<.04	--	2.32
01593900	07-27-05	8.2	270	24.3	.18	.20	<.04	--	2.26
01594000	07-25-05	8.3	298	23.2	.16	.35	<.04	--	1.58
01614000	08-09-05	7.7	264	23.5	.20	.28	E.03	--	.08
01616500	08-31-04	8.2	604	24.1	.20	.23	<.04	1.94	1.95
01617800	07-19-05	8.2	620	22.9	0.21	0.34	0.04	3.73	3.75

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than; E, estimated]

Station number	Date	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unf µS/cm 25 degC (00095)	Temper-ature, water, deg C (00010)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)
01619000	08-17-04	8.2	475	17.9	.20	.16	<.04	5.19	5.20
01619500	08-17-04	8.1	579	19.3	.26	.23	<.04	--	4.99
01636690	08-31-04	7.2	928	22.0	.16	.20	<.04	--	.40
01637500	08-09-04	7.8	214	19.7	.21	.28	E.02	--	.61
01638480	08-05-04	7.8	180	24.6	.26	.30	<.04	--	.63
01639500	08-10-04	7.8	237	20.8	.15	.22	<.04	--	3.45
01642000	08-23-05	8.1	383	25.7	.30	.35	E.02	2.51	2.52
01642500	08-10-04	7.5	222	24.5	.63	.77	.27	1.27	1.32
01643110	08-23-05	8.1	349	21.4	.27	.21	<.04	--	3.43
0164380375	08-02-05	7.7	224	24.8	.25	.24	<.04	1.17	1.18
01643880	08-02-05	7.3	179	22.5	.22	.24	E.02	--	.65
01644000	08-09-05	7.3	163	24.5	.29	.37	.05	--	.53
01644900	09-08-05	7.7	544	21.2	.52	.50	<.04	--	5.36
01656000	08-01-05	7.7	194	24.2	.26	.28	E.02	--	.14
01660400	08-01-05	8.0	126	23.7	.19	.23	<.04	--	.24

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than; E, estimated]

Station number	Date	Nitrite water, fltrd, as N (00613)	Total nitrogen, water, mg/L (00602)	Total nitrogen, water, fltrd, mg/L (00600)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Organic, carbon, water, unfltrd mg/L (00680)	Biomass periphyton, ashfree drymass g/m^2 (49954)
01440400	08-09-04	<0.008	0.29	0.27	<0.02	0.009	0.015	2.0	12.3
01473110	08-24-04	.014	4.9	4.9	.35	.37	.40	4.7	23.5
	08-24-04	--	--	--	--	--	--	--	23.5
01474000	08-10-05	.015	5.4	5.5	.93	.89	.92	4.7	59.4
01478245	07-26-05	.010	4.5	4.6	.04	.057	.066	2.5	24.6
01480617	07-27-05	.016	4.7	4.8	.07	.100	.120	3.1	41.7
	07-27-05	.015	4.7	4.8	.07	.100	.120	3.3	--
01480870	08-23-05	.016	6.1	6.1	.18	.19	.21	3.8	21.8
01546400	07-19-05	.009	3.6	3.7	<.02	.019	.026	4.3	77.7
01564997	08-09-05	.008	6.5	6.6	.34	.34	.36	4.4	46.1
01568000	08-02-05	E.007	1.0	1.0	<.02	.020	.031	3.6	34.8
	08-02-05	--	--	--	--	--	--	--	36.9
01571500	08-16-04	<.008	2.4	2.6	.02	.034	.051	4.0	10.1
	08-16-04	--	--	--	--	--	--	3.5	--
01573000	08-26-05	.026	3.9	4.0	.05	.079	.086	3.1	26.7
01573160	08-01-05	.035	9.4	9.4	.04	.062	.075	3.9	107.9
01574000	08-10-04	<.008	2.7	2.8	.08	.106	.124	5.5	12.2
	08-10-04	<.008	2.7	2.8	.09	.108	.123	--	--
01575825	09-01-04	.010	14	14	.03	.046	.054	2.1	26.1
01576712	09-02-04	.016	9.8	9.8	E.01	.021	.035	1.4	28.2
	08-22-05	.014	6.8	6.9	.03	.041	.053	4.0	49.7
01580000	09-01-04	E.007	4.1	4.1	<.02	.008	.013	1.6	18.2
	08-30-05	E.005	4.1	4.1	<.02	.010	.015	1.9	71.5
01581649	08-18-05	E.006	3.1	3.2	<.02	.013	.015	2.4	26.1
01581700	09-10-04	<.008	3.2	3.2	<.02	.009	.011	1.9	--
	08-18-05	E.006	2.8	2.9	<.02	.010	.012	2.0	24.7
01581800	08-24-05	E.004	3.5	3.5	<.02	.015	.020	1.8	15.3
01583100	08-16-04	E.004	5.0	5.1	<.02	.009	.013	1.9	27.6
01583500	08-24-05	.008	3.3	3.4	<.02	.013	.031	7.7	18.2
	08-24-05	E.007	3.4	3.4	<.02	.013	.027	2.5	17.8
01586000	08-16-04	E.004	3.9	4.0	<.02	.006	.008	2.0	22.7
01587300	09-06-05	E.004	3.9	3.9	E.01	.037	.046	1.5	21.7
01589300	08-24-04	E.005	1.7	1.8	<.02	.009	.014	1.9	23.6
01589440	08-24-04	E.006	--	2.0	<.02	.011	.018	1.5	35.5
01591000	08-04-04	<.008	2.5	2.5	<.02	.006	.018	1.8	44.4
01593900	07-27-05	E.005	2.4	2.5	<.02	.014	.017	2.2	<29.6
01594000	07-25-05	E.006	1.7	1.9	<.02	.016	.036	3.9	<29.6
01614000	08-09-05	<.008	.28	.37	<.02	.006	.029	3.9	54.7
01616500	08-31-04	.011	2.1	2.2	.11	.132	.136	3.6	56.2
01617800	07-19-05	0.018	4.0	4.1	<0.02	0.009	0.033	5.5	74.0

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; <, less than; E, estimated]

Station number	Date	Nitrite water, fltrd, as N (00613)	Total nitro-gen, water, mg/L (00602)	Total nitro-gen, water, fltrd, mg/L (00600)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)	Phos-phorus, water, unfltrd, mg/L (00665)	Organic, carbon, water, unfltrd mg/L (00680)	Biomass peri-phyton, ashfree drymass g/m^2 (49954)
01619000	08-17-04	.012	5.4	5.4	.13	.150	.166	1.9	36.0
01619500	08-17-04	E.007	5.3	5.2	.09	.112	.120	1.9	84.8
01636690	08-31-04	<.008	.57	.61	E.01	.022	.032	3.3	<15.3
01637500	08-09-04	<.008	.82	.89	.04	.054	.071	3.8	17.7
01638480	08-05-04	E.004	.89	.94	E.01	.033	.045	3.5	23.1
01639500	08-10-04	E.004	3.6	3.7	<.02	.015	.029	1.9	24.7
01642000	08-23-05	.010	2.8	2.9	.08	.111	.123	3.5	28.6
01642500	08-10-04	.055	2.0	2.1	<.02	.022	.056	5.6	32.5
01643110	08-23-05	E.004	3.7	3.6	.05	.075	.090	6.7	21.7
0164380375	08-02-05	.011	1.4	1.4	.02	.038	.050	2.9	34.5
01643880	08-02-05	<.008	.87	.89	E.01	.029	.038	3.1	23.2
01644000	08-09-05	E.005	.82	.90	E.01	.034	.044	3.2	79.9
01644900	09-08-05	E.004	5.9	5.9	<.02	.032	.038	4.0	19.7
01656000	08-01-05	<.008	.40	.42	<.02	.018	.024	4.3	105.5
01660400	08-01-05	<.008	.44	.47	<.02	.011	.014	3.4	34.5

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; < less than; E, estimated]

Station number	Date	Periphyton biomass ash weight, g/m^2 (00572)	Periphyton biomass dry weight, g/m^2 (00573)	Biomass chlorophyll ratio, periphyton, number (70950)	Pheophytin a, periphyton, mg/m^2 (62359)	Chlorophyll *a* periphyton, chromofluoro, mg/m^2 (70957)	[1]Type of sample related QA data (99111)	[2]Type of replicate (99105)
01440400	08-09-04	280	290.5	734	8.8	16.8	--	--
01473110	08-24-04	570	596.4	350	31	67.1	30	30.00
	08-24-04	600	623.9	328	32	71.7	--	30.00
01474000	08-10-05	640	697.8	--	E150	E318	200	--
01478245	07-26-05	400	425.0	178	51	138	10	--
01480617	07-27-05	660	698.5	151	120	276	100	--
	07-27-05	--	--	--	--	--	--	20.00
01480870	08-23-05	620	637.8	343	36	63.5	--	--
01546400	07-19-05	970	1,046	407	75	191	--	--
01564997	08-09-05	720	765.8	--	E90	E226	--	--
01568000	08-02-05	430	464.5	180	35	193	30	20.00
	08-02-05	560	601.9	258	36	143	--	20.00
01571500	08-16-04	240	254.6	589	4.6	17.1	100	--
	08-16-04	--	--	--	--	--	--	30.00
01573000	08-26-05	520	545.9	223	41	120	--	--
01573160	08-01-05	1,500	1,572	304	120	355	10	--
01574000	08-10-04	320	333.9	584	10	20.9	30	30.00
	08-10-04	--	--	--	--	--	--	30.00
01575825	09-01-04	410	435.0	149	58	175	--	--
01576712	09-02-04	450	476.9	241	31	117	--	--
	08-22-05	910	963.0	522	40	95.3	--	--
01580000	09-01-04	640	657.3	654	17	27.0	--	--
	08-30-05	890	956.6	285	110	251	100	--
01581649	08-18-05	690	718.4	326	34	80.1	--	--
01581700	09-10-04	--	--	--	--	--	--	--
	08-18-05	710	736.7	633	19	39.0	--	--
01581800	08-24-05	660	671.6	600	12	25.5	--	--
01583100	08-16-04	680	709.1	56.0	48	478	--	--
01583500	08-24-05	660	681.0	189	25	96.6	100	20.00
	08-24-05	690	708.6	271	21	65.7	--	20.00
01586000	08-16-04	680	700.6	362	<.2	60.6	--	--
01587300	09-06-05	690	709.6	382	21	56.8	--	--
01589300	08-24-04	680	703.6	528	17	43.5	--	--
01589440	08-24-04	810	842.2	521	31	66.1	--	--
01591000	08-04-04	1,300	1,342	446	7.7	96.2	--	--
01593900	07-27-05	1,300	1,349	494	13	48.0	--	--
01594000	07-25-05	1,300	1,293	283	30	90.5	--	--
01614000	08-09-05	730	786.0	499	54	110	--	--
01616500	08-31-04	870	925.0	413	39	132	--	--
01617800	07-19-05	2,400	2,471	1,020	44	72.6	--	--

Appendix 1. Data for nutrients, total organic carbon, and periphyton standing-crop samples.—Continued

[Numbers in parentheses are parameter codes in the National Water Information System (NWIS); mm Hg, millimeters of mercury; mg, milligrams; L, liter; std, standard; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; fltrd, filtered; unfltrd, unfiltered; N, nitrogen; P, phosphorus; g/m^2, grams per square meter; mg/m^2, milligrams per square meter; --, no data; < less than; E, estimated]

Station number	Date	Periphyton biomass ash weight, g/m^2 (00572)	Periphyton biomass dry weight, g/m^2 (00573)	Biomass chlorophyll ratio, periphyton, number (70950)	Pheophytin a, periphyton, mg/m^2 (62359)	Chlorophyll *a* periphyton, chromofluoro, mg/m^2 (70957)	[1]Type of sample related QA data (99111)	[2]Type of replicate (99105)
01619000	08-17-04	710	749.4	110	58	325	--	--
01619500	08-17-04	1,000	1,087	150	190	547	--	--
01636690	08-31-04	640	659.3	735	7.6	18.9	--	--
01637500	08-09-04	630	649.4	271	12	63.7	--	--
01638480	08-05-04	640	660.3	319	.7	70.5	--	--
01639500	08-10-04	660	686.4	76.5	<1.0	322	--	--
01642000	08-23-05	680	712.5	456	40	62.7	--	--
01642500	08-10-04	660	688.3	822	20	38.3	--	--
01643110	08-23-05	670	688.4	281	25	77.3	--	--
0164380375	08-02-05	740	773.7	--	E36	E118	--	--
01643880	08-02-05	670	691.8	--	E23	E81.7	--	--
01644000	08-09-05	800	877.7	400	120	200	--	--
01644900	09-08-05	690	708.6	275	29	71.6	--	--
01656000	08-01-05	1,000	1,129	--	E120	E351	--	--
01660400	08-01-05	650	686.9	--	E30	E74.5	--	--

[1]Type of sample related QA data codes: 10 = Blank sample; 30 = Replicate sample; 100 = More than one type of QA sample.

[2]Type of replicate codes: 20.00 - sequential sample; 30.00 = Split sample.

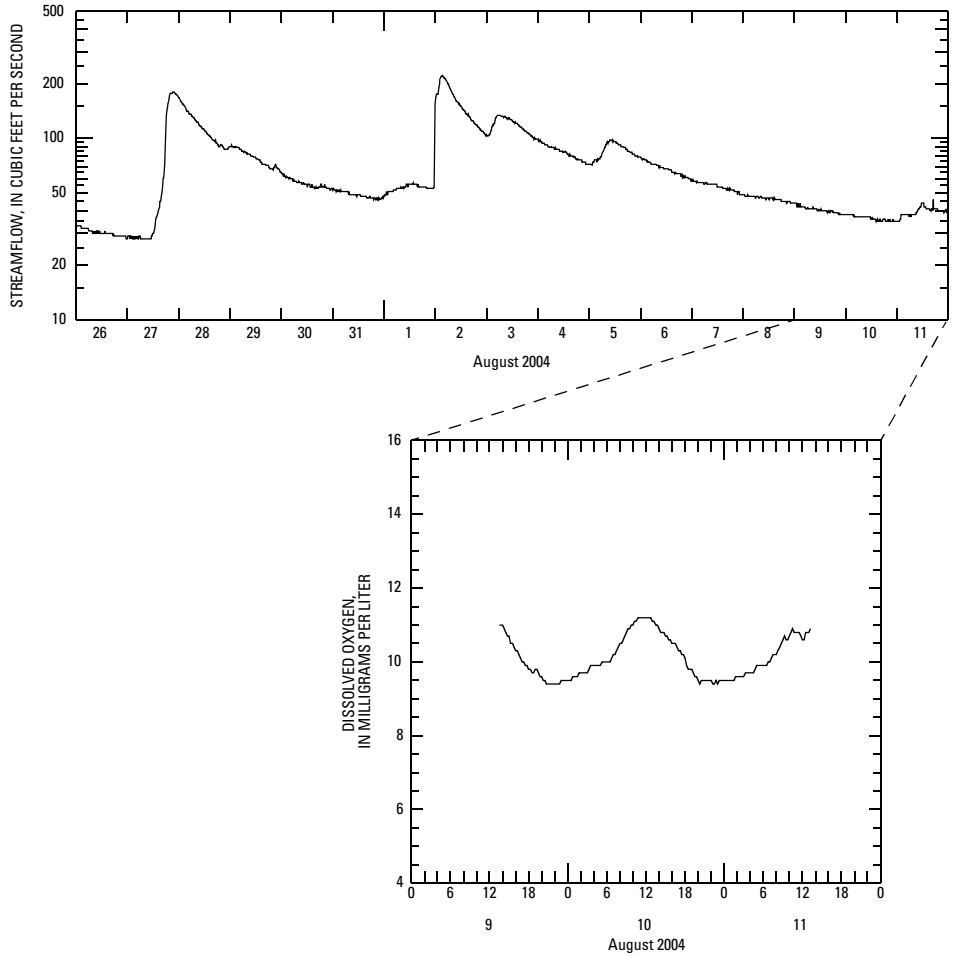
Appendix 2

Data for field parameters measured continuously by water-quality sondes.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.

Continuous-monitoring data for Brodhead Creek near Analomink, Pa. - 01440400.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 9, 2004	1400	11.0	7.4	74	18.4
August 9, 2004	1500	10.7	7.5	74	19.1
August 9, 2004	1600	10.3	7.5	74	19.7
August 9, 2004	1700	10.0	7.5	74	20.0
August 9, 2004	1800	9.8	7.4	74	20.2
August 9, 2004	1900	9.8	7.3	74	20.1
August 9, 2004	2000	9.6	7.2	75	19.9
August 9, 2004	2100	9.4	7.2	75	19.5
August 9, 2004	2200	9.4	7.1	75	19.3
August 9, 2004	2300	9.5	7.1	75	19.0
August 9, 2004	2400	9.5	7.1	75	18.7
August 10, 2004	0100	9.6	7.1	75	18.3
August 10, 2004	0200	9.7	7.0	76	18.0
August 10, 2004	0300	9.7	7.0	75	17.7
August 10, 2004	0400	9.9	7.0	76	17.4
August 10, 2004	0500	9.9	7.0	76	17.2
August 10, 2004	0600	10.0	7.0	76	17.0
August 10, 2004	0700	10.2	7.0	76	16.8
August 10, 2004	0800	10.5	7.1	76	16.7
August 10, 2004	0900	10.8	7.1	76	16.7
August 10, 2004	1000	11.0	7.2	76	16.9
August 10, 2004	1100	11.2	7.3	76	17.4
August 10, 2004	1200	11.2	7.4	76	18.1
August 10, 2004	1300	11.1	7.5	76	18.8
August 10, 2004	1400	10.9	7.5	76	19.2
August 10, 2004	1500	10.7	7.5	76	19.5
August 10, 2004	1600	10.5	7.6	76	20.1
August 10, 2004	1700	10.3	7.5	76	20.4
August 10, 2004	1800	10.1	7.4	76	20.4
August 10, 2004	1900	9.8	7.2	76	20.4
August 10, 2004	2000	9.5	7.2	77	20.3
August 10, 2004	2100	9.5	7.1	77	20.1
August 10, 2004	2200	9.5	7.0	77	19.9
August 10, 2004	2300	9.4	7.0	77	19.8
August 10, 2004	2400	9.5	7.0	77	19.6
August 11, 2004	0100	9.5	7.0	77	19.4
August 11, 2004	0200	9.6	7.0	76	19.1
August 11, 2004	0300	9.6	7.0	77	18.9
August 11, 2004	0400	9.7	7.0	77	18.7
August 11, 2004	0500	9.9	7.0	77	18.5
August 11, 2004	0600	9.9	7.0	77	18.3
August 11, 2004	0700	10.0	7.0	77	18.2
August 11, 2004	0800	10.2	7.0	77	18.1
August 11, 2004	0900	10.6	7.1	76	18.1
August 11, 2004	1000	10.7	7.1	76	18.2
August 11, 2004	1100	10.8	7.2	76	18.2
August 11, 2004	1200	10.6	7.2	76	18.3
August 11, 2004	1300	10.8	7.2	76	18.4

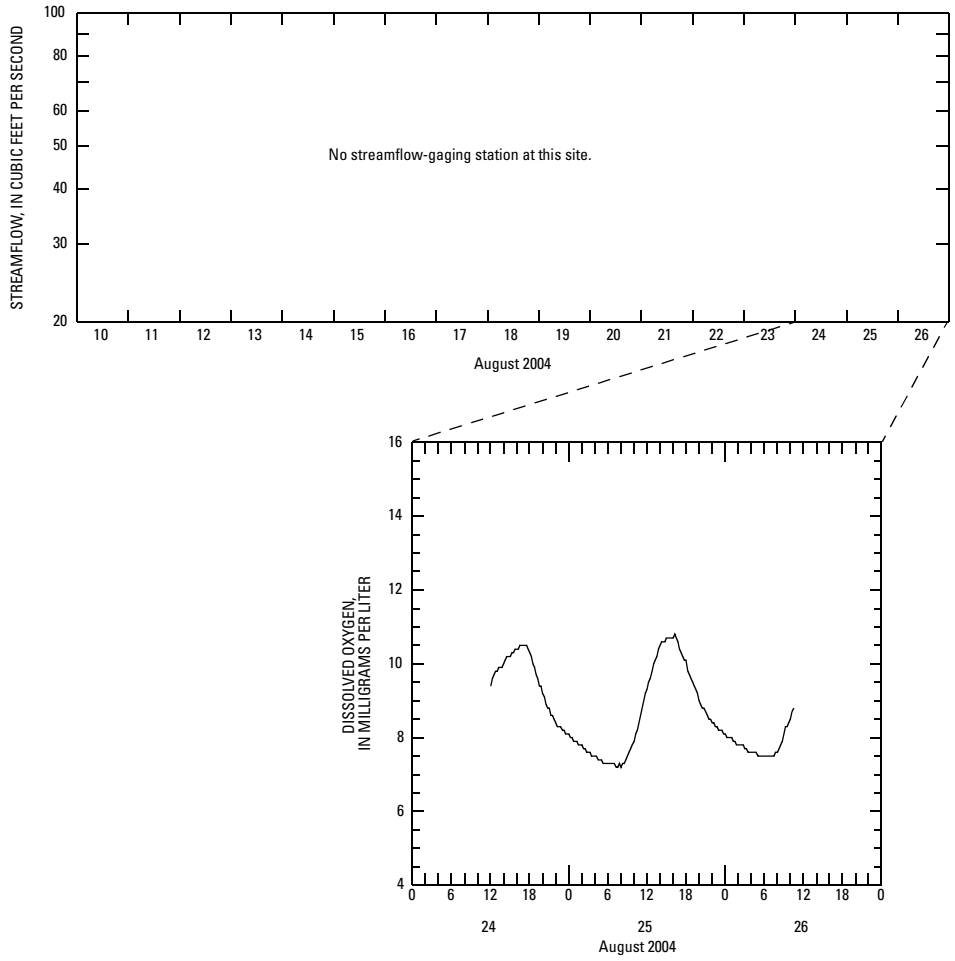


Streamflow and dissolved oxygen concentration for Brodhead Creek near Analomink, Pa. - 01440400.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Skippack Creek at Evansburg, Pa. - 01473110.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 24, 2004	1300	9.8	113	8.1	622	22.3
August 24, 2004	1400	10.0	116	8.2	619	22.6
August 24, 2004	1500	10.2	119	8.3	616	22.8
August 24, 2004	1600	10.4	122	8.4	611	23.1
August 24, 2004	1700	10.5	124	8.4	605	23.5
August 24, 2004	1800	10.3	122	8.4	600	23.7
August 24, 2004	1900	9.7	115	8.4	599	23.6
August 24, 2004	2000	9.2	108	8.3	600	23.4
August 24, 2004	2100	8.8	103	8.2	604	23.2
August 24, 2004	2200	8.4	98	8.2	609	23.1
August 24, 2004	2300	8.2	96	8.2	615	22.9
August 24, 2004	2400	8.1	94	8.2	622	22.8
August 25, 2004	0100	7.9	91	8.1	632	22.5
August 25, 2004	0200	7.8	89	8.1	643	22.3
August 25, 2004	0300	7.6	87	8.0	651	22.0
August 25, 2004	0400	7.5	85	8.0	662	21.8
August 25, 2004	0500	7.4	84	7.9	676	21.5
August 25, 2004	0600	7.3	82	7.9	689	21.4
August 25, 2004	0700	7.3	82	7.9	702	21.2
August 25, 2004	0800	7.2	82	7.8	709	21.1
August 25, 2004	0900	7.5	84	7.9	724	21.1
August 25, 2004	1000	7.9	90	7.9	729	21.2
August 25, 2004	1100	8.6	98	8.0	735	21.4
August 25, 2004	1200	9.3	106	8.1	741	21.8
August 25, 2004	1300	10.0	115	8.2	747	22.2
August 25, 2004	1400	10.5	122	8.3	752	22.9
August 25, 2004	1500	10.7	126	8.4	756	23.5
August 25, 2004	1600	10.7	128	8.5	763	24.1
August 25, 2004	1700	10.4	125	8.5	769	24.3
August 25, 2004	1800	10.1	120	8.5	775	24.0
August 25, 2004	1900	9.5	112	8.4	787	23.7
August 25, 2004	2000	9.0	107	8.3	799	23.4
August 25, 2004	2100	8.7	102	8.3	815	23.3
August 25, 2004	2200	8.4	99	8.2	833	23.1
August 25, 2004	2300	8.2	96	8.2	851	22.8
August 25, 2004	2400	8.1	94	8.2	867	22.5
August 26, 2004	0100	8.0	92	8.2	884	22.2
August 26, 2004	0200	7.8	89	8.1	904	21.9
August 26, 2004	0300	7.7	88	8.1	919	21.6
August 26, 2004	0400	7.6	86	8.1	937	21.3
August 26, 2004	0500	7.5	85	8.0	959	21.1
August 26, 2004	0600	7.5	84	8.0	983	20.9
August 26, 2004	0700	7.5	84	8.0	1,010	20.7
August 26, 2004	0800	7.6	84	7.9	1,020	20.5
August 26, 2004	0900	8.1	90	8.0	1,040	20.5
August 26, 2004	1000	8.5	95	8.0	1,050	20.7

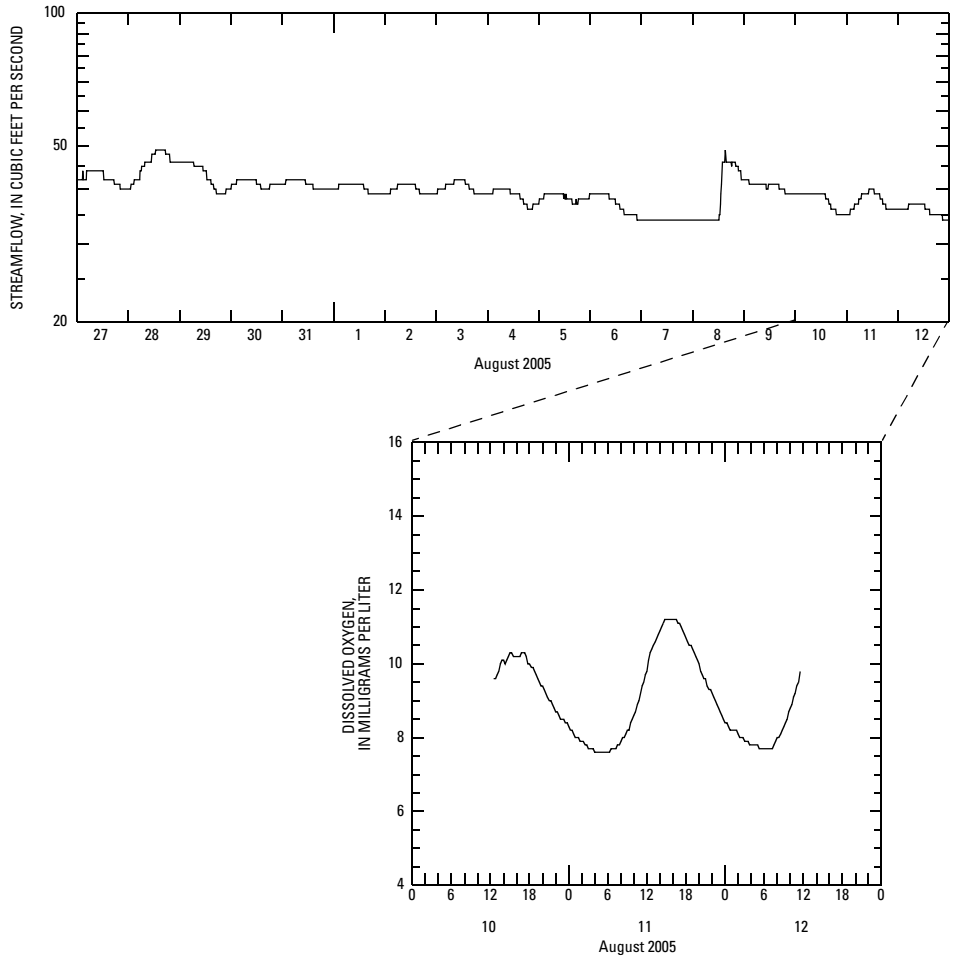


Streamflow and dissolved oxygen concentration for Skippack Creek at Evansburg, Pa. - 01473110.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Wissahickon Creek at Mouth, Philadelphia, Pa. - 01474000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 10, 2005	1300	9.7	--	8.2	766	23.6
August 10, 2005	1400	10.1	114	8.3	766	23.9
August 10, 2005	1500	10.3	120	8.3	765	24.0
August 10, 2005	1600	10.2	122	8.3	764	23.9
August 10, 2005	1700	10.3	121	8.4	762	24.1
August 10, 2005	1800	10.0	121	8.4	762	24.2
August 10, 2005	1900	9.7	118	8.4	761	24.3
August 10, 2005	2000	9.4	115	8.4	760	24.3
August 10, 2005	2100	9.0	111	8.4	760	24.2
August 10, 2005	2200	8.7	106	8.3	761	24.1
August 10, 2005	2300	8.5	103	8.3	761	24.0
August 10, 2005	2400	8.3	99	8.2	773	23.8
August 11, 2005	0100	8.0	96	8.2	784	23.7
August 11, 2005	0200	7.9	93	8.1	784	23.5
August 11, 2005	0300	7.7	90	8.1	774	23.3
August 11, 2005	0400	7.6	88	8.0	768	23.1
August 11, 2005	0500	7.6	87	8.0	770	23.0
August 11, 2005	0600	7.6	86	8.0	772	22.8
August 11, 2005	0700	7.7	86	8.0	773	22.7
August 11, 2005	0800	7.9	86	8.0	774	22.7
August 11, 2005	0900	8.2	88	8.0	776	22.7
August 11, 2005	1000	8.6	92	8.0	777	22.7
August 11, 2005	1100	9.2	96	8.1	778	23.0
August 11, 2005	1200	9.8	104	8.2	779	23.4
August 11, 2005	1300	10.5	112	8.2	779	23.9
August 11, 2005	1400	10.9	120	8.3	779	24.3
August 11, 2005	1500	11.2	126	8.4	778	24.6
August 11, 2005	1600	11.2	129	8.4	777	24.8
August 11, 2005	1700	11.1	131	8.4	776	24.9
August 11, 2005	1800	10.7	130	8.4	775	24.9
August 11, 2005	1900	10.4	124	8.4	774	24.9
August 11, 2005	2000	10.0	120	8.4	774	25.0
August 11, 2005	2100	9.6	115	8.4	774	24.9
August 11, 2005	2200	9.2	110	8.4	775	25.0
August 11, 2005	2300	8.8	105	8.4	775	25.0
August 11, 2005	2400	8.4	101	8.3	777	24.9
August 12, 2005	0100	8.2	96	8.3	777	24.9
August 12, 2005	0200	8.1	93	8.2	777	24.7
August 12, 2005	0300	7.9	90	8.1	779	24.5
August 12, 2005	0400	7.8	88	8.1	780	24.4
August 12, 2005	0500	7.8	86	8.0	783	24.1
August 12, 2005	0600	7.7	85	8.0	784	24.0
August 12, 2005	0700	7.7	84	8.0	785	23.9
August 12, 2005	0800	8.0	84	8.0	785	23.8
August 12, 2005	0900	8.3	86	8.0	786	23.8
August 12, 2005	1000	8.8	90	8.0	786	23.8
August 12, 2005	1100	9.4	96	8.0	786	24.1

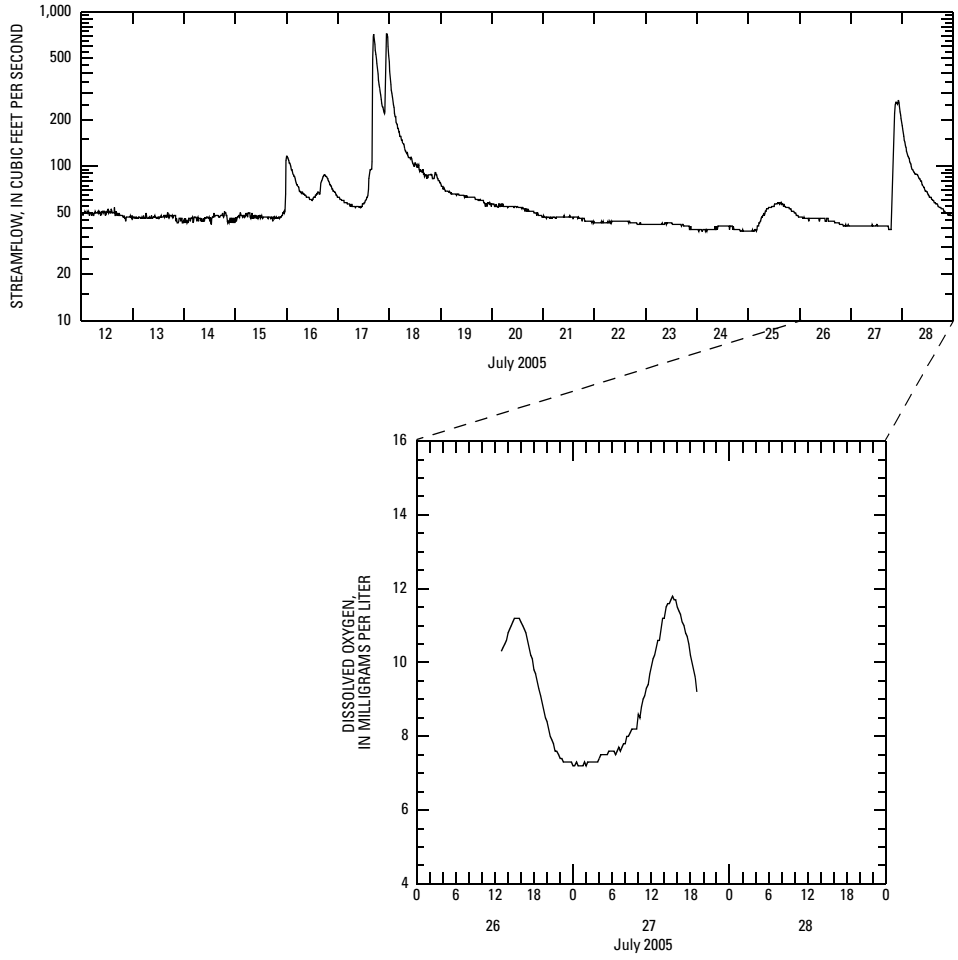


Streamflow and dissolved oxygen concentration for Wissahickon Creek at Mouth, Philadelphia, Pa. - 01474000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for White Clay Creek near Strickersville, Pa. - 01478245.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 26, 2005	1300	10.3	--	8.3	354	23.6
July 26, 2005	1400	10.8	121	8.5	353	24.4
July 26, 2005	1500	11.2	129	8.7	351	25.2
July 26, 2005	1600	11.1	136	8.8	349	25.8
July 26, 2005	1700	10.6	137	8.8	346	26.0
July 26, 2005	1800	9.8	130	8.8	346	26.0
July 26, 2005	1900	9.1	121	8.8	346	26.0
July 26, 2005	2000	8.4	112	8.8	348	26.0
July 26, 2005	2100	7.8	103	8.7	349	25.8
July 26, 2005	2200	7.4	96	8.6	350	25.7
July 26, 2005	2300	7.3	91	8.4	352	25.4
July 26, 2005	2400	7.2	89	8.2	354	25.1
July 27, 2005	0100	7.2	88	8.0	355	24.8
July 27, 2005	0200	7.2	87	7.8	355	24.5
July 27, 2005	0300	7.3	86	7.8	355	24.2
July 27, 2005	0400	7.4	88	7.8	354	24.0
July 27, 2005	0500	7.5	88	7.7	356	23.8
July 27, 2005	0600	7.6	89	7.7	355	23.6
July 27, 2005	0700	7.7	90	7.7	355	23.4
July 27, 2005	0800	7.8	90	7.7	355	23.3
July 27, 2005	0900	8.2	91	7.8	355	23.3
July 27, 2005	1000	8.6	96	7.8	357	23.4
July 27, 2005	1100	9.1	101	8.0	356	23.7
July 27, 2005	1200	9.9	107	8.1	356	24.1
July 27, 2005	1300	10.6	118	8.3	356	24.7
July 27, 2005	1400	11.2	128	8.5	354	25.5
July 27, 2005	1500	11.7	138	8.7	353	26.3
July 27, 2005	1600	11.5	145	8.8	354	26.9
July 27, 2005	1700	11.0	144	8.9	353	27.1
July 27, 2005	1800	10.2	139	8.9	352	27.2
July 27, 2005	1900	9.2	129	8.9	352	27.1

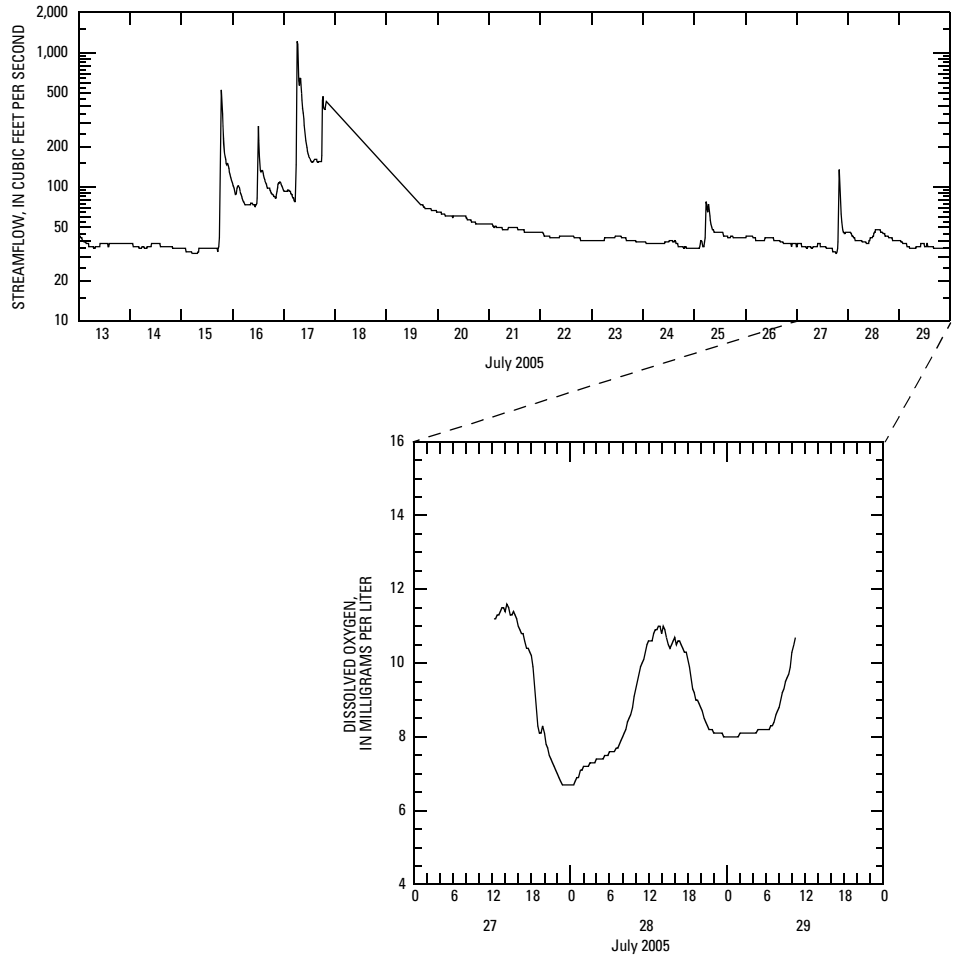


Streamflow and dissolved oxygen concentration for White Clay Creek near Strickersville, Pa. - 01478245.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for West Branch Brandywine Creek at Modena, Pa. (upstream) - 01480617.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 27, 2005	1300	11.3	8.8	357	25.7
July 27, 2005	1400	11.4	9.0	340	26.3
July 27, 2005	1500	11.3	9.1	338	26.9
July 27, 2005	1600	11.0	9.2	335	27.4
July 27, 2005	1700	10.6	9.2	387	27.6
July 27, 2005	1800	10.2	9.2	388	27.7
July 27, 2005	1900	8.3	9.1	379	27.2
July 27, 2005	2000	8.1	8.9	377	26.6
July 27, 2005	2100	7.4	8.4	354	25.9
July 27, 2005	2200	7.0	8.0	309	26.0
July 27, 2005	2300	6.7	7.7	269	26.2
July 27, 2005	2400	6.7	7.7	295	25.8
July 28, 2005	0100	6.9	7.6	332	25.0
July 28, 2005	0200	7.2	7.7	347	24.5
July 28, 2005	0300	7.3	7.7	352	24.1
July 28, 2005	0400	7.4	7.7	353	23.7
July 28, 2005	0500	7.4	7.7	351	23.3
July 28, 2005	0600	7.6	7.7	348	22.8
July 28, 2005	0700	7.7	7.7	345	22.5
July 28, 2005	0800	8.0	7.8	344	22.2
July 28, 2005	0900	8.5	7.8	343	22.1
July 28, 2005	1000	9.3	8.0	341	22.3
July 28, 2005	1100	10.0	8.3	340	22.8
July 28, 2005	1200	10.6	8.5	342	23.3
July 28, 2005	1300	10.9	8.7	349	23.9
July 28, 2005	1400	10.8	8.8	350	24.3
July 28, 2005	1500	10.5	8.9	343	24.4
July 28, 2005	1600	10.7	9.0	336	24.7
July 28, 2005	1700	10.5	9.0	331	24.9
July 28, 2005	1800	10.1	9.0	332	25.0
July 28, 2005	1900	9.2	9.0	332	24.8
July 28, 2005	2000	8.8	8.9	332	24.5
July 28, 2005	2100	8.3	8.9	335	24.0
July 28, 2005	2200	8.1	8.6	342	23.5
July 28, 2005	2300	8.1	8.4	347	23.0
July 28, 2005	2400	8.0	8.1	352	22.6
July 29, 2005	0100	8.0	8.0	357	22.3
July 29, 2005	0200	8.1	7.9	361	22.1
July 29, 2005	0300	8.1	7.8	363	21.8
July 29, 2005	0400	8.1	7.8	366	21.6
July 29, 2005	0500	8.2	7.8	364	21.3
July 29, 2005	0600	8.2	7.8	362	21.1
July 29, 2005	0700	8.3	7.8	358	20.8
July 29, 2005	0800	8.8	7.9	354	20.7
July 29, 2005	0900	9.5	8.0	352	20.7
July 29, 2005	1000	10.3	8.2	350	20.8



Streamflow and dissolved oxygen concentration for West Branch Brandywine Creek at Modena, Pa. (upstream) - 01480617.

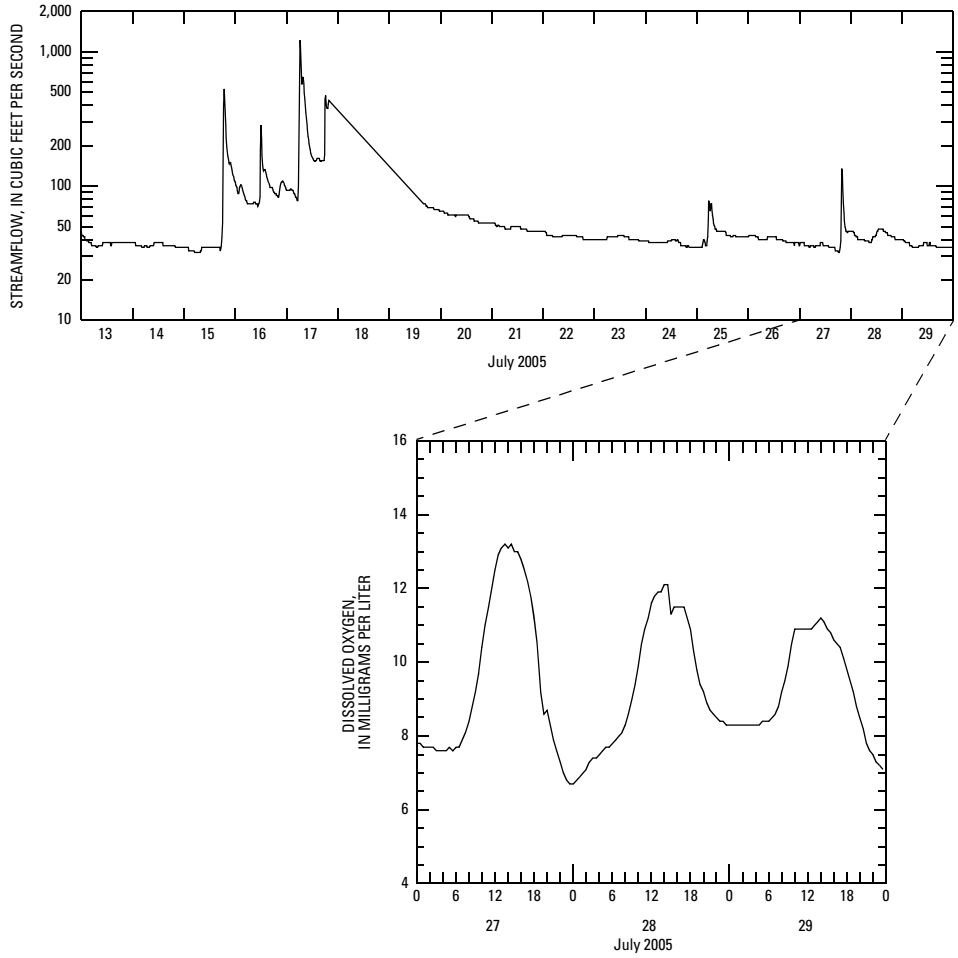
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for West Branch Brandywine Creek at Modena, Pa. (downstream) - 01480617.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 27, 2005	0100	7.7	7.8	381	24.6
July 27, 2005	0200	7.7	7.5	383	24.3
July 27, 2005	0300	7.6	7.4	384	24.1
July 27, 2005	0400	7.6	7.4	384	24.0
July 27, 2005	0500	7.7	7.4	383	23.8
July 27, 2005	0600	7.7	7.3	381	23.7
July 27, 2005	0700	7.9	7.3	373	23.5
July 27, 2005	0800	8.4	7.4	366	23.5
July 27, 2005	0900	9.2	7.5	363	23.5
July 27, 2005	1000	10.4	7.9	360	23.8
July 27, 2005	1100	11.5	8.2	355	24.4
July 27, 2005	1200	12.5	8.5	351	25.2
July 27, 2005	1300	13.1	8.7	352	25.9
July 27, 2005	1400	13.1	8.8	352	26.5
July 27, 2005	1500	13.0	8.9	361	27.0
July 27, 2005	1600	12.8	9.0	360	27.5
July 27, 2005	1700	12.2	9.0	377	27.8
July 27, 2005	1800	11.2	9.0	384	27.8
July 27, 2005	1900	9.2	8.9	383	27.5
July 27, 2005	2000	8.7	8.8	383	27.0
July 27, 2005	2100	7.9	8.3	361	26.1
July 27, 2005	2200	7.3	7.9	323	26.0
July 27, 2005	2300	6.8	7.5	274	26.3
July 27, 2005	2400	6.7	7.3	283	26.0
July 28, 2005	0100	6.9	7.3	323	25.4
July 28, 2005	0200	7.1	7.3	341	24.8
July 28, 2005	0300	7.4	7.3	347	24.4
July 28, 2005	0400	7.5	7.3	348	24.0
July 28, 2005	0500	7.7	7.3	346	23.6
July 28, 2005	0600	7.8	7.3	343	23.2
July 28, 2005	0700	8.0	7.4	340	22.8
July 28, 2005	0800	8.3	7.4	339	22.5
July 28, 2005	0900	9.0	7.5	339	22.4
July 28, 2005	1000	9.9	7.8	337	22.6
July 28, 2005	1100	10.9	8.0	335	23.0
July 28, 2005	1200	11.6	8.3	336	23.6
July 28, 2005	1300	11.9	8.5	341	24.1
July 28, 2005	1400	12.1	8.7	343	24.7
July 28, 2005	1500	11.3	8.7	337	24.7
July 28, 2005	1600	11.5	8.8	330	24.8
July 28, 2005	1700	11.5	8.8	329	25.1
July 28, 2005	1800	10.9	8.8	327	25.2
July 28, 2005	1900	9.8	8.8	331	25.0
July 28, 2005	2000	9.2	8.7	332	24.7
July 28, 2005	2100	8.7	8.5	334	24.3
July 28, 2005	2200	8.5	8.4	339	23.9
July 28, 2005	2300	8.4	8.1	344	23.4
July 28, 2005	2400	8.3	7.8	348	23.0
July 29, 2005	0100	8.3	7.6	353	22.6
July 29, 2005	0200	8.3	7.5	357	22.3
July 29, 2005	0300	8.3	7.4	359	22.1
July 29, 2005	0400	8.3	7.4	362	21.9
July 29, 2005	0500	8.4	7.4	360	21.6
July 29, 2005	0600	8.4	7.4	358	21.4
July 29, 2005	0700	8.6	7.4	354	21.1
July 29, 2005	0800	9.2	7.4	350	21.0
July 29, 2005	0900	9.9	7.6	348	21.0
July 29, 2005	1000	10.9	7.8	348	21.1
July 29, 2005	1100	10.9	8.1	353	21.6

Continuous-monitoring data for West Branch Brandywine Creek at Modena, Pa. (downstream) - 01480617.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 29, 2005	1200	10.9	8.4	358	22.2
July 29, 2005	1300	11.0	8.7	362	22.9
July 29, 2005	1400	11.2	8.8	368	23.5
July 29, 2005	1500	10.9	8.9	371	24.0
July 29, 2005	1600	10.6	9.0	373	24.3
July 29, 2005	1700	10.4	9.1	378	24.7
July 29, 2005	1800	9.8	9.1	401	24.8
July 29, 2005	1900	9.2	9.0	410	24.8
July 29, 2005	2000	8.5	9.0	405	24.6
July 29, 2005	2100	7.8	8.9	402	24.2
July 29, 2005	2200	7.5	8.7	402	23.9
July 29, 2005	2300	7.2	8.6	406	23.6
July 29, 2005	2400	7.1	8.3	411	23.2



Streamflow and dissolved oxygen concentration for West Branch Brandywine Creek at Modena, Pa. (downstream) - 01480617.

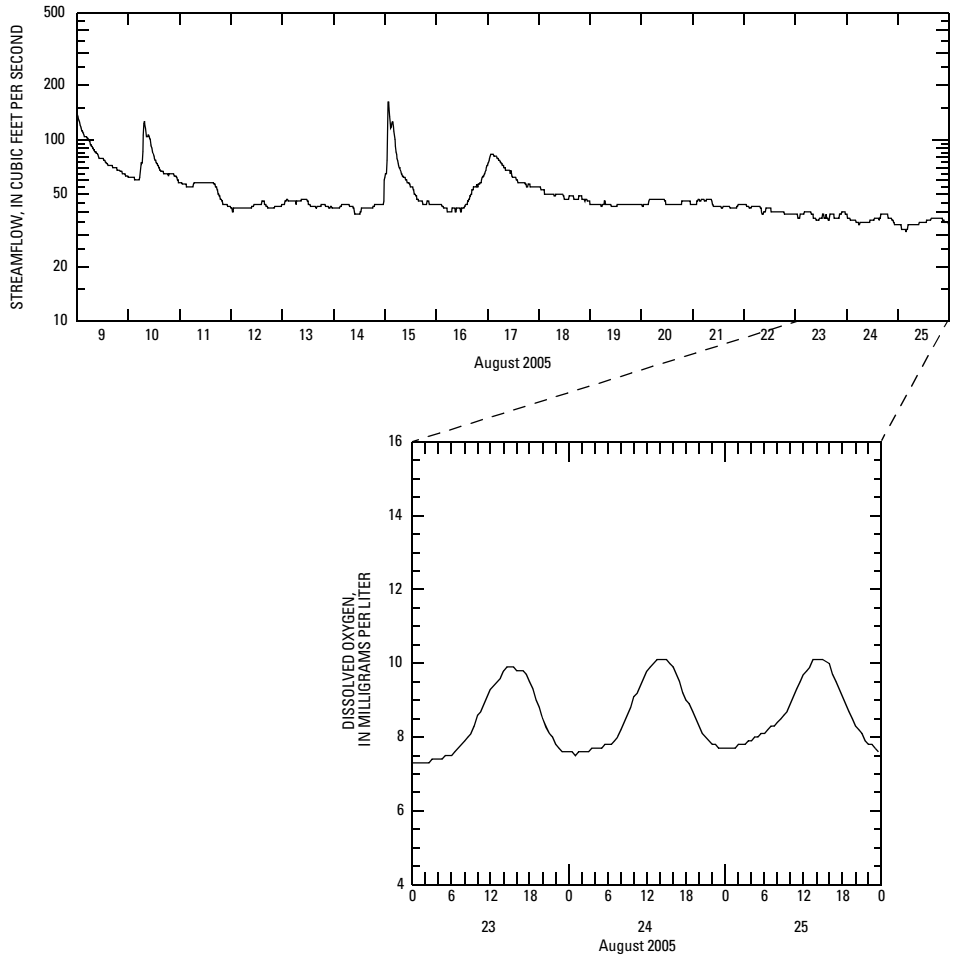
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for East Branch Brandywine Creek below Downingtown, Pa. (upstream) - 01480870.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 23, 2005	0100	7.3	7.6	405	21.7
August 23, 2005	0200	7.3	7.6	407	21.4
August 23, 2005	0300	7.4	7.6	409	21.0
August 23, 2005	0400	7.4	7.6	403	20.7
August 23, 2005	0500	7.5	7.6	407	20.4
August 23, 2005	0600	7.5	7.6	408	20.1
August 23, 2005	0700	7.7	7.6	404	19.9
August 23, 2005	0800	7.9	7.6	399	19.7
August 23, 2005	0900	8.1	7.6	399	19.7
August 23, 2005	1000	8.6	7.7	399	19.9
August 23, 2005	1100	8.9	7.7	398	20.4
August 23, 2005	1200	9.3	7.8	399	21.3
August 23, 2005	1300	9.5	7.9	396	22.1
August 23, 2005	1400	9.8	8.0	400	22.6
August 23, 2005	1500	9.9	8.1	403	23.2
August 23, 2005	1600	9.8	8.2	407	23.6
August 23, 2005	1700	9.8	8.2	408	23.7
August 23, 2005	1800	9.5	8.2	404	23.3
August 23, 2005	1900	9.0	8.1	406	22.9
August 23, 2005	2000	8.5	8.0	410	22.5
August 23, 2005	2100	8.1	7.8	411	22.1
August 23, 2005	2200	7.8	7.8	414	21.8
August 23, 2005	2300	7.6	7.7	416	21.4
August 23, 2005	2400	7.6	7.7	417	21.1
August 24, 2005	0100	7.5	7.6	415	20.8
August 24, 2005	0200	7.6	7.6	415	20.5
August 24, 2005	0300	7.6	7.6	413	20.2
August 24, 2005	0400	7.7	7.6	414	19.9
August 24, 2005	0500	7.7	7.6	413	19.7
August 24, 2005	0600	7.8	7.6	411	19.5
August 24, 2005	0700	7.9	7.6	406	19.3
August 24, 2005	0800	8.2	7.6	408	19.2
August 24, 2005	0900	8.6	7.6	408	19.2
August 24, 2005	1000	9.1	7.7	411	19.4
August 24, 2005	1100	9.4	7.8	413	19.8
August 24, 2005	1200	9.8	7.9	412	20.7
August 24, 2005	1300	10.0	8.0	409	21.6
August 24, 2005	1400	10.1	8.1	410	22.4
August 24, 2005	1500	10.1	8.2	416	23.2
August 24, 2005	1600	9.9	8.2	415	23.6
August 24, 2005	1700	9.5	8.2	415	23.5
August 24, 2005	1800	9.0	8.0	410	23.0
August 24, 2005	1900	8.7	7.9	406	22.3
August 24, 2005	2000	8.3	7.8	403	21.8
August 24, 2005	2100	8.0	7.8	403	21.4
August 24, 2005	2200	7.8	7.7	402	21.1
August 24, 2005	2300	7.7	7.7	400	20.8
August 24, 2005	2400	7.7	7.7	399	20.5
August 25, 2005	0100	7.7	7.6	400	20.2
August 25, 2005	0200	7.8	7.6	399	19.8
August 25, 2005	0300	7.8	7.6	398	19.5
August 25, 2005	0400	7.9	7.6	400	19.2
August 25, 2005	0500	8.0	7.6	402	18.9
August 25, 2005	0600	8.1	7.6	404	18.6
August 25, 2005	0700	8.3	7.6	401	18.4
August 25, 2005	0800	8.4	7.6	401	18.2
August 25, 2005	0900	8.6	7.6	399	18.2
August 25, 2005	1000	8.9	7.7	403	18.5
August 25, 2005	1100	9.3	7.8	405	19.1

Continuous-monitoring data for East Branch Brandywine Creek below Downingtown, Pa. (upstream) - 01480870.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 25, 2005	1200	9.7	7.8	410	20.0
August 25, 2005	1300	9.9	7.9	412	21.1
August 25, 2005	1400	10.1	8.1	412	22.2
August 25, 2005	1500	10.1	8.1	415	23.0
August 25, 2005	1600	10.0	8.2	419	23.4
August 25, 2005	1700	9.5	8.2	418	23.3
August 25, 2005	1800	9.1	8.1	412	22.8
August 25, 2005	1900	8.7	8.0	411	22.2
August 25, 2005	2000	8.3	7.9	410	21.7
August 25, 2005	2100	8.1	7.8	409	21.4
August 25, 2005	2200	7.8	7.8	407	21.2
August 25, 2005	2300	7.7	7.7	408	20.9
August 25, 2005	2400	7.6	7.7	411	20.7

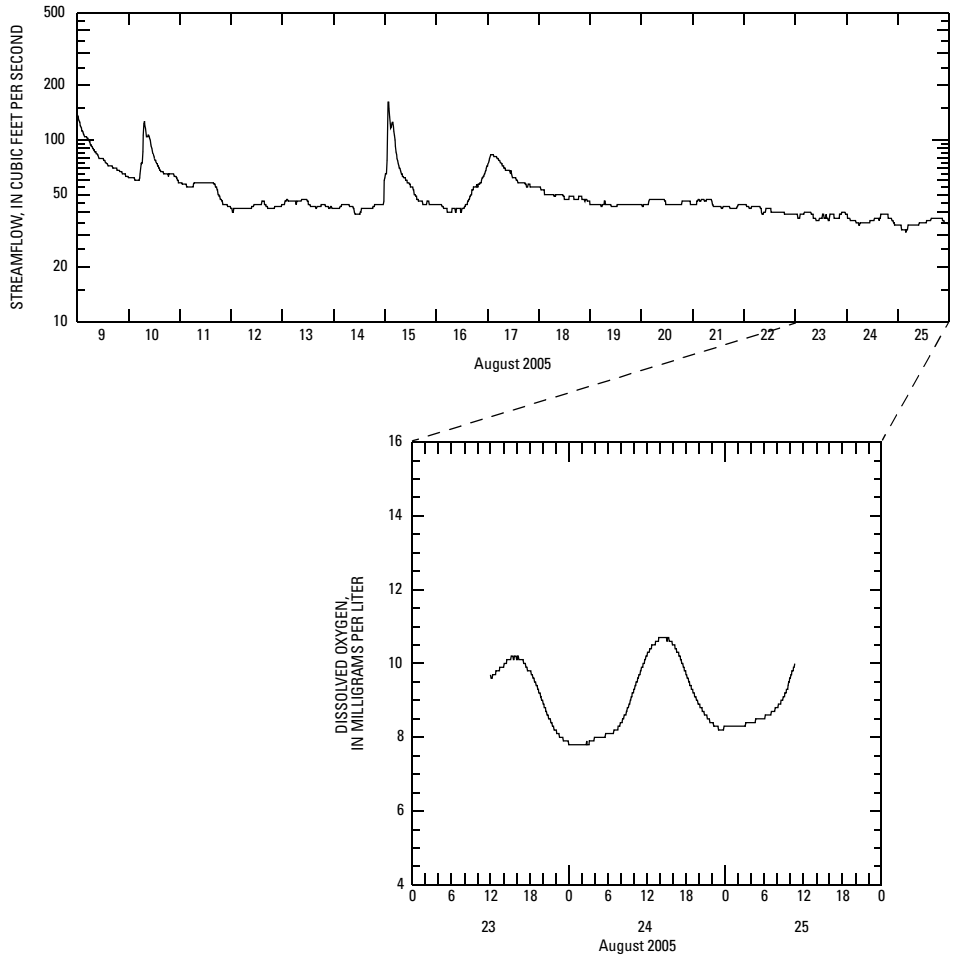


Streamflow and dissolved oxygen concentration for East Branch Brandywine Creek below Downingtown, Pa. (upstream) - 01480870.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for East Branch Brandywine Creek below Downingtown, Pa. (downstream) - 01480870.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 23, 2005	1200	9.7	--	8.0	394	20.8
August 23, 2005	1300	9.8	109	8.1	391	21.5
August 23, 2005	1400	9.9	111	8.2	394	21.9
August 23, 2005	1500	10.1	114	8.3	397	22.6
August 23, 2005	1600	10.1	117	8.3	401	23.0
August 23, 2005	1700	10.1	118	8.4	400	23.2
August 23, 2005	1800	9.8	118	8.3	397	22.9
August 23, 2005	1900	9.4	113	8.2	397	22.5
August 23, 2005	2000	9.0	108	8.1	404	22.1
August 23, 2005	2100	8.5	101	8.0	407	21.7
August 23, 2005	2200	8.2	96	7.9	408	21.4
August 23, 2005	2300	8.0	91	7.9	409	21.0
August 23, 2005	2400	7.8	88	7.8	411	20.7
August 24, 2005	0100	7.8	86	7.8	411	20.3
August 24, 2005	0200	7.8	86	7.8	412	20.0
August 24, 2005	0300	7.8	85	7.8	411	19.8
August 24, 2005	0400	8.0	85	7.7	409	19.5
August 24, 2005	0500	8.0	85	7.7	410	19.2
August 24, 2005	0600	8.1	85	7.7	406	19.0
August 24, 2005	0700	8.2	85	7.7	404	18.8
August 24, 2005	0800	8.4	86	7.8	403	18.7
August 24, 2005	0900	8.8	88	7.8	403	18.7
August 24, 2005	1000	9.3	92	7.9	407	19.0
August 24, 2005	1100	9.8	98	8.0	409	19.4
August 24, 2005	1200	10.2	104	8.1	410	20.3
August 24, 2005	1300	10.5	111	8.2	407	21.0
August 24, 2005	1400	10.7	115	8.2	409	21.7
August 24, 2005	1500	10.7	118	8.3	412	22.3
August 24, 2005	1600	10.5	119	8.3	413	22.9
August 24, 2005	1700	10.2	119	8.3	414	23.0
August 24, 2005	1800	9.7	115	8.2	409	22.6
August 24, 2005	1900	9.3	109	8.1	406	22.0
August 24, 2005	2000	8.9	103	8.0	402	21.4
August 24, 2005	2100	8.6	97	7.9	401	21.0
August 24, 2005	2200	8.4	93	7.9	400	20.7
August 24, 2005	2300	8.2	90	7.9	396	20.4
August 24, 2005	2400	8.3	88	7.8	397	20.0
August 25, 2005	0100	8.3	87	7.8	396	19.7
August 25, 2005	0200	8.3	86	7.8	396	19.4
August 25, 2005	0300	8.3	86	7.8	395	19.0
August 25, 2005	0400	8.4	86	7.8	396	18.7
August 25, 2005	0500	8.5	86	7.8	398	18.4
August 25, 2005	0600	8.5	86	7.8	399	18.1
August 25, 2005	0700	8.6	86	7.8	397	17.9
August 25, 2005	0800	8.8	87	7.8	396	17.7
August 25, 2005	0900	9.1	89	7.8	396	17.8
August 25, 2005	1000	9.6	92	7.9	398	18.1

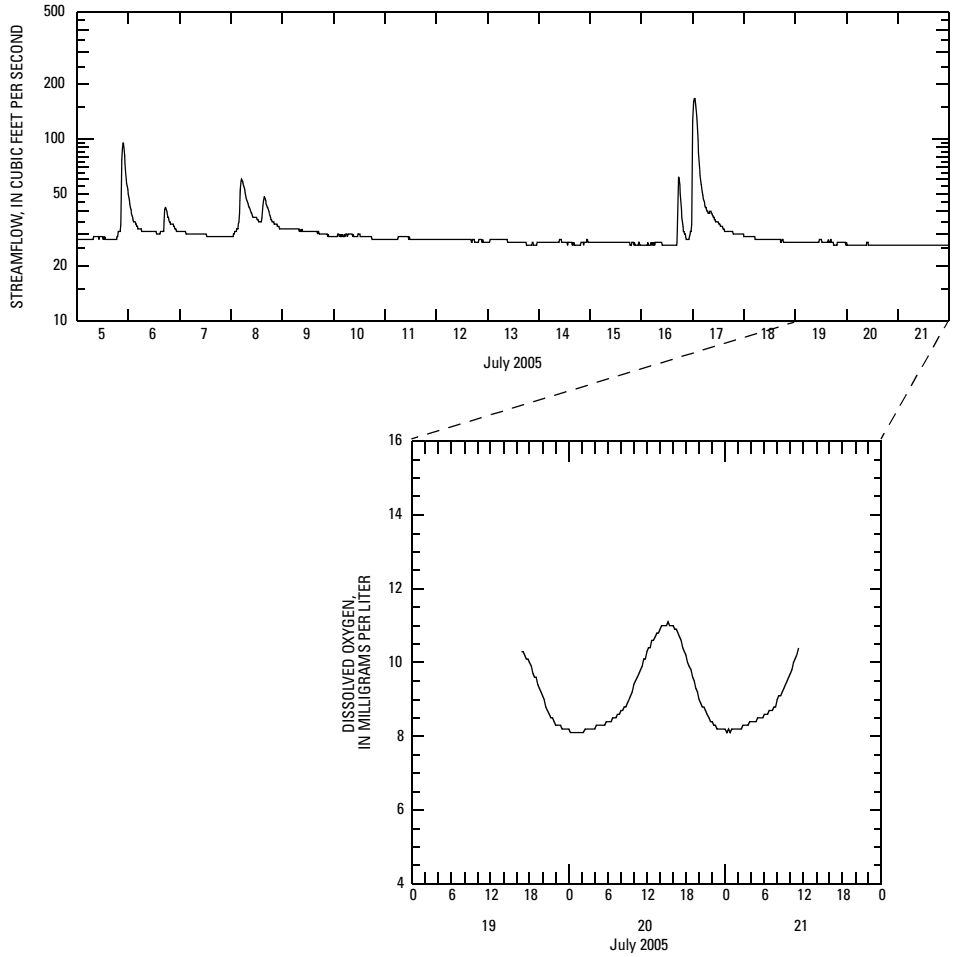


Streamflow and dissolved oxygen concentration for East Branch Brandywine Creek below Downingtown, Pa. (downstream) - 01480870.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Spring Creek at Houserville, Pa. - 01546400.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 19, 2005	1700	10.3	8.4	572	20.5
July 19, 2005	1800	10.0	8.4	572	20.7
July 19, 2005	1900	9.6	8.3	575	20.6
July 19, 2005	2000	9.1	8.3	577	20.4
July 19, 2005	2100	8.6	8.3	577	20.1
July 19, 2005	2200	8.3	8.2	579	19.7
July 19, 2005	2300	8.2	8.2	586	19.2
July 19, 2005	2400	8.2	8.2	587	18.6
July 20, 2005	0100	8.1	8.1	586	18.1
July 20, 2005	0200	8.1	8.1	585	17.7
July 20, 2005	0300	8.2	8.1	586	17.4
July 20, 2005	0400	8.2	8.1	585	17.0
July 20, 2005	0500	8.3	8.1	584	16.8
July 20, 2005	0600	8.4	8.1	583	16.5
July 20, 2005	0700	8.5	8.1	584	16.3
July 20, 2005	0800	8.7	8.1	583	16.1
July 20, 2005	0900	8.9	8.1	583	16.1
July 20, 2005	1000	9.4	8.1	583	16.2
July 20, 2005	1100	9.8	8.2	585	16.6
July 20, 2005	1200	10.3	8.2	587	17.1
July 20, 2005	1300	10.6	8.2	584	17.8
July 20, 2005	1400	10.9	8.3	584	18.9
July 20, 2005	1500	11.0	8.3	584	19.9
July 20, 2005	1600	11.0	8.3	583	20.7
July 20, 2005	1700	10.7	8.3	582	21.1
July 20, 2005	1800	10.2	8.3	581	21.2
July 20, 2005	1900	9.6	8.3	581	21.1
July 20, 2005	2000	9.0	8.3	582	20.8
July 20, 2005	2100	8.7	8.2	583	20.5
July 20, 2005	2200	8.4	8.2	585	20.0
July 20, 2005	2300	8.2	8.2	586	19.5
July 20, 2005	2400	8.2	8.1	586	18.8
July 21, 2005	0100	8.2	8.1	586	18.3
July 21, 2005	0200	8.2	8.1	587	17.8
July 21, 2005	0300	8.3	8.1	586	17.4
July 21, 2005	0400	8.4	8.1	585	17.0
July 21, 2005	0500	8.5	8.1	585	16.7
July 21, 2005	0600	8.6	8.0	585	16.4
July 21, 2005	0700	8.7	8.1	585	16.2
July 21, 2005	0800	9.0	8.1	585	16.0
July 21, 2005	0900	9.3	8.1	585	16.0
July 21, 2005	1000	9.7	8.1	585	16.2
July 21, 2005	1100	10.2	8.1	585	16.6

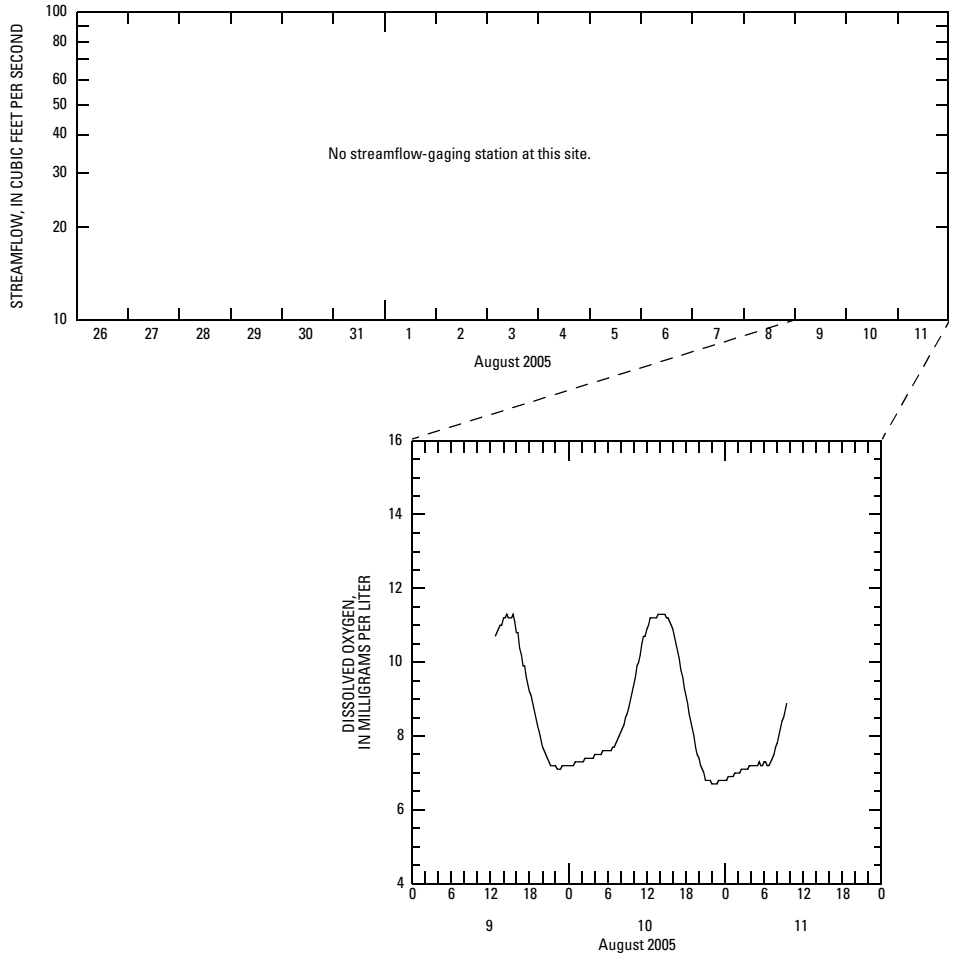


Streamflow and dissolved oxygen concentration for Spring Creek at Houserville, Pa. - 01546400.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Kishacoquillas Creek at Lumber City, Pa. - 01564997.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 9, 2005	1300	10.8	--	8.5	549	21.0
August 9, 2005	1400	11.2	121	8.6	544	21.7
August 9, 2005	1500	11.2	127	8.7	539	22.4
August 9, 2005	1600	10.8	129	8.8	536	22.9
August 9, 2005	1700	9.9	126	8.8	535	22.9
August 9, 2005	1800	9.2	115	8.8	536	23.1
August 9, 2005	1900	8.5	108	8.7	539	23.2
August 9, 2005	2000	7.7	100	8.7	545	23.0
August 9, 2005	2100	7.3	90	8.6	550	22.8
August 9, 2005	2200	7.2	84	8.5	553	22.5
August 9, 2005	2300	7.2	83	8.4	556	22.2
August 9, 2005	2400	7.2	82	8.4	559	21.9
August 10, 2005	0100	7.3	82	8.3	561	21.6
August 10, 2005	0200	7.3	83	8.3	562	21.4
August 10, 2005	0300	7.4	83	8.3	565	21.1
August 10, 2005	0400	7.5	83	8.2	567	20.9
August 10, 2005	0500	7.5	84	8.2	569	20.6
August 10, 2005	0600	7.6	84	8.2	571	20.4
August 10, 2005	0700	7.7	84	8.2	572	20.1
August 10, 2005	0800	8.1	85	8.2	571	19.9
August 10, 2005	0900	8.6	89	8.2	569	20.0
August 10, 2005	1000	9.4	95	8.3	566	20.2
August 10, 2005	1100	10.2	104	8.4	561	20.6
August 10, 2005	1200	10.9	114	8.5	556	21.3
August 10, 2005	1300	11.2	123	8.6	550	22.2
August 10, 2005	1400	11.3	129	8.7	544	23.1
August 10, 2005	1500	11.2	133	8.7	538	23.9
August 10, 2005	1600	10.9	134	8.8	534	24.6
August 10, 2005	1700	10.1	131	8.8	531	24.9
August 10, 2005	1800	9.1	122	8.8	532	24.8
August 10, 2005	1900	8.2	110	8.7	535	24.7
August 10, 2005	2000	7.4	98	8.7	542	24.3
August 10, 2005	2100	6.8	88	8.6	547	24.0
August 10, 2005	2200	6.7	82	8.5	551	23.7
August 10, 2005	2300	6.8	80	8.4	555	23.4
August 10, 2005	2400	6.8	79	8.4	558	23.0
August 11, 2005	0100	6.9	80	8.3	560	22.7
August 11, 2005	0200	7.0	80	8.3	563	22.3
August 11, 2005	0300	7.1	81	8.2	565	22.0
August 11, 2005	0400	7.2	82	8.2	568	21.6
August 11, 2005	0500	7.2	82	8.2	571	21.3
August 11, 2005	0600	7.3	82	8.2	573	20.9
August 11, 2005	0700	7.3	82	8.2	575	20.6
August 11, 2005	0800	7.8	82	8.2	575	20.5
August 11, 2005	0900	8.5	86	8.2	573	20.6

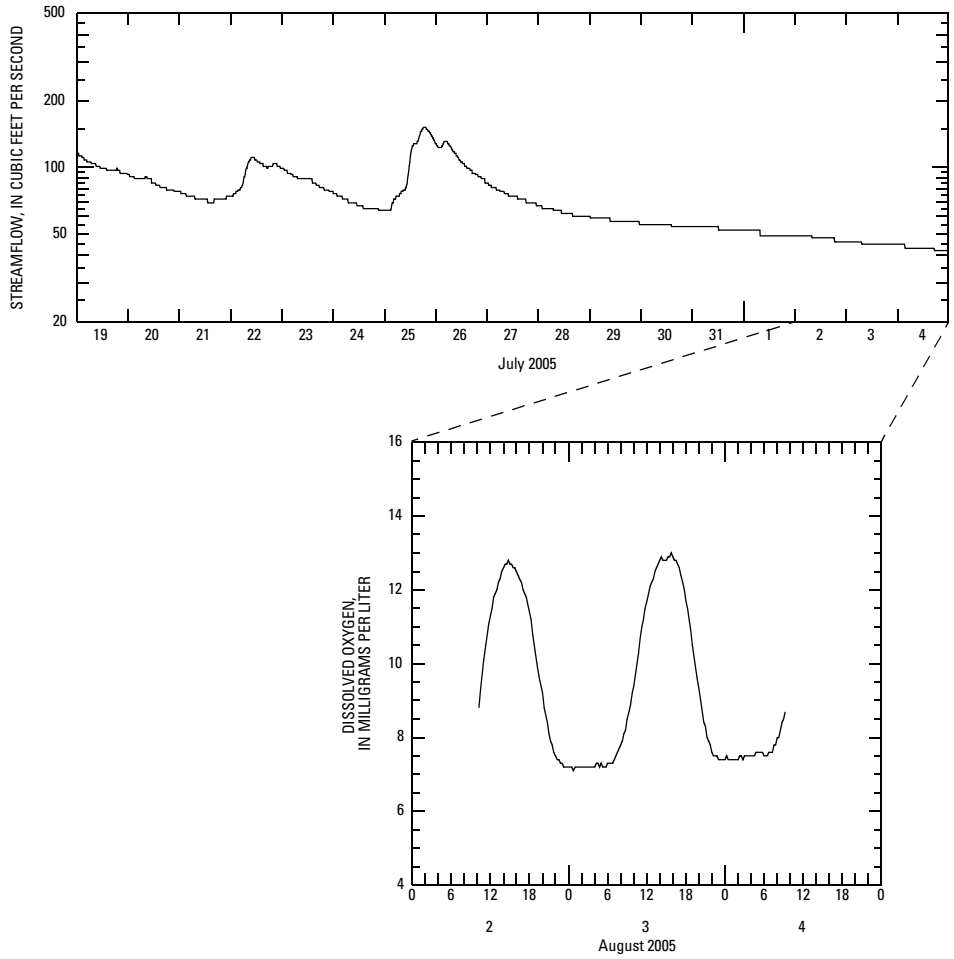


Streamflow and dissolved oxygen concentration for Kishacoquillas Creek at Lumber City, Pa. - 01564997.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Sherman Creek at Shermans Dale, Pa. - 01568000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 2, 2005	1100	10.1	102	8.3	224	25.4
August 2, 2005	1200	11.3	123	8.6	222	26.4
August 2, 2005	1300	12.0	141	8.7	218	27.6
August 2, 2005	1400	12.6	152	8.9	218	28.9
August 2, 2005	1500	12.7	164	9.0	214	29.9
August 2, 2005	1600	12.5	168	9.0	212	30.4
August 2, 2005	1700	12.0	166	9.0	210	30.6
August 2, 2005	1800	11.4	160	8.9	208	30.4
August 2, 2005	1900	10.2	152	8.8	211	30.0
August 2, 2005	2000	9.2	135	8.7	216	29.4
August 2, 2005	2100	8.1	120	8.4	223	28.8
August 2, 2005	2200	7.5	105	8.2	229	28.1
August 2, 2005	2300	7.3	96	8.0	234	27.4
August 2, 2005	2400	7.2	92	7.9	238	26.8
August 3, 2005	0100	7.2	89	7.9	240	26.3
August 3, 2005	0200	7.2	89	7.8	242	25.8
August 3, 2005	0300	7.2	89	7.8	243	25.5
August 3, 2005	0400	7.2	88	7.8	243	25.2
August 3, 2005	0500	7.3	88	7.8	242	24.9
August 3, 2005	0600	7.3	88	7.8	241	24.8
August 3, 2005	0700	7.4	88	7.8	239	24.6
August 3, 2005	0800	7.8	88	7.8	237	24.5
August 3, 2005	0900	8.5	94	7.9	235	24.6
August 3, 2005	1000	9.4	102	8.0	234	25.0
August 3, 2005	1100	10.7	114	8.3	230	25.8
August 3, 2005	1200	11.7	131	8.5	227	26.8
August 3, 2005	1300	12.3	147	8.6	225	27.8
August 3, 2005	1400	12.8	156	8.8	221	28.9
August 3, 2005	1500	12.8	166	8.8	221	29.6
August 3, 2005	1600	12.9	169	8.9	219	30.4
August 3, 2005	1700	12.6	172	8.9	220	30.7
August 3, 2005	1800	11.7	168	8.9	220	30.8
August 3, 2005	1900	10.5	157	8.8	221	30.4
August 3, 2005	2000	9.3	140	8.7	227	29.9
August 3, 2005	2100	8.3	123	8.4	232	29.3
August 3, 2005	2200	7.6	108	8.2	238	28.7
August 3, 2005	2300	7.4	99	8.0	241	28.0
August 3, 2005	2400	7.4	95	7.9	244	27.4
August 4, 2005	0100	7.4	94	7.8	246	26.9
August 4, 2005	0200	7.4	92	7.8	247	26.4
August 4, 2005	0300	7.5	92	7.8	248	26.0
August 4, 2005	0400	7.5	92	7.8	247	25.7
August 4, 2005	0500	7.6	92	7.7	247	25.4
August 4, 2005	0600	7.5	92	7.7	246	25.2
August 4, 2005	0700	7.6	92	7.7	244	25.0
August 4, 2005	0800	8.0	92	7.8	241	24.9
August 4, 2005	0900	8.5	96	7.8	238	24.9

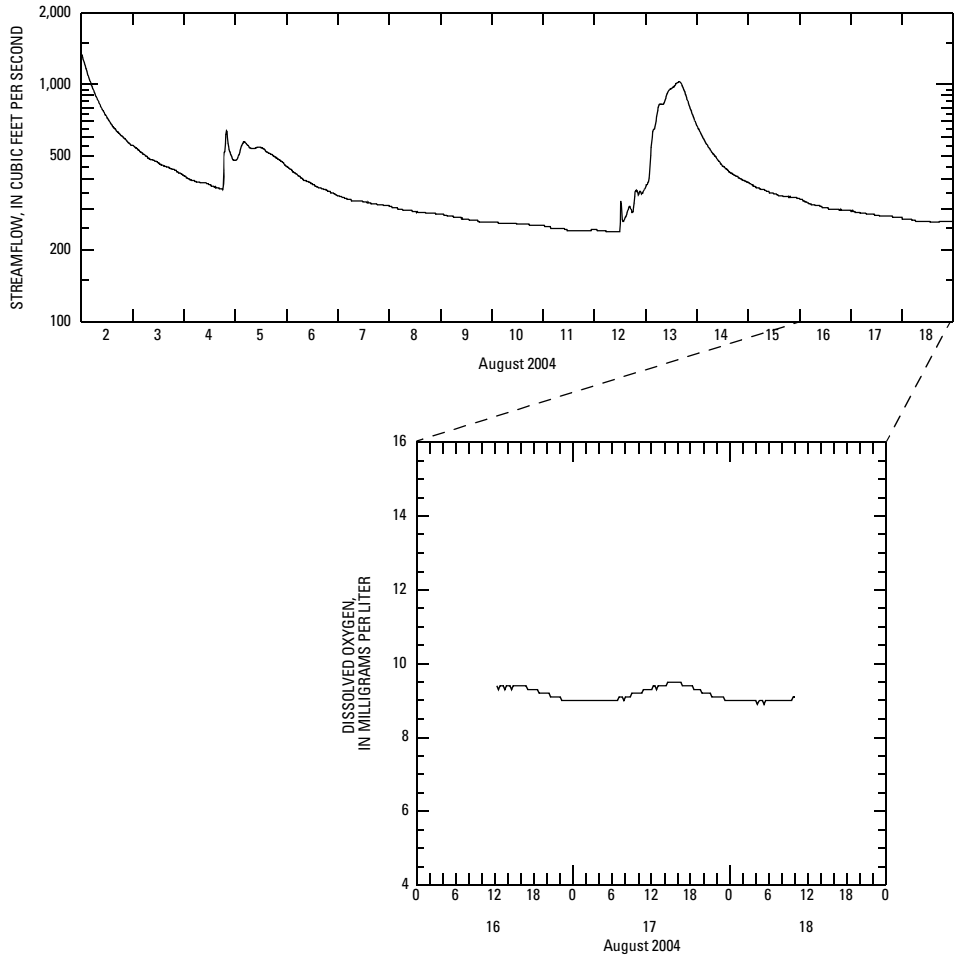


Streamflow and dissolved oxygen concentration for Sherman Creek at Shermans Dale, Pa. - 01568000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Yellow Breeches Creek near Camp Hill, Pa. - 01571500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 16, 2004	1300	9.4	101	8.0	268	18.4
August 16, 2004	1400	9.4	100	8.0	267	18.5
August 16, 2004	1500	9.4	100	8.1	267	18.7
August 16, 2004	1600	9.4	101	8.1	267	18.9
August 16, 2004	1700	9.3	101	8.1	266	18.9
August 16, 2004	1800	9.3	101	8.1	266	19.0
August 16, 2004	1900	9.2	100	8.1	267	19.0
August 16, 2004	2000	9.2	100	8.1	267	18.9
August 16, 2004	2100	9.1	99	8.0	266	18.9
August 16, 2004	2200	9.1	98	8.0	267	18.9
August 16, 2004	2300	9.0	98	8.0	267	19.0
August 16, 2004	2400	9.0	97	8.0	267	19.0
August 17, 2004	0100	9.0	97	8.0	267	18.9
August 17, 2004	0200	9.0	96	8.0	268	18.8
August 17, 2004	0300	9.0	97	8.0	269	18.7
August 17, 2004	0400	9.0	96	8.0	269	18.6
August 17, 2004	0500	9.0	96	8.0	270	18.5
August 17, 2004	0600	9.0	96	8.0	271	18.4
August 17, 2004	0700	9.1	96	8.0	272	18.2
August 17, 2004	0800	9.1	96	8.0	272	18.1
August 17, 2004	0900	9.2	96	8.0	272	18.0
August 17, 2004	1000	9.2	97	8.0	273	18.0
August 17, 2004	1100	9.3	98	8.0	273	18.1
August 17, 2004	1200	9.3	98	8.0	274	18.2
August 17, 2004	1300	9.4	99	8.0	275	18.3
August 17, 2004	1400	9.4	100	8.1	275	18.4
August 17, 2004	1500	9.5	100	8.1	274	18.6
August 17, 2004	1600	9.5	101	8.1	275	18.8
August 17, 2004	1700	9.4	102	8.1	274	18.8
August 17, 2004	1800	9.4	101	8.1	274	18.9
August 17, 2004	1900	9.3	101	8.1	274	18.9
August 17, 2004	2000	9.2	100	8.1	274	18.8
August 17, 2004	2100	9.2	99	8.1	273	18.8
August 17, 2004	2200	9.1	98	8.1	273	18.8
August 17, 2004	2300	9.1	98	8.1	273	18.8
August 17, 2004	2400	9.0	97	8.1	273	18.8
August 18, 2004	0100	9.0	97	8.1	274	18.8
August 18, 2004	0200	9.0	97	8.1	274	18.8
August 18, 2004	0300	9.0	97	8.1	275	18.7
August 18, 2004	0400	9.0	96	8.1	275	18.7
August 18, 2004	0500	9.0	96	8.0	276	18.6
August 18, 2004	0600	9.0	96	8.0	276	18.5
August 18, 2004	0700	9.0	96	8.0	277	18.4
August 18, 2004	0800	9.0	96	8.0	277	18.4
August 18, 2004	0900	9.0	96	8.0	278	18.3
August 18, 2004	1000	9.1	96	8.0	278	18.3



Streamflow and dissolved oxygen concentration for Yellow Breeches Creek near Camp Hill, Pa. - 01571500.

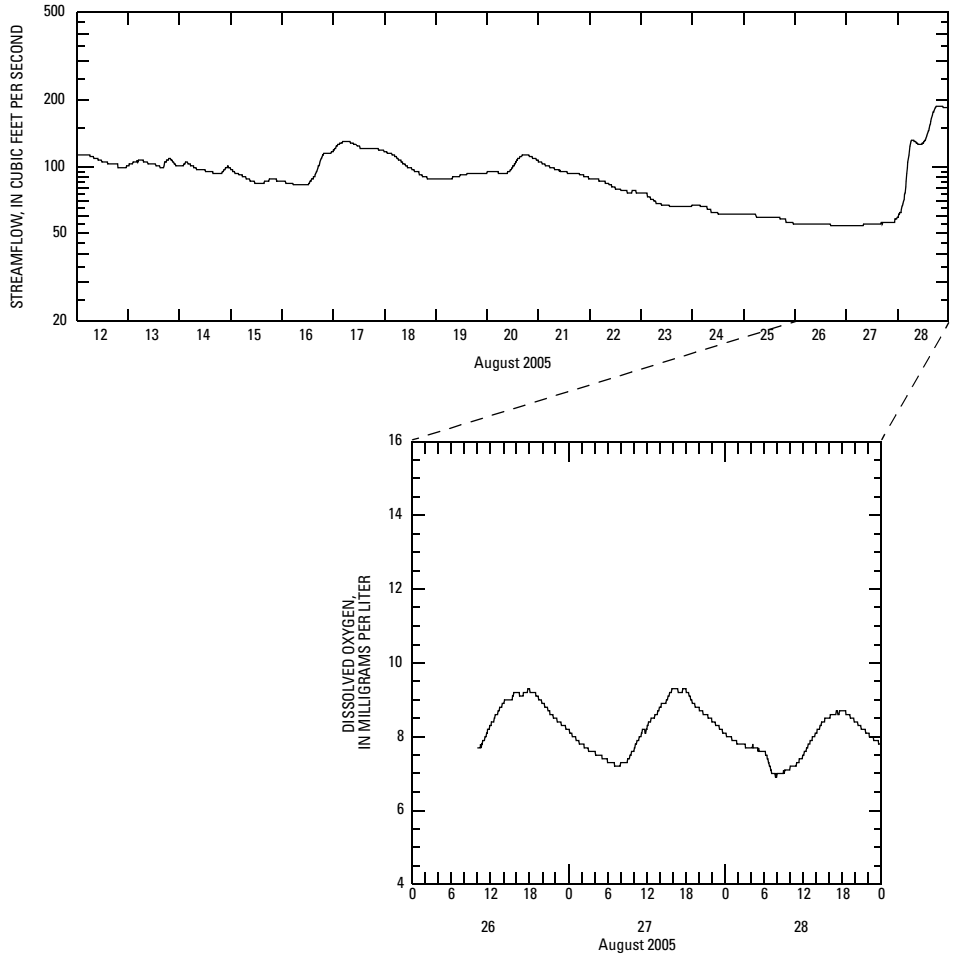
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Swatara Creek at Harper Tavern, Pa. - 01573000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 26, 2005	1000	7.7	--	7.6	311	21.2
August 26, 2005	1100	7.9	86	7.7	311	21.5
August 26, 2005	1200	8.3	90	7.8	311	21.9
August 26, 2005	1300	8.6	95	7.9	311	22.4
August 26, 2005	1400	8.9	100	7.9	311	22.7
August 26, 2005	1500	9.0	104	8.0	312	22.8
August 26, 2005	1600	9.2	105	8.0	312	23.0
August 26, 2005	1700	9.1	107	8.0	312	23.0
August 26, 2005	1800	9.3	107	8.1	312	23.1
August 26, 2005	1900	9.1	108	8.1	312	23.0
August 26, 2005	2000	8.9	107	8.0	312	22.8
August 26, 2005	2100	8.7	104	8.0	313	22.7
August 26, 2005	2200	8.5	101	7.9	313	22.6
August 26, 2005	2300	8.3	98	7.9	314	22.5
August 26, 2005	2400	8.2	96	7.9	315	22.3
August 27, 2005	0100	8.0	94	7.8	316	22.2
August 27, 2005	0200	7.8	91	7.8	316	22.0
August 27, 2005	0300	7.7	89	7.8	316	21.8
August 27, 2005	0400	7.6	87	7.7	316	21.7
August 27, 2005	0500	7.5	86	7.7	316	21.5
August 27, 2005	0600	7.3	85	7.7	317	21.4
August 27, 2005	0700	7.3	83	7.7	318	21.2
August 27, 2005	0800	7.3	82	7.7	317	21.2
August 27, 2005	0900	7.3	82	7.7	318	21.2
August 27, 2005	1000	7.6	83	7.7	317	21.3
August 27, 2005	1100	8.0	86	7.8	318	21.5
August 27, 2005	1200	8.2	91	7.8	319	21.7
August 27, 2005	1300	8.5	94	7.9	320	22.1
August 27, 2005	1400	8.8	98	7.9	319	22.6
August 27, 2005	1500	9.0	102	8.0	320	22.7
August 27, 2005	1600	9.3	104	8.1	320	23.0
August 27, 2005	1700	9.2	108	8.1	321	22.9
August 27, 2005	1800	9.3	107	8.1	320	22.8
August 27, 2005	1900	8.9	108	8.0	322	22.7
August 27, 2005	2000	8.8	104	8.0	321	22.5
August 27, 2005	2100	8.6	101	8.0	321	22.3
August 27, 2005	2200	8.4	99	7.9	320	22.1
August 27, 2005	2300	8.3	97	7.9	320	22.0
August 27, 2005	2400	8.1	95	7.8	320	21.8
August 28, 2005	0100	8.0	92	7.8	318	21.7
August 28, 2005	0200	7.8	90	7.8	314	21.6
August 28, 2005	0300	7.8	89	7.8	306	21.4
August 28, 2005	0400	7.7	88	7.7	283	21.1
August 28, 2005	0500	7.7	87	7.7	275	21.1
August 28, 2005	0600	7.6	86	7.7	280	21.0
August 28, 2005	0700	7.1	85	7.6	294	20.9
August 28, 2005	0800	7.0	79	7.6	291	20.8
August 28, 2005	0900	7.1	78	7.6	284	20.8
August 28, 2005	1000	7.2	79	7.6	280	21.0
August 28, 2005	1100	7.3	80	7.6	279	21.1
August 28, 2005	1200	7.5	82	7.6	283	21.4
August 28, 2005	1300	7.8	85	7.7	287	22.0
August 28, 2005	1400	8.1	90	7.7	295	22.7
August 28, 2005	1500	8.4	94	7.8	300	23.2
August 28, 2005	1600	8.5	98	7.8	303	23.3
August 28, 2005	1700	8.6	100	7.9	304	23.4
August 28, 2005	1800	8.7	102	7.9	304	23.5
August 28, 2005	1900	8.6	102	7.9	304	23.4
August 28, 2005	2000	8.4	101	7.8	301	23.4

Continuous-monitoring data for Swatara Creek at Harper Tavern, Pa. - 01573000.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 28, 2005	2100	8.2	99	7.8	299	23.2
August 28, 2005	2200	8.1	97	7.8	293	23.0
August 28, 2005	2300	7.9	94	7.7	288	22.9
August 28, 2005	2400	7.8	92	7.7	282	22.7

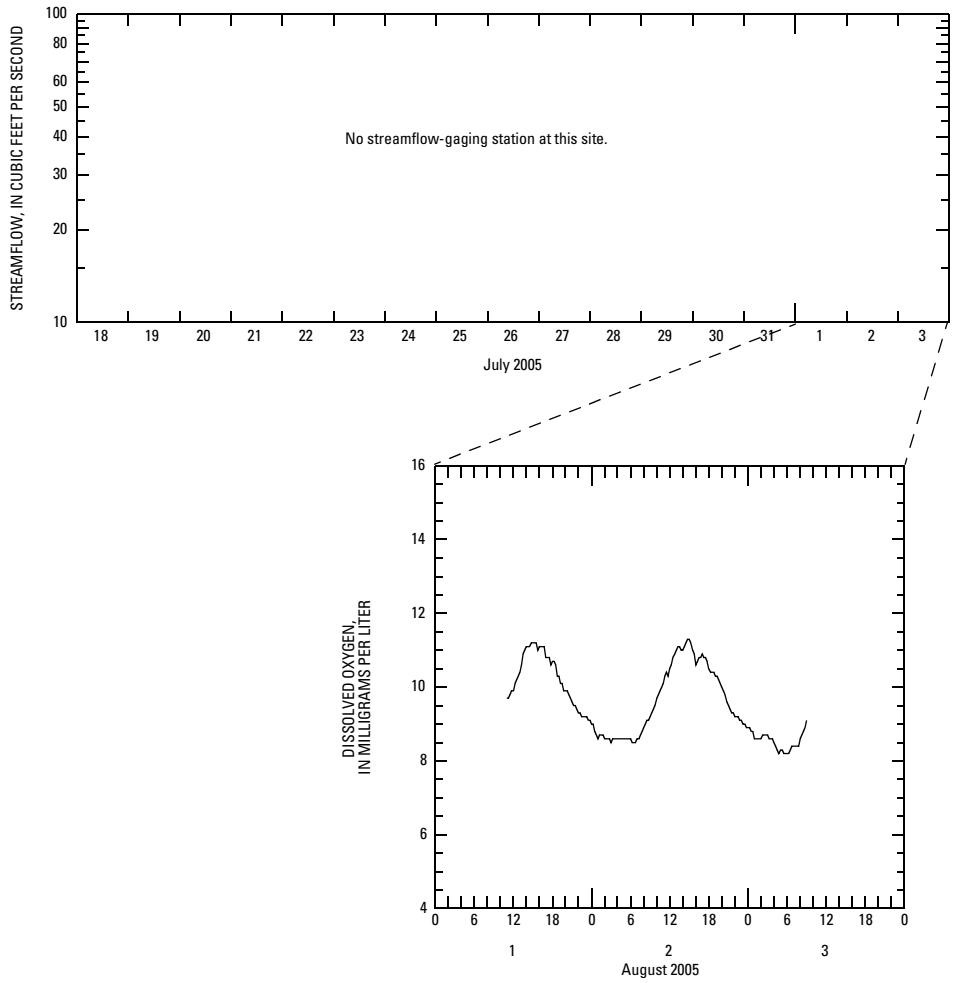


Streamflow and dissolved oxygen concentration for Swatara Creek at Harper Tavern, Pa. - 01573000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Quittapahilla Creek near Bellegrove, Pa. - 01573160.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 1, 2005	1100	9.7	--	7.8	619	18.0
August 1, 2005	1200	9.9	102	7.9	619	18.1
August 1, 2005	1300	10.4	105	7.9	617	18.4
August 1, 2005	1400	11.1	111	8.0	618	18.9
August 1, 2005	1500	11.2	119	8.0	617	18.9
August 1, 2005	1600	11.1	120	8.0	618	19.0
August 1, 2005	1700	10.8	119	8.0	618	18.9
August 1, 2005	1800	10.7	115	8.0	618	18.9
August 1, 2005	1900	10.3	113	8.0	619	18.8
August 1, 2005	2000	9.9	109	8.0	619	18.8
August 1, 2005	2100	9.6	104	8.0	619	18.7
August 1, 2005	2200	9.3	101	7.9	620	18.6
August 1, 2005	2300	9.2	98	7.9	617	18.5
August 1, 2005	2400	9.0	95	7.8	618	18.4
August 2, 2005	0100	8.6	93	7.8	622	18.4
August 2, 2005	0200	8.6	89	7.8	622	18.4
August 2, 2005	0300	8.5	89	7.8	623	18.3
August 2, 2005	0400	8.6	88	7.8	623	18.2
August 2, 2005	0500	8.6	87	7.8	622	18.1
August 2, 2005	0600	8.6	87	7.8	620	18.0
August 2, 2005	0700	8.6	86	7.8	618	17.9
August 2, 2005	0800	8.9	86	7.8	616	17.9
August 2, 2005	0900	9.2	89	7.8	615	18.0
August 2, 2005	1000	9.7	93	7.8	615	18.3
August 2, 2005	1100	10.1	98	7.9	617	18.7
August 2, 2005	1200	10.5	104	7.9	617	19.1
August 2, 2005	1300	11.0	108	8.0	616	19.4
August 2, 2005	1400	11.0	113	8.0	616	19.6
August 2, 2005	1500	11.3	113	8.0	616	19.6
August 2, 2005	1600	10.6	117	8.0	614	19.2
August 2, 2005	1700	10.9	109	8.0	614	19.3
August 2, 2005	1800	10.5	111	8.0	615	19.2
August 2, 2005	1900	10.3	107	8.0	615	19.2
August 2, 2005	2000	10.0	104	7.9	616	19.2
August 2, 2005	2100	9.5	101	7.9	617	19.1
August 2, 2005	2200	9.2	95	7.9	619	19.1
August 2, 2005	2300	9.1	91	7.8	620	19.1
August 2, 2005	2400	8.9	90	7.8	620	19.1
August 3, 2005	0100	8.6	88	7.8	621	19.0
August 3, 2005	0200	8.6	85	7.8	620	19.0
August 3, 2005	0300	8.7	84	7.8	617	18.7
August 3, 2005	0400	8.5	83	7.8	616	18.6
August 3, 2005	0500	8.3	81	7.8	619	18.6
August 3, 2005	0600	8.2	79	7.8	617	18.4
August 3, 2005	0700	8.4	78	7.8	615	18.3
August 3, 2005	0800	8.6	79	7.8	614	18.3
August 3, 2005	0900	9.1	81	7.8	612	18.4

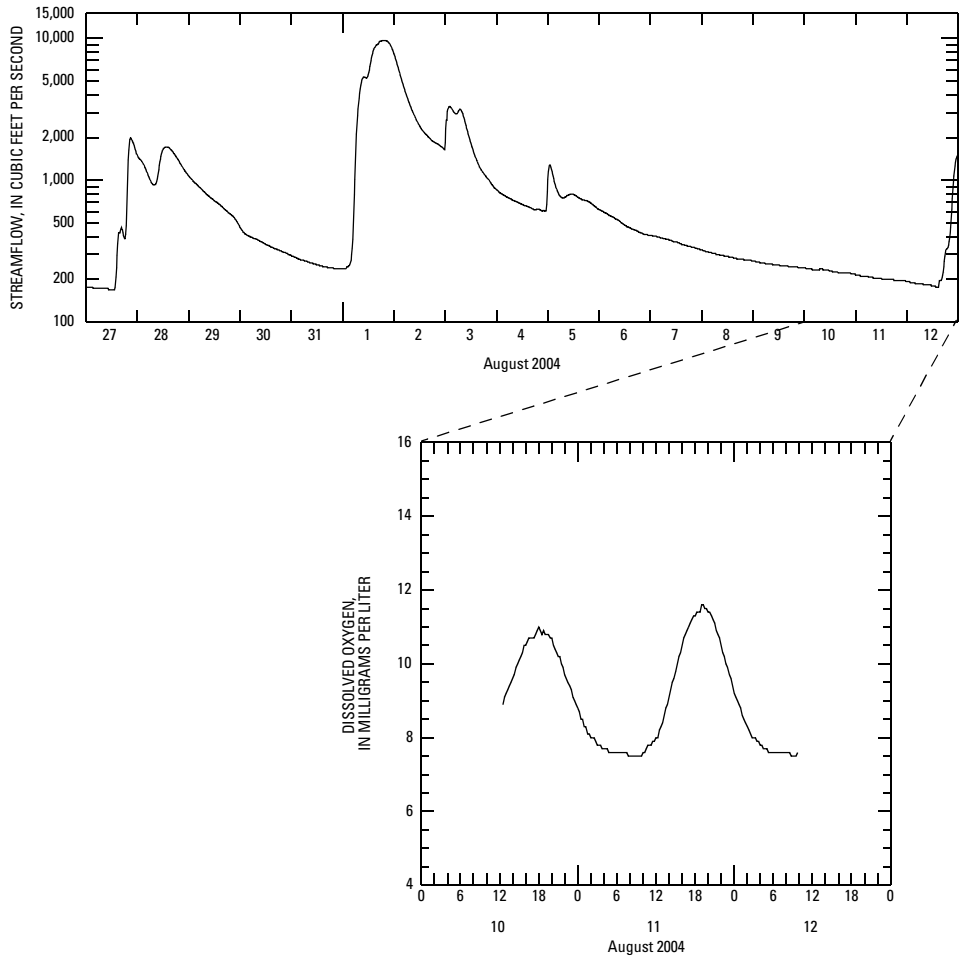


Streamflow and dissolved oxygen concentration for Quittapahilla Creek near Bellegrove, Pa. - 01573160.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for West Conewago Creek near Manchester, Pa. - 01574000.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 10, 2004	1300	9.2	8.0	294	23.0
August 10, 2004	1400	9.6	8.1	292	23.6
August 10, 2004	1500	10.1	8.3	291	24.3
August 10, 2004	1600	10.5	8.4	290	24.9
August 10, 2004	1700	10.7	8.5	288	25.3
August 10, 2004	1800	11.0	8.6	289	25.5
August 10, 2004	1900	10.8	8.6	287	25.7
August 10, 2004	2000	10.7	8.6	287	25.5
August 10, 2004	2100	10.2	8.6	287	25.3
August 10, 2004	2200	9.7	8.5	289	25.0
August 10, 2004	2300	9.3	8.5	292	24.7
August 10, 2004	2400	8.8	8.4	294	24.4
August 11, 2004	0100	8.3	8.3	295	24.2
August 11, 2004	0200	8.0	8.2	296	24.0
August 11, 2004	0300	7.8	8.0	298	23.8
August 11, 2004	0400	7.7	8.0	298	23.6
August 11, 2004	0500	7.6	8.0	298	23.5
August 11, 2004	0600	7.6	7.9	299	23.3
August 11, 2004	0700	7.6	7.9	300	23.1
August 11, 2004	0800	7.5	7.9	300	23.0
August 11, 2004	0900	7.5	7.8	300	22.8
August 11, 2004	1000	7.6	7.8	301	22.8
August 11, 2004	1100	7.8	7.8	300	22.9
August 11, 2004	1200	8.0	7.9	299	23.1
August 11, 2004	1300	8.4	7.9	300	23.5
August 11, 2004	1400	9.1	8.0	298	24.1
August 11, 2004	1500	9.8	8.2	304	24.6
August 11, 2004	1600	10.5	8.4	300	25.3
August 11, 2004	1700	11.0	8.5	300	25.8
August 11, 2004	1800	11.3	8.6	300	26.0
August 11, 2004	1900	11.6	8.7	302	26.0
August 11, 2004	2000	11.4	8.7	299	25.9
August 11, 2004	2100	11.1	8.8	299	25.8
August 11, 2004	2200	10.5	8.7	300	25.5
August 11, 2004	2300	9.9	8.6	300	25.2
August 11, 2004	2400	9.2	8.5	302	24.9
August 12, 2004	0100	8.8	8.4	304	24.6
August 12, 2004	0200	8.3	8.3	305	24.3
August 12, 2004	0300	8.0	8.2	306	24.1
August 12, 2004	0400	7.8	8.1	307	23.9
August 12, 2004	0500	7.7	8.0	307	23.8
August 12, 2004	0600	7.6	8.0	307	23.6
August 12, 2004	0700	7.6	7.9	307	23.5
August 12, 2004	0800	7.6	7.9	307	23.4
August 12, 2004	0900	7.5	7.9	308	23.3

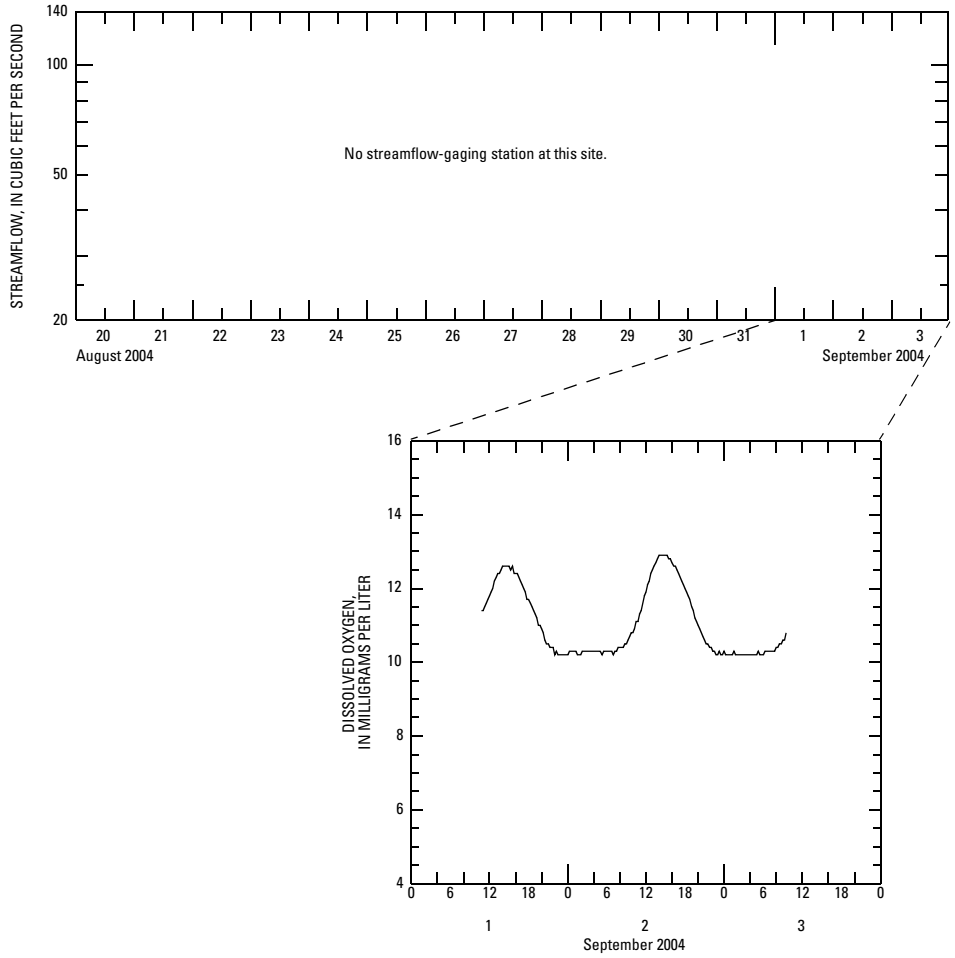


Streamflow and dissolved oxygen concentration for West Conewago Creek near Manchester, Pa. - 01574000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Chickies Creek at Iron Bridge Road near Mount Joy, Pa. (upstream) - 01575825.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 1, 2004	1100	11.4	7.9	498	17.7
September 1, 2004	1200	11.8	7.9	492	18.0
September 1, 2004	1300	12.3	8.0	490	18.4
September 1, 2004	1400	12.6	8.1	494	18.7
September 1, 2004	1500	12.6	8.1	500	18.8
September 1, 2004	1600	12.4	8.1	501	18.8
September 1, 2004	1700	12.1	8.0	503	18.8
September 1, 2004	1800	11.7	8.0	506	18.6
September 1, 2004	1900	11.3	8.0	506	18.4
September 1, 2004	2000	10.9	7.9	505	18.3
September 1, 2004	2100	10.5	7.9	501	18.1
September 1, 2004	2200	10.2	7.9	495	18.0
September 1, 2004	2300	10.2	7.8	492	17.9
September 1, 2004	2400	10.2	7.8	490	17.8
September 2, 2004	0100	10.3	7.8	490	17.7
September 2, 2004	0200	10.2	7.8	491	17.6
September 2, 2004	0300	10.3	7.8	493	17.5
September 2, 2004	0400	10.3	7.8	495	17.4
September 2, 2004	0500	10.3	7.8	497	17.3
September 2, 2004	0600	10.3	7.8	505	17.2
September 2, 2004	0700	10.2	7.8	516	17.1
September 2, 2004	0800	10.4	7.8	520	17.0
September 2, 2004	0900	10.5	7.8	516	17.0
September 2, 2004	1000	10.8	7.8	511	17.1
September 2, 2004	1100	11.3	7.9	508	17.3
September 2, 2004	1200	11.9	7.9	508	17.6
September 2, 2004	1300	12.5	8.0	510	18.0
September 2, 2004	1400	12.9	8.1	511	18.4
September 2, 2004	1500	12.9	8.1	518	18.5
September 2, 2004	1600	12.7	8.1	523	18.5
September 2, 2004	1700	12.4	8.1	523	18.5
September 2, 2004	1800	12.0	8.0	525	18.3
September 2, 2004	1900	11.5	8.0	522	18.2
September 2, 2004	2000	11.0	7.9	513	18.0
September 2, 2004	2100	10.6	7.9	507	17.9
September 2, 2004	2200	10.4	7.8	504	17.8
September 2, 2004	2300	10.2	7.8	502	17.7
September 2, 2004	2400	10.3	7.8	501	17.6
September 3, 2004	0100	10.2	7.8	502	17.5
September 3, 2004	0200	10.2	7.8	509	17.4
September 3, 2004	0300	10.2	7.8	515	17.4
September 3, 2004	0400	10.2	7.8	518	17.3
September 3, 2004	0500	10.2	7.8	521	17.2
September 3, 2004	0600	10.2	7.8	522	17.1
September 3, 2004	0700	10.3	7.8	520	17.0
September 3, 2004	0800	10.4	7.8	517	16.9
September 3, 2004	0900	10.6	7.8	509	16.9

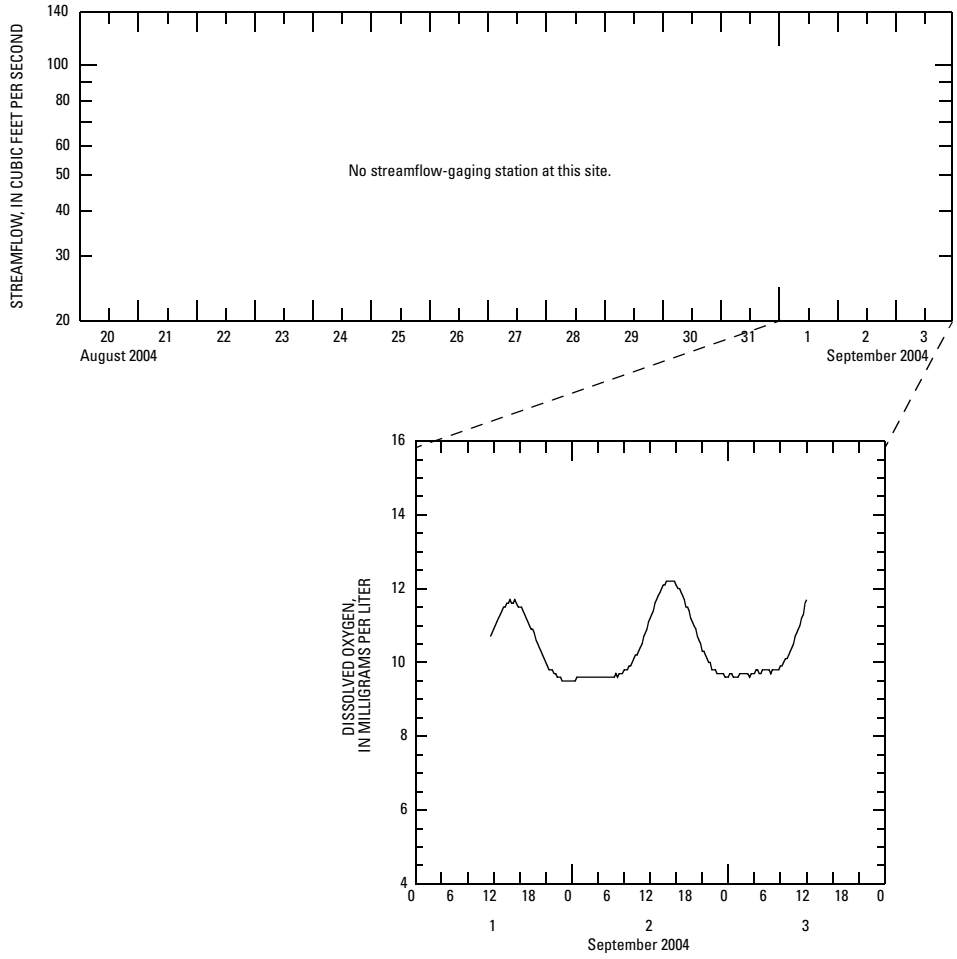


Streamflow and dissolved oxygen concentration for Little Chickies Creek at Iron Bridge Road near Mount Joy, Pa. (upstream) - 01575825.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Chickies Creek at Iron Bridge Road near Mount Joy, Pa. (downstream) - 01575825.

Date	Time	Oxygen, dissolved (milligrams per liter)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 1, 2004	1200	10.9	8.0	473	18.1
September 1, 2004	1300	11.3	8.1	470	18.5
September 1, 2004	1400	11.6	8.2	473	18.8
September 1, 2004	1500	11.6	8.2	479	19.0
September 1, 2004	1600	11.5	8.2	480	19.0
September 1, 2004	1700	11.2	8.2	482	18.9
September 1, 2004	1800	10.9	8.1	485	18.7
September 1, 2004	1900	10.4	8.0	486	18.5
September 1, 2004	2000	10.0	8.0	486	18.3
September 1, 2004	2100	9.8	8.0	483	18.2
September 1, 2004	2200	9.6	7.9	478	18.0
September 1, 2004	2300	9.5	7.9	474	17.9
September 1, 2004	2400	9.5	7.9	473	17.8
September 2, 2004	0100	9.6	7.9	472	17.7
September 2, 2004	0200	9.6	7.9	473	17.6
September 2, 2004	0300	9.6	7.9	475	17.5
September 2, 2004	0400	9.6	7.9	477	17.4
September 2, 2004	0500	9.6	7.9	479	17.3
September 2, 2004	0600	9.6	7.9	485	17.2
September 2, 2004	0700	9.6	7.9	496	17.1
September 2, 2004	0800	9.8	7.9	502	17.0
September 2, 2004	0900	9.9	7.9	499	17.0
September 2, 2004	1000	10.2	7.9	495	17.1
September 2, 2004	1100	10.7	8.0	491	17.3
September 2, 2004	1200	11.2	8.0	491	17.6
September 2, 2004	1300	11.7	8.1	492	18.0
September 2, 2004	1400	12.1	8.2	493	18.5
September 2, 2004	1500	12.2	8.2	498	18.6
September 2, 2004	1600	12.1	8.2	504	18.6
September 2, 2004	1700	11.8	8.2	504	18.6
September 2, 2004	1800	11.4	8.2	505	18.4
September 2, 2004	1900	10.9	8.1	504	18.2
September 2, 2004	2000	10.3	8.0	497	18.0
September 2, 2004	2100	10.0	8.0	490	17.9
September 2, 2004	2200	9.8	8.0	487	17.8
September 2, 2004	2300	9.7	7.9	485	17.7
September 2, 2004	2400	9.6	7.9	484	17.6
September 3, 2004	0100	9.6	7.9	484	17.5
September 3, 2004	0200	9.7	7.9	490	17.4
September 3, 2004	0300	9.7	7.9	496	17.4
September 3, 2004	0400	9.7	7.9	500	17.3
September 3, 2004	0500	9.7	7.9	502	17.2
September 3, 2004	0600	9.8	7.9	504	17.1
September 3, 2004	0700	9.8	7.9	503	17.0
September 3, 2004	0800	9.9	7.9	500	17.0
September 3, 2004	0900	10.1	7.9	493	17.0
September 3, 2004	1000	10.5	8.0	485	17.1
September 3, 2004	1100	11.0	8.0	480	17.2
September 3, 2004	1200	11.7	8.1	476	17.5

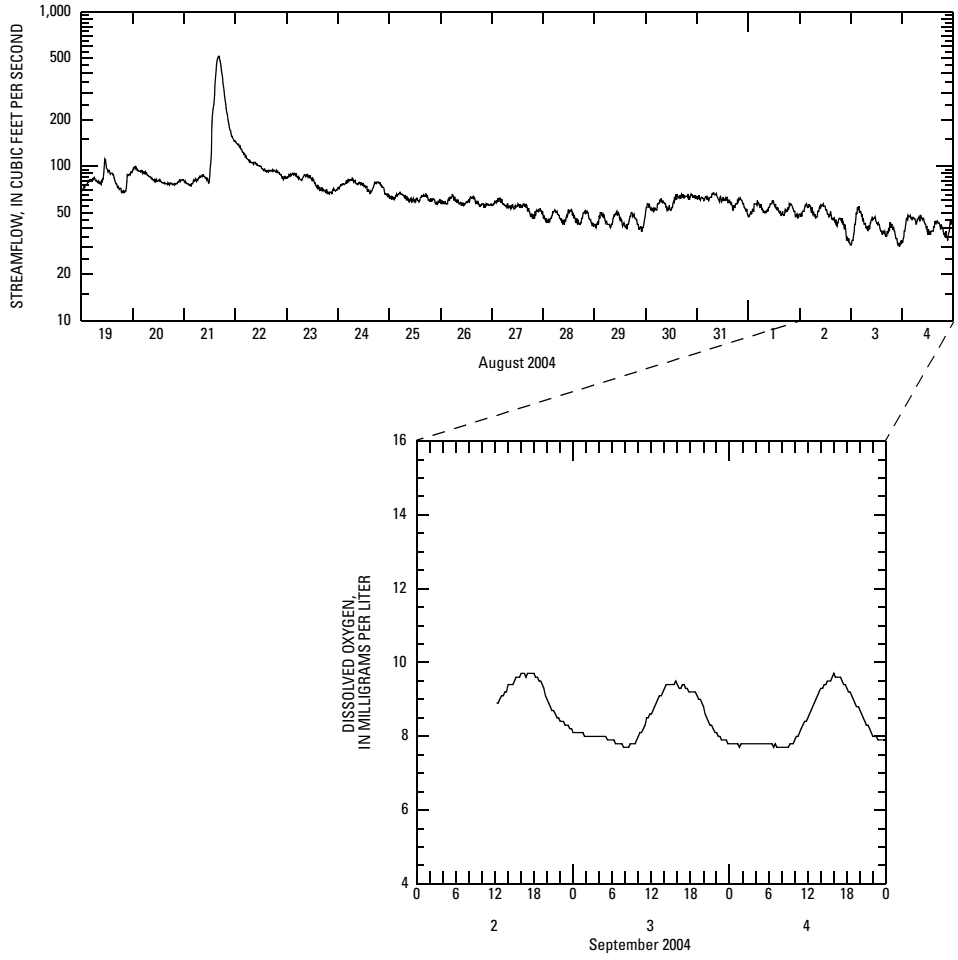


Streamflow and dissolved oxygen concentration for Little Chickies Creek at Iron Bridge Road near Mount Joy, Pa. (downstream) - 01575825.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Conestoga Creek near Millersville, Pa. - 01576712.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 2, 2004	1300	9.1	98	8.1	680	19.0
September 2, 2004	1400	9.4	102	8.1	679	19.3
September 2, 2004	1500	9.5	104	8.1	679	19.5
September 2, 2004	1600	9.7	106	8.2	679	19.6
September 2, 2004	1700	9.7	106	8.2	680	19.5
September 2, 2004	1800	9.7	105	8.2	681	19.5
September 2, 2004	1900	9.5	103	8.2	682	19.4
September 2, 2004	2000	9.0	98	8.2	684	19.2
September 2, 2004	2100	8.7	94	8.1	686	19.0
September 2, 2004	2200	8.4	91	8.1	687	18.8
September 2, 2004	2300	8.3	89	8.1	688	18.7
September 2, 2004	2400	8.1	87	8.1	689	18.7
September 3, 2004	0100	8.1	86	8.1	690	18.6
September 3, 2004	0200	8.0	86	8.1	691	18.6
September 3, 2004	0300	8.0	86	8.1	691	18.6
September 3, 2004	0400	8.0	86	8.1	693	18.5
September 3, 2004	0500	8.0	85	8.1	711	18.5
September 3, 2004	0600	7.9	84	8.1	733	18.4
September 3, 2004	0700	7.8	83	8.1	742	18.3
September 3, 2004	0800	7.7	82	8.1	737	18.3
September 3, 2004	0900	7.8	83	8.1	726	18.3
September 3, 2004	1000	8.0	85	8.1	720	18.4
September 3, 2004	1100	8.3	90	8.1	717	18.7
September 3, 2004	1200	8.6	93	8.1	703	19.0
September 3, 2004	1300	9.0	98	8.1	686	19.3
September 3, 2004	1400	9.3	102	8.1	676	19.6
September 3, 2004	1500	9.4	103	8.1	671	19.8
September 3, 2004	1600	9.4	103	8.2	672	19.9
September 3, 2004	1700	9.4	103	8.2	675	19.9
September 3, 2004	1800	9.2	102	8.2	678	19.9
September 3, 2004	1900	9.1	101	8.2	681	20.0
September 3, 2004	2000	8.8	96	8.1	684	19.8
September 3, 2004	2100	8.3	91	8.1	685	19.6
September 3, 2004	2200	8.1	88	8.1	686	19.4
September 3, 2004	2300	7.9	86	8.1	687	19.2
September 3, 2004	2400	7.8	85	8.1	687	19.0
September 4, 2004	0100	7.8	84	8.1	687	18.9
September 4, 2004	0200	7.8	83	8.1	687	18.7
September 4, 2004	0300	7.8	84	8.1	687	18.6
September 4, 2004	0400	7.8	83	8.1	687	18.6
September 4, 2004	0500	7.8	84	8.1	686	18.5
September 4, 2004	0600	7.8	83	8.1	685	18.4
September 4, 2004	0700	7.8	82	8.1	685	18.2
September 4, 2004	0800	7.7	82	8.0	683	18.1
September 4, 2004	0900	7.7	82	8.0	681	18.1
September 4, 2004	1000	7.9	84	8.1	679	18.3
September 4, 2004	1100	8.2	87	8.1	674	18.5
September 4, 2004	1200	8.5	91	8.1	670	18.8
September 4, 2004	1300	8.9	97	8.1	667	19.2
September 4, 2004	1400	9.3	101	8.1	665	19.5
September 4, 2004	1500	9.5	104	8.1	663	19.8
September 4, 2004	1600	9.7	107	8.2	663	20.1
September 4, 2004	1700	9.6	105	8.2	666	20.1
September 4, 2004	1800	9.3	103	8.2	671	20.1
September 4, 2004	1900	9.0	99	8.1	674	19.9
September 4, 2004	2000	8.7	95	8.1	676	19.7
September 4, 2004	2100	8.3	91	8.1	678	19.5
September 4, 2004	2200	8.0	88	8.1	679	19.4
September 4, 2004	2300	7.9	86	8.1	680	19.4
September 4, 2004	2400	7.9	86	8.1	680	19.4

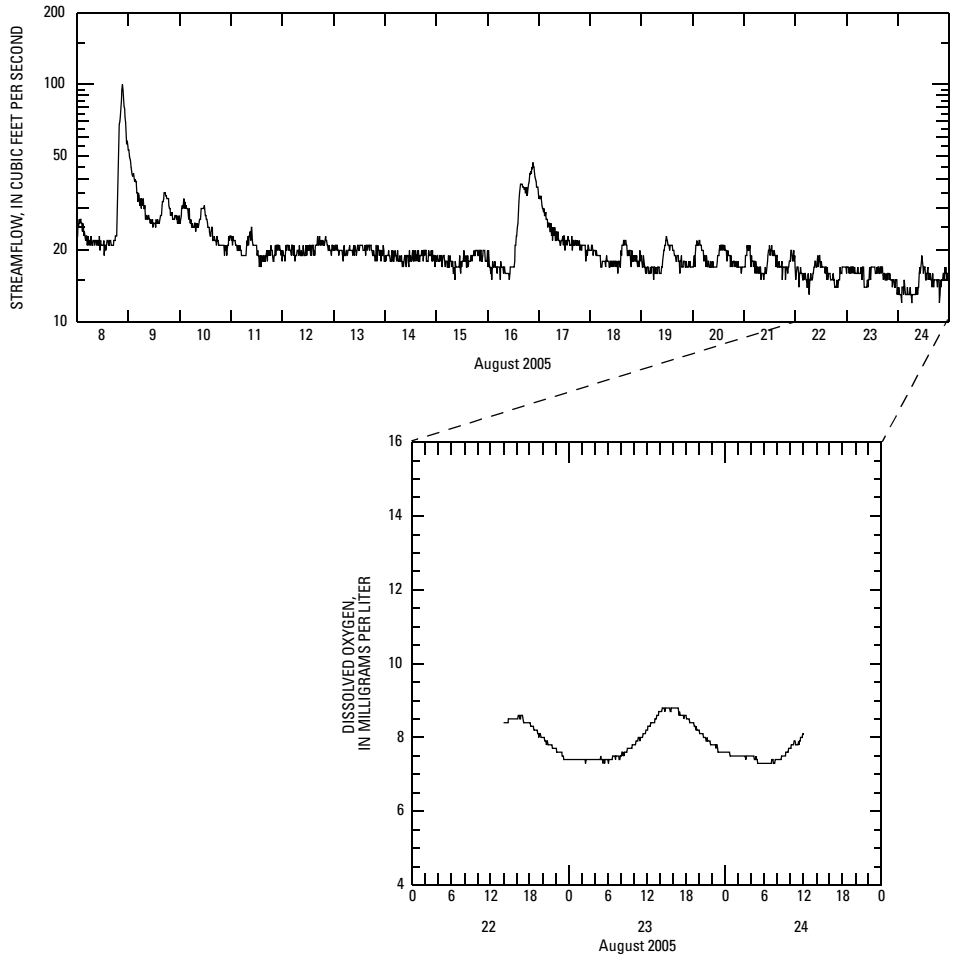


Streamflow and dissolved oxygen concentration for Little Conestoga Creek near Millersville, Pa. - 01576712.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Conestoga Creek near Millersville, Pa. (upstream) - 01576712.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 22, 2005	1400	8.4	97	7.9	695	21.9
August 22, 2005	1500	8.5	99	8.0	692	22.3
August 22, 2005	1600	8.5	100	8.0	691	22.5
August 22, 2005	1700	8.5	100	8.0	692	22.6
August 22, 2005	1800	8.4	99	8.0	693	22.6
August 22, 2005	1900	8.2	96	8.0	695	22.4
August 22, 2005	2000	8.0	93	8.0	698	22.2
August 22, 2005	2100	7.8	91	8.0	700	22.1
August 22, 2005	2200	7.7	89	7.9	701	22.0
August 22, 2005	2300	7.5	87	7.9	699	21.8
August 22, 2005	2400	7.4	85	7.9	699	21.6
August 23, 2005	0100	7.4	85	7.9	697	21.5
August 23, 2005	0200	7.4	85	7.9	696	21.4
August 23, 2005	0300	7.4	85	7.9	696	21.3
August 23, 2005	0400	7.4	84	7.9	698	21.2
August 23, 2005	0500	7.4	84	8.0	699	21.1
August 23, 2005	0600	7.4	84	8.0	699	20.9
August 23, 2005	0700	7.5	85	8.0	700	20.6
August 23, 2005	0800	7.5	84	7.9	700	20.4
August 23, 2005	0900	7.7	86	7.9	700	20.2
August 23, 2005	1000	7.8	87	8.0	700	20.0
August 23, 2005	1100	8.0	89	8.0	702	20.0
August 23, 2005	1200	8.2	92	8.0	701	20.2
August 23, 2005	1300	8.4	94	8.0	708	20.3
August 23, 2005	1400	8.7	98	8.0	742	20.7
August 23, 2005	1500	8.8	100	8.0	805	20.9
August 23, 2005	1600	8.8	100	8.0	863	21.1
August 23, 2005	1700	8.7	99	8.0	893	21.2
August 23, 2005	1800	8.6	98	8.0	889	21.2
August 23, 2005	1900	8.4	96	8.0	863	21.1
August 23, 2005	2000	8.2	93	8.0	830	21.0
August 23, 2005	2100	8.0	91	8.0	800	20.8
August 23, 2005	2200	7.8	88	8.0	777	20.7
August 23, 2005	2300	7.6	86	8.0	758	20.5
August 23, 2005	2400	7.6	85	7.9	742	20.3
August 24, 2005	0100	7.5	84	7.9	731	20.2
August 24, 2005	0200	7.5	84	7.9	722	20.1
August 24, 2005	0300	7.5	84	7.9	717	20.0
August 24, 2005	0400	7.5	83	7.9	713	19.9
August 24, 2005	0500	7.3	81	7.9	712	19.8
August 24, 2005	0600	7.3	81	7.9	710	19.8
August 24, 2005	0700	7.3	81	7.9	709	19.7
August 24, 2005	0800	7.4	82	7.9	710	19.6
August 24, 2005	0900	7.5	83	7.9	709	19.6
August 24, 2005	1000	7.7	85	7.9	709	19.6
August 24, 2005	1100	7.8	86	7.9	710	19.6
August 24, 2005	1200	8.1	90	8.0	713	19.7

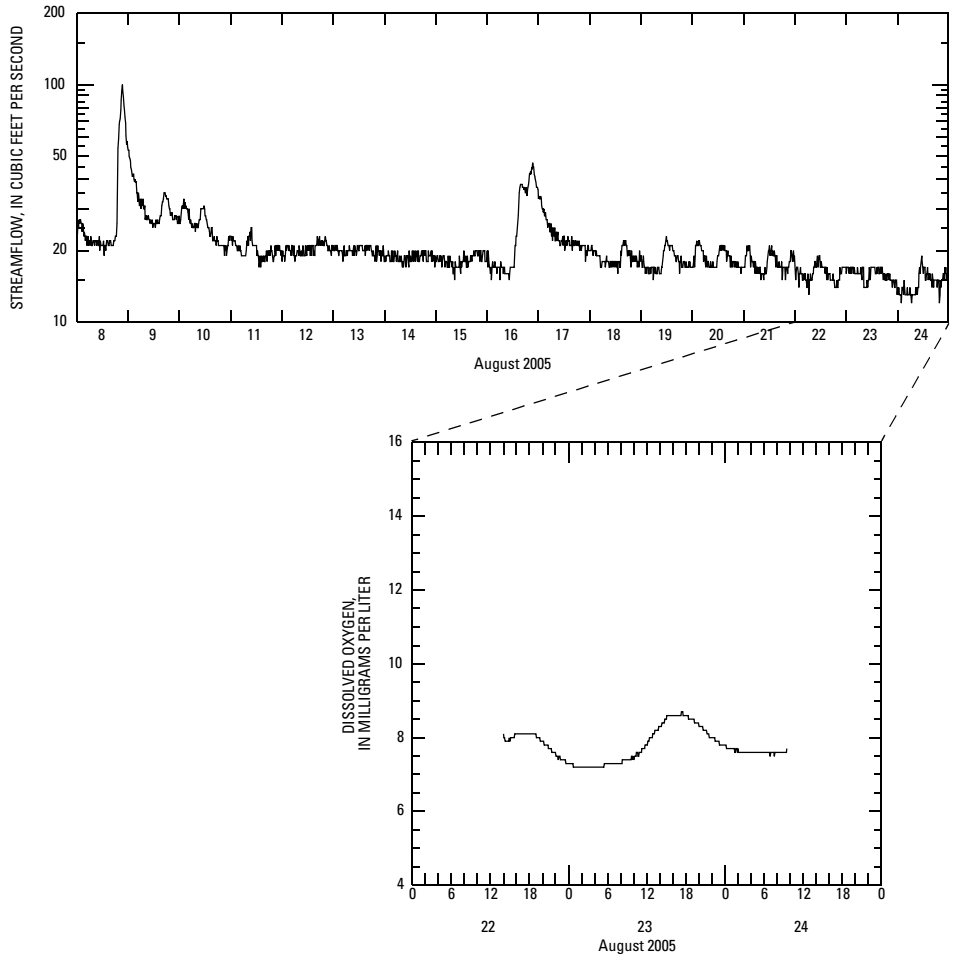


Streamflow and dissolved oxygen concentration for Little Conestoga Creek near Millersville, Pa. (upstream) - 01576712.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Conestoga Creek near Millersville, Pa. (downstream) - 01576712.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 22, 2005	1400	8.1	92	8.0	674	21.7
August 22, 2005	1500	7.9	91	8.0	670	21.9
August 22, 2005	1600	8.1	93	8.0	666	22.2
August 22, 2005	1700	8.1	94	8.0	665	22.4
August 22, 2005	1800	8.1	94	8.0	665	22.6
August 22, 2005	1900	8.1	93	8.0	666	22.6
August 22, 2005	2000	7.9	91	8.0	667	22.4
August 22, 2005	2100	7.7	89	8.0	670	22.2
August 22, 2005	2200	7.6	87	8.0	672	22.1
August 22, 2005	2300	7.4	85	8.0	672	21.9
August 22, 2005	2400	7.3	83	8.0	671	21.8
August 23, 2005	0100	7.2	82	8.0	669	21.6
August 23, 2005	0200	7.2	82	8.0	668	21.4
August 23, 2005	0300	7.2	82	8.0	667	21.3
August 23, 2005	0400	7.2	82	8.0	666	21.3
August 23, 2005	0500	7.2	82	8.0	667	21.2
August 23, 2005	0600	7.3	82	8.0	668	21.0
August 23, 2005	0700	7.3	82	8.0	668	20.9
August 23, 2005	0800	7.3	82	8.0	669	20.6
August 23, 2005	0900	7.4	82	8.0	669	20.4
August 23, 2005	1000	7.4	82	8.0	668	20.2
August 23, 2005	1100	7.6	84	8.0	669	20.1
August 23, 2005	1200	7.8	86	8.0	669	20.0
August 23, 2005	1300	8.1	89	8.0	669	20.2
August 23, 2005	1400	8.3	92	8.0	672	20.4
August 23, 2005	1500	8.5	95	8.0	698	20.6
August 23, 2005	1600	8.6	97	8.1	754	20.9
August 23, 2005	1700	8.6	97	8.1	822	21.0
August 23, 2005	1800	8.6	98	8.1	859	21.2
August 23, 2005	1900	8.5	96	8.1	862	21.2
August 23, 2005	2000	8.3	94	8.1	840	21.1
August 23, 2005	2100	8.2	92	8.0	809	21.0
August 23, 2005	2200	8.0	90	8.0	779	20.8
August 23, 2005	2300	7.9	88	8.0	754	20.7
August 23, 2005	2400	7.8	86	8.0	734	20.5
August 24, 2005	0100	7.7	85	8.0	717	20.3
August 24, 2005	0200	7.7	85	8.0	704	20.2
August 24, 2005	0300	7.6	84	8.0	695	20.0
August 24, 2005	0400	7.6	84	8.0	689	19.9
August 24, 2005	0500	7.6	83	8.0	685	19.9
August 24, 2005	0600	7.6	83	8.0	682	19.8
August 24, 2005	0700	7.6	83	8.0	681	19.7
August 24, 2005	0800	7.6	83	8.0	680	19.6
August 24, 2005	0900	7.6	83	8.0	679	19.6
August 24, 2005	1000	7.7	84	8.0	678	19.6

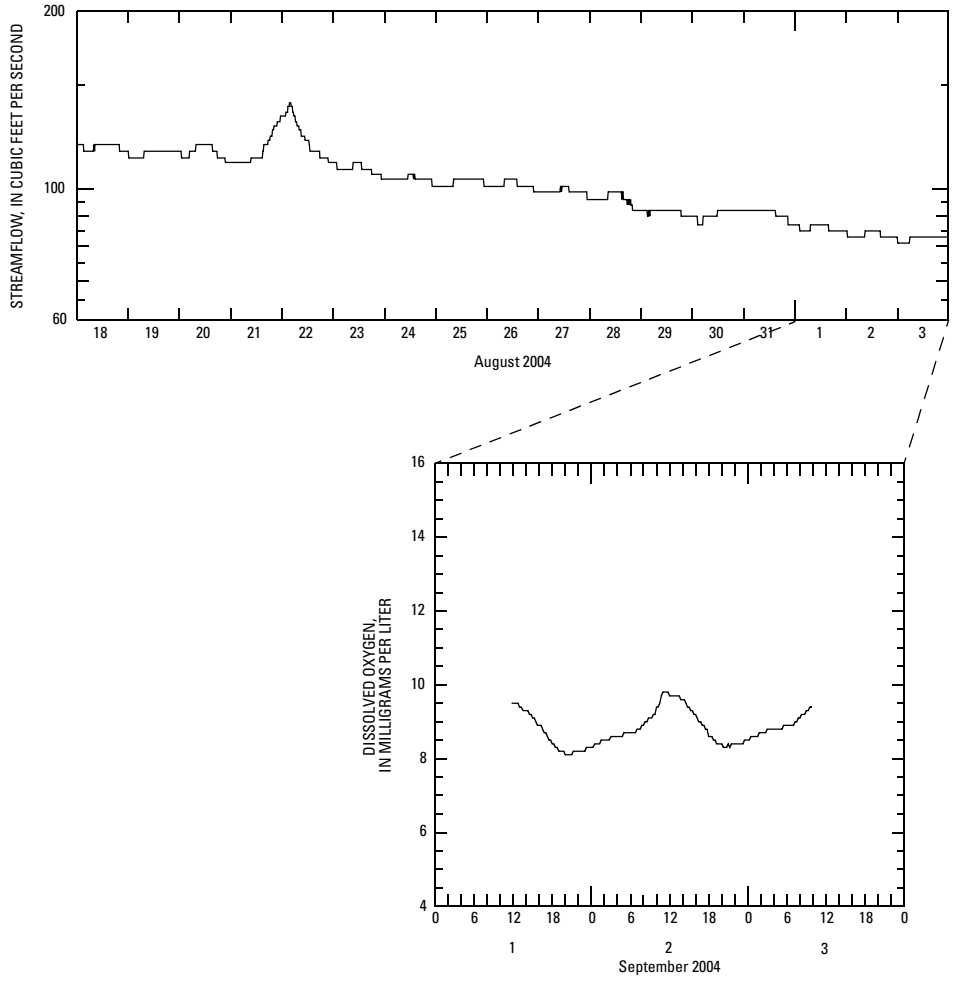


Streamflow and dissolved oxygen concentration for Little Conestoga Creek near Millersville, Pa. (downstream) - 01576712.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Deer Creek at Rocks, Md. - 01580000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 1, 2004	1200	9.5	102	7.7	153	20.5
September 1, 2004	1300	9.4	106	7.8	152	21.2
September 1, 2004	1400	9.3	106	8.0	152	21.8
September 1, 2004	1500	9.1	106	8.0	152	22.5
September 1, 2004	1600	8.9	105	8.0	151	23.0
September 1, 2004	1700	8.7	104	8.0	151	23.4
September 1, 2004	1800	8.4	102	7.8	152	23.3
September 1, 2004	1900	8.2	99	7.7	153	23.2
September 1, 2004	2000	8.1	96	7.6	154	22.9
September 1, 2004	2100	8.1	95	7.4	154	22.4
September 1, 2004	2200	8.2	94	7.4	154	22.0
September 1, 2004	2300	8.2	94	7.3	154	21.6
September 1, 2004	2400	8.3	94	7.3	154	21.1
September 2, 2004	0100	8.4	94	7.3	153	20.6
September 2, 2004	0200	8.5	94	7.3	153	20.2
September 2, 2004	0300	8.6	94	7.2	152	19.8
September 2, 2004	0400	8.6	94	7.2	152	19.5
September 2, 2004	0500	8.7	94	7.2	152	19.3
September 2, 2004	0600	8.7	94	7.2	152	19.1
September 2, 2004	0700	8.8	94	7.2	152	18.9
September 2, 2004	0800	8.9	94	7.2	152	18.8
September 2, 2004	0900	9.1	96	7.3	152	18.9
September 2, 2004	1000	9.4	98	7.4	151	19.1
September 2, 2004	1100	9.8	101	7.5	151	19.4
September 2, 2004	1200	9.7	106	7.6	151	19.9
September 2, 2004	1300	9.7	107	7.8	151	20.6
September 2, 2004	1400	9.6	108	7.9	150	21.2
September 2, 2004	1500	9.4	108	7.9	150	21.8
September 2, 2004	1600	9.2	107	7.9	150	22.4
September 2, 2004	1700	8.9	106	7.8	150	22.7
September 2, 2004	1800	8.6	103	7.6	150	22.8
September 2, 2004	1900	8.5	100	7.5	151	22.8
September 2, 2004	2000	8.4	98	7.4	152	22.5
September 2, 2004	2100	8.4	97	7.3	152	22.1
September 2, 2004	2200	8.4	96	7.3	152	21.7
September 2, 2004	2300	8.4	96	7.2	152	21.3
September 2, 2004	2400	8.5	95	7.2	153	20.8
September 3, 2004	0100	8.6	95	7.2	152	20.4
September 3, 2004	0200	8.7	95	7.2	152	19.9
September 3, 2004	0300	8.8	96	7.1	152	19.6
September 3, 2004	0400	8.8	96	7.1	152	19.4
September 3, 2004	0500	8.8	96	7.1	151	19.2
September 3, 2004	0600	8.9	96	7.1	151	19.0
September 3, 2004	0700	8.9	96	7.1	151	18.9
September 3, 2004	0800	9.1	96	7.1	151	18.8
September 3, 2004	0900	9.3	98	7.2	151	18.9



Streamflow and dissolved oxygen concentration for Deer Creek at Rocks, Md. - 01580000.

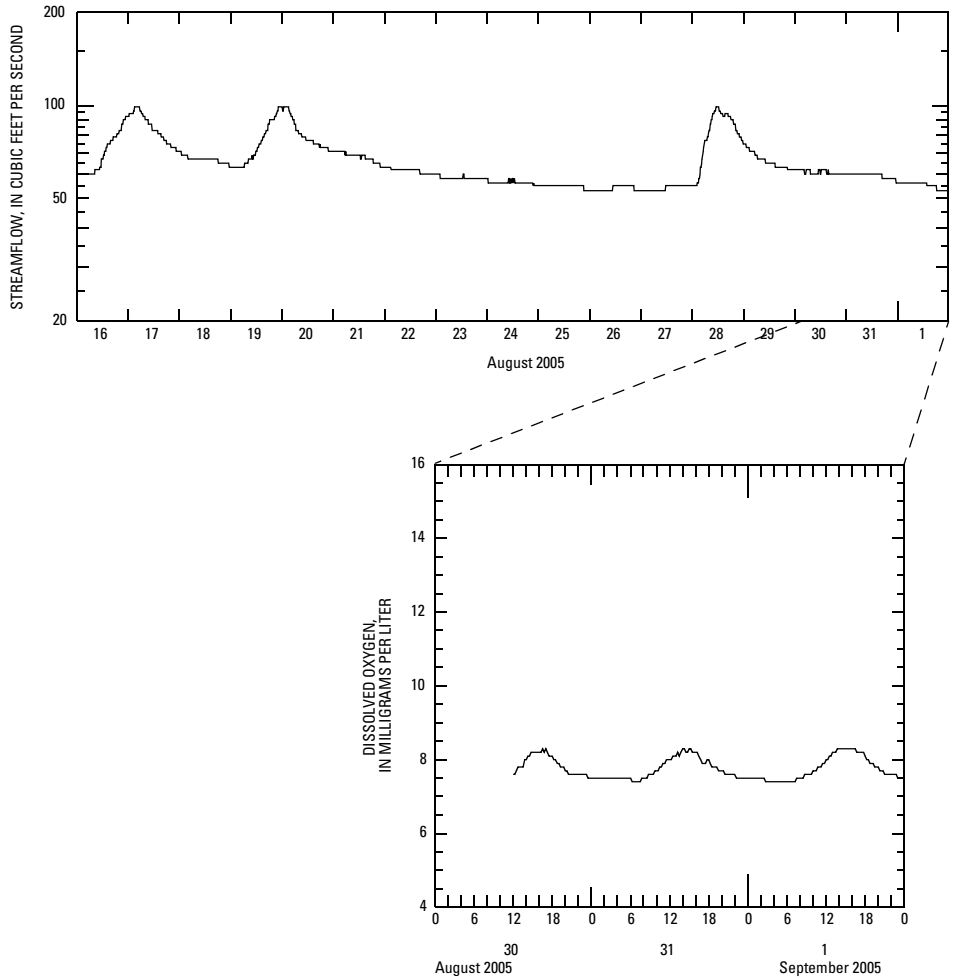
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Deer Creek at Rocks, Md. - 01580000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 30, 2005	1200	9.0	--	7.6	157	21.7
August 30, 2005	1300	9.0	102	7.8	157	21.9
August 30, 2005	1400	9.1	102	8.0	157	22.2
August 30, 2005	1500	9.0	105	8.2	157	22.6
August 30, 2005	1600	8.8	105	8.2	157	22.8
August 30, 2005	1700	8.8	102	8.3	157	23.2
August 30, 2005	1800	8.4	103	8.1	157	23.3
August 30, 2005	1900	8.1	99	7.9	158	23.4
August 30, 2005	2000	7.9	96	7.7	159	23.5
August 30, 2005	2100	7.8	93	7.6	159	23.6
August 30, 2005	2200	7.7	92	7.6	160	23.6
August 30, 2005	2300	7.7	91	7.6	161	23.5
August 30, 2005	2400	7.7	91	7.5	162	23.4
August 31, 2005	0100	7.7	90	7.5	163	23.3
August 31, 2005	0200	7.7	90	7.5	163	23.1
August 31, 2005	0300	7.8	90	7.5	164	22.9
August 31, 2005	0400	7.8	90	7.5	164	22.8
August 31, 2005	0500	7.8	90	7.5	163	22.7
August 31, 2005	0600	7.8	90	7.5	163	22.6
August 31, 2005	0700	7.8	90	7.4	162	22.6
August 31, 2005	0800	7.9	90	7.5	162	22.6
August 31, 2005	0900	8.2	92	7.6	161	22.6
August 31, 2005	1000	8.3	94	7.7	160	22.8
August 31, 2005	1100	8.6	97	7.9	160	23.2
August 31, 2005	1200	8.6	100	8.0	159	23.6
August 31, 2005	1300	8.6	101	8.1	159	23.8
August 31, 2005	1400	8.7	102	8.3	158	24.1
August 31, 2005	1500	8.5	103	8.3	158	24.3
August 31, 2005	1600	8.3	102	8.2	158	24.5
August 31, 2005	1700	7.9	99	7.9	158	24.6
August 31, 2005	1800	8.0	95	8.0	158	24.8
August 31, 2005	1900	7.7	97	7.8	158	24.7
August 31, 2005	2000	7.6	93	7.7	159	24.6
August 31, 2005	2100	7.5	91	7.6	160	24.4
August 31, 2005	2200	7.6	90	7.6	161	24.1
August 31, 2005	2300	7.6	90	7.5	162	23.8
August 31, 2005	2400	7.7	90	7.5	163	23.4
September 1, 2005	0100	7.8	90	7.5	163	23.0
September 1, 2005	0200	7.8	90	7.5	163	22.6
September 1, 2005	0300	7.9	90	7.4	163	22.2
September 1, 2005	0400	8.0	91	7.4	163	21.8
September 1, 2005	0500	8.0	91	7.4	163	21.5
September 1, 2005	0600	8.1	91	7.4	163	21.3
September 1, 2005	0700	8.2	91	7.4	163	21.0
September 1, 2005	0800	8.3	92	7.5	162	20.9
September 1, 2005	0900	8.6	94	7.6	161	20.9
September 1, 2005	1000	8.8	96	7.7	160	21.0
September 1, 2005	1100	8.9	98	7.8	159	21.3
September 1, 2005	1200	9.0	101	8.0	159	21.9
September 1, 2005	1300	9.1	103	8.2	159	22.7
September 1, 2005	1400	8.9	105	8.3	159	23.3
September 1, 2005	1500	8.8	105	8.3	159	23.6
September 1, 2005	1600	8.7	104	8.3	159	24.0
September 1, 2005	1700	8.4	103	8.2	158	24.1
September 1, 2005	1800	8.2	100	8.1	158	24.3
September 1, 2005	1900	7.9	98	7.9	158	24.4
September 1, 2005	2000	7.7	94	7.8	159	24.3

Continuous-monitoring data for Deer Creek at Rocks, Md. - 01580000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 1, 2005	2100	7.6	92	7.6	160	24.1
September 1, 2005	2200	7.6	91	7.6	161	23.8
September 1, 2005	2300	7.7	91	7.5	162	23.5
September 1, 2005	2400	7.7	90	7.5	163	23.2



Streamflow and dissolved oxygen concentration for Deer Creek at Rocks, Md. - 01580000.

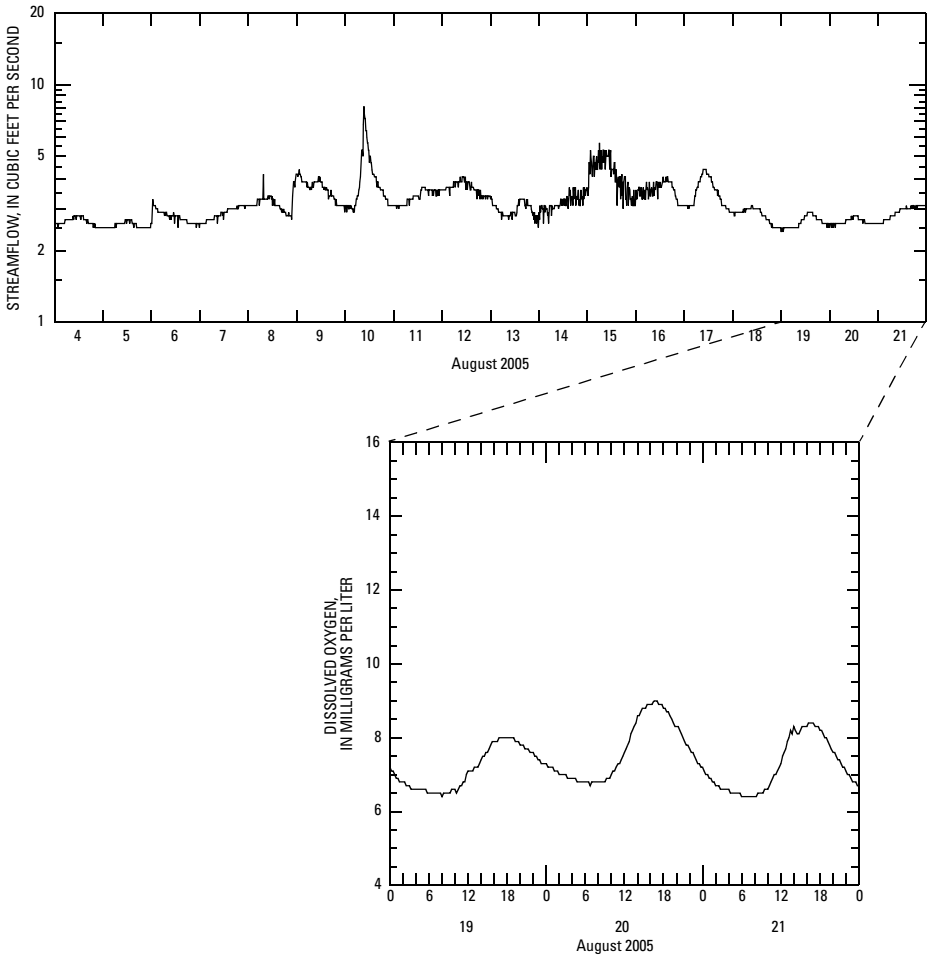
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for James Run near Belcamp, Md. - 01581649.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 19, 2005	0100	6.9	84	7.7	272	23.4
August 19, 2005	0200	6.8	81	7.7	272	23.4
August 19, 2005	0300	6.7	80	7.6	272	23.3
August 19, 2005	0400	6.6	78	7.6	272	23.2
August 19, 2005	0500	6.6	77	7.6	273	23.1
August 19, 2005	0600	6.5	77	7.6	278	23.0
August 19, 2005	0700	6.5	76	7.6	278	22.9
August 19, 2005	0800	6.4	75	7.6	277	22.8
August 19, 2005	0900	6.5	75	7.5	277	22.8
August 19, 2005	1000	6.6	75	7.5	276	22.7
August 19, 2005	1100	6.7	76	7.5	274	22.6
August 19, 2005	1200	7.1	78	7.5	274	22.7
August 19, 2005	1300	7.2	82	7.5	274	22.7
August 19, 2005	1400	7.4	83	7.5	272	22.6
August 19, 2005	1500	7.6	86	7.6	271	22.6
August 19, 2005	1600	7.9	88	7.6	271	22.5
August 19, 2005	1700	8.0	91	7.6	271	22.5
August 19, 2005	1800	8.0	92	7.6	269	22.4
August 19, 2005	1900	8.0	92	7.7	266	22.4
August 19, 2005	2000	7.8	92	7.7	265	22.3
August 19, 2005	2100	7.7	90	7.7	264	22.3
August 19, 2005	2200	7.6	88	7.6	264	22.2
August 19, 2005	2300	7.4	87	7.6	263	22.2
August 19, 2005	2400	7.3	85	7.6	263	22.2
August 20, 2005	0100	7.2	83	7.6	263	22.2
August 20, 2005	0200	7.0	82	7.5	264	22.1
August 20, 2005	0300	7.0	81	7.5	265	22.1
August 20, 2005	0400	6.9	80	7.5	266	22.1
August 20, 2005	0500	6.8	79	7.5	267	22.1
August 20, 2005	0600	6.8	78	7.5	267	22.1
August 20, 2005	0700	6.8	78	7.4	267	22.0
August 20, 2005	0800	6.8	78	7.4	267	22.0
August 20, 2005	0900	6.8	78	7.4	267	22.1
August 20, 2005	1000	7.0	78	7.4	267	22.2
August 20, 2005	1100	7.3	81	7.5	267	22.4
August 20, 2005	1200	7.6	84	7.5	267	22.6
August 20, 2005	1300	8.1	88	7.6	266	23.0
August 20, 2005	1400	8.6	94	7.6	266	23.4
August 20, 2005	1500	8.8	101	7.7	265	23.6
August 20, 2005	1600	8.9	104	7.8	265	23.8
August 20, 2005	1700	9.0	106	7.8	264	23.9
August 20, 2005	1800	8.8	107	7.9	263	23.9
August 20, 2005	1900	8.6	105	7.9	263	24.0
August 20, 2005	2000	8.3	102	7.9	262	23.9
August 20, 2005	2100	8.0	99	7.9	262	23.9
August 20, 2005	2200	7.7	95	7.8	261	23.9
August 20, 2005	2300	7.4	91	7.8	261	23.9
August 20, 2005	2400	7.2	88	7.7	261	23.9
August 21, 2005	0100	6.9	85	7.7	261	23.8
August 21, 2005	0200	6.7	82	7.6	261	23.9
August 21, 2005	0300	6.6	80	7.5	261	23.8
August 21, 2005	0400	6.6	78	7.5	261	23.8
August 21, 2005	0500	6.5	78	7.5	262	23.8
August 21, 2005	0600	6.4	77	7.4	262	23.7
August 21, 2005	0700	6.4	76	7.4	262	23.6
August 21, 2005	0800	6.4	76	7.4	263	23.6
August 21, 2005	0900	6.5	76	7.4	263	23.6
August 21, 2005	1000	6.6	77	7.4	263	23.6
August 21, 2005	1100	7.0	78	7.4	263	23.8

Continuous-monitoring data for James Run near Belcamp, Md. - 01581649.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 21, 2005	1200	7.3	82	7.4	263	24.1
August 21, 2005	1300	7.9	87	7.5	263	25.0
August 21, 2005	1400	8.3	96	7.6	262	25.4
August 21, 2005	1500	8.2	101	7.6	262	25.3
August 21, 2005	1600	8.3	100	7.7	261	25.4
August 21, 2005	1700	8.4	102	7.8	260	25.4
August 21, 2005	1800	8.2	103	7.8	259	25.3
August 21, 2005	1900	8.0	100	7.8	258	25.2
August 21, 2005	2000	7.6	97	7.8	258	25.2
August 21, 2005	2100	7.4	93	7.8	257	25.1
August 21, 2005	2200	7.1	90	7.8	257	24.9
August 21, 2005	2300	6.8	86	7.7	256	24.8
August 21, 2005	2400	6.7	82	7.7	255	24.6



Streamflow and dissolved oxygen concentration for James Run near Belcamp, Md. - 01581649.

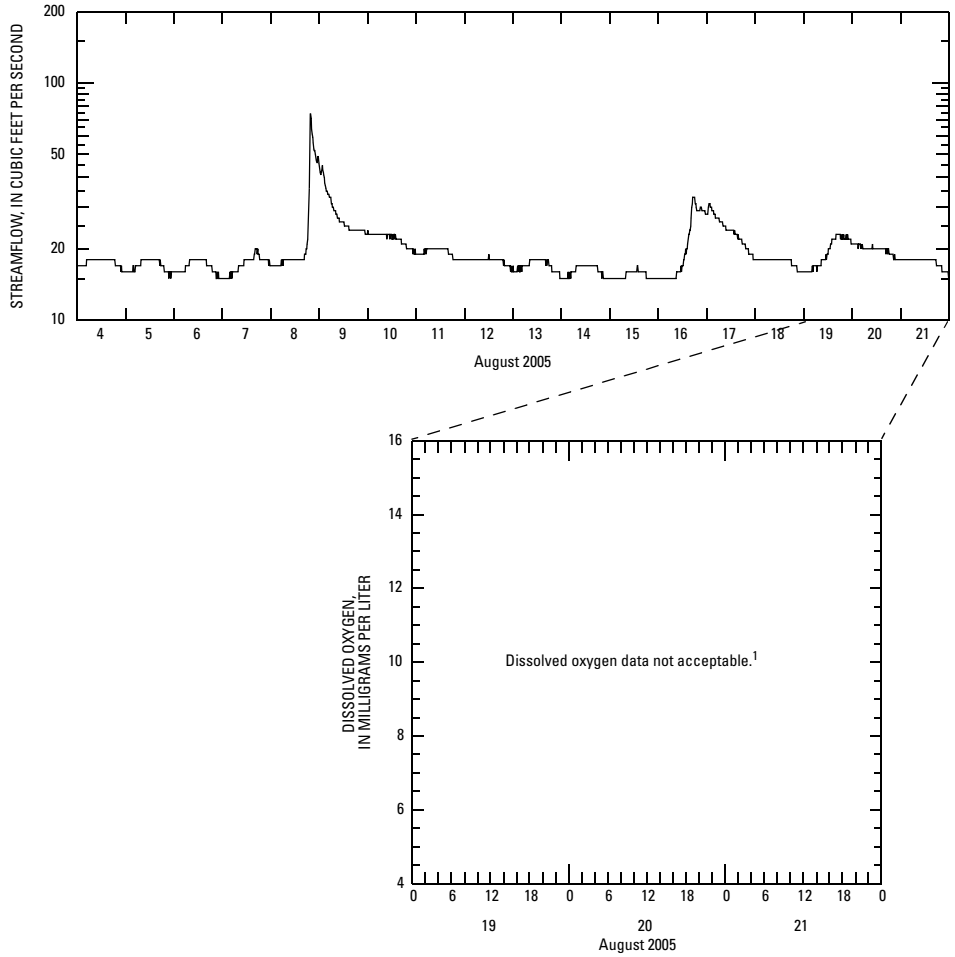
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Winters Run near Benson, Md. - 01581700.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 19, 2005	0100	--	--	7.4	163	22.1
August 19, 2005	0200	--	--	7.4	163	22.0
August 19, 2005	0300	--	--	7.4	164	21.9
August 19, 2005	0400	--	--	7.4	164	21.9
August 19, 2005	0500	--	--	7.3	165	21.8
August 19, 2005	0600	--	--	7.3	165	21.7
August 19, 2005	0700	--	--	7.3	165	21.6
August 19, 2005	0800	--	--	7.4	165	21.6
August 19, 2005	0900	--	--	7.4	165	21.6
August 19, 2005	1000	--	--	7.5	165	21.5
August 19, 2005	1100	--	--	7.5	165	21.4
August 19, 2005	1200	--	--	7.7	165	21.6
August 19, 2005	1300	--	--	7.7	166	21.5
August 19, 2005	1400	--	--	7.8	166	21.6
August 19, 2005	1500	--	--	7.9	164	21.7
August 19, 2005	1600	--	--	7.8	164	21.5
August 19, 2005	1700	--	--	7.7	163	21.5
August 19, 2005	1800	--	--	7.7	163	21.4
August 19, 2005	1900	--	--	7.7	163	21.3
August 19, 2005	2000	--	--	7.6	163	21.2
August 19, 2005	2100	--	--	7.5	162	21.1
August 19, 2005	2200	--	--	7.5	162	21.0
August 19, 2005	2300	--	--	7.5	162	21.0
August 19, 2005	2400	--	--	7.5	163	21.0
August 20, 2005	0100	--	--	7.5	163	20.9
August 20, 2005	0200	--	--	7.4	163	20.9
August 20, 2005	0300	--	--	7.4	164	20.9
August 20, 2005	0400	--	--	7.4	164	20.8
August 20, 2005	0500	--	--	7.4	165	20.8
August 20, 2005	0600	--	--	7.4	165	20.8
August 20, 2005	0700	--	--	7.4	165	20.7
August 20, 2005	0800	--	--	7.4	165	20.8
August 20, 2005	0900	--	--	7.5	165	20.9
August 20, 2005	1000	--	--	7.6	164	21.2
August 20, 2005	1100	--	--	7.7	163	21.6
August 20, 2005	1200	--	--	7.9	163	22.1
August 20, 2005	1300	--	--	8.0	163	22.4
August 20, 2005	1400	--	--	8.1	163	23.0
August 20, 2005	1500	--	--	8.2	163	23.5
August 20, 2005	1600	--	--	8.2	163	24.0
August 20, 2005	1700	--	--	8.1	163	24.0
August 20, 2005	1800	--	--	8.0	163	23.8
August 20, 2005	1900	--	--	7.8	164	23.4
August 20, 2005	2000	--	--	7.6	164	23.0
August 20, 2005	2100	--	--	7.6	165	22.8
August 20, 2005	2200	--	--	7.5	164	22.6
August 20, 2005	2300	--	--	7.5	164	22.6
August 20, 2005	2400	--	--	7.5	164	22.6
August 21, 2005	0100	--	--	7.5	165	22.5
August 21, 2005	0200	--	--	7.4	165	22.5
August 21, 2005	0300	--	--	7.4	165	22.5
August 21, 2005	0400	--	--	7.4	166	22.4
August 21, 2005	0500	--	--	7.4	166	22.4
August 21, 2005	0600	--	--	7.4	166	22.3
August 21, 2005	0700	--	--	7.4	167	22.3
August 21, 2005	0800	--	--	7.4	167	22.3
August 21, 2005	0900	--	--	7.6	166	22.4
August 21, 2005	1000	--	--	7.7	166	22.8
August 21, 2005	1100	--	--	7.9	166	23.4

Continuous-monitoring data for Winters Run near Benson, Md. - 01581700.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 21, 2005	1200	--	--	8.0	165	24.1
August 21, 2005	1300	--	--	8.1	165	24.6
August 21, 2005	1400	--	--	8.2	165	25.0
August 21, 2005	1500	--	--	8.3	165	25.6
August 21, 2005	1600	--	--	8.3	165	26.0
August 21, 2005	1700	--	--	8.3	165	26.0
August 21, 2005	1800	--	--	8.2	166	25.5
August 21, 2005	1900	--	--	7.9	166	24.8
August 21, 2005	2000	--	--	7.7	167	24.1
August 21, 2005	2100	--	--	7.7	167	23.7
August 21, 2005	2200	--	--	7.7	166	23.3
August 21, 2005	2300	--	--	7.6	166	23.0
August 21, 2005	2400	--	--	7.6	166	22.8



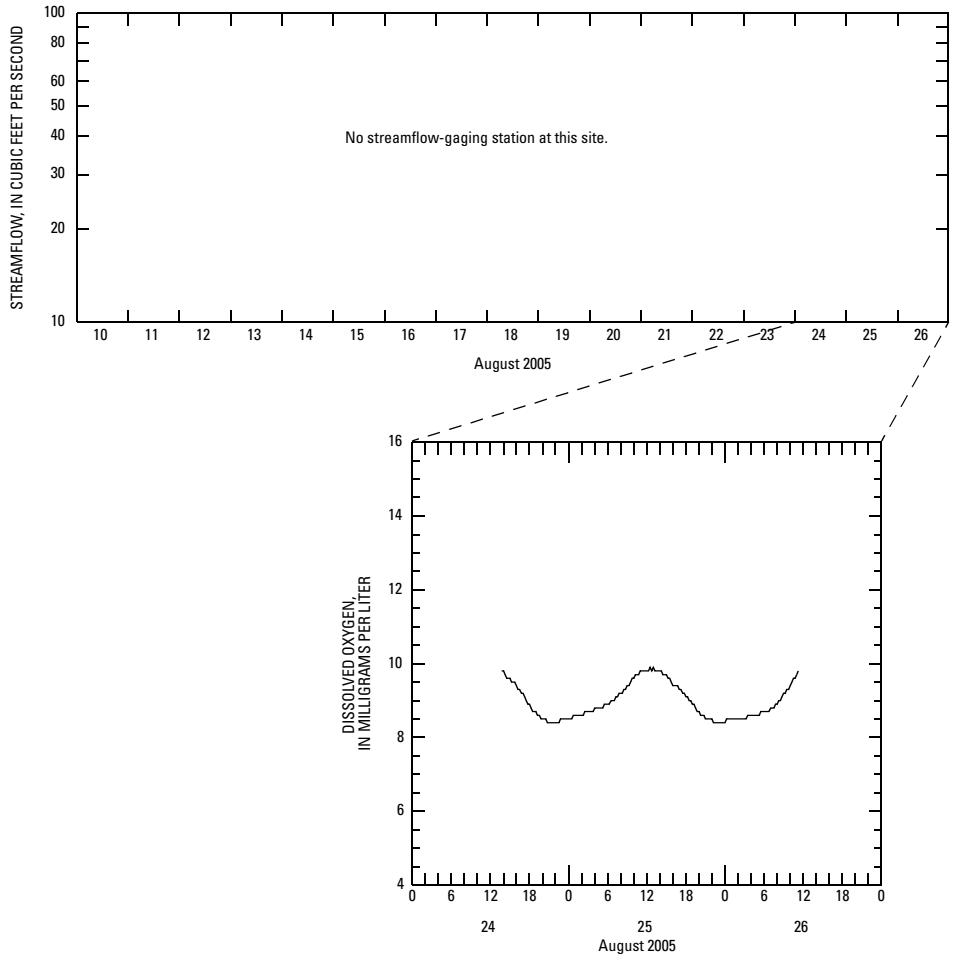
Streamflow and dissolved oxygen concentration for Winters Run near Benson, Md. - 01581700.

[1]At the end of the continuous monitor deployment period, dissolved oxygen concentations were outside the maximum allowable quality-control limits as defined in USGS Techniques and Methods manual, I-D3, "Guidelines and Standard Procedures for Continuous Water-Qulaity Monitors: Station Operation, Record Computation, and Data Reporting" (Wagner and others, 2006).

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Gunpowder Falls at Roller, Md. - 01581800.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 24, 2005	1400	9.8	--	7.9	179	20.4
August 24, 2005	1500	9.6	108	8.0	178	20.9
August 24, 2005	1600	9.4	108	8.0	178	21.2
August 24, 2005	1700	9.2	106	7.9	178	21.1
August 24, 2005	1800	8.9	103	7.8	178	20.8
August 24, 2005	1900	8.7	99	7.7	178	20.6
August 24, 2005	2000	8.5	96	7.6	178	20.3
August 24, 2005	2100	8.4	94	7.6	178	19.9
August 24, 2005	2200	8.4	93	7.6	178	19.6
August 24, 2005	2300	8.5	92	7.5	178	19.3
August 24, 2005	2400	8.5	92	7.5	178	19.0
August 25, 2005	0100	8.6	92	7.5	178	18.7
August 25, 2005	0200	8.6	92	7.5	177	18.4
August 25, 2005	0300	8.7	92	7.5	177	18.2
August 25, 2005	0400	8.8	92	7.5	177	17.9
August 25, 2005	0500	8.8	92	7.5	177	17.6
August 25, 2005	0600	8.9	92	7.5	177	17.3
August 25, 2005	0700	9.0	93	7.5	177	17.0
August 25, 2005	0800	9.2	93	7.5	177	16.8
August 25, 2005	0900	9.4	95	7.5	176	16.7
August 25, 2005	1000	9.6	97	7.6	176	17.0
August 25, 2005	1100	9.8	100	7.7	176	17.6
August 25, 2005	1200	9.8	102	7.7	176	18.2
August 25, 2005	1300	9.9	104	7.8	175	18.8
August 25, 2005	1400	9.8	106	7.8	175	19.5
August 25, 2005	1500	9.7	107	7.9	175	20.2
August 25, 2005	1600	9.4	107	7.9	175	20.5
August 25, 2005	1700	9.3	105	7.9	173	20.6
August 25, 2005	1800	9.1	104	7.8	173	20.5
August 25, 2005	1900	8.9	102	7.8	173	20.4
August 25, 2005	2000	8.7	99	7.7	174	20.1
August 25, 2005	2100	8.5	96	7.6	174	19.9
August 25, 2005	2200	8.5	94	7.6	174	19.7
August 25, 2005	2300	8.4	92	7.5	174	19.5
August 25, 2005	2400	8.4	92	7.5	173	19.3
August 26, 2005	0100	8.5	92	7.5	173	19.2
August 26, 2005	0200	8.5	92	7.5	173	19.0
August 26, 2005	0300	8.5	92	7.5	173	18.8
August 26, 2005	0400	8.6	92	7.5	175	18.6
August 26, 2005	0500	8.6	92	7.5	175	18.4
August 26, 2005	0600	8.7	92	7.5	175	18.2
August 26, 2005	0700	8.8	92	7.5	175	18.0
August 26, 2005	0800	8.9	92	7.5	177	17.9
August 26, 2005	0900	9.2	94	7.5	176	17.9
August 26, 2005	1000	9.4	96	7.6	175	18.1
August 26, 2005	1100	9.7	100	7.7	175	18.3

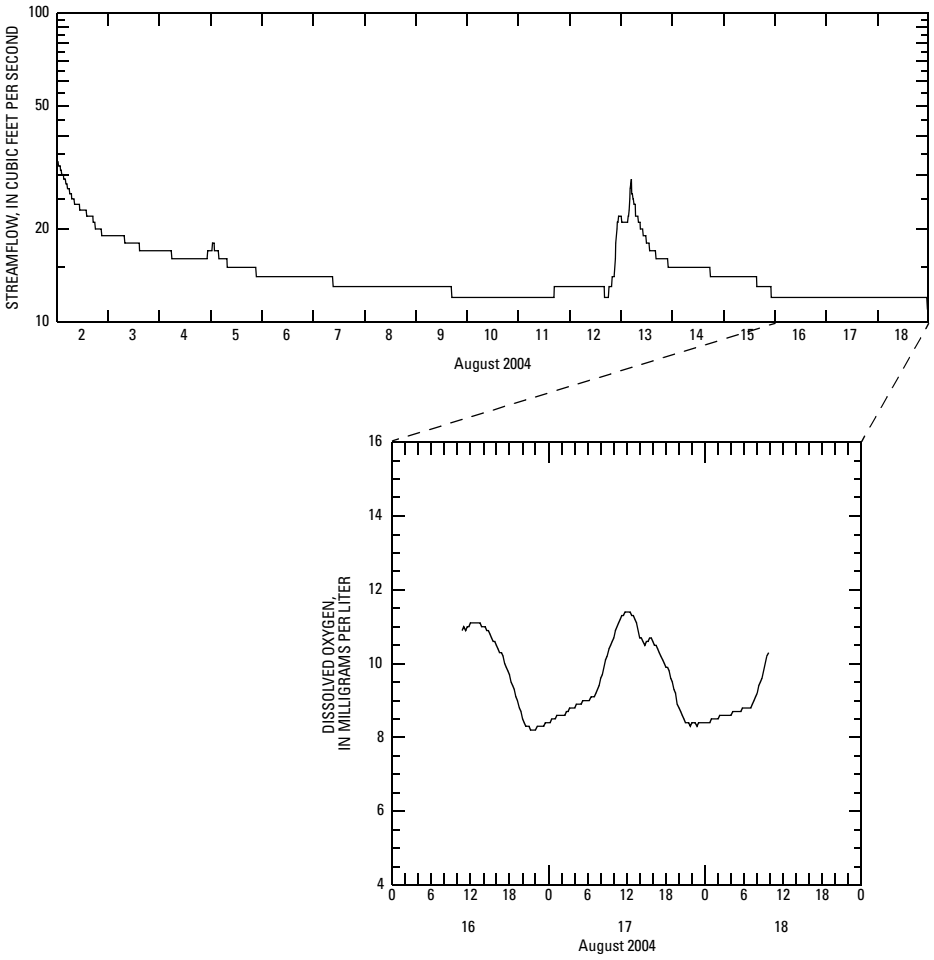


Streamflow and dissolved oxygen concentration for Gunpowder Falls at Roller, Md. - 01581800.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Piney Run at Dover, Md. - 01583100.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 16, 2004	1100	11.0	--	7.8	241	18.9
August 16, 2004	1200	11.1	118	8.2	241	19.4
August 16, 2004	1300	11.1	120	8.4	239	20.3
August 16, 2004	1400	11.0	123	8.6	238	21.1
August 16, 2004	1500	10.8	124	8.6	237	21.8
August 16, 2004	1600	10.5	123	8.6	237	22.1
August 16, 2004	1700	10.2	120	8.5	237	22.1
August 16, 2004	1800	9.7	116	8.3	238	21.8
August 16, 2004	1900	9.1	110	7.9	240	21.4
August 16, 2004	2000	8.5	103	7.5	241	21.1
August 16, 2004	2100	8.3	96	7.3	241	20.7
August 16, 2004	2200	8.2	92	7.3	240	20.3
August 16, 2004	2300	8.3	91	7.2	238	20.0
August 16, 2004	2400	8.4	91	7.2	237	19.6
August 17, 2004	0100	8.5	92	7.2	237	19.2
August 17, 2004	0200	8.6	92	7.2	237	18.9
August 17, 2004	0300	8.7	93	7.2	237	18.5
August 17, 2004	0400	8.8	93	7.2	238	18.2
August 17, 2004	0500	8.9	94	7.2	238	17.9
August 17, 2004	0600	9.0	94	7.2	238	17.7
August 17, 2004	0700	9.1	95	7.3	240	17.5
August 17, 2004	0800	9.6	96	7.3	241	17.4
August 17, 2004	0900	10.2	100	7.5	242	17.5
August 17, 2004	1000	10.7	107	7.8	242	17.7
August 17, 2004	1100	11.2	113	8.1	242	18.3
August 17, 2004	1200	11.4	119	8.4	243	19.1
August 17, 2004	1300	11.3	123	8.5	242	19.7
August 17, 2004	1400	10.7	124	8.4	242	19.7
August 17, 2004	1500	10.6	118	8.4	241	20.1
August 17, 2004	1600	10.6	117	8.5	241	20.5
August 17, 2004	1700	10.3	118	8.4	241	20.5
August 17, 2004	1800	9.9	114	8.2	241	20.5
August 17, 2004	1900	9.5	110	7.9	242	20.4
August 17, 2004	2000	8.8	105	7.5	242	20.2
August 17, 2004	2100	8.4	97	7.3	244	20.1
August 17, 2004	2200	8.4	93	7.3	244	19.8
August 17, 2004	2300	8.4	92	7.2	242	19.6
August 17, 2004	2400	8.4	91	7.2	242	19.4
August 18, 2004	0100	8.5	92	7.2	242	19.2
August 18, 2004	0200	8.5	92	7.2	242	18.9
August 18, 2004	0300	8.6	92	7.2	241	18.8
August 18, 2004	0400	8.6	92	7.2	241	18.6
August 18, 2004	0500	8.7	92	7.2	242	18.4
August 18, 2004	0600	8.8	93	7.2	244	18.3
August 18, 2004	0700	8.8	93	7.3	245	18.2
August 18, 2004	0800	9.2	94	7.3	246	18.2
August 18, 2004	0900	9.8	98	7.5	247	18.4



Streamflow and dissolved oxygen concentration for Piney Run at Dover, Md. - 01583100.

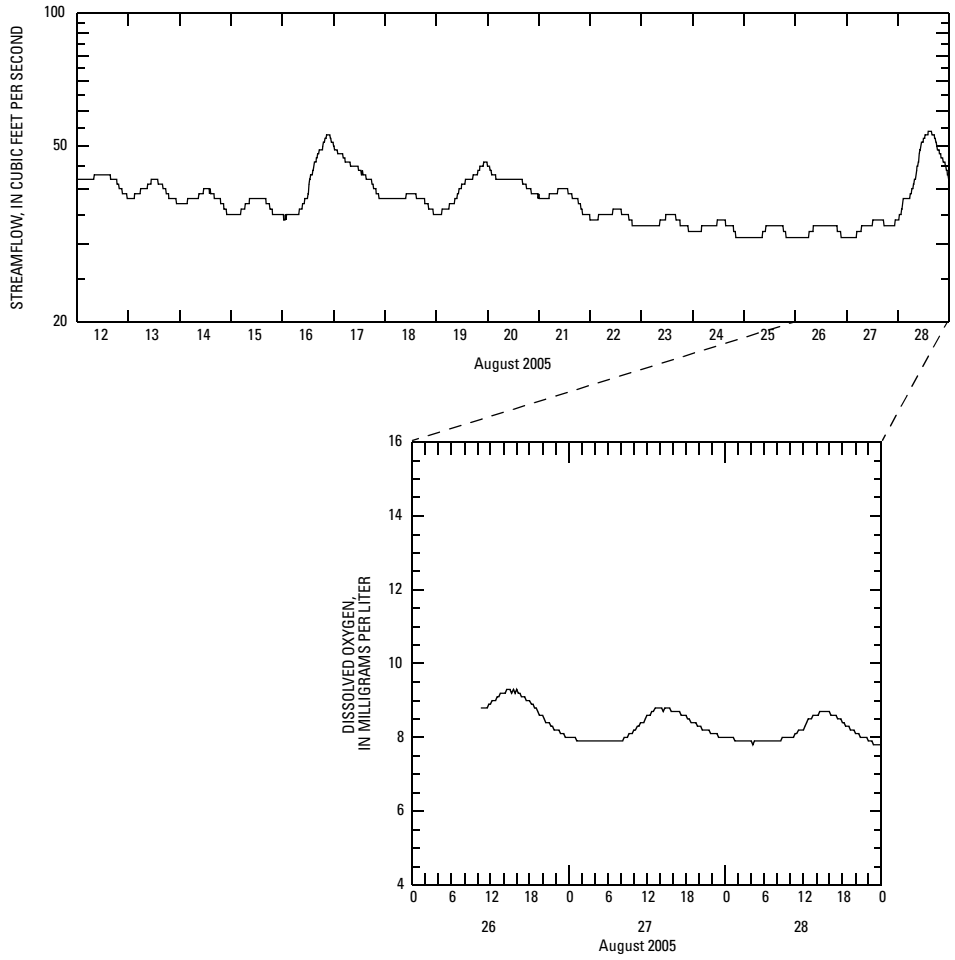
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Western Run at Western Run, Md. - 01583500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 26, 2005	1100	8.8	--	7.8	276	18.9
August 26, 2005	1200	8.9	95	7.9	275	19.3
August 26, 2005	1300	9.1	97	7.9	276	19.7
August 26, 2005	1400	9.2	100	8.0	275	20.1
August 26, 2005	1500	9.3	101	8.1	275	20.4
August 26, 2005	1600	9.3	103	8.1	274	20.6
August 26, 2005	1700	9.1	103	8.1	274	20.5
August 26, 2005	1800	9.0	101	8.1	274	20.5
August 26, 2005	1900	8.8	100	8.1	275	20.6
August 26, 2005	2000	8.6	98	8.1	275	20.6
August 26, 2005	2100	8.4	95	8.0	275	20.5
August 26, 2005	2200	8.2	93	8.0	276	20.3
August 26, 2005	2300	8.1	91	7.9	276	20.2
August 26, 2005	2400	8.0	89	7.9	277	20.0
August 27, 2005	0100	8.0	88	7.8	277	19.9
August 27, 2005	0200	7.9	87	7.8	277	19.7
August 27, 2005	0300	7.9	86	7.8	277	19.6
August 27, 2005	0400	7.9	86	7.8	277	19.5
August 27, 2005	0500	7.9	86	7.8	278	19.4
August 27, 2005	0600	7.9	86	7.7	278	19.3
August 27, 2005	0700	7.9	86	7.7	278	19.3
August 27, 2005	0800	7.9	86	7.7	278	19.2
August 27, 2005	0900	8.0	86	7.7	278	19.2
August 27, 2005	1000	8.2	87	7.8	279	19.4
August 27, 2005	1100	8.4	89	7.8	278	19.5
August 27, 2005	1200	8.6	91	7.8	278	19.7
August 27, 2005	1300	8.7	94	7.9	278	19.8
August 27, 2005	1400	8.8	95	7.9	277	19.9
August 27, 2005	1500	8.8	97	8.0	278	19.9
August 27, 2005	1600	8.7	96	8.0	277	19.9
August 27, 2005	1700	8.7	96	8.0	277	19.9
August 27, 2005	1800	8.6	95	8.0	277	19.9
August 27, 2005	1900	8.4	94	8.0	277	19.8
August 27, 2005	2000	8.3	92	7.9	278	19.8
August 27, 2005	2100	8.2	91	7.9	278	19.7
August 27, 2005	2200	8.1	90	7.8	279	19.6
August 27, 2005	2300	8.0	88	7.8	279	19.5
August 27, 2005	2400	8.0	88	7.8	279	19.4
August 28, 2005	0100	8.0	87	7.8	280	19.4
August 28, 2005	0200	7.9	86	7.7	279	19.3
August 28, 2005	0300	7.9	86	7.7	278	19.3
August 28, 2005	0400	7.9	86	7.7	276	19.3
August 28, 2005	0500	7.9	86	7.7	276	19.2
August 28, 2005	0600	7.9	86	7.7	277	19.2
August 28, 2005	0700	7.9	85	7.7	277	19.1
August 28, 2005	0800	7.9	86	7.7	277	19.1
August 28, 2005	0900	8.0	86	7.7	277	19.1
August 28, 2005	1000	8.0	86	7.7	276	19.1
August 28, 2005	1100	8.1	87	7.7	275	19.3
August 28, 2005	1200	8.2	88	7.7	273	19.6
August 28, 2005	1300	8.5	90	7.8	272	20.0
August 28, 2005	1400	8.6	94	7.8	272	20.4
August 28, 2005	1500	8.7	96	7.9	270	20.6
August 28, 2005	1600	8.7	97	7.9	268	20.8
August 28, 2005	1700	8.6	97	7.9	266	20.9
August 28, 2005	1800	8.4	96	7.9	269	20.9
August 28, 2005	1900	8.3	94	7.9	267	20.9
August 28, 2005	2000	8.1	93	7.8	263	20.8
August 28, 2005	2100	8.0	91	7.8	263	20.8

Continuous-monitoring data for Western Run at Western Run, Md. - 01583500.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 28, 2005	2200	7.9	90	7.8	261	20.7
August 28, 2005	2300	7.8	88	7.7	260	20.7
August 28, 2005	2400	7.8	87	7.7	260	20.6

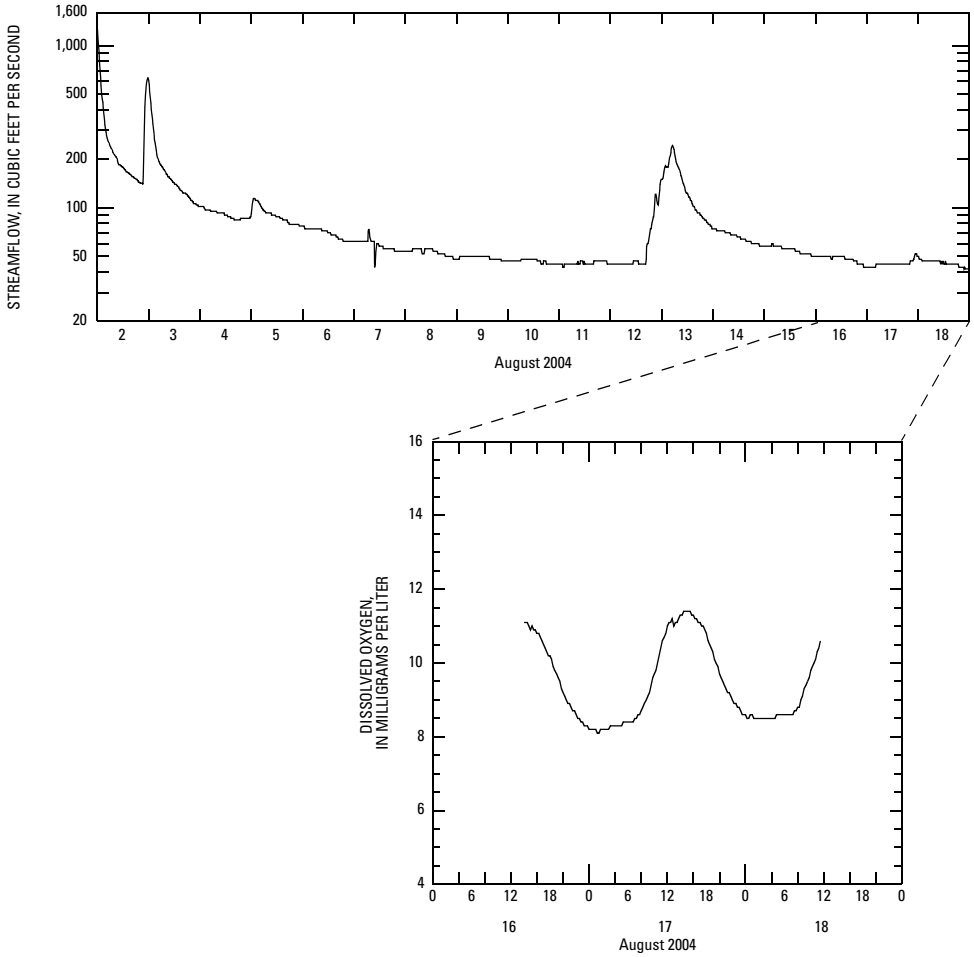


Streamflow and dissolved oxygen concentration for Western Run at Western Run, Md.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for North Branch Patapsco River at Cedarhurst, Md. - 01586000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 16, 2004	1400	11.1	126	8.8	234	20.2
August 16, 2004	1500	10.9	123	8.9	232	20.6
August 16, 2004	1600	10.8	122	9.0	231	20.9
August 16, 2004	1700	10.5	121	9.1	231	21.2
August 16, 2004	1800	10.2	118	9.1	231	21.4
August 16, 2004	1900	9.7	114	9.1	230	21.4
August 16, 2004	2000	9.2	109	9.0	232	21.3
August 16, 2004	2100	8.9	103	8.8	232	21.0
August 16, 2004	2200	8.6	98	8.6	233	20.8
August 16, 2004	2300	8.4	95	8.2	234	20.4
August 16, 2004	2400	8.1	90	7.9	235	20.1
August 17, 2004	0100	8.2	88	7.7	237	19.8
August 17, 2004	0200	8.2	88	7.6	237	19.5
August 17, 2004	0300	8.2	88	7.6	237	19.3
August 17, 2004	0400	8.3	87	7.6	237	19.0
August 17, 2004	0500	8.3	87	7.5	236	18.8
August 17, 2004	0600	8.4	88	7.5	236	18.6
August 17, 2004	0700	8.5	88	7.5	236	18.5
August 17, 2004	0800	8.7	88	7.5	236	18.3
August 17, 2004	0900	9.1	90	7.6	236	18.3
August 17, 2004	1000	9.7	94	7.7	236	18.4
August 17, 2004	1100	10.4	100	8.0	237	18.6
August 17, 2004	1200	11.0	108	8.3	256	19.1
August 17, 2004	1300	11.0	115	8.5	238	19.3
August 17, 2004	1400	11.3	116	8.8	236	19.7
August 17, 2004	1500	11.4	120	9.0	233	20.1
August 17, 2004	1600	11.3	123	9.1	232	20.3
August 17, 2004	1700	11.1	122	9.1	231	20.6
August 17, 2004	1800	10.8	119	9.2	232	20.8
August 17, 2004	1900	10.3	116	9.1	232	20.8
August 17, 2004	2000	9.7	110	9.0	232	20.7
August 17, 2004	2100	9.3	104	8.9	233	20.6
August 17, 2004	2200	9.0	100	8.7	234	20.4
August 17, 2004	2300	8.8	96	8.3	235	20.1
August 17, 2004	2400	8.2	90	7.9	236	19.9
August 18, 2004	0100	8.6	88	7.7	237	19.6
August 18, 2004	0200	8.5	88	7.6	238	19.5
August 18, 2004	0300	8.5	87	7.6	239	19.3
August 18, 2004	0400	8.5	87	7.5	240	19.2
August 18, 2004	0500	8.6	87	7.5	241	19.1
August 18, 2004	0600	8.6	87	7.5	241	19.0
August 18, 2004	0700	8.6	87	7.5	239	18.9
August 18, 2004	0800	8.8	87	7.5	240	18.9
August 18, 2004	0900	9.3	89	7.6	239	18.9
August 18, 2004	1000	9.8	93	7.7	239	19.1
August 18, 2004	1100	10.3	99	7.9	236	19.3
August 18, 2004	1200	10.6	105	8.1	235	19.5
August 18, 2004	1300	10.7	100	8.2	235	19.6
August 18, 2004	1400	10.7	116	8.2	235	19.6
August 18, 2004	1500	10.7	117	8.3	235	19.7
August 18, 2004	1600	10.8	117	8.4	235	19.7
August 18, 2004	1700	10.8	118	8.4	235	19.8
August 18, 2004	1800	10.9	118	8.5	234	19.8
August 18, 2004	1900	10.9	119	8.5	234	19.9
August 18, 2004	2000	10.9	119	8.6	234	19.9
August 18, 2004	2100	11.0	120	8.6	234	20.0
August 18, 2004	2200	11.0	120	8.7	234	20.0
August 18, 2004	2300	11.1	121	8.7	234	20.1
August 18, 2004	2400	11.1	121	8.8	234	20.1

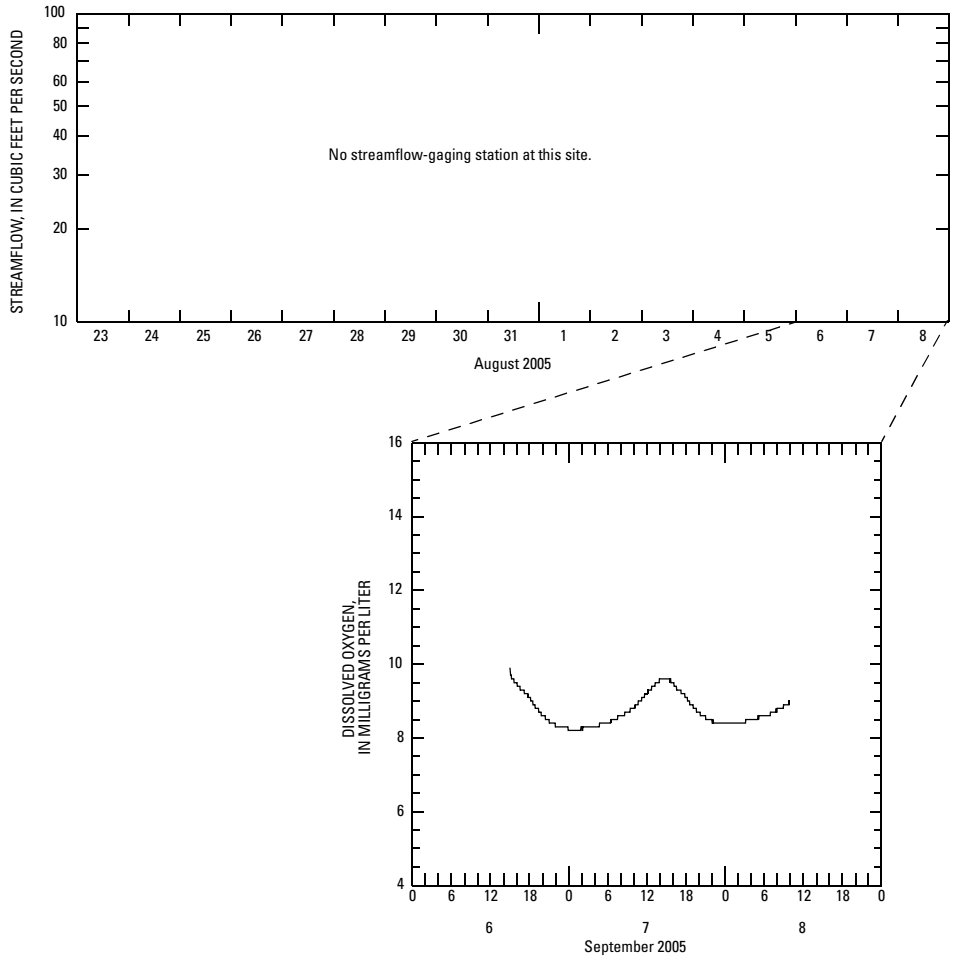


Streamflow and dissolved oxygen concentration for North Branch Patapsco River at Cedarhurst, Md. - 01586000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for South Branch Patapsco River near Gaither, Md. (upstream) - 01587300.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 6, 2005	1500	9.9	--	7.9	225	20.0
September 6, 2005	1600	9.5	109	7.9	225	20.4
September 6, 2005	1700	9.4	105	7.8	225	20.2
September 6, 2005	1800	9.2	102	7.8	226	20.1
September 6, 2005	1900	8.9	100	7.8	227	19.9
September 6, 2005	2000	8.7	97	7.7	228	19.7
September 6, 2005	2100	8.5	95	7.7	229	19.6
September 6, 2005	2200	8.4	93	7.6	229	19.4
September 6, 2005	2300	8.3	91	7.6	229	19.2
September 6, 2005	2400	8.3	90	7.6	230	19.1
September 7, 2005	0100	8.2	89	7.6	230	18.8
September 7, 2005	0200	8.2	89	7.6	230	18.6
September 7, 2005	0300	8.2	88	7.5	230	18.4
September 7, 2005	0400	8.3	88	7.5	230	18.1
September 7, 2005	0500	8.3	88	7.5	230	17.9
September 7, 2005	0600	8.4	88	7.5	230	17.6
September 7, 2005	0700	8.4	88	7.5	230	17.4
September 7, 2005	0800	8.5	89	7.5	229	17.1
September 7, 2005	0900	8.6	89	7.5	228	17.0
September 7, 2005	1000	8.7	90	7.5	227	17.0
September 7, 2005	1100	8.9	90	7.6	226	17.2
September 7, 2005	1200	9.1	92	7.6	226	17.6
September 7, 2005	1300	9.3	95	7.7	225	18.2
September 7, 2005	1400	9.5	98	7.8	225	19.0
September 7, 2005	1500	9.6	101	7.8	226	19.8
September 7, 2005	1600	9.6	104	7.8	227	20.1
September 7, 2005	1700	9.4	105	7.8	227	19.9
September 7, 2005	1800	9.1	104	7.8	228	19.7
September 7, 2005	1900	8.9	102	7.7	228	19.4
September 7, 2005	2000	8.7	99	7.7	228	19.2
September 7, 2005	2100	8.6	96	7.6	229	19.0
September 7, 2005	2200	8.5	94	7.6	229	18.8
September 7, 2005	2300	8.4	92	7.6	229	18.6
September 7, 2005	2400	8.4	91	7.6	229	18.3
September 8, 2005	0100	8.3	90	7.6	229	18.1
September 8, 2005	0200	8.3	90	7.6	229	17.8
September 8, 2005	0300	8.4	89	7.5	229	17.6
September 8, 2005	0400	8.4	89	7.5	229	17.3
September 8, 2005	0500	8.4	88	7.5	229	17.0
September 8, 2005	0600	8.5	89	7.5	229	16.8
September 8, 2005	0700	8.6	88	7.5	229	16.5
September 8, 2005	0800	8.7	88	7.5	229	16.3
September 8, 2005	0900	8.8	89	7.5	229	16.2
September 8, 2005	1000	8.9	89	7.5	228	16.2

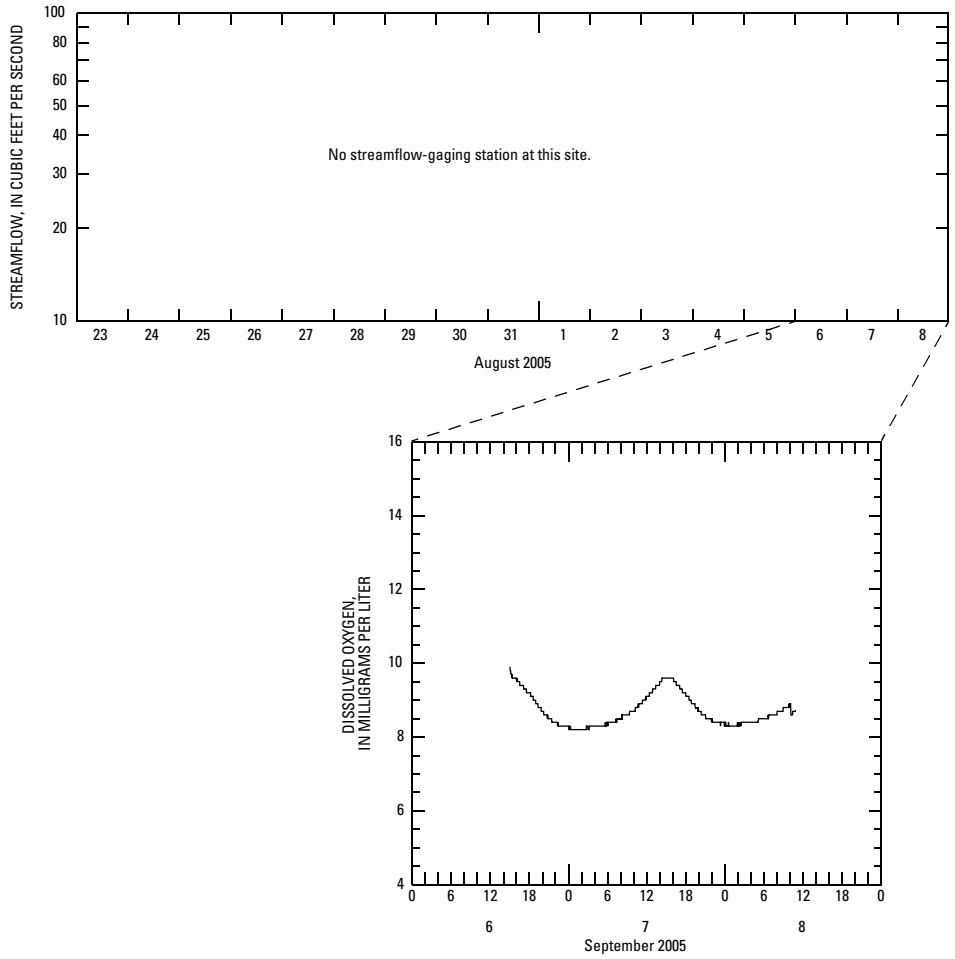


Streamflow and dissolved oxygen concentration for South Branch Patapsco River near Gaither, Md. (upstream) - 01587300.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for South Branch Patapsco River near Gaither, Md. (downstream) - 01587300.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
September 6, 2005	1500	9.9	--	7.8	225	20.0
September 6, 2005	1600	9.5	109	7.8	225	20.4
September 6, 2005	1700	9.4	106	7.8	225	20.2
September 6, 2005	1800	9.2	104	7.7	226	20.1
September 6, 2005	1900	8.9	101	7.7	227	19.9
September 6, 2005	2000	8.7	99	7.6	228	19.7
September 6, 2005	2100	8.5	96	7.6	229	19.6
September 6, 2005	2200	8.4	93	7.5	229	19.4
September 6, 2005	2300	8.3	92	7.5	229	19.2
September 6, 2005	2400	8.3	90	7.5	230	19.1
September 7, 2005	0100	8.2	89	7.4	230	18.8
September 7, 2005	0200	8.2	89	7.4	230	18.6
September 7, 2005	0300	8.2	88	7.4	230	18.4
September 7, 2005	0400	8.3	88	7.4	230	18.1
September 7, 2005	0500	8.3	88	7.4	230	17.9
September 7, 2005	0600	8.4	88	7.4	230	17.6
September 7, 2005	0700	8.4	88	7.4	230	17.4
September 7, 2005	0800	8.5	88	7.4	229	17.1
September 7, 2005	0900	8.6	88	7.4	228	17.0
September 7, 2005	1000	8.7	89	7.4	227	17.0
September 7, 2005	1100	8.9	90	7.4	226	17.2
September 7, 2005	1200	9.1	91	7.5	226	17.6
September 7, 2005	1300	9.3	93	7.5	225	18.2
September 7, 2005	1400	9.5	96	7.6	225	19.0
September 7, 2005	1500	9.6	100	7.7	226	19.8
September 7, 2005	1600	9.6	103	7.7	227	20.1
September 7, 2005	1700	9.4	106	7.7	227	19.9
September 7, 2005	1800	9.1	105	7.7	228	19.7
September 7, 2005	1900	8.9	102	7.6	228	19.4
September 7, 2005	2000	8.7	100	7.6	228	19.2
September 7, 2005	2100	8.6	97	7.5	229	19.0
September 7, 2005	2200	8.5	94	7.5	229	18.8
September 7, 2005	2300	8.4	92	7.5	229	18.6
September 7, 2005	2400	8.4	91	7.5	229	18.3
September 8, 2005	0100	8.3	90	7.4	229	18.1
September 8, 2005	0200	8.3	89	7.4	229	17.8
September 8, 2005	0300	8.4	88	7.4	229	17.6
September 8, 2005	0400	8.4	88	7.4	229	17.3
September 8, 2005	0500	8.4	88	7.4	229	17.0
September 8, 2005	0600	8.5	88	7.4	229	16.8
September 8, 2005	0700	8.6	88	7.4	229	16.5
September 8, 2005	0800	8.7	88	7.4	229	16.3
September 8, 2005	0900	8.8	88	7.4	229	16.2
September 8, 2005	1000	8.9	88	7.4	228	16.2

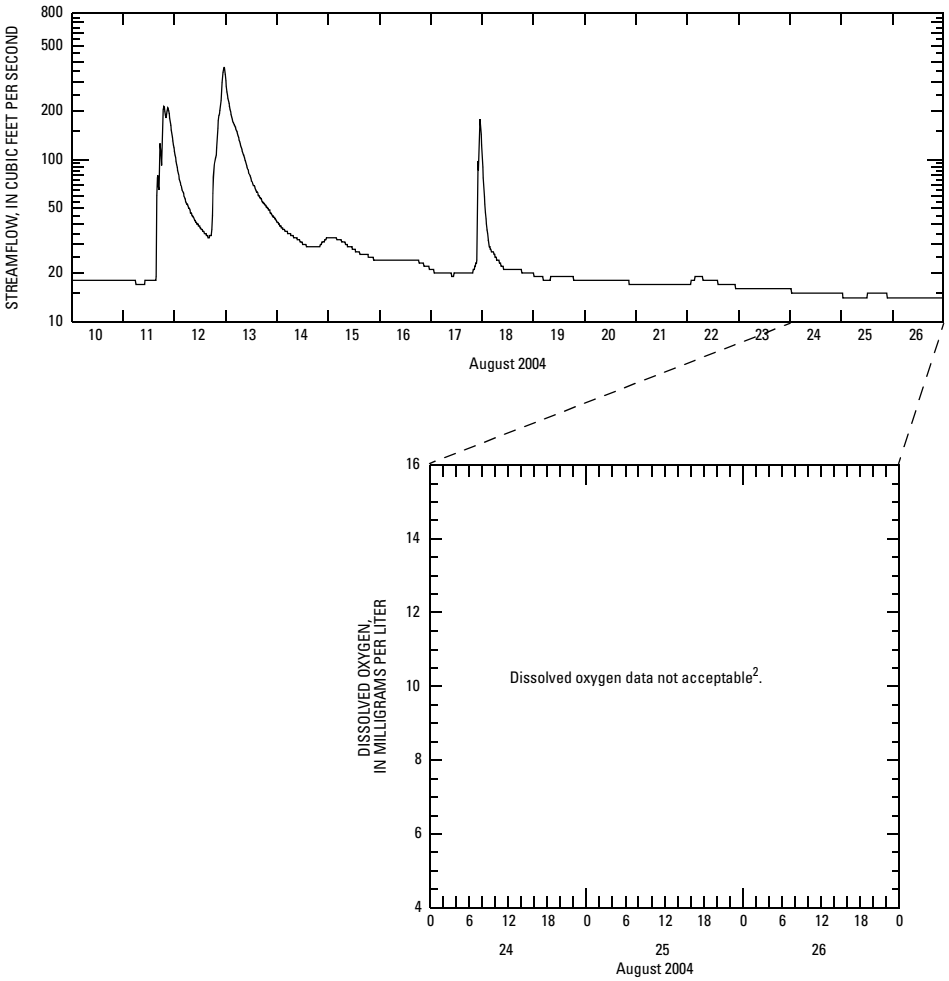


Streamflow and dissolved oxygen concentration for South Branch Patapsco River near Gaither, Md. (downstream) - 01587300.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Gwynns Falls at Villa Nova, Md. - 01589300.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 24, 2004	1800	--	--	8.2	401	22.4
August 24, 2004	1900	--	--	8.1	402	22.4
August 24, 2004	2000	--	--	8.0	404	22.2
August 24, 2004	2100	--	--	8.0	404	22.1
August 24, 2004	2200	--	--	7.9	405	22.0
August 24, 2004	2300	--	--	7.9	405	21.9
August 24, 2004	2400	--	--	7.9	405	21.8
August 25, 2004	0100	--	--	7.8	406	21.8
August 25, 2004	0200	--	--	7.8	407	21.7
August 25, 2004	0300	--	--	7.8	407	21.6
August 25, 2004	0400	--	--	7.8	408	21.5
August 25, 2004	0500	--	--	7.8	409	21.4
August 25, 2004	0600	--	--	7.8	410	21.3
August 25, 2004	0700	--	--	7.8	411	21.2
August 25, 2004	0800	--	--	7.8	412	21.2
August 25, 2004	0900	--	--	7.8	413	21.2
August 25, 2004	1000	--	--	7.9	414	21.1
August 25, 2004	1100	--	--	8.0	414	21.2
August 25, 2004	1200	--	--	8.1	413	21.4
August 25, 2004	1300	--	--	8.2	413	21.9
August 25, 2004	1400	--	--	8.3	413	22.2
August 25, 2004	1500	--	--	8.4	412	22.5
August 25, 2004	1600	--	--	8.4	412	22.8
August 25, 2004	1700	--	--	8.4	412	23.0
August 25, 2004	1800	--	--	8.3	411	23.0
August 25, 2004	1900	--	--	8.2	411	22.8
August 25, 2004	2000	--	--	8.1	411	22.6
August 25, 2004	2100	--	--	8.0	411	22.6
August 25, 2004	2200	--	--	8.0	411	22.5
August 25, 2004	2300	--	--	7.9	411	22.4
August 25, 2004	2400	--	--	7.9	412	22.2
August 26, 2004	0100	--	--	7.9	411	22.1
August 26, 2004	0200	--	--	7.8	410	22.0
August 26, 2004	0300	--	--	7.8	409	21.9
August 26, 2004	0400	--	--	7.8	408	21.8
August 26, 2004	0500	--	--	7.8	407	21.7
August 26, 2004	0600	--	--	7.8	406	21.6
August 26, 2004	0700	--	--	7.8	406	21.5
August 26, 2004	0800	--	--	7.8	406	21.4
August 26, 2004	0900	--	--	7.8	406	21.4
August 26, 2004	1000	--	--	7.9	405	21.5
August 26, 2004	1100	--	--	8.0	405	21.6
August 26, 2004	1200	--	--	8.0	405	21.8
August 26, 2004	1300	--	--	8.2	404	22.3
August 26, 2004	1400	--	--	8.3	404	22.6
August 26, 2004	1500	--	--	8.3	404	22.7
August 26, 2004	1600	--	--	8.3	404	22.9
August 26, 2004	1700	--	--	8.3	403	23.0
August 26, 2004	1800	--	--	8.3	402	23.1
August 26, 2004	1900	--	--	8.2	402	22.9
August 26, 2004	2000	--	--	8.1	402	22.7
August 26, 2004	2100	--	--	8.0	402	22.6
August 26, 2004	2200	--	--	7.9	401	22.5
August 26, 2004	2300	--	--	7.9	400	22.4
August 26, 2004	2400	--	--	7.9	400	22.4



Streamflow and dissolved oxygen concentration for Gwynns Falls at Villa Nova, Md. - 01589300.

[2]At the end of the continuous monitor deployment period, dissolved oxygen concentations were outside the maximum allowable quality-control limits as defined in USGS Techniques and Methods manual, I-D3, “Guidelines and Standard Procedures for Continuous Water-Qulaity Monitors: Station Operation, Record Computation, and Data Reporting” (Wagner and others, 2006).

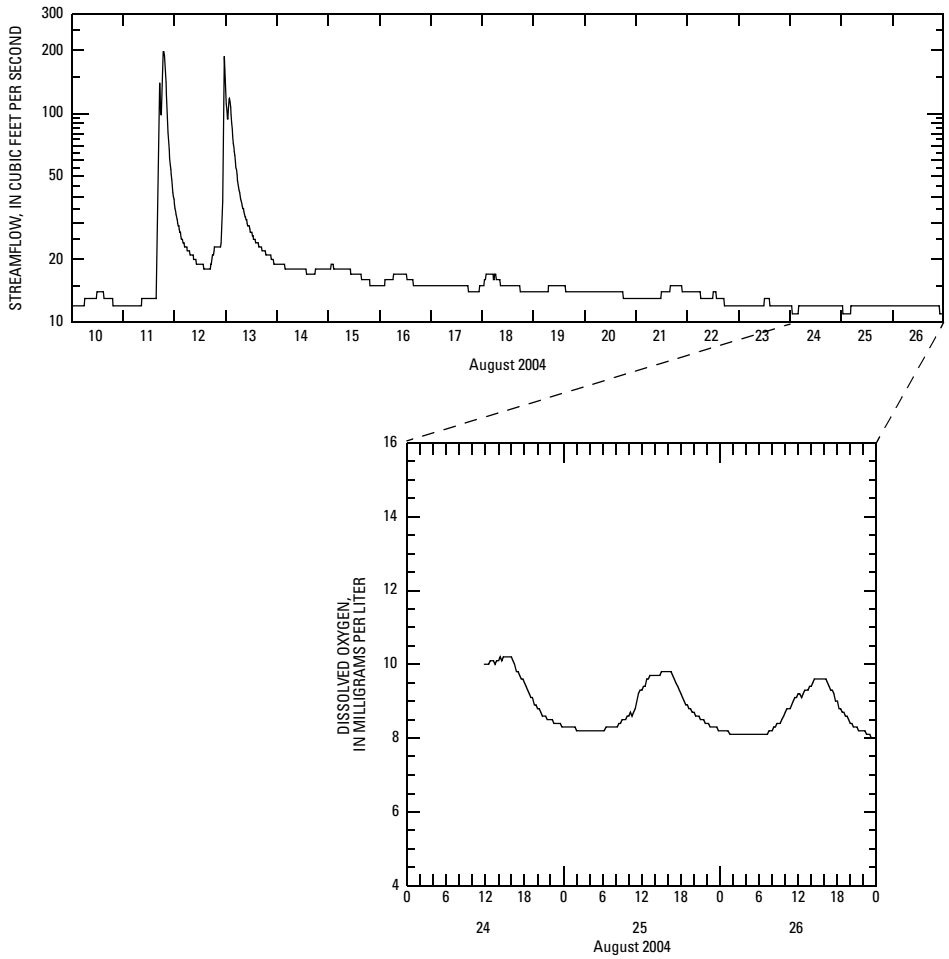
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Jones Falls at Sorrento, Md. - 01589440.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 24, 2004	1200	10.0	--	8.0	475	18.8
August 24, 2004	1300	10.1	107	8.0	474	19.2
August 24, 2004	1400	10.1	110	8.1	472	19.4
August 24, 2004	1500	10.2	110	8.1	471	19.7
August 24, 2004	1600	10.2	112	8.2	469	20.0
August 24, 2004	1700	9.8	112	8.1	468	20.0
August 24, 2004	1800	9.5	108	8.1	468	20.1
August 24, 2004	1900	9.1	105	8.1	468	20.2
August 24, 2004	2000	8.8	101	8.0	469	20.3
August 24, 2004	2100	8.6	98	8.0	469	20.2
August 24, 2004	2200	8.5	95	8.0	470	20.2
August 24, 2004	2300	8.4	94	7.9	472	20.1
August 24, 2004	2400	8.3	93	7.9	473	20.1
August 25, 2004	0100	8.3	92	7.9	474	20.0
August 25, 2004	0200	8.2	91	7.9	476	19.9
August 25, 2004	0300	8.2	91	7.9	478	19.8
August 25, 2004	0400	8.2	90	7.8	479	19.8
August 25, 2004	0500	8.2	90	7.8	480	19.7
August 25, 2004	0600	8.2	90	7.8	481	19.6
August 25, 2004	0700	8.3	90	7.8	481	19.6
August 25, 2004	0800	8.3	90	7.8	481	19.6
August 25, 2004	0900	8.5	91	7.8	481	19.6
August 25, 2004	1000	8.6	92	7.9	481	19.6
August 25, 2004	1100	8.8	94	7.9	480	19.6
August 25, 2004	1200	9.3	96	8.0	478	19.8
August 25, 2004	1300	9.6	102	8.0	476	20.0
August 25, 2004	1400	9.7	106	8.1	474	20.2
August 25, 2004	1500	9.8	108	8.1	473	20.3
August 25, 2004	1600	9.8	108	8.1	473	20.5
August 25, 2004	1700	9.6	109	8.1	471	20.6
August 25, 2004	1800	9.2	107	8.1	470	20.5
August 25, 2004	1900	8.9	102	8.0	469	20.4
August 25, 2004	2000	8.7	99	8.0	468	20.4
August 25, 2004	2100	8.5	96	8.0	468	20.4
August 25, 2004	2200	8.4	95	8.0	468	20.4
August 25, 2004	2300	8.3	93	8.0	468	20.3
August 25, 2004	2400	8.2	92	7.9	469	20.3
August 26, 2004	0100	8.2	91	7.9	470	20.2
August 26, 2004	0200	8.1	90	7.9	472	20.1
August 26, 2004	0300	8.1	90	7.9	474	20.0
August 26, 2004	0400	8.1	90	7.8	475	19.9
August 26, 2004	0500	8.1	89	7.8	476	19.8
August 26, 2004	0600	8.1	89	7.8	479	19.8
August 26, 2004	0700	8.1	89	7.8	482	19.7
August 26, 2004	0800	8.2	89	7.8	482	19.6
August 26, 2004	0900	8.4	90	7.9	482	19.7
August 26, 2004	1000	8.7	92	7.9	480	19.8
August 26, 2004	1100	8.9	96	7.9	478	19.9
August 26, 2004	1200	9.2	97	8.0	476	20.0
August 26, 2004	1300	9.3	101	8.0	474	20.1
August 26, 2004	1400	9.4	102	8.0	471	20.3
August 26, 2004	1500	9.6	104	8.1	469	20.6
August 26, 2004	1600	9.6	107	8.1	468	20.7
August 26, 2004	1700	9.3	107	8.1	466	20.8
August 26, 2004	1800	9.0	104	8.1	465	20.8
August 26, 2004	1900	8.7	100	8.0	465	20.7
August 26, 2004	2000	8.4	97	8.0	465	20.6
August 26, 2004	2100	8.3	94	8.0	465	20.6
August 26, 2004	2200	8.2	92	8.0	466	20.6

Continuous-monitoring data for Jones Falls at Sorrento, Md. - 01589440.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 26, 2004	2300	8.1	91	7.9	467	20.6
August 26, 2004	2400	8.0	90	7.9	468	20.6

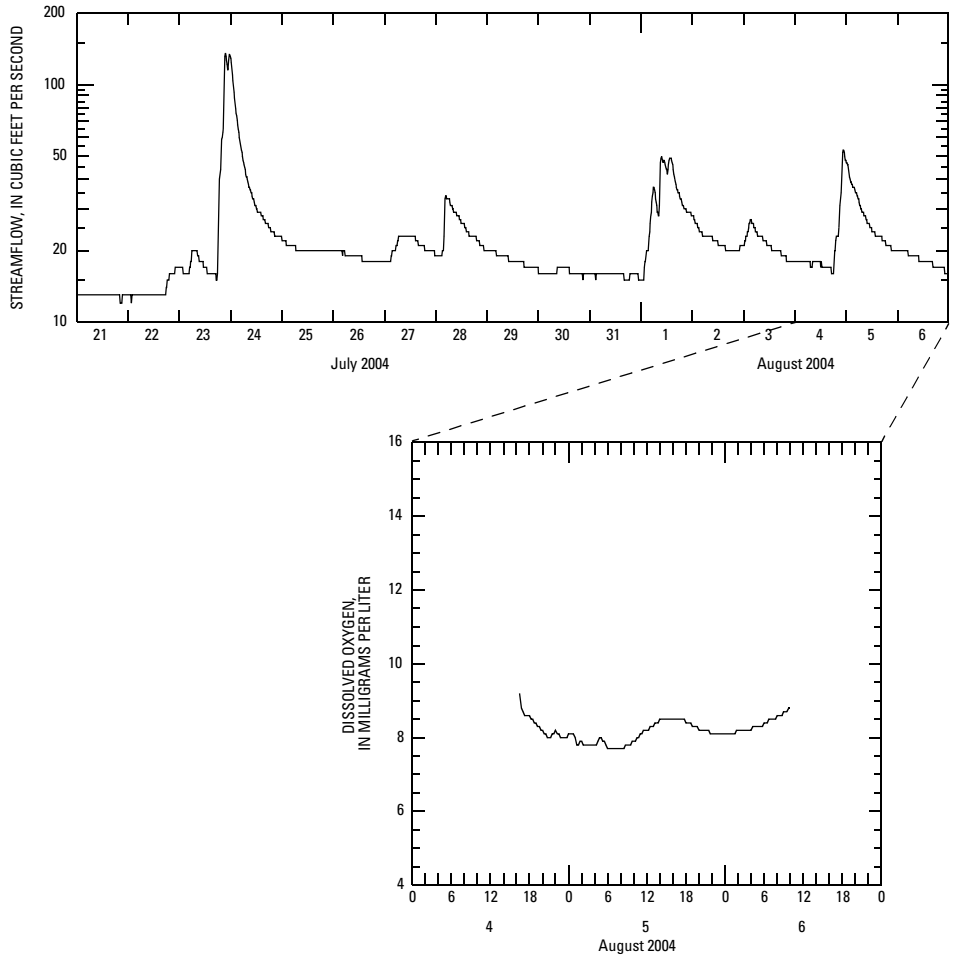


Streamflow and dissolved oxygen concentration for Jones Falls at Sorrento, Md. - 01589440.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Patuxent River near Unity, Md. - 01591000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 4, 2004	1700	8.7	--	7.5	133	24.4
August 4, 2004	1800	8.6	105	7.5	133	24.4
August 4, 2004	1900	8.4	102	7.4	133	24.3
August 4, 2004	2000	8.2	100	7.3	128	23.9
August 4, 2004	2100	8.0	97	7.3	125	23.6
August 4, 2004	2200	8.2	95	7.2	127	23.3
August 4, 2004	2300	8.0	96	7.2	127	23.0
August 4, 2004	2400	8.1	93	7.2	125	22.7
August 5, 2004	0100	8.0	94	7.2	124	22.5
August 5, 2004	0200	7.9	92	7.2	122	22.3
August 5, 2004	0300	7.8	91	7.2	125	22.2
August 5, 2004	0400	7.8	89	7.2	122	22.0
August 5, 2004	0500	8.0	89	7.2	121	21.9
August 5, 2004	0600	7.7	91	7.1	122	21.7
August 5, 2004	0700	7.7	88	7.1	124	21.6
August 5, 2004	0800	7.7	88	7.2	124	21.5
August 5, 2004	0900	7.8	87	7.2	125	21.4
August 5, 2004	1000	7.9	88	7.2	126	21.3
August 5, 2004	1100	8.1	89	7.2	128	21.4
August 5, 2004	1200	8.2	91	7.3	127	21.5
August 5, 2004	1300	8.3	93	7.3	126	21.6
August 5, 2004	1400	8.5	95	7.3	126	21.6
August 5, 2004	1500	8.5	96	7.4	127	21.7
August 5, 2004	1600	8.5	97	7.4	130	21.7
August 5, 2004	1700	8.5	97	7.4	133	21.7
August 5, 2004	1800	8.4	96	7.4	134	21.7
August 5, 2004	1900	8.3	96	7.4	133	21.6
August 5, 2004	2000	8.2	95	7.3	132	21.5
August 5, 2004	2100	8.2	93	7.3	130	21.2
August 5, 2004	2200	8.1	92	7.3	129	21.0
August 5, 2004	2300	8.1	91	7.3	129	20.8
August 5, 2004	2400	8.1	91	7.3	129	20.6
August 6, 2004	0100	8.1	90	7.3	129	20.5
August 6, 2004	0200	8.2	90	7.3	130	20.3
August 6, 2004	0300	8.2	90	7.3	131	20.1
August 6, 2004	0400	8.2	90	7.3	131	19.8
August 6, 2004	0500	8.3	90	7.3	132	19.6
August 6, 2004	0600	8.4	90	7.3	132	19.3
August 6, 2004	0700	8.5	91	7.3	132	19.0
August 6, 2004	0800	8.6	91	7.3	132	18.8
August 6, 2004	0900	8.7	92	7.3	132	18.6
August 6, 2004	1000	8.8	93	7.3	132	18.6

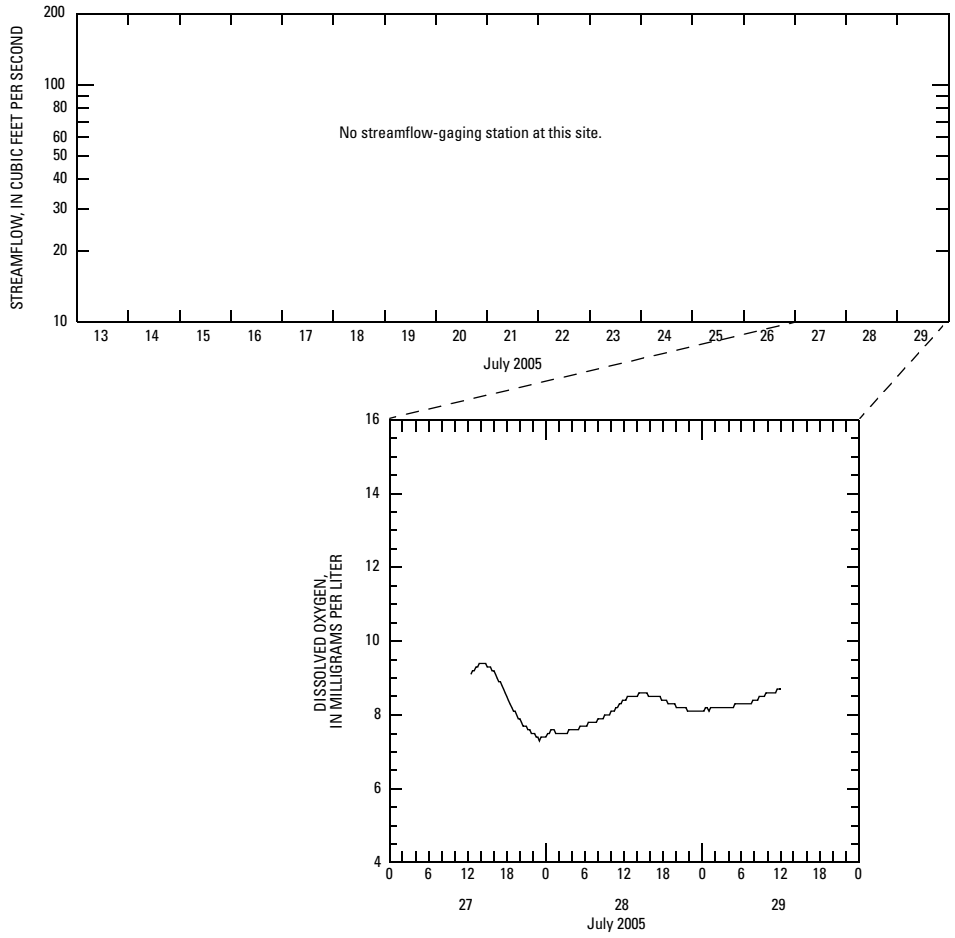


Streamflow and dissolved oxygen concentration for Patuxent River near Unity, Md. - 01591000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Middle Patuxent River near Savage, Md. - 01593900.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 27, 2005	1300	9.2	--	8.1	271	25.6
July 27, 2005	1400	9.4	112	8.2	272	26.2
July 27, 2005	1500	9.3	116	8.3	271	26.7
July 27, 2005	1600	9.2	117	8.3	271	26.9
July 27, 2005	1700	8.9	115	8.2	272	26.9
July 27, 2005	1800	8.5	111	8.1	272	26.8
July 27, 2005	1900	8.1	107	7.9	259	26.2
July 27, 2005	2000	7.9	100	7.8	252	25.8
July 27, 2005	2100	7.7	97	7.8	244	25.6
July 27, 2005	2200	7.5	94	7.7	246	25.5
July 27, 2005	2300	7.3	92	7.6	246	25.6
July 27, 2005	2400	7.4	90	7.6	238	25.4
July 28, 2005	0100	7.6	91	7.5	211	25.1
July 28, 2005	0200	7.5	92	7.5	191	24.8
July 28, 2005	0300	7.5	90	7.4	188	24.6
July 28, 2005	0400	7.6	90	7.4	188	24.4
July 28, 2005	0500	7.6	90	7.5	193	24.2
July 28, 2005	0600	7.7	91	7.5	197	23.9
July 28, 2005	0700	7.8	92	7.5	205	23.7
July 28, 2005	0800	7.9	92	7.5	210	23.5
July 28, 2005	0900	8.0	93	7.5	213	23.3
July 28, 2005	1000	8.1	93	7.6	217	23.2
July 28, 2005	1100	8.2	94	7.6	219	23.3
July 28, 2005	1200	8.4	96	7.6	221	23.5
July 28, 2005	1300	8.5	99	7.7	225	23.9
July 28, 2005	1400	8.5	101	7.7	226	24.0
July 28, 2005	1500	8.6	101	7.8	226	24.1
July 28, 2005	1600	8.5	103	7.7	226	24.1
July 28, 2005	1700	8.5	101	7.7	225	24.0
July 28, 2005	1800	8.4	101	7.7	226	23.9
July 28, 2005	1900	8.3	100	7.7	227	23.8
July 28, 2005	2000	8.2	98	7.7	229	23.6
July 28, 2005	2100	8.2	97	7.6	232	23.5
July 28, 2005	2200	8.1	96	7.6	233	23.4
July 28, 2005	2300	8.1	96	7.6	236	23.3
July 28, 2005	2400	8.1	95	7.6	238	23.1
July 29, 2005	0100	8.1	95	7.6	240	23.0
July 29, 2005	0200	8.2	95	7.6	243	22.9
July 29, 2005	0300	8.2	95	7.6	247	22.8
July 29, 2005	0400	8.2	95	7.6	250	22.6
July 29, 2005	0500	8.3	95	7.6	253	22.5
July 29, 2005	0600	8.3	96	7.6	256	22.4
July 29, 2005	0700	8.3	96	7.6	258	22.3
July 29, 2005	0800	8.4	96	7.6	260	22.3
July 29, 2005	0900	8.5	97	7.6	260	22.3
July 29, 2005	1000	8.6	98	7.6	260	22.3
July 29, 2005	1100	8.6	98	7.7	260	22.3
July 29, 2005	1200	8.7	99	7.7	260	22.3

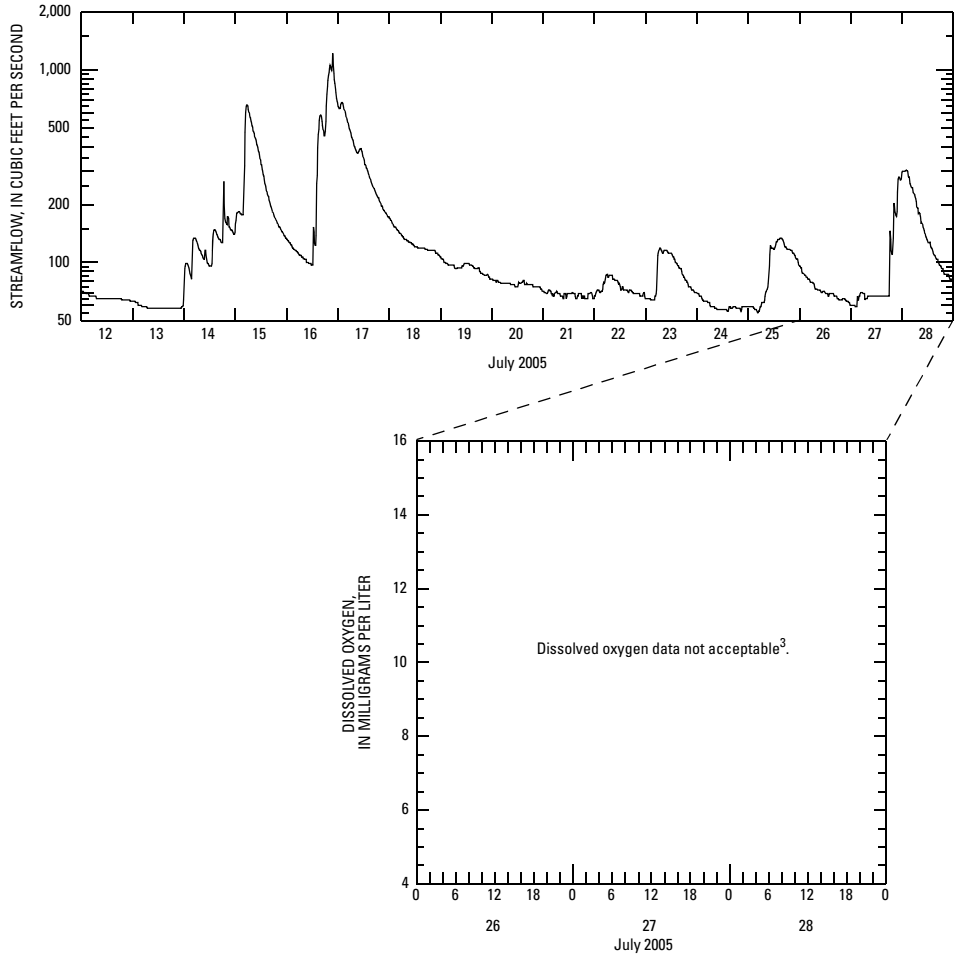


Streamflow and dissolved oxygen concentration for Middle Patuxent River near Savage, Md. - 01593900.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Little Patuxent River at Savage, Md. - 01594000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
July 26, 2005	1300	--	--	8.5	271	25.4
July 26, 2005	1400	--	--	8.7	271	26.3
July 26, 2005	1500	--	--	8.8	270	27.1
July 26, 2005	1600	--	--	8.8	270	27.7
July 26, 2005	1700	--	--	8.7	271	27.9
July 26, 2005	1800	--	--	8.6	272	27.7
July 26, 2005	1900	--	--	8.4	274	27.2
July 26, 2005	2000	--	--	8.2	275	26.8
July 26, 2005	2100	--	--	8.0	277	26.4
July 26, 2005	2200	--	--	8.0	278	26.1
July 26, 2005	2300	--	--	7.9	279	25.9
July 26, 2005	2400	--	--	7.9	280	25.7
July 27, 2005	0100	--	--	7.9	281	25.6
July 27, 2005	0200	--	--	7.9	282	25.4
July 27, 2005	0300	--	--	7.9	283	25.3
July 27, 2005	0400	--	--	7.9	284	25.1
July 27, 2005	0500	--	--	7.9	285	25.0
July 27, 2005	0600	--	--	7.9	285	24.9
July 27, 2005	0700	--	--	7.9	285	24.8
July 27, 2005	0800	--	--	7.9	286	24.7
July 27, 2005	0900	--	--	8.0	286	24.8
July 27, 2005	1000	--	--	8.1	287	25.0
July 27, 2005	1100	--	--	8.3	287	25.3
July 27, 2005	1200	--	--	8.5	288	25.8
July 27, 2005	1300	--	--	8.6	288	26.6
July 27, 2005	1400	--	--	8.8	288	27.4
July 27, 2005	1500	--	--	8.8	289	28.2
July 27, 2005	1600	--	--	8.9	289	28.8
July 27, 2005	1700	--	--	8.9	290	29.0
July 27, 2005	1800	--	--	8.8	291	28.8
July 27, 2005	1900	--	--	8.6	293	28.4
July 27, 2005	2000	--	--	8.2	273	27.5
July 27, 2005	2100	--	--	8.0	270	26.7
July 27, 2005	2200	--	--	7.9	280	26.3
July 27, 2005	2300	--	--	7.8	234	26.3
July 27, 2005	2400	--	--	7.8	224	26.4
July 28, 2005	0100	--	--	7.8	228	26.1
July 28, 2005	0200	--	--	7.8	213	25.6
July 28, 2005	0300	--	--	7.8	207	25.5
July 28, 2005	0400	--	--	7.8	200	25.4
July 28, 2005	0500	--	--	7.8	188	25.3
July 28, 2005	0600	--	--	7.8	175	25.1
July 28, 2005	0700	--	--	7.8	171	24.9
July 28, 2005	0800	--	--	7.8	175	24.7
July 28, 2005	0900	--	--	7.8	177	24.5
July 28, 2005	1000	--	--	7.9	159	24.5
July 28, 2005	1100	--	--	8.0	154	24.5
July 28, 2005	1200	--	--	8.1	153	24.7
July 28, 2005	1300	--	--	8.2	161	25.1
July 28, 2005	1400	--	--	8.3	156	25.5
July 28, 2005	1500	--	--	8.3	156	25.6
July 28, 2005	1600	--	--	8.3	157	25.6
July 28, 2005	1700	--	--	8.3	157	25.4
July 28, 2005	1800	--	--	8.2	158	25.2
July 28, 2005	1900	--	--	8.2	159	25.0
July 28, 2005	2000	--	--	8.1	160	24.8
July 28, 2005	2100	--	--	8.0	160	24.6
July 28, 2005	2200	--	--	7.9	160	24.4
July 28, 2005	2300	--	--	7.9	162	24.3
July 28, 2005	2400	--	--	7.9	163	24.1



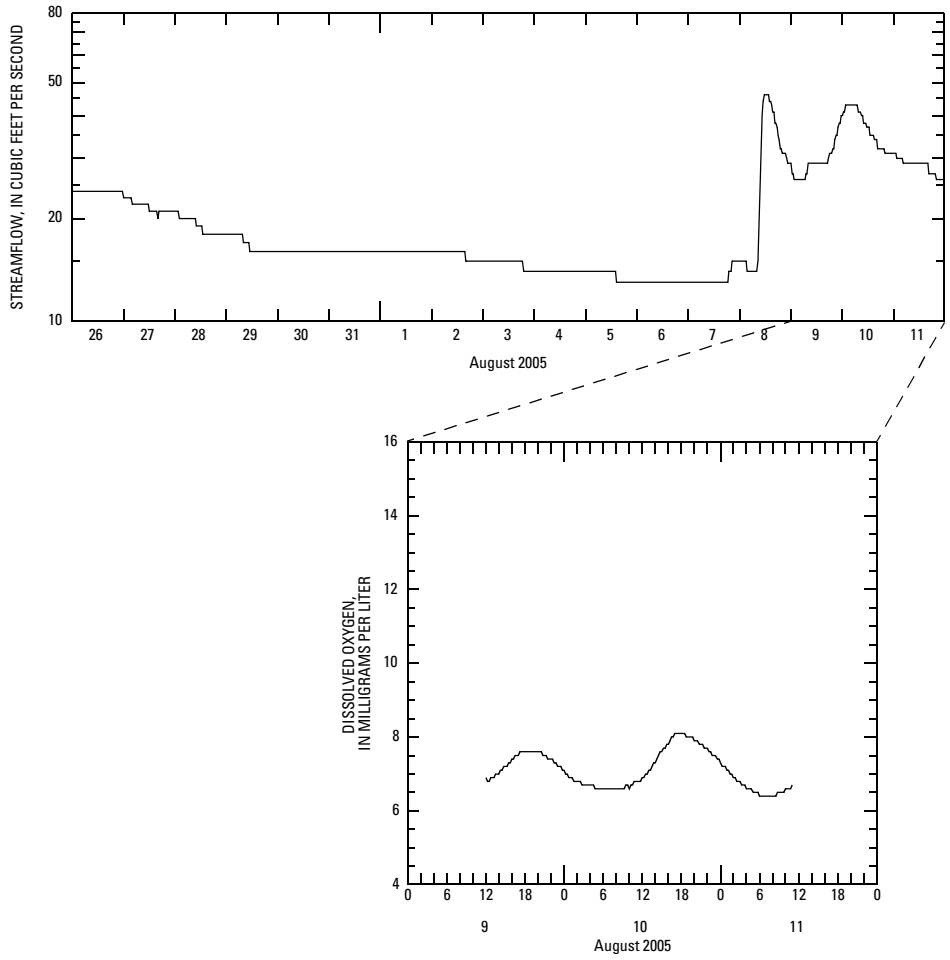
Streamflow and dissolved oxygen concentration for Little Patuxent River at Savage, Md. - 01594000.

[3]At the end of the continuous monitor deployment period, dissolved oxygen concentations were outside the maximum allowable quality-control limits as defined in USGS Techniques and Methods manual, I-D3, “Guidelines and Standard Procedures for Continuous Water-Qulaity Monitors: Station Operation, Record Computation, and Data Reporting” (Wagner and others, 2006).

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Back Creek near Jones Springs, W.Va. - 01614000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 9, 2005	1200	6.9	--	7.7	261	23.6
August 9, 2005	1300	6.9	81	7.7	258	23.7
August 9, 2005	1400	7.0	82	7.7	255	23.9
August 9, 2005	1500	7.2	83	7.8	253	24.2
August 9, 2005	1600	7.4	86	7.8	250	24.4
August 9, 2005	1700	7.5	88	7.8	247	24.5
August 9, 2005	1800	7.6	90	7.8	245	24.6
August 9, 2005	1900	7.6	91	7.8	243	24.6
August 9, 2005	2000	7.6	92	7.8	242	24.6
August 9, 2005	2100	7.5	91	7.8	242	24.5
August 9, 2005	2200	7.4	90	7.8	241	24.5
August 9, 2005	2300	7.2	89	7.8	241	24.3
August 9, 2005	2400	7.1	86	7.8	240	24.2
August 10, 2005	0100	6.9	84	7.7	240	24.0
August 10, 2005	0200	6.8	82	7.7	240	23.9
August 10, 2005	0300	6.7	81	7.7	240	23.8
August 10, 2005	0400	6.7	80	7.7	240	23.7
August 10, 2005	0500	6.6	79	7.7	241	23.6
August 10, 2005	0600	6.6	78	7.7	242	23.5
August 10, 2005	0700	6.6	78	7.7	243	23.4
August 10, 2005	0800	6.6	77	7.6	244	23.4
August 10, 2005	0900	6.6	78	7.6	244	23.4
August 10, 2005	1000	6.6	78	7.6	245	23.5
August 10, 2005	1100	6.8	78	7.7	245	23.7
August 10, 2005	1200	6.9	80	7.7	245	23.8
August 10, 2005	1300	7.1	82	7.7	246	24.3
August 10, 2005	1400	7.3	85	7.8	246	24.8
August 10, 2005	1500	7.6	89	7.8	245	25.5
August 10, 2005	1600	7.8	93	7.8	245	26.0
August 10, 2005	1700	8.1	97	7.9	245	26.2
August 10, 2005	1800	8.1	100	7.9	244	26.1
August 10, 2005	1900	8.0	100	7.9	244	25.9
August 10, 2005	2000	7.9	99	7.9	243	25.8
August 10, 2005	2100	7.8	97	7.9	243	25.6
August 10, 2005	2200	7.7	96	7.8	243	25.6
August 10, 2005	2300	7.5	94	7.8	243	25.4
August 10, 2005	2400	7.3	92	7.8	242	25.3
August 11, 2005	0100	7.1	89	7.8	242	25.2
August 11, 2005	0200	6.9	87	7.8	242	25.1
August 11, 2005	0300	6.8	84	7.7	242	24.9
August 11, 2005	0400	6.6	82	7.7	241	24.8
August 11, 2005	0500	6.5	80	7.7	241	24.6
August 11, 2005	0600	6.4	78	7.7	240	24.4
August 11, 2005	0700	6.4	77	7.6	240	24.2
August 11, 2005	0800	6.4	76	7.6	240	24.0
August 11, 2005	0900	6.5	76	7.6	240	24.0
August 11, 2005	1000	6.6	77	7.7	240	24.1
August 11, 2005	1100	6.7	78	7.7	240	24.3

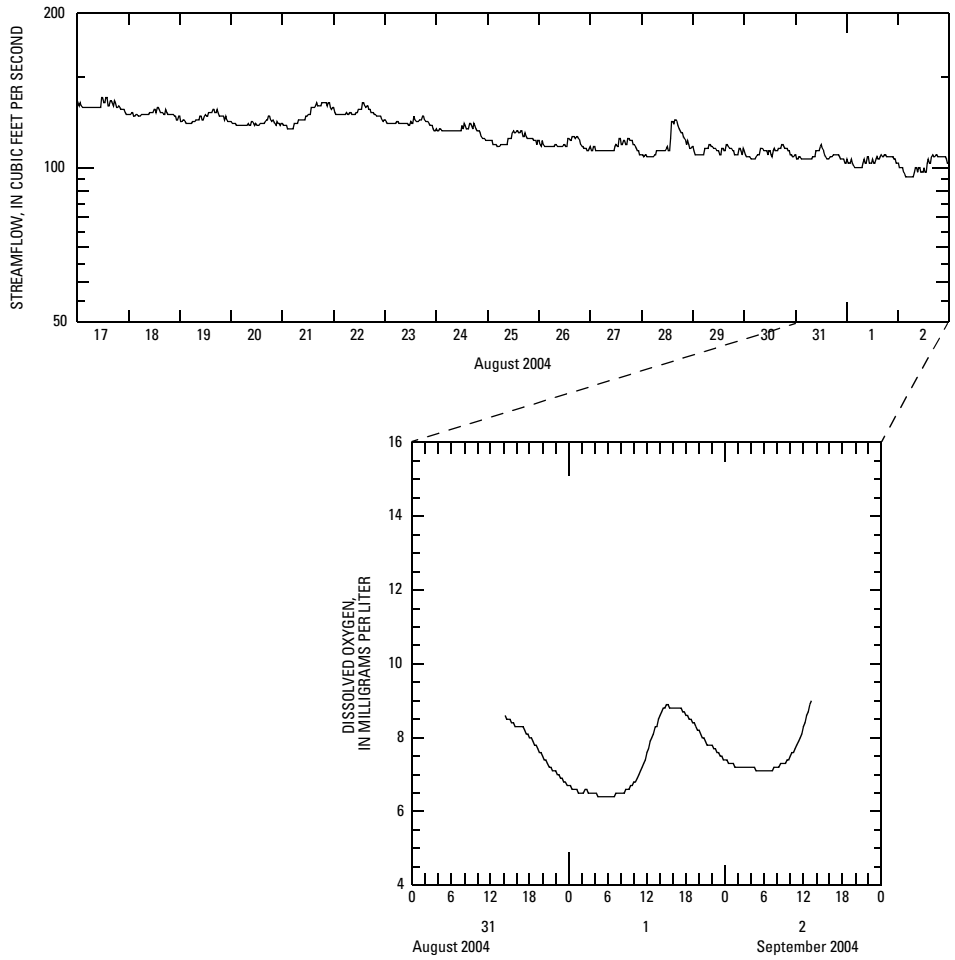


Streamflow and dissolved oxygen concentration for Back Creek near Jones Springs, W.Va. - 01614000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Opequon Creek near Martinsburg, W.Va. - 01616500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 31, 2004	1500	8.5	--	8.1	642	24.4
August 31, 2004	1600	8.3	101	8.1	694	24.6
August 31, 2004	1700	8.3	100	8.1	647	24.6
August 31, 2004	1800	8.0	99	8.1	678	24.5
August 31, 2004	1900	7.8	95	8.1	653	24.3
August 31, 2004	2000	7.5	92	8.1	655	24.0
August 31, 2004	2100	7.2	88	8.1	659	23.7
August 31, 2004	2200	7.1	84	8.1	663	23.3
August 31, 2004	2300	6.9	81	8.1	666	23.0
August 31, 2004	2400	6.7	78	8.1	744	22.8
September 1, 2004	0100	6.6	76	8.1	676	22.4
September 1, 2004	0200	6.5	74	8.1	757	22.2
September 1, 2004	0300	6.5	72	8.1	680	21.9
September 1, 2004	0400	6.5	71	8.0	677	21.7
September 1, 2004	0500	6.4	70	8.0	679	21.5
September 1, 2004	0600	6.4	70	8.0	680	21.2
September 1, 2004	0700	6.4	69	8.0	681	21.0
September 1, 2004	0800	6.5	68	8.0	738	20.9
September 1, 2004	0900	6.6	68	8.0	684	20.7
September 1, 2004	1000	6.8	69	8.0	730	20.8
September 1, 2004	1100	7.1	71	8.0	678	21.0
September 1, 2004	1200	7.6	75	8.1	727	21.5
September 1, 2004	1300	8.1	81	8.1	672	21.9
September 1, 2004	1400	8.6	87	8.1	710	22.5
September 1, 2004	1500	8.9	94	8.2	665	22.8
September 1, 2004	1600	8.8	97	8.2	718	23.0
September 1, 2004	1700	8.8	97	8.2	661	23.1
September 1, 2004	1800	8.6	96	8.2	696	23.1
September 1, 2004	1900	8.4	94	8.2	659	23.0
September 1, 2004	2000	8.2	91	8.2	655	22.8
September 1, 2004	2100	7.9	88	8.1	654	22.5
September 1, 2004	2200	7.8	84	8.1	653	22.2
September 1, 2004	2300	7.6	82	8.1	653	21.9
September 1, 2004	2400	7.4	79	8.1	733	21.7
September 2, 2004	0100	7.3	77	8.1	659	21.4
September 2, 2004	0200	7.2	75	8.1	738	21.3
September 2, 2004	0300	7.2	73	8.1	661	21.0
September 2, 2004	0400	7.2	72	8.1	656	20.7
September 2, 2004	0500	7.1	71	8.1	656	20.5
September 2, 2004	0600	7.1	70	8.0	656	20.3
September 2, 2004	0700	7.1	70	8.0	656	20.1
September 2, 2004	0800	7.2	70	8.0	708	20.0
September 2, 2004	0900	7.3	70	8.0	661	19.9
September 2, 2004	1000	7.5	70	8.0	700	20.0
September 2, 2004	1100	7.8	72	8.1	659	20.2
September 2, 2004	1200	8.3	76	8.1	707	20.6
September 2, 2004	1300	8.9	82	8.1	656	21.0

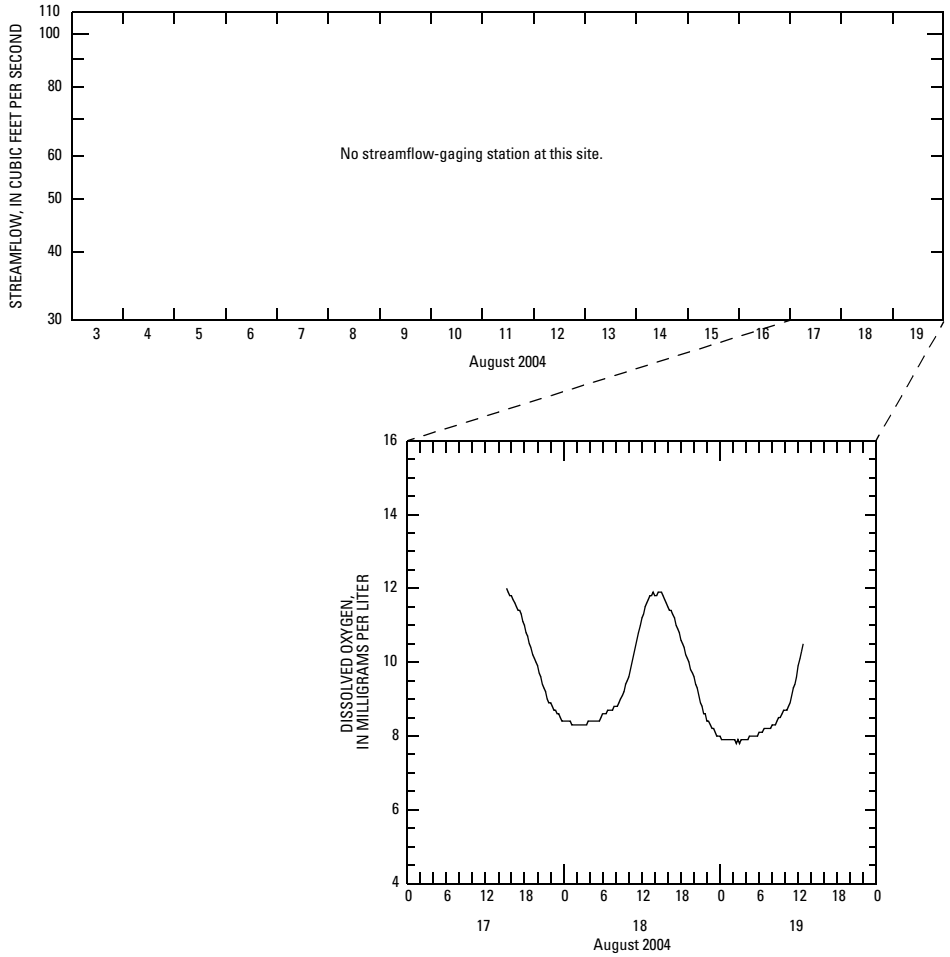


Streamflow and dissolved oxygen concentration for Opequon Creek near Martinsburg, WV - 01616500.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous monitoring data for Antietam Creek near Waynesboro, Pa. - 01619000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 17, 2004	1600	11.8	108	8.4	472	19.4
August 17, 2004	1700	11.4	128	8.4	466	19.6
August 17, 2004	1800	11.0	125	8.4	468	20.0
August 17, 2004	1900	10.4	121	8.3	469	20.1
August 17, 2004	2000	9.9	114	8.3	466	19.8
August 17, 2004	2100	9.3	108	8.2	470	19.6
August 17, 2004	2200	8.9	101	8.2	467	19.3
August 17, 2004	2300	8.6	96	8.1	469	19.1
August 17, 2004	2400	8.4	93	8.1	475	19.0
August 18, 2004	0100	8.4	91	8.0	470	18.9
August 18, 2004	0200	8.3	90	8.0	474	18.9
August 18, 2004	0300	8.3	89	8.0	479	18.8
August 18, 2004	0400	8.4	89	8.0	477	18.6
August 18, 2004	0500	8.4	90	7.9	480	18.3
August 18, 2004	0600	8.6	90	7.9	476	18.0
August 18, 2004	0700	8.7	90	7.9	476	17.7
August 18, 2004	0800	8.8	91	7.9	480	17.5
August 18, 2004	0900	9.1	92	7.9	476	17.4
August 18, 2004	1000	9.6	95	8.0	477	17.4
August 18, 2004	1100	10.4	101	8.1	478	17.7
August 18, 2004	1200	11.2	109	8.2	473	18.1
August 18, 2004	1300	11.7	119	8.3	472	18.8
August 18, 2004	1400	11.8	126	8.4	468	19.4
August 18, 2004	1500	11.9	129	8.4	468	20.0
August 18, 2004	1600	11.5	131	8.4	469	20.4
August 18, 2004	1700	11.2	128	8.4	464	20.6
August 18, 2004	1800	10.6	124	8.4	466	20.6
August 18, 2004	1900	10.1	118	8.3	466	20.6
August 18, 2004	2000	9.6	113	8.3	463	20.5
August 18, 2004	2100	8.9	106	8.2	466	20.4
August 18, 2004	2200	8.4	99	8.2	466	20.2
August 18, 2004	2300	8.2	93	8.1	468	20.1
August 18, 2004	2400	8.0	90	8.0	476	20.0
August 19, 2004	0100	7.9	88	8.0	473	19.9
August 19, 2004	0200	7.9	87	8.0	473	19.9
August 19, 2004	0300	7.8	87	7.9	476	19.8
August 19, 2004	0400	7.9	86	7.9	475	19.6
August 19, 2004	0500	8.0	87	7.9	477	19.5
August 19, 2004	0600	8.1	87	7.9	477	19.3
August 19, 2004	0700	8.2	87	7.9	477	19.0
August 19, 2004	0800	8.3	88	7.9	480	18.9
August 19, 2004	0900	8.5	89	7.9	479	18.7
August 19, 2004	1000	8.7	91	8.0	478	18.5
August 19, 2004	1100	9.1	93	8.0	480	18.5
August 19, 2004	1200	9.9	98	8.1	478	18.6

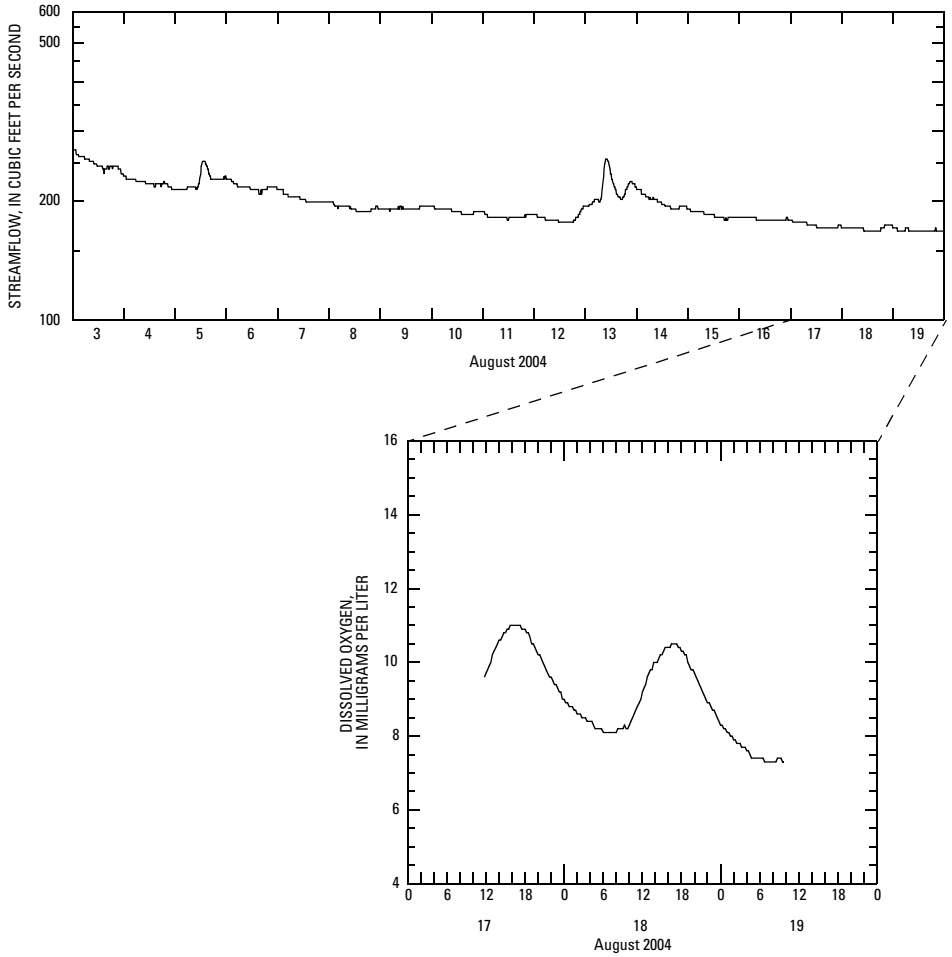


Streamflow and dissolved oxygen concentration for Antietam Creek near Waynesboro, Pa. - 01619000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Antietam Creek near Sharpsburg, Md. - 01619500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 17, 2004	1200	9.7	--	8.1	574	19.4
August 17, 2004	1300	10.2	106	8.2	573	19.5
August 17, 2004	1400	10.6	111	8.2	571	19.8
August 17, 2004	1500	10.8	116	8.3	571	20.2
August 17, 2004	1600	11.0	121	8.3	570	20.4
August 17, 2004	1700	11.0	123	8.3	570	20.5
August 17, 2004	1800	10.9	123	8.3	571	20.6
August 17, 2004	1900	10.5	122	8.3	572	20.6
August 17, 2004	2000	10.2	120	8.3	574	20.5
August 17, 2004	2100	9.9	116	8.3	576	20.5
August 17, 2004	2200	9.6	112	8.3	576	20.4
August 17, 2004	2300	9.3	108	8.3	576	20.3
August 17, 2004	2400	9.0	105	8.3	576	20.2
August 18, 2004	0100	8.8	103	8.3	577	20.2
August 18, 2004	0200	8.6	100	8.3	577	20.1
August 18, 2004	0300	8.5	99	8.2	578	20.0
August 18, 2004	0400	8.4	97	8.2	578	19.9
August 18, 2004	0500	8.2	96	8.2	579	19.9
August 18, 2004	0600	8.1	94	8.2	581	19.8
August 18, 2004	0700	8.1	94	8.2	582	19.8
August 18, 2004	0800	8.1	93	8.2	582	19.7
August 18, 2004	0900	8.2	94	8.2	583	19.6
August 18, 2004	1000	8.3	94	8.2	584	19.6
August 18, 2004	1100	8.7	96	8.2	585	19.7
August 18, 2004	1200	9.2	100	8.2	584	19.9
August 18, 2004	1300	9.7	106	8.2	582	20.1
August 18, 2004	1400	10.0	112	8.3	581	20.3
August 18, 2004	1500	10.2	117	8.3	579	20.5
August 18, 2004	1600	10.4	121	8.3	578	20.8
August 18, 2004	1700	10.5	123	8.3	577	20.9
August 18, 2004	1800	10.3	124	8.3	577	20.9
August 18, 2004	1900	10.0	123	8.3	576	20.9
August 18, 2004	2000	9.7	120	8.3	575	20.9
August 18, 2004	2100	9.3	116	8.3	577	20.9
August 18, 2004	2200	8.9	112	8.3	579	20.9
August 18, 2004	2300	8.7	108	8.3	581	20.8
August 18, 2004	2400	8.3	105	8.3	582	20.8
August 19, 2004	0100	8.1	102	8.3	583	20.8
August 19, 2004	0200	7.9	100	8.3	583	20.8
August 19, 2004	0300	7.8	98	8.2	584	20.8
August 19, 2004	0400	7.6	96	8.2	585	20.8
August 19, 2004	0500	7.4	94	8.2	585	20.8
August 19, 2004	0600	7.4	93	8.2	585	20.7
August 19, 2004	0700	7.3	92	8.2	586	20.7
August 19, 2004	0800	7.3	92	8.2	587	20.7
August 19, 2004	0900	7.4	92	8.2	588	20.6

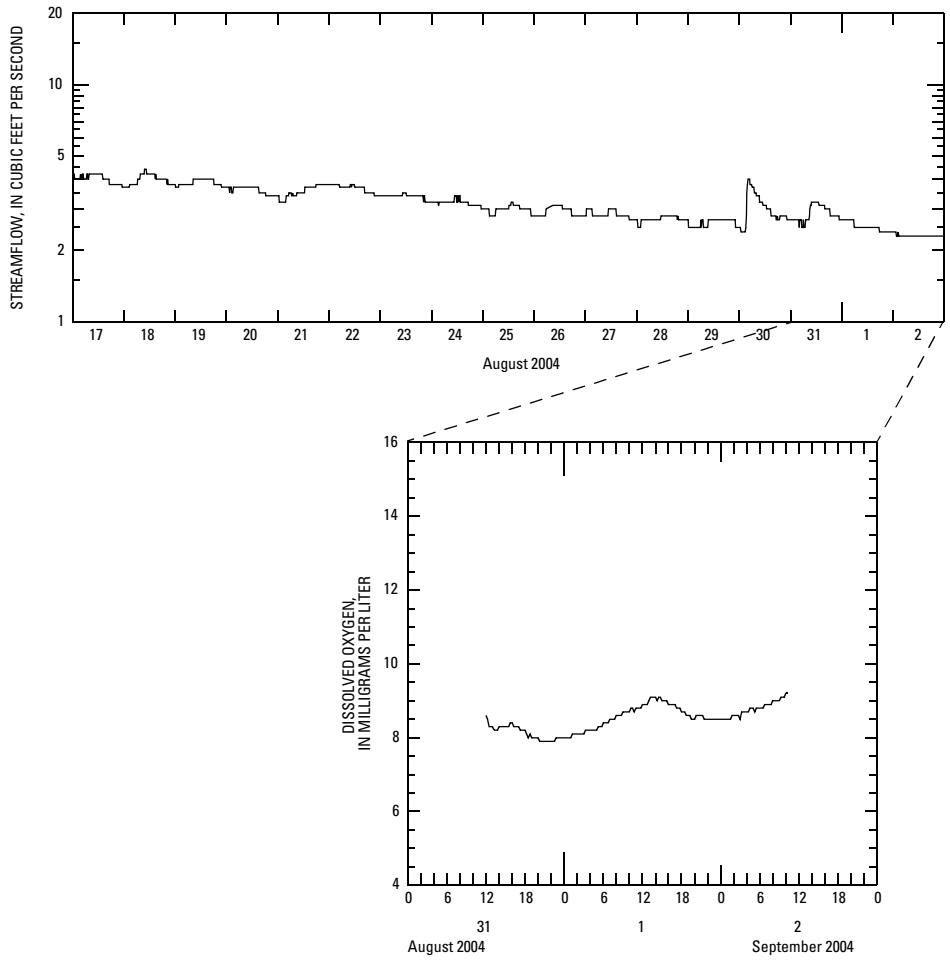


Streamflow and dissolved oxygen concentration for Antietam Creek near Sharpsburg, Md. - 01619500.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Piney Run near Lovettsville, Va. - 01636690.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 31, 2004	1200	8.6	--	7.3	104	22.0
August 31, 2004	1300	8.3	99	7.4	104	22.0
August 31, 2004	1400	8.3	95	7.4	104	22.2
August 31, 2004	1500	8.3	95	7.4	103	22.4
August 31, 2004	1600	8.4	96	7.4	103	22.5
August 31, 2004	1700	8.3	95	7.4	103	22.6
August 31, 2004	1800	8.2	95	7.4	102	22.5
August 31, 2004	1900	8.0	93	7.4	102	22.4
August 31, 2004	2000	8.0	92	7.4	103	22.1
August 31, 2004	2100	7.9	90	7.4	103	21.8
August 31, 2004	2200	7.9	89	7.4	103	21.5
August 31, 2004	2300	8.0	89	7.3	103	21.3
August 31, 2004	2400	8.0	88	7.3	103	21.1
September 1, 2004	0100	8.0	88	7.3	103	20.9
September 1, 2004	0200	8.1	88	7.3	104	20.7
September 1, 2004	0300	8.1	88	7.3	104	20.4
September 1, 2004	0400	8.2	88	7.3	104	20.1
September 1, 2004	0500	8.2	88	7.3	105	19.9
September 1, 2004	0600	8.4	88	7.3	105	19.6
September 1, 2004	0700	8.5	88	7.3	105	19.4
September 1, 2004	0800	8.6	89	7.3	105	19.2
September 1, 2004	0900	8.7	89	7.3	105	19.2
September 1, 2004	1000	8.7	90	7.4	105	19.3
September 1, 2004	1100	8.8	92	7.4	104	19.4
September 1, 2004	1200	8.9	92	7.4	104	19.7
September 1, 2004	1300	9.0	94	7.4	104	20.2
September 1, 2004	1400	9.1	95	7.4	104	20.6
September 1, 2004	1500	9.0	97	7.4	104	20.8
September 1, 2004	1600	8.9	97	7.4	104	21.0
September 1, 2004	1700	8.9	95	7.4	104	21.2
September 1, 2004	1800	8.7	95	7.4	104	21.3
September 1, 2004	1900	8.6	94	7.4	104	21.2
September 1, 2004	2000	8.5	93	7.4	104	21.0
September 1, 2004	2100	8.6	91	7.4	104	20.8
September 1, 2004	2200	8.5	90	7.4	104	20.5
September 1, 2004	2300	8.5	89	7.3	104	20.4
September 1, 2004	2400	8.5	89	7.3	104	20.2
September 2, 2004	0100	8.5	88	7.3	104	20.0
September 2, 2004	0200	8.6	88	7.3	104	19.8
September 2, 2004	0300	8.5	88	7.3	104	19.6
September 2, 2004	0400	8.7	88	7.3	104	19.4
September 2, 2004	0500	8.8	88	7.3	104	19.1
September 2, 2004	0600	8.8	88	7.3	104	18.9
September 2, 2004	0700	8.9	88	7.3	105	18.7
September 2, 2004	0800	9.0	89	7.3	105	18.5
September 2, 2004	0900	9.0	89	7.3	105	18.5
September 2, 2004	1000	9.2	90	7.3	104	18.7

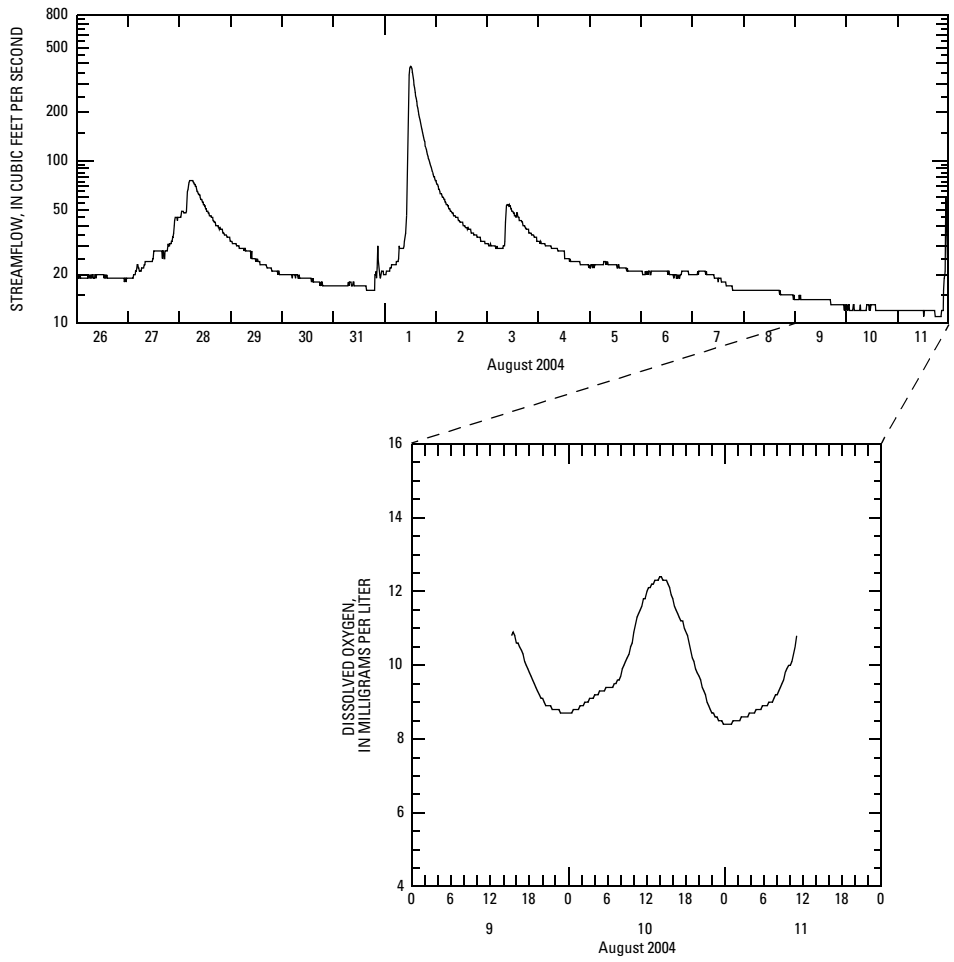


Streamflow and dissolved oxygen concentration for Piney Run near Lovettsville, Va. - 01636690.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Catoctin Creek near Middletown, Md. - 01637500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 9, 2004	1600	10.6	--	8.8	219	24.9
August 9, 2004	1700	10.3	129	8.8	220	25.5
August 9, 2004	1800	9.8	125	8.8	220	25.7
August 9, 2004	1900	9.4	120	8.7	221	25.3
August 9, 2004	2000	9.1	114	8.6	222	24.7
August 9, 2004	2100	8.9	109	8.4	223	24.0
August 9, 2004	2200	8.8	106	8.2	223	23.5
August 9, 2004	2300	8.7	103	7.9	224	22.9
August 9, 2004	2400	8.7	101	7.8	224	22.4
August 10, 2004	0100	8.8	100	7.7	224	22.0
August 10, 2004	0200	8.9	100	7.7	225	21.6
August 10, 2004	0300	9.0	101	7.7	225	21.4
August 10, 2004	0400	9.2	102	7.6	225	21.1
August 10, 2004	0500	9.3	102	7.6	225	20.9
August 10, 2004	0600	9.4	103	7.6	226	20.7
August 10, 2004	0700	9.5	104	7.6	226	20.6
August 10, 2004	0800	9.7	105	7.7	226	20.5
August 10, 2004	0900	10.2	107	7.7	226	20.5
August 10, 2004	1000	10.9	113	7.8	225	20.7
August 10, 2004	1100	11.5	120	8.0	225	21.3
August 10, 2004	1200	12.0	129	8.2	224	22.1
August 10, 2004	1300	12.2	136	8.3	223	23.0
August 10, 2004	1400	12.4	141	8.6	222	24.2
August 10, 2004	1500	12.3	146	8.7	222	25.2
August 10, 2004	1600	11.8	148	8.8	222	26.1
August 10, 2004	1700	11.3	145	8.8	222	26.6
August 10, 2004	1800	10.9	139	8.9	221	26.9
August 10, 2004	1900	10.2	136	8.8	223	26.6
August 10, 2004	2000	9.7	126	8.7	224	26.3
August 10, 2004	2100	9.2	118	8.6	225	25.8
August 10, 2004	2200	8.7	111	8.4	226	25.3
August 10, 2004	2300	8.5	105	8.1	227	24.8
August 10, 2004	2400	8.4	101	7.9	228	24.4
August 11, 2004	0100	8.4	100	7.8	229	24.1
August 11, 2004	0200	8.5	99	7.7	229	23.8
August 11, 2004	0300	8.6	99	7.7	230	23.4
August 11, 2004	0400	8.7	100	7.6	230	23.1
August 11, 2004	0500	8.8	100	7.6	230	22.9
August 11, 2004	0600	8.9	101	7.6	230	22.7
August 11, 2004	0700	9.0	101	7.6	230	22.5
August 11, 2004	0800	9.2	102	7.6	230	22.3
August 11, 2004	0900	9.6	104	7.6	230	22.4
August 11, 2004	1000	10.0	109	7.7	229	22.4
August 11, 2004	1100	10.8	114	7.8	229	22.8



Streamflow and dissolved oxygen concentration for Catoctin Creek near Middletown, Md. - 01637500.

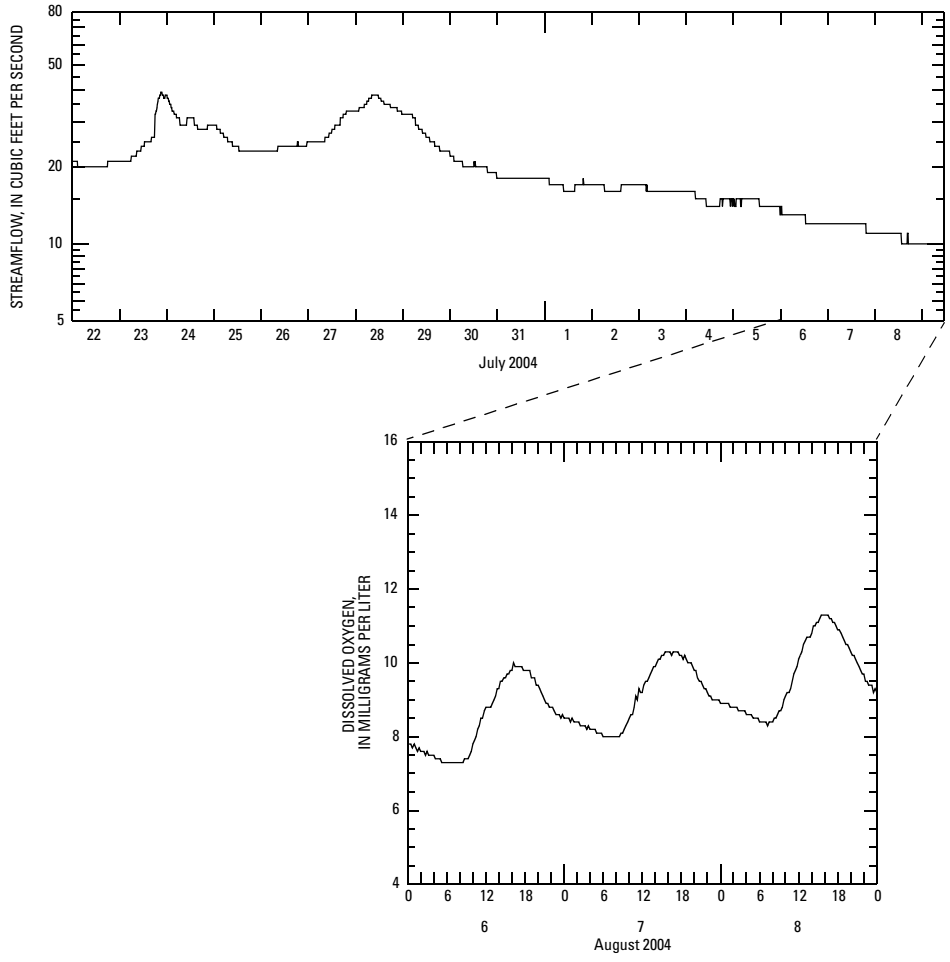
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Catoctin Creek at Taylorstown, Va., 01638480.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 6, 2004	0100	7.8	92	7.6	184	23.4
August 6, 2004	0200	7.6	91	7.5	183	23.2
August 6, 2004	0300	7.6	89	7.5	183	23.0
August 6, 2004	0400	7.5	88	7.4	183	22.8
August 6, 2004	0500	7.4	86	7.3	183	22.5
August 6, 2004	0600	7.3	85	7.3	183	22.1
August 6, 2004	0700	7.3	83	7.3	183	21.7
August 6, 2004	0800	7.3	83	7.3	183	21.6
August 6, 2004	0900	7.4	82	7.3	183	21.4
August 6, 2004	1000	7.8	84	7.3	183	21.6
August 6, 2004	1100	8.3	88	7.5	182	22.2
August 6, 2004	1200	8.8	96	7.5	183	22.6
August 6, 2004	1300	8.9	102	7.6	183	22.6
August 6, 2004	1400	9.3	103	7.7	183	22.8
August 6, 2004	1500	9.6	108	7.8	183	22.8
August 6, 2004	1600	9.8	111	7.8	183	22.9
August 6, 2004	1700	9.9	114	7.9	183	23.0
August 6, 2004	1800	9.8	115	7.9	184	22.9
August 6, 2004	1900	9.6	114	7.9	184	22.8
August 6, 2004	2000	9.4	112	7.8	184	22.5
August 6, 2004	2100	9.0	108	7.7	185	22.1
August 6, 2004	2200	8.8	103	7.6	185	21.8
August 6, 2004	2300	8.6	100	7.5	185	21.5
August 6, 2004	2400	8.5	97	7.5	185	21.4
August 7, 2004	0100	8.4	96	7.5	185	21.3
August 7, 2004	0200	8.4	95	7.5	185	21.0
August 7, 2004	0300	8.3	94	7.5	184	20.8
August 7, 2004	0400	8.2	92	7.4	184	20.6
August 7, 2004	0500	8.1	91	7.4	184	20.3
August 7, 2004	0600	8.0	90	7.3	184	20.1
August 7, 2004	0700	8.0	88	7.2	184	19.8
August 7, 2004	0800	8.0	87	7.2	183	19.7
August 7, 2004	0900	8.1	87	7.2	183	19.7
August 7, 2004	1000	8.5	88	7.3	183	19.8
August 7, 2004	1100	9.1	93	7.4	182	20.4
August 7, 2004	1200	9.2	100	7.4	182	20.6
August 7, 2004	1300	9.6	102	7.5	182	21.1
August 7, 2004	1400	9.9	107	7.6	182	21.5
August 7, 2004	1500	10.2	112	7.8	181	21.8
August 7, 2004	1600	10.3	116	7.8	182	21.9
August 7, 2004	1700	10.3	117	7.8	182	22.1
August 7, 2004	1800	10.2	118	7.8	183	22.1
August 7, 2004	1900	10.0	116	7.8	183	22.0
August 7, 2004	2000	9.8	114	7.7	183	21.7
August 7, 2004	2100	9.5	111	7.6	184	21.4
August 7, 2004	2200	9.2	106	7.5	185	21.0
August 7, 2004	2300	9.0	102	7.4	185	20.8
August 7, 2004	2400	8.9	100	7.4	185	20.6
August 8, 2004	0100	8.9	99	7.4	185	20.4
August 8, 2004	0200	8.8	98	7.4	185	20.2
August 8, 2004	0300	8.7	97	7.4	185	20.1
August 8, 2004	0400	8.6	95	7.3	184	19.9
August 8, 2004	0500	8.5	93	7.3	184	19.6
August 8, 2004	0600	8.4	92	7.3	184	19.4
August 8, 2004	0700	8.4	91	7.2	184	19.3
August 8, 2004	0800	8.4	90	7.2	184	19.1
August 8, 2004	0900	8.7	90	7.2	184	19.1
August 8, 2004	1000	9.1	93	7.2	183	19.3
August 8, 2004	1100	9.5	98	7.3	183	19.7

Continuous-monitoring data for Catoctin Creek at Taylorstown, Va., 01638480.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 8, 2004	1200	10.1	103	7.5	182	20.4
August 8, 2004	1300	10.6	111	7.6	181	20.8
August 8, 2004	1400	10.8	117	7.7	181	21.3
August 8, 2004	1500	11.1	121	7.9	180	21.8
August 8, 2004	1600	11.3	126	8.0	180	22.0
August 8, 2004	1700	11.2	128	7.9	180	22.2
August 8, 2004	1800	10.9	127	7.9	181	22.3
August 8, 2004	1900	10.6	124	7.8	181	22.3
August 8, 2004	2000	10.3	120	7.8	181	22.0
August 8, 2004	2100	10.0	117	7.6	181	21.7
August 8, 2004	2200	9.7	112	7.5	182	21.4
August 8, 2004	2300	9.4	108	7.4	182	21.2
August 8, 2004	2400	9.2	105	7.4	182	21.0

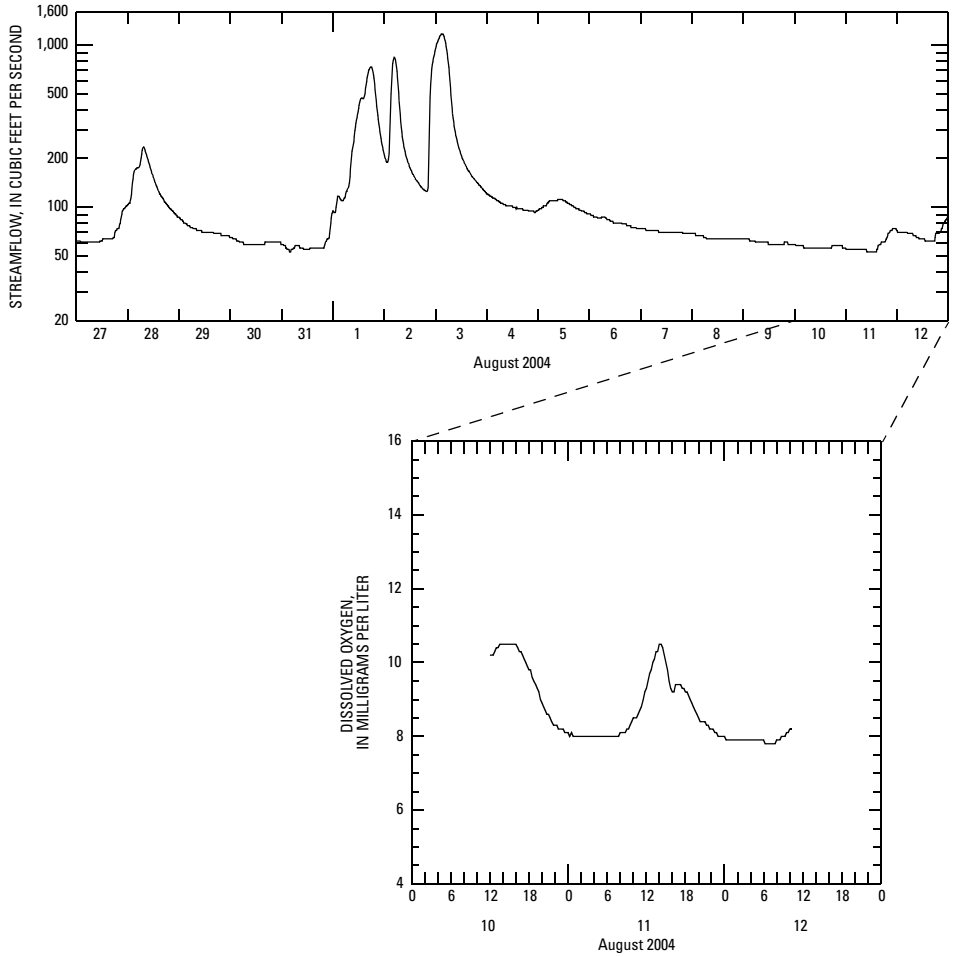


Streamflow and dissolved oxygen concentration for Catoctin Creek at Taylorstown, Va., 01638480.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Big Pipe Creek at Bruceville, Md. - 01639500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 10, 2004	1200	10.2	--	8.2	246	22.1
August 10, 2004	1300	10.4	117	8.4	245	22.8
August 10, 2004	1400	10.5	121	8.5	245	23.4
August 10, 2004	1500	10.5	124	8.6	244	23.9
August 10, 2004	1600	10.5	125	8.7	243	24.4
August 10, 2004	1700	10.2	125	8.7	243	24.5
August 10, 2004	1800	9.8	122	8.7	243	24.4
August 10, 2004	1900	9.4	118	8.6	244	24.1
August 10, 2004	2000	8.9	112	8.5	245	23.7
August 10, 2004	2100	8.6	106	8.4	246	23.4
August 10, 2004	2200	8.3	100	8.2	247	23.1
August 10, 2004	2300	8.2	97	8.1	248	22.9
August 10, 2004	2400	8.1	95	8.0	249	22.7
August 11, 2004	0100	8.0	94	8.0	249	22.5
August 11, 2004	0200	8.0	93	7.9	249	22.2
August 11, 2004	0300	8.0	92	7.9	250	22.0
August 11, 2004	0400	8.0	92	7.9	249	21.9
August 11, 2004	0500	8.0	92	7.8	249	21.8
August 11, 2004	0600	8.0	91	7.8	248	21.8
August 11, 2004	0700	8.0	91	7.8	248	21.8
August 11, 2004	0800	8.1	91	7.8	248	21.9
August 11, 2004	0900	8.2	92	7.8	247	22.0
August 11, 2004	1000	8.5	93	7.9	247	22.2
August 11, 2004	1100	8.7	97	8.0	246	22.3
August 11, 2004	1200	9.3	100	8.2	246	22.7
August 11, 2004	1300	10.0	108	8.4	245	23.5
August 11, 2004	1400	10.5	118	8.6	244	24.1
August 11, 2004	1500	10.0	124	8.6	245	24.1
August 11, 2004	1600	9.2	119	8.4	238	23.7
August 11, 2004	1700	9.4	109	8.6	240	24.1
August 11, 2004	1800	9.2	112	8.5	240	24.1
August 11, 2004	1900	8.9	110	8.4	240	23.9
August 11, 2004	2000	8.5	106	8.2	241	23.6
August 11, 2004	2100	8.4	100	8.2	243	23.3
August 11, 2004	2200	8.2	98	8.1	245	23.1
August 11, 2004	2300	8.0	96	8.0	245	22.8
August 11, 2004	2400	8.0	94	7.9	245	22.5
August 12, 2004	0100	7.9	92	7.8	245	22.3
August 12, 2004	0200	7.9	91	7.8	246	22.1
August 12, 2004	0300	7.9	90	7.8	247	22.0
August 12, 2004	0400	7.9	90	7.8	247	21.9
August 12, 2004	0500	7.9	90	7.8	249	21.9
August 12, 2004	0600	7.9	90	7.8	248	21.9
August 12, 2004	0700	7.8	90	7.8	246	21.9
August 12, 2004	0800	7.9	90	7.8	245	21.9
August 12, 2004	0900	8.0	90	7.8	242	22.0
August 12, 2004	1000	8.2	92	7.8	240	22.0

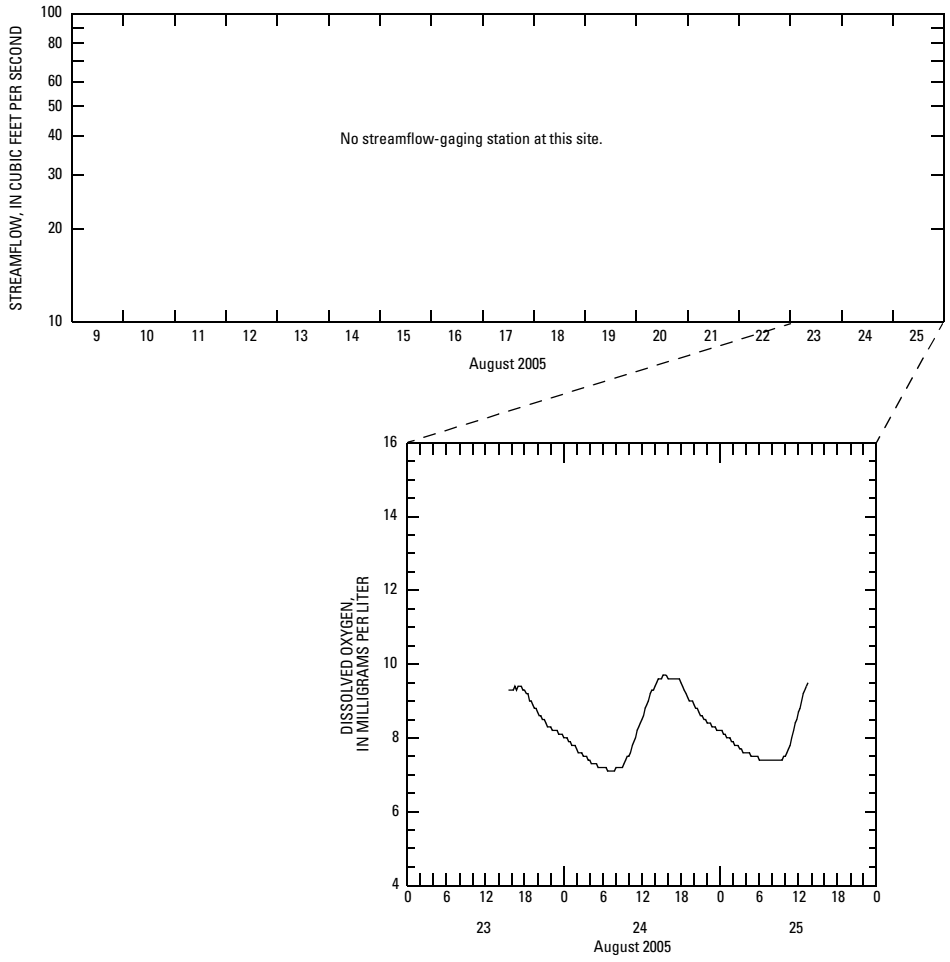


Streamflow and dissolved oxygen concentration for Big Pipe Creek at Bruceville, Md. - 01639500.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Monocacy River near Frederick, Md. - 01642000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 23, 2005	1600	9.3	--	8.1	381	25.7
August 23, 2005	1700	9.4	114	8.2	381	25.9
August 23, 2005	1800	9.3	115	8.2	380	26.0
August 23, 2005	1900	9.0	114	8.2	380	25.9
August 23, 2005	2000	8.7	111	8.1	380	25.8
August 23, 2005	2100	8.5	107	8.1	380	25.7
August 23, 2005	2200	8.3	104	8.1	380	25.6
August 23, 2005	2300	8.2	101	8.1	381	25.5
August 23, 2005	2400	8.0	100	8.1	381	25.3
August 24, 2005	0100	7.9	98	8.0	382	25.0
August 24, 2005	0200	7.7	95	8.0	382	24.7
August 24, 2005	0300	7.5	93	8.0	382	24.5
August 24, 2005	0400	7.4	90	7.9	382	24.2
August 24, 2005	0500	7.3	88	7.9	381	23.9
August 24, 2005	0600	7.2	86	7.9	381	23.7
August 24, 2005	0700	7.1	85	7.8	381	23.5
August 24, 2005	0800	7.2	84	7.8	380	23.3
August 24, 2005	0900	7.2	84	7.8	380	23.1
August 24, 2005	1000	7.5	85	7.9	380	23.1
August 24, 2005	1100	8.0	88	7.9	380	23.4
August 24, 2005	1200	8.5	94	8.0	380	24.0
August 24, 2005	1300	9.0	102	8.1	380	24.7
August 24, 2005	1400	9.4	109	8.2	381	25.4
August 24, 2005	1500	9.6	115	8.2	381	25.8
August 24, 2005	1600	9.6	118	8.2	380	25.8
August 24, 2005	1700	9.6	118	8.2	381	25.7
August 24, 2005	1800	9.5	118	8.2	381	25.5
August 24, 2005	1900	9.1	116	8.2	382	25.3
August 24, 2005	2000	8.9	111	8.2	382	25.2
August 24, 2005	2100	8.6	108	8.2	383	25.0
August 24, 2005	2200	8.4	105	8.1	382	24.9
August 24, 2005	2300	8.3	102	8.1	382	24.6
August 24, 2005	2400	8.2	100	8.1	382	24.3
August 25, 2005	0100	8.0	98	8.1	384	23.9
August 25, 2005	0200	7.9	96	8.0	384	23.6
August 25, 2005	0300	7.7	93	8.0	383	23.3
August 25, 2005	0400	7.6	91	8.0	383	23.0
August 25, 2005	0500	7.5	89	7.9	382	22.7
August 25, 2005	0600	7.4	87	7.9	381	22.4
August 25, 2005	0700	7.4	86	7.9	381	22.1
August 25, 2005	0800	7.4	85	7.9	380	21.8
August 25, 2005	0900	7.4	84	7.8	380	21.7
August 25, 2005	1000	7.5	84	7.9	379	21.7
August 25, 2005	1100	8.0	86	7.9	379	22.2
August 25, 2005	1200	8.7	92	8.0	378	23.0
August 25, 2005	1300	9.3	101	8.1	378	23.9

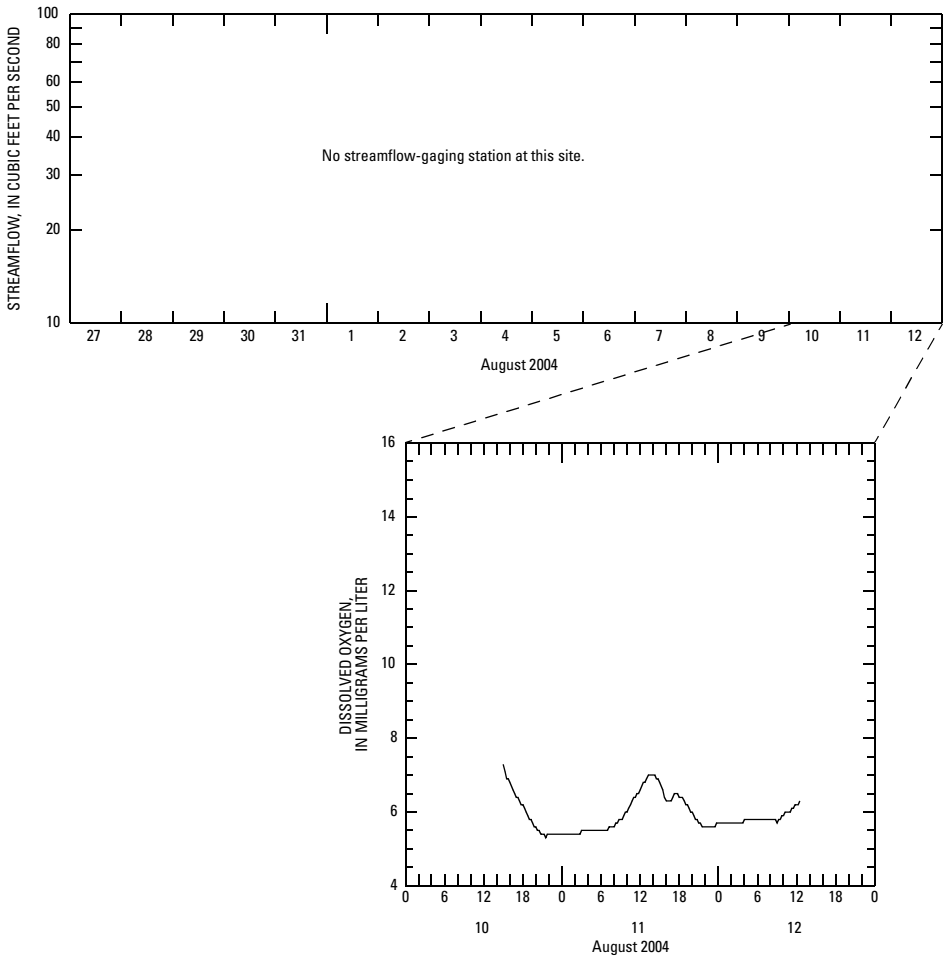


Streamflow and dissolved oxygen concentration for Monocacy River near Frederick, Md. - 01642000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Linganore Creek near Frederick, Md. - 01642500.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 10, 2004	1500	7.3	--	7.8	231	25.6
August 10, 2004	1600	6.8	89	7.8	232	25.8
August 10, 2004	1700	6.4	83	7.8	232	25.7
August 10, 2004	1800	6.2	79	7.8	232	25.7
August 10, 2004	1900	5.8	76	7.8	233	25.6
August 10, 2004	2000	5.6	71	7.8	234	25.4
August 10, 2004	2100	5.4	68	7.7	234	25.1
August 10, 2004	2200	5.4	65	7.7	234	24.8
August 10, 2004	2300	5.4	64	7.7	234	24.6
August 10, 2004	2400	5.4	64	7.7	234	24.4
August 11, 2004	0100	5.4	63	7.7	234	24.3
August 11, 2004	0200	5.4	63	7.7	234	24.1
August 11, 2004	0300	5.5	64	7.7	234	24.0
August 11, 2004	0400	5.5	64	7.7	234	23.9
August 11, 2004	0500	5.5	64	7.7	233	23.8
August 11, 2004	0600	5.5	64	7.6	233	23.7
August 11, 2004	0700	5.5	64	7.6	232	23.6
August 11, 2004	0800	5.6	64	7.6	232	23.6
August 11, 2004	0900	5.8	65	7.6	232	23.6
August 11, 2004	1000	6.0	67	7.7	232	23.8
August 11, 2004	1100	6.4	70	7.7	231	23.9
August 11, 2004	1200	6.6	73	7.8	231	24.0
August 11, 2004	1300	6.9	76	7.8	232	24.4
August 11, 2004	1400	7.0	80	7.8	232	25.0
August 11, 2004	1500	6.8	82	7.8	232	25.2
August 11, 2004	1600	6.3	80	7.8	232	24.9
August 11, 2004	1700	6.4	74	7.8	232	24.9
August 11, 2004	1800	6.4	75	7.8	232	24.8
August 11, 2004	1900	6.2	75	7.8	232	24.7
August 11, 2004	2000	6.0	72	7.8	232	24.6
August 11, 2004	2100	5.7	69	7.7	232	24.4
August 11, 2004	2200	5.6	66	7.7	232	24.3
August 11, 2004	2300	5.6	65	7.7	229	24.2
August 11, 2004	2400	5.7	64	7.7	232	24.1
August 12, 2004	0100	5.7	64	7.7	232	24.1
August 12, 2004	0200	5.7	64	7.7	232	23.9
August 12, 2004	0300	5.7	64	7.7	232	23.8
August 12, 2004	0400	5.8	64	7.7	231	23.7
August 12, 2004	0500	5.8	64	7.6	231	23.6
August 12, 2004	0600	5.8	65	7.6	230	23.6
August 12, 2004	0700	5.8	65	7.6	231	23.5
August 12, 2004	0800	5.8	65	7.6	231	23.5
August 12, 2004	0900	5.7	65	7.6	232	23.5
August 12, 2004	1000	5.9	64	7.6	232	23.5
August 12, 2004	1100	6.0	66	7.6	232	23.5
August 12, 2004	1200	6.2	68	7.6	232	23.6

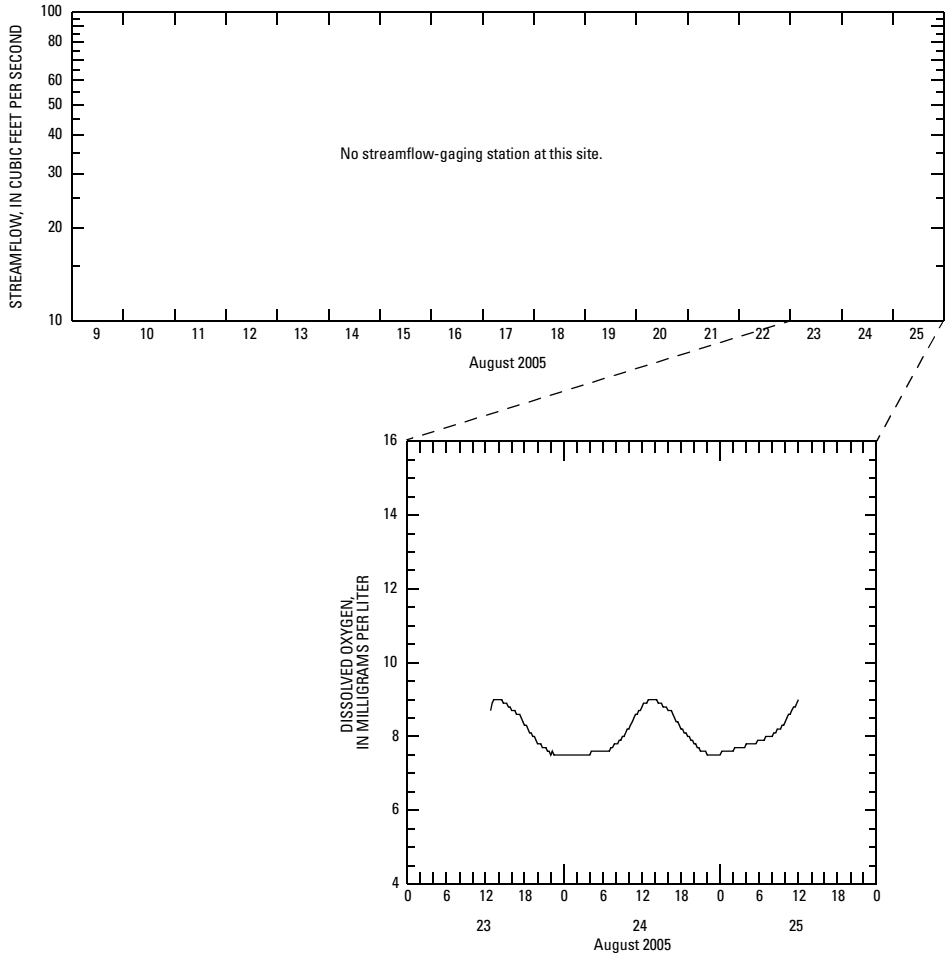


Streamflow and dissolved oxygen concentration for Linganore Creek near Frederick, Md. - 01642500.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Bush Creek at Reels Mill, Md. - 01643110.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 23, 2005	1300	8.9	--	8.0	347	21.8
August 23, 2005	1400	9.0	102	8.2	347	22.4
August 23, 2005	1500	8.9	104	8.2	348	22.6
August 23, 2005	1600	8.7	103	8.2	349	22.6
August 23, 2005	1700	8.6	101	8.2	349	22.6
August 23, 2005	1800	8.3	100	8.2	350	22.6
August 23, 2005	1900	8.1	97	8.1	347	22.4
August 23, 2005	2000	7.8	94	8.0	340	22.2
August 23, 2005	2100	7.7	90	8.0	334	22.1
August 23, 2005	2200	7.5	88	7.9	330	21.9
August 23, 2005	2300	7.5	86	7.8	328	21.8
August 23, 2005	2400	7.5	86	7.8	328	21.6
August 24, 2005	0100	7.5	85	7.8	330	21.5
August 24, 2005	0200	7.5	84	7.8	335	21.3
August 24, 2005	0300	7.5	84	7.8	341	21.1
August 24, 2005	0400	7.5	84	7.8	345	20.9
August 24, 2005	0500	7.6	84	7.8	347	20.7
August 24, 2005	0600	7.6	85	7.8	345	20.5
August 24, 2005	0700	7.6	85	7.8	340	20.3
August 24, 2005	0800	7.8	85	7.8	334	20.2
August 24, 2005	0900	8.0	86	7.8	329	20.1
August 24, 2005	1000	8.2	88	7.9	327	20.2
August 24, 2005	1100	8.6	91	7.9	325	20.6
August 24, 2005	1200	8.8	95	8.0	325	21.0
August 24, 2005	1300	9.0	99	8.1	329	21.6
August 24, 2005	1400	9.0	102	8.2	336	22.3
August 24, 2005	1500	8.9	104	8.3	342	22.5
August 24, 2005	1600	8.7	103	8.2	347	22.6
August 24, 2005	1700	8.5	101	8.2	348	22.5
August 24, 2005	1800	8.2	98	8.2	345	22.4
August 24, 2005	1900	8.0	95	8.1	339	22.3
August 24, 2005	2000	7.8	92	8.0	335	22.1
August 24, 2005	2100	7.6	90	7.9	332	21.7
August 24, 2005	2200	7.5	87	7.9	331	21.4
August 24, 2005	2300	7.5	85	7.8	329	21.1
August 24, 2005	2400	7.5	84	7.8	329	20.7
August 25, 2005	0100	7.6	84	7.8	330	20.4
August 25, 2005	0200	7.6	84	7.8	335	20.1
August 25, 2005	0300	7.7	84	7.8	342	19.9
August 25, 2005	0400	7.8	84	7.8	347	19.6
August 25, 2005	0500	7.8	85	7.8	351	19.3
August 25, 2005	0600	7.9	85	7.8	349	19.0
August 25, 2005	0700	8.0	85	7.8	343	18.8
August 25, 2005	0800	8.0	85	7.8	336	18.5
August 25, 2005	0900	8.2	86	7.8	331	18.4
August 25, 2005	1000	8.4	87	7.8	328	18.5
August 25, 2005	1100	8.7	90	7.9	327	19.1
August 25, 2005	1200	9.0	94	7.9	328	19.6



Streamflow and dissolved oxygen concentration for Bush Creek at Reels Mill, Md. - 01643110.

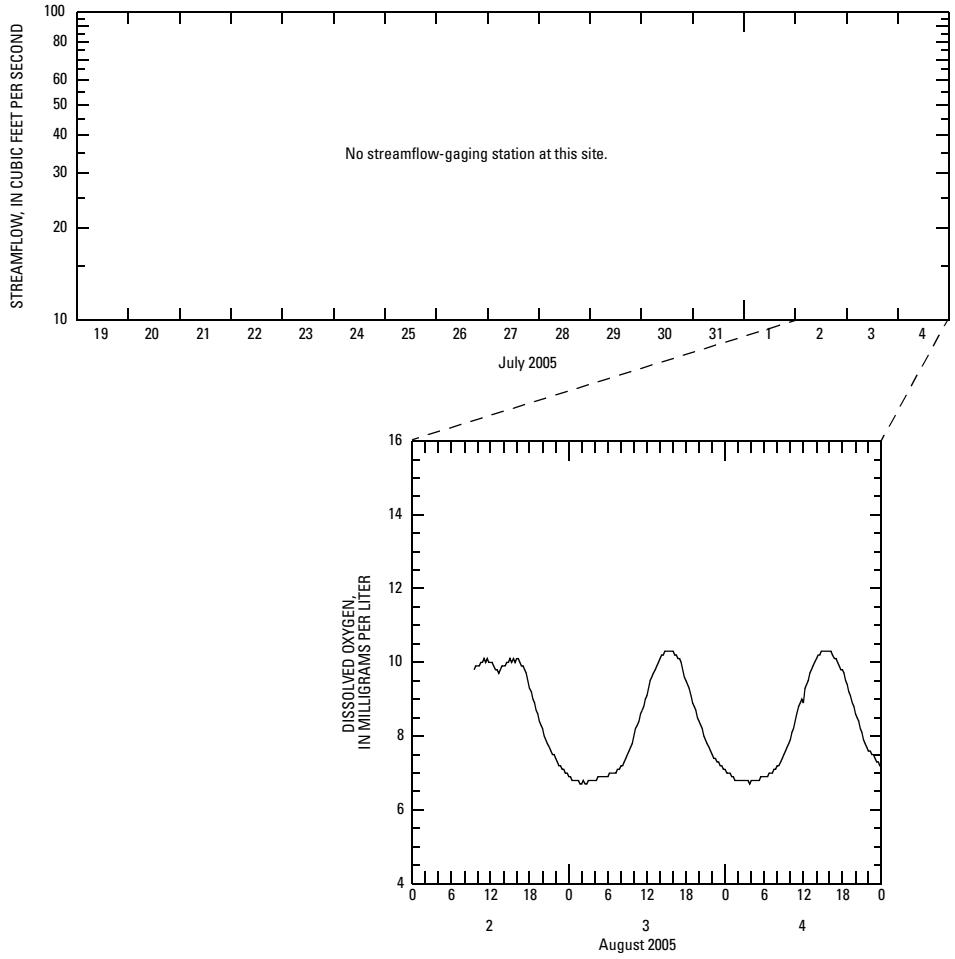
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Crooked Run near Lincoln, Va. - 0164380375.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Temperature (degrees Celsius)
August 2, 2005	1000	9.9	122	7.9	25.9
August 2, 2005	1100	10.1	126	8.0	26.6
August 2, 2005	1200	10.0	126	8.1	27.1
August 2, 2005	1300	9.8	123	8.1	27.1
August 2, 2005	1400	9.9	115	8.0	26.4
August 2, 2005	1500	10.1	106	7.8	25.7
August 2, 2005	1600	10.1	98	7.7	25.2
August 2, 2005	1700	9.9	92	7.6	24.9
August 2, 2005	1800	9.3	88	7.5	24.8
August 2, 2005	1900	8.7	84	7.4	24.6
August 2, 2005	2000	8.2	82	7.4	24.5
August 2, 2005	2100	7.7	80	7.3	24.3
August 2, 2005	2200	7.4	79	7.3	24.1
August 2, 2005	2300	7.1	79	7.3	23.9
August 2, 2005	2400	6.9	79	7.3	23.7
August 3, 2005	0100	6.8	79	7.2	23.5
August 3, 2005	0200	6.7	79	7.2	23.2
August 3, 2005	0300	6.8	79	7.2	22.9
August 3, 2005	0400	6.8	81	7.2	22.8
August 3, 2005	0500	6.9	85	7.3	22.8
August 3, 2005	0600	6.9	91	7.3	23.0
August 3, 2005	0700	7.0	99	7.4	23.5
August 3, 2005	0800	7.2	107	7.5	24.2
August 3, 2005	0900	7.5	115	7.6	25.2
August 3, 2005	1000	8.0	123	7.7	26.2
August 3, 2005	1100	8.6	127	7.8	27.1
August 3, 2005	1200	9.1	128	8.0	27.6
August 3, 2005	1300	9.7	124	8.0	27.6
August 3, 2005	1400	10.1	115	7.9	26.9
August 3, 2005	1500	10.3	107	7.8	26.3
August 3, 2005	1600	10.3	100	7.7	25.7
August 3, 2005	1700	10.1	92	7.6	25.4
August 3, 2005	1800	9.5	87	7.4	25.1
August 3, 2005	1900	8.9	84	7.4	24.9
August 3, 2005	2000	8.4	81	7.3	24.7
August 3, 2005	2100	7.9	80	7.3	24.5
August 3, 2005	2200	7.5	78	7.3	24.4
August 3, 2005	2300	7.3	77	7.2	24.2
August 3, 2005	2400	7.1	77	7.2	24.0
August 4, 2005	0100	6.9	77	7.2	23.8
August 4, 2005	0200	6.8	77	7.2	23.6
August 4, 2005	0300	6.8	77	7.2	23.4
August 4, 2005	0400	6.8	79	7.2	23.2
August 4, 2005	0500	6.8	83	7.2	23.2
August 4, 2005	0600	6.9	89	7.3	23.5
August 4, 2005	0700	7.0	97	7.3	24.0
August 4, 2005	0800	7.2	103	7.4	24.8
August 4, 2005	0900	7.5	114	7.5	25.7
August 4, 2005	1000	7.9	121	7.6	26.7
August 4, 2005	1100	8.6	126	7.7	27.6
August 4, 2005	1200	8.9	127	7.8	28.2
August 4, 2005	1300	9.7	124	7.9	28.1
August 4, 2005	1400	10.1	118	7.8	27.6
August 4, 2005	1500	10.3	109	7.8	27.0
August 4, 2005	1600	10.3	101	7.6	26.4
August 4, 2005	1700	10.1	93	7.5	25.9
August 4, 2005	1800	9.8	87	7.4	25.6
August 4, 2005	1900	9.2	84	7.4	25.3
August 4, 2005	2000	8.6	81	7.3	25.2

Continuous-monitoring data for Crooked Run near Lincoln, Va. - 0164380375.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Temperature (degrees Celsius)
August 4, 2005	2100	8.1	79	7.3	25.0
August 4, 2005	2200	7.6	77	7.2	24.9
August 4, 2005	2300	7.4	75	7.2	24.7
August 4, 2005	2400	7.2	74	7.2	24.5

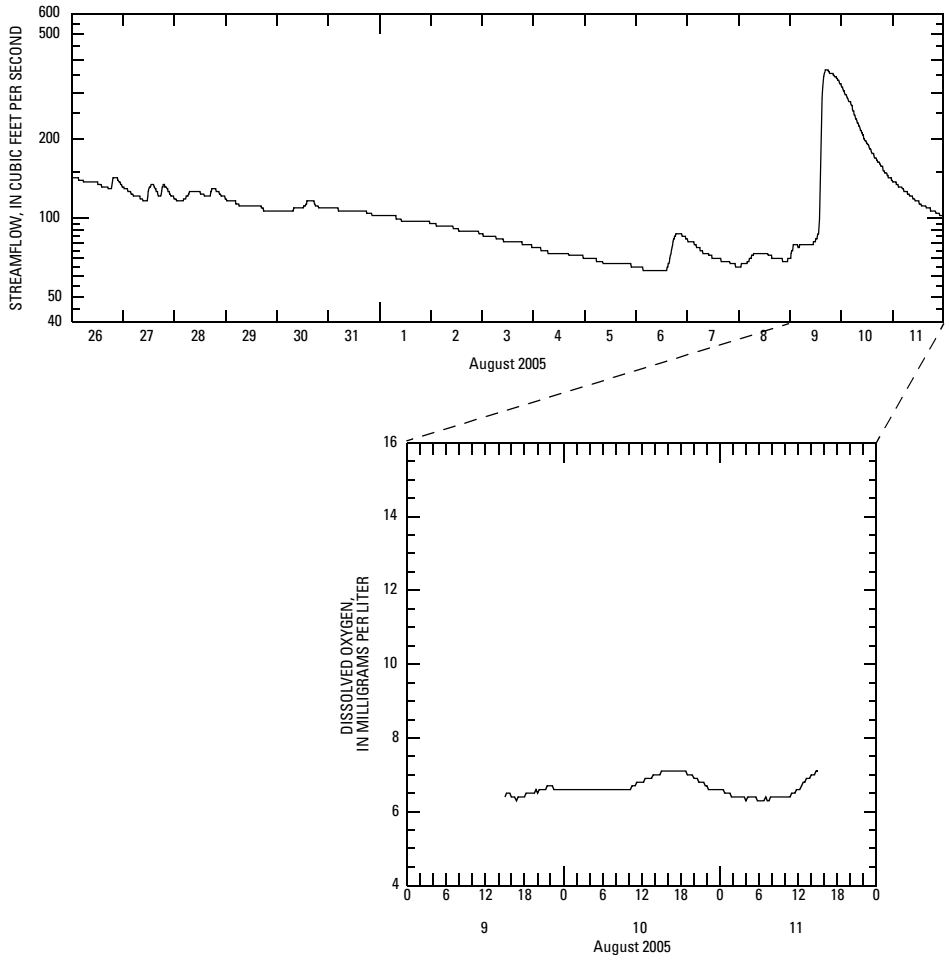


Streamflow and dissolved oxygen concentration for Crooked Run near Lincoln, Va. - 0164380375.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Goose Creek near Leesburg, Va. - 01644000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 9, 2005	1500	6.4	--	7.4	161	24.5
August 9, 2005	1600	6.4	77	7.4	167	24.6
August 9, 2005	1700	6.4	77	7.4	169	24.4
August 9, 2005	1800	6.4	76	7.4	166	24.4
August 9, 2005	1900	6.5	77	7.4	165	24.4
August 9, 2005	2000	6.5	78	7.4	164	24.3
August 9, 2005	2100	6.6	78	7.4	164	24.2
August 9, 2005	2200	6.7	78	7.4	165	24.1
August 9, 2005	2300	6.6	78	7.4	165	24.0
August 9, 2005	2400	6.6	78	7.4	164	23.9
August 10, 2005	0100	6.6	77	7.4	164	23.8
August 10, 2005	0200	6.6	77	7.4	163	23.7
August 10, 2005	0300	6.6	77	7.3	162	23.6
August 10, 2005	0400	6.6	76	7.3	161	23.5
August 10, 2005	0500	6.6	76	7.3	160	23.4
August 10, 2005	0600	6.6	76	7.3	159	23.3
August 10, 2005	0700	6.6	76	7.3	158	23.2
August 10, 2005	0800	6.6	76	7.3	157	23.1
August 10, 2005	0900	6.6	76	7.3	156	23.1
August 10, 2005	1000	6.6	76	7.3	156	23.2
August 10, 2005	1100	6.7	76	7.3	155	23.3
August 10, 2005	1200	6.8	77	7.3	155	23.6
August 10, 2005	1300	6.9	78	7.4	155	23.9
August 10, 2005	1400	7.0	80	7.4	155	24.2
August 10, 2005	1500	7.1	81	7.4	155	24.8
August 10, 2005	1600	7.1	83	7.4	156	25.1
August 10, 2005	1700	7.1	84	7.4	156	25.3
August 10, 2005	1800	7.1	84	7.4	156	25.5
August 10, 2005	1900	7.0	84	7.4	156	25.5
August 10, 2005	2000	6.9	84	7.4	157	25.6
August 10, 2005	2100	6.8	82	7.4	157	25.4
August 10, 2005	2200	6.7	80	7.4	157	25.3
August 10, 2005	2300	6.6	79	7.3	158	25.1
August 10, 2005	2400	6.6	78	7.3	158	25.0
August 11, 2005	0100	6.5	76	7.3	158	24.8
August 11, 2005	0200	6.4	75	7.3	158	24.8
August 11, 2005	0300	6.4	74	7.3	159	24.6
August 11, 2005	0400	6.3	73	7.3	159	24.5
August 11, 2005	0500	6.4	72	7.3	159	24.4
August 11, 2005	0600	6.3	73	7.3	159	24.2
August 11, 2005	0700	6.4	72	7.3	159	24.1
August 11, 2005	0800	6.4	72	7.3	160	24.0
August 11, 2005	0900	6.4	72	7.3	160	23.9
August 11, 2005	1000	6.4	72	7.3	160	24.0
August 11, 2005	1100	6.5	72	7.3	160	24.2
August 11, 2005	1200	6.6	74	7.3	160	24.5
August 11, 2005	1300	6.8	76	7.3	157	24.9
August 11, 2005	1400	7.0	78	7.3	157	25.4
August 11, 2005	1500	7.1	80	7.4	158	25.9

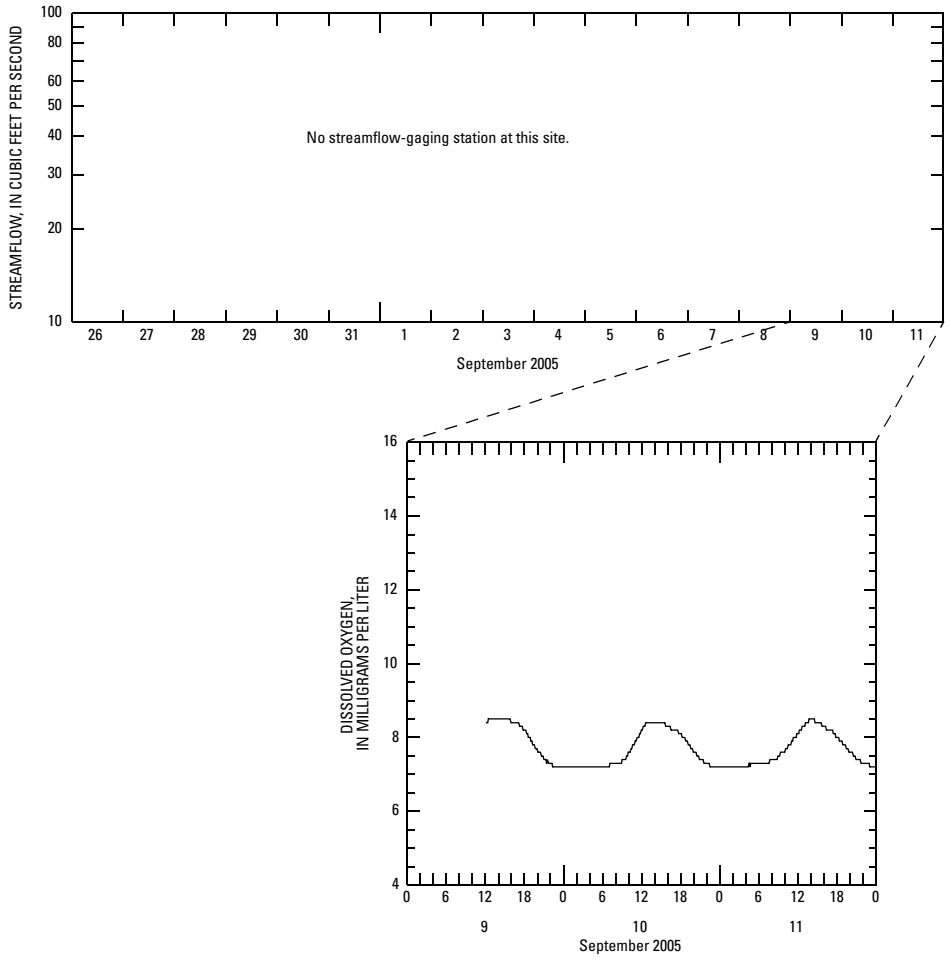


Streamflow and dissolved oxygen concentration for Goose Creek near Leesburg, Va. - 01644000.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Great Seneca Creek at Blackrock Mill, Md. (upstream) - 01644900.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens centimeter)	Temperature (degrees Celsius)
September 9, 2005	1300	8.5	94	7.8	558	20.8
September 9, 2005	1400	8.5	95	7.9	560	21.2
September 9, 2005	1500	8.5	96	7.9	551	21.6
September 9, 2005	1600	8.4	97	7.9	534	21.9
September 9, 2005	1700	8.4	97	7.9	522	22.0
September 9, 2005	1800	8.2	96	7.9	524	22.1
September 9, 2005	1900	7.9	94	7.8	540	22.2
September 9, 2005	2000	7.7	91	7.8	556	22.3
September 9, 2005	2100	7.4	88	7.8	564	22.3
September 9, 2005	2200	7.3	86	7.7	563	22.2
September 9, 2005	2300	7.2	84	7.7	560	22.0
September 9, 2005	2400	7.2	83	7.7	554	21.9
September 10, 2005	0100	7.2	82	7.7	550	21.7
September 10, 2005	0200	7.2	82	7.7	546	21.5
September 10, 2005	0300	7.2	81	7.7	544	21.3
September 10, 2005	0400	7.2	81	7.7	542	21.2
September 10, 2005	0500	7.2	81	7.7	541	21.0
September 10, 2005	0600	7.2	81	7.6	540	20.8
September 10, 2005	0700	7.2	81	7.6	541	20.7
September 10, 2005	0800	7.3	81	7.6	542	20.6
September 10, 2005	0900	7.4	81	7.6	542	20.5
September 10, 2005	1000	7.6	82	7.7	543	20.6
September 10, 2005	1100	7.9	84	7.7	544	20.8
September 10, 2005	1200	8.2	88	7.8	543	21.1
September 10, 2005	1300	8.4	92	7.8	543	21.4
September 10, 2005	1400	8.4	95	7.9	543	21.8
September 10, 2005	1500	8.4	96	7.9	542	22.0
September 10, 2005	1600	8.3	96	7.9	533	22.3
September 10, 2005	1700	8.2	96	7.9	519	22.4
September 10, 2005	1800	8.1	95	7.9	511	22.5
September 10, 2005	1900	7.9	94	7.8	521	22.5
September 10, 2005	2000	7.6	91	7.8	539	22.5
September 10, 2005	2100	7.4	88	7.8	554	22.4
September 10, 2005	2200	7.3	86	7.7	563	22.4
September 10, 2005	2300	7.2	84	7.7	566	22.3
September 10, 2005	2400	7.2	83	7.7	566	22.1
September 11, 2005	0100	7.2	82	7.7	563	21.8
September 11, 2005	0200	7.2	82	7.7	560	21.6
September 11, 2005	0300	7.2	82	7.7	557	21.4
September 11, 2005	0400	7.2	82	7.7	554	21.1
September 11, 2005	0500	7.3	82	7.7	552	20.9
September 11, 2005	0600	7.3	81	7.7	549	20.6
September 11, 2005	0700	7.3	82	7.6	547	20.4
September 11, 2005	0800	7.4	81	7.6	546	20.2
September 11, 2005	0900	7.5	82	7.6	544	20.0
September 11, 2005	1000	7.7	82	7.7	543	20.0
September 11, 2005	1100	7.9	84	7.7	541	20.1
September 11, 2005	1200	8.1	87	7.7	539	20.5
September 11, 2005	1300	8.3	90	7.8	538	20.9
September 11, 2005	1400	8.5	94	7.8	537	21.5
September 11, 2005	1500	8.4	96	7.8	535	21.7
September 11, 2005	1600	8.3	96	7.8	530	21.9
September 11, 2005	1700	8.2	95	7.8	518	22.0
September 11, 2005	1800	8.0	94	7.8	503	22.1
September 11, 2005	1900	7.8	92	7.8	504	22.1
September 11, 2005	2000	7.6	90	7.8	522	22.2
September 11, 2005	2100	7.4	88	7.8	536	22.1
September 11, 2005	2200	7.3	86	7.7	545	22.0
September 11, 2005	2300	7.2	84	7.7	548	21.9
September 11, 2005	2400	7.2	83	7.7	554	21.7



Streamflow and dissolved oxygen concentration for Great Seneca Creek at Blackrock Mill, Md. (upstream) - 01644900.

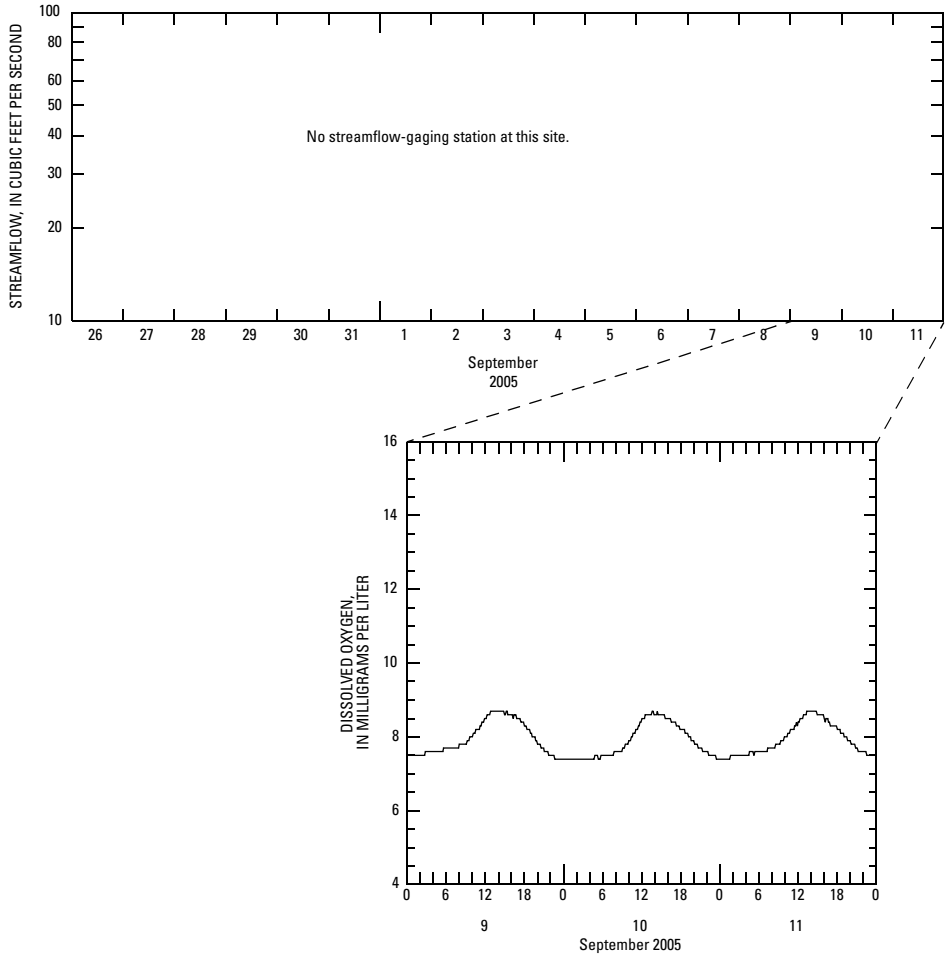
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Great Seneca Creek at Blackrock Mill, Md. (downstream) - 01644900.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens centimeter)	Temperature (degrees Celsius)
September 9, 2005	0100	7.5	84	7.7	560	21.0
September 9, 2005	0200	7.5	84	7.7	557	20.8
September 9, 2005	0300	7.6	84	7.7	554	20.6
September 9, 2005	0400	7.6	84	7.7	550	20.3
September 9, 2005	0500	7.6	84	7.7	549	20.1
September 9, 2005	0600	7.7	84	7.7	548	19.9
September 9, 2005	0700	7.7	84	7.7	549	19.7
September 9, 2005	0800	7.8	84	7.7	549	19.6
September 9, 2005	0900	7.8	85	7.7	550	19.5
September 9, 2005	1000	8.0	86	7.7	551	19.6
September 9, 2005	1100	8.2	88	7.8	551	19.8
September 9, 2005	1200	8.5	90	7.9	553	20.1
September 9, 2005	1300	8.7	94	8.0	560	20.7
September 9, 2005	1400	8.7	97	8.0	562	21.1
September 9, 2005	1500	8.6	98	8.0	558	21.5
September 9, 2005	1600	8.6	98	8.0	542	21.8
September 9, 2005	1700	8.5	98	8.0	528	22.0
September 9, 2005	1800	8.3	97	8.0	524	22.1
September 9, 2005	1900	8.1	96	8.0	536	22.1
September 9, 2005	2000	7.8	93	7.9	553	22.2
September 9, 2005	2100	7.7	90	7.9	565	22.2
September 9, 2005	2200	7.5	88	7.8	567	22.1
September 9, 2005	2300	7.4	86	7.8	565	22.0
September 9, 2005	2400	7.4	85	7.8	560	21.9
September 10, 2005	0100	7.4	84	7.8	555	21.7
September 10, 2005	0200	7.4	84	7.8	552	21.5
September 10, 2005	0300	7.4	84	7.8	549	21.3
September 10, 2005	0400	7.4	84	7.8	547	21.1
September 10, 2005	0500	7.5	84	7.8	546	21.0
September 10, 2005	0600	7.5	84	7.8	545	20.8
September 10, 2005	0700	7.5	84	7.8	545	20.6
September 10, 2005	0800	7.6	84	7.8	546	20.5
September 10, 2005	0900	7.7	84	7.8	546	20.5
September 10, 2005	1000	7.9	85	7.8	547	20.5
September 10, 2005	1100	8.2	88	7.8	548	20.7
September 10, 2005	1200	8.5	91	7.9	549	21.0
September 10, 2005	1300	8.6	95	7.9	549	21.3
September 10, 2005	1400	8.6	98	8.0	549	21.6
September 10, 2005	1500	8.6	98	8.0	549	22.0
September 10, 2005	1600	8.5	99	8.0	542	22.2
September 10, 2005	1700	8.4	98	8.0	529	22.4
September 10, 2005	1800	8.2	97	8.0	517	22.4
September 10, 2005	1900	8.1	95	7.9	521	22.4
September 10, 2005	2000	7.9	93	7.9	538	22.4
September 10, 2005	2100	7.7	91	7.9	555	22.4
September 10, 2005	2200	7.6	89	7.8	567	22.3
September 10, 2005	2300	7.5	87	7.8	573	22.2
September 10, 2005	2400	7.4	86	7.9	573	22.0
September 11, 2005	0100	7.4	85	7.9	572	21.8
September 11, 2005	0200	7.5	85	7.9	569	21.6
September 11, 2005	0300	7.5	85	7.9	566	21.4
September 11, 2005	0400	7.5	85	7.9	563	21.1
September 11, 2005	0500	7.6	85	7.9	561	20.9
September 11, 2005	0600	7.6	85	7.9	559	20.6
September 11, 2005	0700	7.6	85	7.9	557	20.4
September 11, 2005	0800	7.7	85	7.8	556	20.1
September 11, 2005	0900	7.8	85	7.9	555	20.0
September 11, 2005	1000	8.0	86	7.9	553	20.0

Continuous-monitoring data for Great Seneca Creek at Blackrock Mill, Md. (downstream) - 01644900.—Continued

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens centimeter)	Temperature (degrees Celsius)
September 11, 2005	1100	8.2	88	7.9	551	20.1
September 11, 2005	1200	8.4	91	7.9	549	20.4
September 11, 2005	1300	8.6	93	8.0	548	20.8
September 11, 2005	1400	8.7	96	8.0	547	21.4
September 11, 2005	1500	8.6	99	8.1	545	21.7
September 11, 2005	1600	8.5	98	8.1	541	21.8
September 11, 2005	1700	8.3	97	8.0	532	22.0
September 11, 2005	1800	8.2	95	8.0	513	22.0
September 11, 2005	1900	8.1	94	8.0	506	22.0
September 11, 2005	2000	7.9	92	8.0	519	22.1
September 11, 2005	2100	7.7	90	7.9	536	22.1
September 11, 2005	2200	7.6	88	7.9	545	22.0
September 11, 2005	2300	7.5	87	7.9	550	21.8
September 11, 2005	2400	7.5	86	7.9	555	21.7

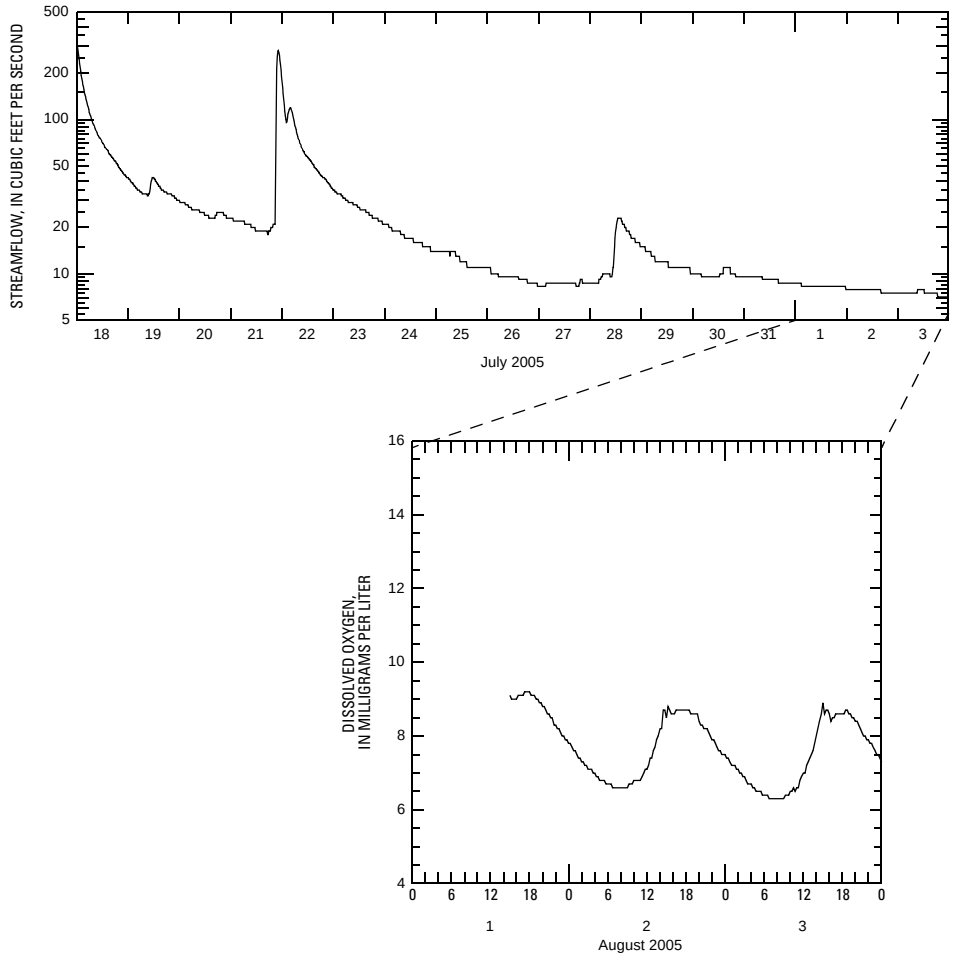


Streamflow and dissolved oxygen concentration for Great Seneca Creek at Blackrock Mill, Md. (downstream) - 01644900.

Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Cedar Run near Catlett, Va. - 01656000.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 1, 2005	1500	9.1	--	7.6	191	24.2
August 1, 2005	1600	9.0	108	7.8	190	24.5
August 1, 2005	1700	9.1	108	7.9	189	24.8
August 1, 2005	1800	9.2	109	7.9	188	25.0
August 1, 2005	1900	9.0	111	7.9	187	25.1
August 1, 2005	2000	8.8	110	7.9	186	25.2
August 1, 2005	2100	8.6	107	7.9	186	25.2
August 1, 2005	2200	8.3	104	7.8	185	25.1
August 1, 2005	2300	8.0	101	7.8	185	24.9
August 1, 2005	2400	7.8	97	7.7	186	24.7
August 2, 2005	0100	7.6	94	7.7	185	24.6
August 2, 2005	0200	7.3	91	7.6	184	24.4
August 2, 2005	0300	7.1	88	7.6	184	24.2
August 2, 2005	0400	7.0	85	7.5	184	24.0
August 2, 2005	0500	6.8	83	7.5	184	23.8
August 2, 2005	0600	6.7	81	7.4	184	23.6
August 2, 2005	0700	6.6	79	7.4	183	23.4
August 2, 2005	0800	6.6	78	7.4	183	23.2
August 2, 2005	0900	6.6	78	7.4	183	23.1
August 2, 2005	1000	6.8	78	7.4	183	23.2
August 2, 2005	1100	6.8	79	7.4	183	23.2
August 2, 2005	1200	7.1	80	7.5	183	23.5
August 2, 2005	1300	7.6	84	7.5	182	23.9
August 2, 2005	1400	8.2	91	7.6	182	24.4
August 2, 2005	1500	8.5	98	7.6	182	24.8
August 2, 2005	1600	8.6	103	7.7	182	25.3
August 2, 2005	1700	8.7	105	7.8	183	25.5
August 2, 2005	1800	8.7	107	7.8	183	25.8
August 2, 2005	1900	8.6	107	7.8	183	26.0
August 2, 2005	2000	8.4	107	7.8	184	26.0
August 2, 2005	2100	8.2	104	7.8	185	26.2
August 2, 2005	2200	7.9	101	7.7	185	26.1
August 2, 2005	2300	7.6	98	7.7	186	25.9
August 2, 2005	2400	7.5	94	7.6	187	25.8
August 3, 2005	0100	7.2	92	7.6	187	25.6
August 3, 2005	0200	7.1	89	7.6	188	25.4
August 3, 2005	0300	6.9	86	7.5	189	25.2
August 3, 2005	0400	6.7	83	7.5	189	25.0
August 3, 2005	0500	6.5	81	7.4	190	24.8
August 3, 2005	0600	6.4	78	7.4	191	24.6
August 3, 2005	0700	6.3	77	7.4	192	24.4
August 3, 2005	0800	6.3	76	7.4	192	24.2
August 3, 2005	0900	6.3	75	7.4	192	24.1
August 3, 2005	1000	6.5	76	7.4	193	24.1
August 3, 2005	1100	6.6	77	7.4	193	24.1
August 3, 2005	1200	7.0	78	7.4	193	24.5
August 3, 2005	1300	7.4	84	7.5	193	24.8
August 3, 2005	1400	8.0	89	7.6	192	25.3
August 3, 2005	1500	8.9	98	7.7	191	25.5
August 3, 2005	1600	8.6	109	7.7	192	25.8
August 3, 2005	1700	8.6	106	7.7	193	26.2
August 3, 2005	1800	8.6	106	7.8	193	26.4
August 3, 2005	1900	8.6	107	7.8	194	26.6
August 3, 2005	2000	8.4	107	7.8	194	26.6
August 3, 2005	2100	8.1	105	7.8	195	26.7
August 3, 2005	2200	7.9	101	7.8	197	26.9
August 3, 2005	2300	7.6	99	7.7	197	26.8
August 3, 2005	2400	7.3	95	7.6	197	26.5



Streamflow and dissolved oxygen concentration for Cedar Run near Catlett, Va. - 01656000.

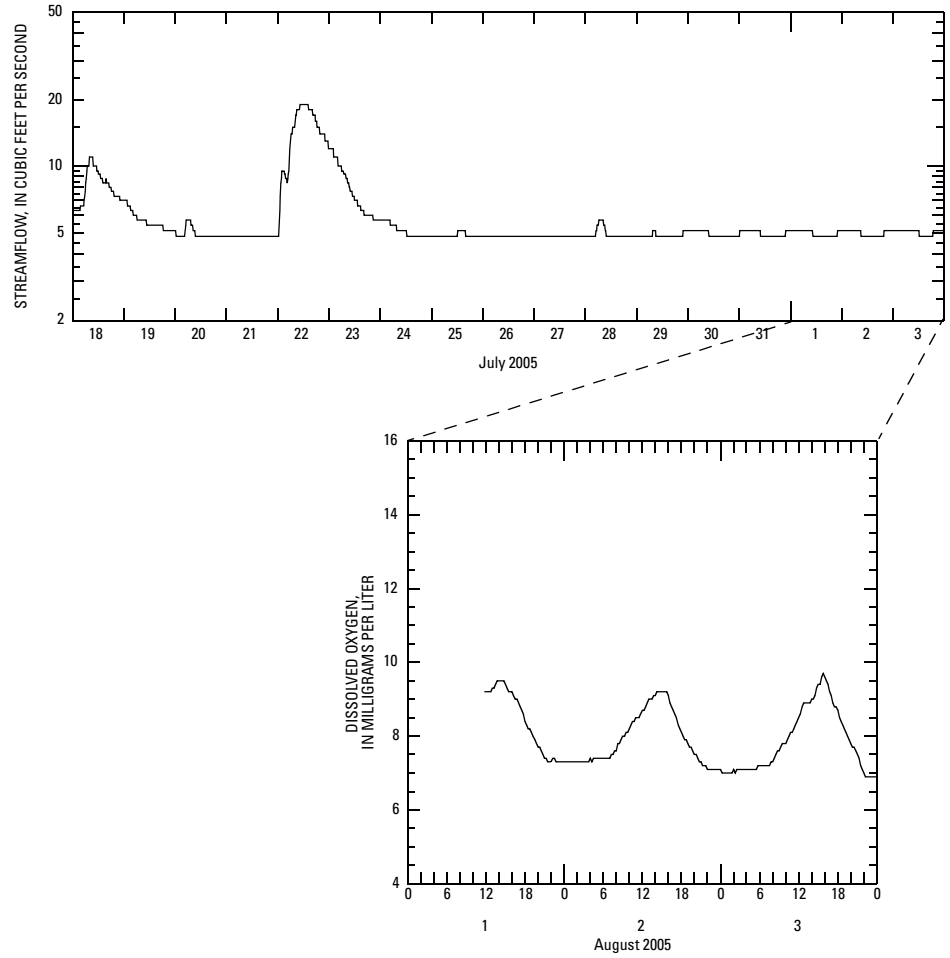
Appendix 2. Data for field parameters measured continuously by water-quality sondes.—Continued

Continuous-monitoring data for Aquia Creek near Garrisonville, Va. - 01660400.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 1, 2005	1200	9.2	--	8.0	125	24.0
August 1, 2005	1300	9.3	109	8.2	124	24.8
August 1, 2005	1400	9.5	112	8.3	124	26.2
August 1, 2005	1500	9.4	117	8.5	123	26.9
August 1, 2005	1600	9.2	118	8.5	123	26.7
August 1, 2005	1700	8.9	114	8.5	123	26.9
August 1, 2005	1800	8.4	111	8.5	124	27.0
August 1, 2005	1900	8.1	106	8.3	125	26.6
August 1, 2005	2000	7.7	100	8.1	125	26.0
August 1, 2005	2100	7.4	95	8.0	125	25.6
August 1, 2005	2200	7.3	91	7.8	125	25.4
August 1, 2005	2300	7.3	89	7.8	125	25.1
August 1, 2005	2400	7.3	88	7.8	125	24.9
August 2, 2005	100	7.3	87	7.7	125	24.6
August 2, 2005	200	7.3	87	7.7	125	24.3
August 2, 2005	300	7.3	86	7.6	125	24.0
August 2, 2005	400	7.4	86	7.6	125	23.8
August 2, 2005	500	7.4	86	7.6	126	23.6
August 2, 2005	600	7.4	86	7.6	127	23.4
August 2, 2005	700	7.4	86	7.6	129	23.2
August 2, 2005	800	7.6	86	7.6	133	23.1
August 2, 2005	900	8.0	88	7.7	139	23.2
August 2, 2005	1000	8.2	92	7.8	148	23.5
August 2, 2005	1100	8.5	96	7.8	156	23.9
August 2, 2005	1200	8.7	99	7.9	161	24.6
August 2, 2005	1300	9.0	103	8.1	163	26.0
August 2, 2005	1400	9.1	110	8.3	160	27.4
August 2, 2005	1500	9.2	114	8.4	158	28.1
August 2, 2005	1600	9.1	117	8.4	155	28.5
August 2, 2005	1700	8.6	116	8.4	151	28.3
August 2, 2005	1800	8.1	109	8.3	148	28.1
August 2, 2005	1900	7.8	103	8.2	147	27.9
August 2, 2005	2000	7.5	97	8.0	146	27.5
August 2, 2005	2100	7.3	93	7.9	146	27.1
August 2, 2005	2200	7.1	89	7.8	146	26.8
August 2, 2005	2300	7.1	87	7.8	146	26.6
August 2, 2005	2400	7.1	86	7.7	147	26.3
August 3, 2005	100	7.0	85	7.7	147	26.0
August 3, 2005	200	7.1	84	7.7	147	25.7
August 3, 2005	300	7.1	84	7.6	147	25.4
August 3, 2005	400	7.1	84	7.6	146	25.2
August 3, 2005	500	7.1	84	7.6	146	25.0
August 3, 2005	600	7.2	84	7.6	146	24.7
August 3, 2005	700	7.2	84	7.6	145	24.5
August 3, 2005	800	7.3	84	7.6	146	24.4
August 3, 2005	900	7.6	85	7.7	147	24.4
August 3, 2005	1000	7.8	89	7.7	150	24.6
August 3, 2005	1100	8.1	92	7.8	153	25.0
August 3, 2005	1200	8.5	96	7.9	160	25.6
August 3, 2005	1300	8.9	102	8.0	164	26.6
August 3, 2005	1400	9.0	108	8.0	165	27.5
August 3, 2005	1500	9.4	112	8.1	166	28.0
August 3, 2005	1600	9.6	117	8.2	172	28.6
August 3, 2005	1700	9.1	120	8.3	182	28.9
August 3, 2005	1800	8.7	114	8.3	184	28.8
August 3, 2005	1900	8.2	108	8.2	184	28.6
August 3, 2005	2000	7.8	102	8.1	184	28.4
August 3, 2005	2100	7.5	97	8.0	181	28.0
August 3, 2005	2200	7.0	92	7.9	180	27.7

Continuous-monitoring data for Aquia Creek near Garrisonville, Va. - 01660400.

Date	Time	Oxygen, dissolved (milligrams per liter)	Dissolved oxygen (percent saturation)	pH (standard units)	Specific conductance (microsiemens per centimeter)	Temperature (degrees Celsius)
August 3, 2005	2300	6.9	85	7.8	176	27.3
August 3, 2005	2400	6.9	83	7.8	173	26.9



Streamflow and dissolved oxygen concentration for Aquia Creek near Garrisonville, Va. - 01660400.

Appendix 3

Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01440400		01473110		01474000		01478245	
Stream name	Brodhead Creek		Skippack Creek		Wissahicken Creek		White Clay Creek	
Date–Time	8/9/2004–1400		8/24/2004–1130		8/10/2005–1400		7/26/2005–1400	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	4,525	0.51	—	—	—	—
Heteroleibleinia sp.	11,214	0.63	—	—	—	—	—	—
Leibleinia sp.	—	—	—	—	—	—	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	42,613	4.28	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	13,456	.25	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	—	—	—	—	11,076	0.49	1,893	0.16
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	2,215	1.78	946	.27
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	4,430	.06	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	2,215	.03	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	1,794	135.28	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	448	.08	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	2,215	.01	—	—
Monoraphidium setiforme Komarkova-Legenerova	672	.06	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	15,506	4.16	—	—
Scenedesmus acutus Meyen	897	.08	—	—	13,291	.50	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	8,860	.59	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	70,887	7.13	3,786	0.25

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01440400		01473110		01474000		01478245	
Stream name	Brodhead Creek		Skippack Creek		Wissahicken Creek		White Clay Creek	
Date–Time	8/9/2004–1400		8/24/2004–1130		8/10/2005–1400		7/26/2005–1400	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	11,076	11.14	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01480617		01480870		01546400		01564997	
Stream name	West Branch Brandywine Creek		East Branch Brandywine Creek		Spring Creek		Kishacoquillas Creek	
Date–Time	7/27/2005–1300		8/23/2005–1145		7/19/2005–1430		8/9/2005–1400	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	4,525	0.51
Heteroleibleinia sp.	—	—	—	—	—	—	—	—
Leibleinia sp.	—	—	—	—	16,312	2.36	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	1,208	2.94
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	3,020	0.08	939	0.12	57,998	2.19	3,020	.10
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	469	1.20	170,370	105.98	21,749	15.99
Phormidium sp.	—	—	—	—	—	—	1,208	.27
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae	—	—						
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	2,349	.42	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	469	.02	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	469	.01	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	1,812	.11	604	.10
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	3,020	.81	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	1,879	.03	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01480617		01480870		01546400		01564997	
Stream name	West Branch Brandywine Creek		East Branch Brandywine Creek		Spring Creek		Kishacoquillas Creek	
Date–Time	7/27/2005–1300		8/23/2005–1145		7/19/2005–1430		8/9/2005–1400	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01568000		01568000		01571500		01573000	
Stream name	Sherman Creek		Sherman Creek		Yellow Breeches Creek		Swatara Creek	
Date–Time	8/2/2005–1030		8/2/2005–1035		8/16/2004–1215		8/26/2005–1030	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	—	—	—	—
Leibleinia sp.	9,062	2.16	12,687	2.15	—	—	13,392	1.85
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	18,124	1.59	65,248	2.87	—	—	30,132	.95
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	18,124	23.57	63,436	78.92	—	—	—	—
Phormidium sp.	2,013	.23	1,812	.13	7,322	0.83	956	.11
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	1,812	.04	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	9,062	9.11	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	2,013	.03	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	2,013	.08	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	4,027	.27	7,249	.61	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	3,624	0.30	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01568000		01568000		01571500		01573000	
Stream name	Sherman Creek		Sherman Creek		Yellow Breeches Creek		Swatara Creek	
Date–Time	8/2/2005–1030		8/2/2005–1035		8/16/2004–1215		8/26/2005–1030	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	2,440	3.07	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	9062	2.16	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01573160		01574000		01575825		01576712	
Stream name	Quittapahilla Creek		West Conewago Creek		Little Chickies Creek		Little Conestoga Creek	
Date–Time	8/1/2005–1040		8/10/2004–1230		9/1/2004–1300		9/2/2004–1300	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	157,583	8.91	—	—
Leibleinia sp.	—	—	—	—	—	—	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	6,050	0.61	—	—	53,697	5.40
Oscillatoria limnetica (Kleb.) Geitler	—	—	22,472	1.27	39,395	1.67	—	—
Oscillatoria limnetica Lemmerman	16,916	0.85	—	—	—	—	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	2,416	7.52	—	—	—	—	—	—
Phormidium sp.	—	—	2,593	.26	—	—	30,684	3.08
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	14,499	7.29	—	—	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	19,697	1.98	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01573160		01574000		01575825		01576712	
Stream name	Quittapahilla Creek		West Conewago Creek		Little Chickies Creek		Little Conestoga Creek	
Date–Time	8/1/2005–1040		8/10/2004–1230		9/1/2004–1300		9/2/2004–1300	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	177,281	360.90	96,655	121.46
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	172	.13	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01576712		01580000		01580000		01581649	
Stream name	Little Conestoga Creek		Deer Creek		Deer Creek		James Run	
Date–Time	8/22/2005–1420		9/1/2004–0945		8/30/2005–1030		8/18/2005–1230	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	—	—	—	—
Leibleinia sp.	—	—	—	—	3,574	0.18	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	—	—	—	—	—	—	16,110	0.81
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	738	1.67	—	—	1,787	.81	16,110	34.62
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	1,787	.03	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	163,188	153.80	—	—	5,361	4.31	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	16,110	303.68
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	1,787	.24	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	4,833	0.40	7,149	.48	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	7,149	0.60	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01576712		01580000		01580000		01581649	
Stream name	Little Conestoga Creek		Deer Creek		Deer Creek		James Run	
Date–Time	8/22/2005–1420		9/1/2004–0945		8/30/2005–1030		8/18/2005–1230	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01581700		01581800		01583100		01583500	
Stream name	Winters Run		Gunpowder Falls		Piney Run		Western Run	
Date–Time	8/18/2005–1215		8/24/2005–1300		8/16/2004–0930		8/24/2005–1000	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	1,533,037	86.69	—	—
Leibleinia sp.	—	—	—	—	—	—	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	1,437,882	180.69	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	37,0043	20.93	—	—
Oscillatoria limnetica Lemmerman	—	—	7,451	0.47	—	—	30,207	1.52
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	—	—	15,103	8.54
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	7,551	.24
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	1,064	20.07	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	21,145	239.50	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	3,193	.03	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	6,283	0.53	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	4,257	.29	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	42,290	1.99	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01581700		01581800		01583100		01583500	
Stream name	Winters Run		Gunpowder Falls		Piney Run		Western Run	
Date–Time	8/18/2005–1215		8/24/2005–1300		8/16/2004–0930		8/24/2005–1000	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01583500		01586000		01587300		01589300	
Stream name	Western Run		North Branch Patapsco River		South Branch Patapsco River		Gwynn's Falls	
Date–Time	8/27/2005–1005		8/16/2004–1115		9/6/2005–1230		8/24/2004–1315	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	1,570,796	6.58	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—		—	—	—
Heteroleibleinia sp.	—	—	201,384	20.25	—	—	—	—
Leibleinia sp.	—	—	—	—	7,048	1.33	—	—
Lynbya limnetica Lemmermann	—	—	251,730	14.24	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	15,707	.49	—	—	35,242	1.33	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	7,853	11.10	—	—	—	—	—	—
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	21,145	21.26	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	7,853	.26	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	62,831	2.07	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01583500		01586000		01587300		01589300	
Stream name	Western Run		North Branch Patapsco River		South Branch Patapsco River		Gwynn's Falls	
Date–Time	8/27/2005–1005		8/16/2004–1115		9/6/2005–1230		8/24/2004–1315	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	100,692	45.55	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01589440		01591000		01593900		01594000	
Stream name	Jones Falls		Patuxent River		Middle Patuxent River		Little Patuxent River	
Date–Time	8/24/2004–1030		8/4/2004–1030		7/27/2005–1100		7/25/05–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	434,989	68.33	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—		—	—
Heteroleibleinia sp.	—	—	241,660	24.29	—	—	—	—
Leibleinia sp.	—	—	—	—	—	—	154,360	19.40
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	193,328	19.44	314,159	74.02	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	—	—	—	—	2,064	0.07	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	—	—	7,350	12.47
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	3,508,916	2,469.28	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	115,997	6.56	—	—	—	—
Pseudanabaena sp.	—	—	96,664	4.10	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	14,701	23.09
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01589440		01591000		01593900		01594000	
Stream name	Jones Falls		Patuxent River		Middle Patuxent River		Little Patuxent River	
Date–Time	8/24/2004–1030		8/4/2004–1030		7/27/2005–1100		7/25/05–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	—	—	29,402	46.19
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01614000		01616500		01617800		01619000	
Stream name	Back Creek		Opequon Creek		Marsh Run		Antietam Creek	
Date–Time	8/9/2005–1000		8/31/2004–1420		7/19/2005–1300		8/17/2004–1300	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	1,304,969	73.79	—	—	—	—
Leibleinia sp.	—	—	—	—	—	—	—	—
Lynbya limnetica Lemmermann	—	—	144,996	6.15	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	120,830	12.15	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	8,810	0.33	—	—	—	—	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	84,581	62.18	—	—
Phormidium sp.	5,286	.52	—	—	—	—	—	—
Plectonema sp.	3,524	61.73	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	8,810	177.15	—	—	—	—	110,761	86.99
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01614000		01616500		01617800		01619000	
Stream name	Back Creek		Opequon Creek		Marsh Run		Antietam Creek	
Date–Time	8/9/2005–1000		8/31/2004–1420		7/19/2005–1300		8/17/2004–1300	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	35,242	49.82	96,664	136.66	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01619500		01636690		01637500		01638480	
Stream name	Antietam Creek		Piney Run		Catoctin Creek		Catoctin Creek	
Date–Time	8/17/2004–1030		8/31/2004–1045		8/9/2004–1100		8/5/2004–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	—	—	359,470	36.14
Leibleinia sp.	—	—	—	—	—	—	—	—
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	85,462	8.59	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	—	—	—	—	—	—	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	—	—	—	—
Phormidium sp.	—	—	4,195	0.42	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	—	—	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01619500		01636690		01637500		01638480	
Stream name	Antietam Creek		Piney Run		Catoctin Creek		Catoctin Creek	
Date–Time	8/17/2004–1030		8/31/2004–1045		8/9/2004–1100		8/5/2004–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	9,767	19.88	2,098	1.90	52,360	106.59	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01639500		01642000		01642500		01643110	
Stream name	Big Pipe Creek		Monocacy River		Linganore Creek		Bush Creek	
Date–Time	8/10/2004–1045		8/23/2005–1515		8/10/2004–1415		8/23/2005–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	251,730	25.31	—	—	201,384	11.39	—	—
Leibleinia sp.	—	—	—	—	—	—	24,166	2.58
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	100,692	5.69	—	—
Oscillatoria limnetica Lemmerman	—	—	654	0.06	—	—	—	—
Oscillatoria sp.	—	—	—	—	—	—	—	—
Oscillatoria tenuis C.A. Agardh	—	—	—	—	—	—	24,166	17.77
Phormidium sp.	—	—	—	—	—	—	—	—
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	—	—	25,173	1.42	—	—
Pseudanabaena sp.	—	—	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	5,034	4.75	—	—
Closterium dianae Ehrenberg	—	—	—	—	—	—	—	—
Cosmarium sp.	—	—	—	—	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	654	.01	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	654	.19	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	2,517	35.59	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	32,221	2.16
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—	20,138	1.33	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01639500		01642000		01642500		01643110	
Stream name	Big Pipe Creek		Monocacy River		Linganore Creek		Bush Creek	
Date–Time	8/10/2004–1045		8/23/2005–1515		8/10/2004–1415		8/23/2005–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	25,173	27.84	—	—	—	—	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	2,517	3.62	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	2,517	1.84	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	0164380375		01643880		01644000		01644900	
Stream name	Crooked Run		Beaverdam Creek		Goose Creek		Great Seneca Creek	
Date–Time	8/2/2005–1300		8/2/2005–1100		8/9/2005–1400		9/8/2005–1230	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA								
Cyanophyceae								
Aphanocapsa delicatissima West & West	—	—	—	—	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	—	—	—	—	—	—
Chroococcus limneticus Lemmermann	—	—	—	—	—	—	—	—
Heteroleibleinia sp.	—	—	—	—	—	—	—	—
Leibleinia sp.	—	—	21,447	4.72	6,947	0.44	23,864	2.55
Lynbya limnetica Lemmermann	—	—	—	—	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	12,888	0.18	—	—	—	—	—	—
Oscillatoria formosa Bory	—	—	—	—	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—	—	—	—	—
Oscillatoria limnetica Lemmerman	6,444	.41	—	—	—	—	7,954	.75
Oscillatoria sp.	—	—	—	—	—	—	7,954	.34
Oscillatoria tenuis C.A. Agardh	—	—	—	—	—	—	—	—
Phormidium sp.	—	—	—	—	—	—	7,954	2.25
Plectonema sp.	—	—	—	—	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	28,596	1.80	1,157	.04	—	—
Pseudanabaena sp.	3,222	.26	—	—	—	—	—	—
Synechococcus sp.	—	—	—	—	—	—	—	—
Tolypothrix sp.	—	—	—	—	—	—	—	—
CHLOROPHYTA								
Chlorophyceae								
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	1,611	.86	—	—	—	—	—	—
Cladophora sp.	—	—	—	—	—	—	—	—
Closterium dianae Ehrenberg	1,611	13.67	—	—	—	—	—	—
Cosmarium sp.	—	—	7,149	112.12	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—	—	—	—	—
Gloeocystis sp.	—	—	—	—	—	—	—	—
Microscpora sp.	—	—	—	—	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	7,149	.06	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	6,444	.54	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	0164380375		01643880		01644000		01644900	
Stream name	Crooked Run		Beaverdam Creek		Goose Creek		Great Seneca Creek	
Date–Time	8/2/2005–1300		8/2/2005–1100		8/9/2005–1400		9/8/2005–1230	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	—	—	—	—	3,473	223.51	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—	—	—	—	—
PYRROPHYTA								
Dinophyceae								
Gymnodinium ordinatum Skuja	—	—	—	—	—	—	—	—
EUGLENOPHYTA								
Euglenophyceae								
Trachelomomas sp.	—	—	—	—	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01656000		01660400	
Stream name	Cedar Run		Aquia Creek	
Date–Time	8/1/2005–1400		8/1/2005–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
CYANOPHYTA				
Cyanophyceae				
Aphanocapsa delicatissima West & West	—	—	—	—
Aphanizomenon flos-aquae (Linne) Ralfs	—	—	3,020	7.86
Chroococcus limneticus Lemmermann	—	—	—	—
Heteroleibleinia sp.	—	—	—	—
Leibleinia sp.	—	—	1,812	.14
Lynbya limnetica Lemmermann	—	—	—	—
Merismopedia glauca (Ehrenberg) Naegeli	—	—	4,833	.16
Oscillatoria formosa Bory	—	—	—	—
Oscillatoria limnetica (Kleb.) Geitler	—	—	—	—
Oscillatoria limnetica Lemmerman	2,920	0.37	—	—
Oscillatoria sp.	—	—	604	.14
Oscillatoria tenuis C.A. Agardh	2,920	2.48	—	—
Phormidium sp.	—	—	4,833	.68
Plectonema sp.	—	—	—	—
Pseudanabaena limnetica Komarek	—	—	1,208	.08
Pseudanabaena sp.	—	—	—	—
Synechococcus sp.	—	—	—	—
Tolypothrix sp.	—	—	604	11.39
CHLOROPHYTA				
Chlorophyceae				
Ankistrodesmus gracilis (Reinsch) Kors.	—	—	—	—
Chlamydomonas sp. *Ehrenberg*	—	—	—	—
Cladophora sp.	—	—	4,833	7.59
Closterium dianae Ehrenberg	—	—	—	—
Cosmarium sp.	—	—	—	—
Cosmarium subcrenatum Hantz.	—	—	—	—
Gloeocystis sp.	—	—	—	—
Microscpora sp.	—	—	—	—
Monoraphidium braunii Naegeli	—	—	—	—
Monoraphidium circinale (Nygaard) Nygaard	—	—	—	—
Monoraphidium contortum (Thuret) Komarkova-Legenerova	—	—	—	—
Monoraphidium griffithii (Berkeley) Komarkova-Legenerova	—	—	—	—
Monoraphidium minutum (Nag.) Komarkova-Legenerova	—	—	—	—
Monoraphidium setiforme Komarkova-Legenerova	—	—	—	—
Monoraphidium subclavatum Nygaard	—	—	—	—
Pediastrum boryanum (Turpin) Meneghini	—	—	—	—
Protococcus viridis C.A. Agardh	—	—	—	—
Scenedesmus acutus Meyen	—	—	—	—
Scenedesmus bijuga (Turp.) Lagerheim	—	—	—	—
Scenedesmus dimorphus (Turp.) Kuetzing	—	—	—	—
Scenedesmus incrassatulus Bohlin	—	—	—	—
Scenedesmus quadricauda (Turpin) Brebisson	—	—	—	—

Appendix 3. Densities and biomass for periphyton species identified by Bio-Limno Research and Consulting.—Continued

[units/cm^2, units per centimeter squared; µg/cm^2, micrograms per centimeter squared; —, species not identified]

Station number	01656000		01660400	
Stream name	Cedar Run		Aquia Creek	
Date–Time	8/1/2005–1400		8/1/2005–1100	
Organism	Density (units/cm^2)	Biomass (µg/cm^2)	Density (units/cm^2)	Biomass (µg/cm^2)
Stigeoclonium sp.	2,920	155.95	—	—
Tetraedron minimum (A. Braun) Hansgirg	—	—	—	—
PYRROPHYTA				
Dinophyceae				
Gymnodinium ordinatum Skuja	—	—	—	—
EUGLENOPHYTA				
Euglenophyceae				
Trachelomomas sp.	—	—	—	—

Appendix 4

Numbers of diatom species identified by the Academy of Natural Sciences.

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01440400	01473110	01474000	01478245
Stream name	NADED number	Brodhead Creek	Skippack Creek	Wissahicken Creek	White Clay Creek
Date–Time		8/9/2004–1400	8/24/2004–1130	8/10/2005–1400	7/26/2005–1400
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	157	1	—	2
Achnanthidium sp.	1022	60	—	—	—
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	1	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	1
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	—	—	—	4
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	—	8	5	1
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	8	—	—	2
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	2	—	3
Amphora veneta Kützing	7006	—	18	—	—
Amphora inariensis Krammer	7010	—	2	5	5
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	7	25	3	5
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	2	—	—	—
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	37	—	—	—
Cocconeis placentula Ehrenberg	16004	9	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	2	7	10	31
Cocconeis pediculus Ehrenberg	16011	1	—	—	10
Cocconeis placentula var. pseudolineata Geitler	16015	75	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	4	4	1
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	4	—	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	1	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01440400	01473110	01474000	01478245
Stream name	NADED number	Brodhead Creek	Skippack Creek	Wissahicken Creek	White Clay Creek
Date–Time		8/9/2004–1400	8/24/2004–1130	8/10/2005–1400	7/26/2005–1400
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	3	117
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	12	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	9	—	—	3
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	29	—	—	2
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	1
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	3	—	—	4
Gomphonema subclavatum (Grunow) Grunow	37029	3	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	1	4	1	11
Gomphonema kobayasii Kociolek et Kingston	37197	3	—	—	8
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	1	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	2	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	1	1	11	35
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	1	—	—	—
Navicula gregaria Donkin	46023	1	14	3	7

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01440400	01473110	01474000	01478245
Stream name	NADED number	Brodhead Creek	Skippack Creek	Wissahicken Creek	White Clay Creek
Date–Time		8/9/2004–1400	8/24/2004–1130	8/10/2005–1400	7/26/2005–1400
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	6	10	22	23
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	—	—	10
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	—	—	—	—
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	4	—	—	5
Navicula perminuta Grunow	46538	—	—	2	5
Navicula subminuscula Manguin	46562	—	9	17	11
Navicula germainii Wallace	46616	1	10	—	4
Navicula caterva Hohn et Hellermann	46646	—	—	—	—
Navicula erifuga Lange-Bertalot	46648	—	1	—	—
Navicula recens Lange-Bertalot	46649	—	80	36	—
Navicula capitatoradiata Germain	46661	1	—	—	—
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	3
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	1	2	—	2
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	—	—	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	—	3	—	2
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	2
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	—	2	29	24
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	2	—	—	—
Nitzschia fonticola Grunow	48011	—	—	—	6
Nitzschia frustulum (Kützing) Grunow	48013	5	243	281	59
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	—	1	—	2

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01440400	01473110	01474000	01478245
Stream name	NADED number	Brodhead Creek	Skippack Creek	Wissahicken Creek	White Clay Creek
Date–Time		8/9/2004–1400	8/24/2004–1130	8/10/2005–1400	7/26/2005–1400
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	—	—
Nitzschia inconspicua Grunow	48122	—	36	—	15
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	2	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	1	1	28	4
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	2	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	1	—	—	1
Nitzschia archibaldii Lange-Bertalot	48417	—	—	—	1
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	1	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	1	2	—	14
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	1	3	14	2
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	1	—	—	2
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	3	—	—	3
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	1	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01440400	01473110	01474000	01478245
Stream name	NADED number	Brodhead Creek	Skippack Creek	Wissahicken Creek	White Clay Creek
Date–Time		8/9/2004–1400	8/24/2004–1130	8/10/2005–1400	7/26/2005–1400
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	1	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	13	—	—	—
Encyonema silesiacum (Bleisch) Mann	110005	17	—	—	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	1	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	1	—	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	4	—	8	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	1	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	—	1	10	8
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	2	2	2
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	1	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	—	1	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	2	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	1	2	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	1	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	1
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	2	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—	—	2
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01480617	01480870	01546400	01564997
Stream name	NADED number	West Branch Brandywine Creek	East Branch Brandywine Creek	Spring Creek	Kishacoquillas Creek
Date–Time		7/27/2005–1300	8/23/2005–1145	7/19/2005–1430	8/9/2005–1400
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	—	—	154	8
Achnanthidium sp.	1022	—	24	—	—
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	2	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	14	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	—	2	—	—
Achnanthidium sp. 1	1047	—	—	17	—
Achnanthes conspicua Mayer	2098	—	11	1	2
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	6	4	—	—
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	1	2
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	—	14	14	13
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	1	38	62	202
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	—	3	1	5
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	1	5	—	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	15	136	2	12
Cocconeis pediculus Ehrenberg	16011	6	28	4	1
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	1
Cyclotella meneghiniana Kützing	20007	2	—	—	7
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	1	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	1	—	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	15	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01480617	01480870	01546400	01564997
Stream name	NADED number	West Branch Brandywine Creek	East Branch Brandywine Creek	Spring Creek	Kishacoquillas Creek
Date–Time		7/27/2005–1300	8/23/2005–1145	7/19/2005–1430	8/9/2005–1400
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	23	—	5	6
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	5	—	—	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	1	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	1	—	—	—
Fragilaria sp. 1	34990	3	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	6	5	2	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	1	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	3	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	1	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	1	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	2	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	4	2	5	3
Gomphonema kobayasii Kociolek et Kingston	37197	—	3	—	—
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	2	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	3	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	1
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	5	—	—
Melosira varians Agardh	44073	51	—	1	—
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	1	—	—
Navicula cryptocephala Kützing	46014	—	1	—	—
Navicula gregaria Donkin	46023	4	8	7	1

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01480617	01480870	01546400	01564997
Stream name	NADED number	West Branch Brandywine Creek	East Branch Brandywine Creek	Spring Creek	Kishacoquillas Creek
Date–Time		7/27/2005–1300	8/23/2005–1145	7/19/2005–1430	8/9/2005–1400
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	10	22	13	103
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	6	32	18
Navicula rhynchocephala Kützing	46154	1	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	1	—	—
Navicula symmetrica Patrick	46400	—	2	—	—
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	1	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	2	4	35	18
Navicula perminuta Grunow	46538	3	11	—	—
Navicula subminuscula Manguin	46562	67	5	—	2
Navicula germainii Wallace	46616	4	1	—	6
Navicula caterva Hohn et Hellermann	46646	1	—	—	—
Navicula erifuga Lange-Bertalot	46648	—	—	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	9	3	7	17
Navicula reichardtiana Lange-Bertalot	46666	—	—	5	—
Navicula trivialis Lange-Bertalot	46774	—	—	1	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	4	2	5	1
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	1	1	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	3	1	—	1
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	63	13	—	—
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	—	—	12	4
Nitzschia fonticola Grunow	48011	5	—	21	—
Nitzschia frustulum (Kützing) Grunow	48013	31	31	2	12
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	2
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	11	5	—	4

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01480617	01480870	01546400	01564997
Stream name	NADED number	West Branch Brandywine Creek	East Branch Brandywine Creek	Spring Creek	Kishacoquillas Creek
Date–Time		7/27/2005–1300	8/23/2005–1145	7/19/2005–1430	8/9/2005–1400
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	1	—	2	—
Nitzschia inconspicua Grunow	48122	1	14	—	3
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	2	1	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	13	—	—	1
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	2	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	7	6	2
Nitzschia palea var. debilis (Kützing) Grunow	48228	4	3	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	1	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	5	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	14	—	2	2
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	8	4	2	—
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	65	30	25	4
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	1	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	20	—	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	6	—	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	1	—	—
Bacillaria paradoxa Gmelin	76001	—	1	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01480617	01480870	01546400	01564997
Stream name		West Branch Brandywine Creek	East Branch Brandywine Creek	Spring Creek	Kishacoquillas Creek
Date–Time		7/27/2005–1300	8/23/2005–1145	7/19/2005–1430	8/9/2005–1400
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	1
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	2	—	—
Encyonema silesiacum (Bleisch) Mann	110005	—	—	12	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	1	—	1
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	2	1
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	11	—	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	2	18	1	28
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	1	1
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	1	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	3
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	10	—	—	1
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01568000	01568000	01571500	01573000
Stream name	NADED number	Sherman Creek	Sherman Creek	Yellow Breeches Creek	Swatara Creek
Date–Time		8/2/2005–1030	8/2/2005–1035	8/16/2004–1215	8/26/2005–1030
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	81	82	—	—
Achnanthidium sp.	1022	63	23	3	9
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	11	1	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	1	1	69	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	236	128	6	6
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	—	1	11	—
Achnanthes lemmermannii Hustedt	2129	—	—	1	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	—	1	68	178
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	4	—	10	—
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	—	1	98	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	—	—	—	—
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	1	—	—	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	4	11	16	5
Cocconeis pediculus Ehrenberg	16011	—	—	—	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	1	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	—	—
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	1	—	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	27	79	—	1
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	1	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01568000	01568000	01571500	01573000
Stream name	NADED number	Sherman Creek	Sherman Creek	Yellow Breeches Creek	Swatara Creek
Date–Time		8/2/2005–1030	8/2/2005–1035	8/16/2004–1215	8/26/2005–1030
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	1	—
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	—	1	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	—	—	1	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	4	8	1	—
Gomphonema kobayasii Kociolek et Kingston	37197	4	10	6	—
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	1
Gomphonema sp. 1	37272	32	44	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	—	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	2
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	1	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	—	—	—	2
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	—	—	—
Navicula gregaria Donkin	46023	—	—	7	2

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01568000	01568000	01571500	01573000
Stream name	NADED number	Sherman Creek	Sherman Creek	Yellow Breeches Creek	Swatara Creek
Date–Time		8/2/2005–1030	8/2/2005–1035	8/16/2004–1215	8/26/2005–1030
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	—	6	13	231
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	—	2	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	—	—	—	—
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	1	7	16	—
Navicula perminuta Grunow	46538	—	4	—	—
Navicula subminuscula Manguin	46562	1	1	—	6
Navicula germainii Wallace	46616	3	5	—	—
Navicula caterva Hohn et Hellermann	46646	11	8	—	—
Navicula erifuga Lange-Bertalot	46648	—	—	—	—
Navicula recens Lange-Bertalot	46649	—	1	—	—
Navicula capitatoradiata Germain	46661	—	4	11	—
Navicula reichardtiana Lange-Bertalot	46666	—	—	1	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	2	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	—	4	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	1	—
Navicula antonii Lange-Bertalot	46893	4	—	—	1
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	1	—	—
Navicula rostellata Kützing	46896	—	—	3	—
Navicula sp. 5	46906	—	—		—
Navicula sp. 1	46990	—	—	2	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	4	8	7	15
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	—	—	8	—
Nitzschia fonticola Grunow	48011	—	7	1	—
Nitzschia frustulum (Kützing) Grunow	48013	—	3	—	10
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	1	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	11	15	—	1

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01568000	01568000	01571500	01573000
Stream name	NADED number	Sherman Creek	Sherman Creek	Yellow Breeches Creek	Swatara Creek
Date–Time		8/2/2005–1030	8/2/2005–1035	8/16/2004–1215	8/26/2005–1030
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	—	—
Nitzschia inconspicua Grunow	48122	—	1	47	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	2	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	2	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	2	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	—	13	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	2	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	1	—	—	5
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	2	—	2	5
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	—	1	51	2
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	1	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01568000	01568000	01571500	01573000
Stream name	NADED number	Sherman Creek	Sherman Creek	Yellow Breeches Creek	Swatara Creek
Date–Time		8/2/2005–1030	8/2/2005–1035	8/16/2004–1215	8/26/2005–1030
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	1	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	1	—	—
Encyonema silesiacum (Bleisch) Mann	110005	—	1	—	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	1	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	5	—	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	1	3	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	1
Sellaphora seminulum (Grunow) Mann	170014	—	2	9	17
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	5	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	1	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	2	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	1	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	1	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—	1	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01573160	01574000	01575825	01576712
Stream name	NADED number	Quittapahilla Creek	West Conewago Creek	Little Chickies Creek	Little Conestoga Creek
Date–Time		8/1/2005–1040	8/10/2004–1230	9/1/2004–1300	9/2/2004–1300
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	36	—	2	13
Achnanthidium sp.	1022	—	—	—	—
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	2	—	—	—
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	7	23	20	23
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	—	—	—	—
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	1	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	1	—	—
Amphora inariensis Krammer	7010	27	1	21	25
Amphora montana Krasske	7042	1	—	—	—
Amphora pediculus (Kützing) Grunow	7043	66	22	73	168
Amphora copulata (Kützing) Schoeman et Archibald	7075	1	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	2	—	2	—
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	8	—	—	1
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	25	13	1	3
Cocconeis pediculus Ehrenberg	16011	12	1	2	4
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	2	—
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	1	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	1
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	6	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01573160	01574000	01575825	01576712
Stream name		Quittapahilla Creek	West Conewago Creek	Little Chickies Creek	Little Conestoga Creek
Date–Time		8/1/2005–1040	8/10/2004–1230	9/1/2004–1300	9/2/2004–1300
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	20	—	2	5
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	1	1
Fragilaria vaucheriae (Kützing) Petersen	34030	—	1	—	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	1	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	1	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	2	—	—	1
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	1	—	—
Gomphonema minutum (Agardh) Agardh	37178	1	1	4	—
Gomphonema kobayasii Kociolek et Kingston	37197	1	1	6	—
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	1	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	1	—	—	1
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	2	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	1	3
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	1
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	13	—	3	6
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	—	—	1
Navicula gregaria Donkin	46023	4	7	42	12

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01573160	01574000	01575825	01576712
Stream name	NADED number	Quittapahilla Creek	West Conewago Creek	Little Chickies Creek	Little Conestoga Creek
Date–Time		8/1/2005–1040	8/10/2004–1230	9/1/2004–1300	9/2/2004–1300
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	16	171	23	66
Navicula subhamulata Grunow	46076	1	—	—	4
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	12	—	8	22
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	1	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	—	4	—	2
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	29	8	66	30
Navicula perminuta Grunow	46538	—	—	—	—
Navicula subminuscula Manguin	46562	2	9	2	—
Navicula germainii Wallace	46616	1	2	1	1
Navicula caterva Hohn et Hellermann	46646	—	—	—	—
Navicula erifuga Lange-Bertalot	46648	—	—	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	6	2	1	2
Navicula reichardtiana Lange-Bertalot	46666	4	—	—	4
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	1	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	24	—	41	12
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	—	—	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	—	2	1	2
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	—	2	2	—
Nitzschia capitellata Hustedt	48006	7	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	15	2	42	33
Nitzschia fonticola Grunow	48011	2	—	—	—
Nitzschia frustulum (Kützing) Grunow	48013	18	120	16	3
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	11	4	8	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01573160	01574000	01575825	01576712
Stream name		Quittapahilla Creek	West Conewago Creek	Little Chickies Creek	Little Conestoga Creek
Date–Time		8/1/2005–1040	8/10/2004–1230	9/1/2004–1300	9/2/2004–1300
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	3	—	4	1
Nitzschia inconspicua Grunow	48122	—	56	48	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	2	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	12	5
Nitzschia palea var. debilis (Kützing) Grunow	48228	1	—	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	2	—	—
Nitzschia archibaldii Lange-Bertalot	48417	1	—	—	—
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	3	4	6	27
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	64	15	12	—
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	1	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	1	—	—	1
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	1	—	—	—
Synedra acus Kützing	66042	—	—	—	6
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	4	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	1	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01573160	01574000	01575825	01576712
Stream name		Quittapahilla Creek	West Conewago Creek	Little Chickies Creek	Little Conestoga Creek
Date–Time		8/1/2005–1040	8/10/2004–1230	9/1/2004–1300	9/2/2004–1300
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	—	—	—
Encyonema silesiacum (Bleisch) Mann	110005	3	—	—	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	1	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	7	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	3	—	3	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	1	6	2	1
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	1	—
Sellaphora seminulum (Grunow) Mann	170014	6	7	—	—
Staurosira construens Ehrenberg	172001	4	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	2	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	17	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	2	—	—	1
Tryblionella apiculata Gregory	185023	—	—	—	2
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	3	—	2	6
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	1	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	2	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	3	—	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01576712	01580000	01580000	01581649
Stream name	NADED number	Little Conestoga Creek	Deer Creek	Deer Creek	James Run
Date–Time		8/22/2005–1420	9/1/2004–0945	8/30/2005–1030	8/18/2005–1230
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	13	68	42	19
Achnanthidium sp.	1022	2	195	223	150
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	1	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	1
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	13	1	—	13
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	19	4	—	—
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	—	25	48	94
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	2	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	24	—	—	10
Amphora montana Krasske	7042	1	—	—	—
Amphora pediculus (Kützing) Grunow	7043	122	—	—	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	1
Caloneis bacillum (Grunow) Cleve	12001	2	—	—	1
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	2	17	50	4
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	40	—	30	23
Cocconeis pediculus Ehrenberg	16011	4	—	—	1
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	2	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	2	1	—	3
Cyclotella pseudostelligera Hustedt	20012	1	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	1	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	1	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	2	—	1
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	1
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01576712	01580000	01580000	01581649
Stream name		Little Conestoga Creek	Deer Creek	Deer Creek	James Run
Date–Time		8/22/2005–1420	9/1/2004–0945	8/30/2005–1030	8/18/2005–1230
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	1	—	—	2
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	—	—	5
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	5
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	2
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	—	2	1	3
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	1	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	1
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	1	—	—	—
Gomphonema kobayasii Kociolek et Kingston	37197	6	6	5	1
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	1	—	—
Gomphonema sp. 1	37272	—	—	20	—
Gomphonema sp. 2	37277	—	8	—	—
Gomphonema lagenula Kützing	37278	—	—	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	2	—	—	2
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	4	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	1	—	6	19
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	1	—	—	2
Navicula gregaria Donkin	46023	15	4	4	13

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01576712	01580000	01580000	01581649
Stream name	NADED number	Little Conestoga Creek	Deer Creek	Deer Creek	James Run
Date–Time		8/22/2005–1420	9/1/2004–0945	8/30/2005–1030	8/18/2005–1230
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	39	4	6	17
Navicula subhamulata Grunow	46076	2	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	12	—	—	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	1
Navicula canalis Patrick	46317	1	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	2	1	3	5
Navicula tenelloides Hustedt	46401	5	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	1	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	19	—	1	—
Navicula perminuta Grunow	46538	—	3	3	—
Navicula subminuscula Manguin	46562	6	—	—	—
Navicula germainii Wallace	46616	10	—	7	2
Navicula caterva Hohn et Hellermann	46646	—	—	—	1
Navicula erifuga Lange-Bertalot	46648	—	2	—	—
Navicula recens Lange-Bertalot	46649	—	5	10	—
Navicula capitatoradiata Germain	46661	8	1	—	4
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	1	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	10	—	—	1
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	3	—	—	2
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	2	—	—	—
Navicula rostellata Kützing	46896	3	1	—	1
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	2	4	—	6
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	12	—	—	9
Nitzschia fonticola Grunow	48011	—	—	—	—
Nitzschia frustulum (Kützing) Grunow	48013	7	93	—	14
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	2	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	16	5	1	1

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01576712	01580000	01580000	01581649
Stream name	NADED number	Little Conestoga Creek	Deer Creek	Deer Creek	James Run
Date–Time		8/22/2005–1420	9/1/2004–0945	8/30/2005–1030	8/18/2005–1230
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	3	—	—	—
Nitzschia inconspicua Grunow	48122	—	13	—	—
Nitzschia pusilla Grunow	48123	—	1	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	1
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	4	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	1	—	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	4	—	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	1	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	3	11	1	—
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	—	8	7	4
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	8	—	2	2
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	1	—	—	—
Surirella angusta Kützing	65002	1	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	4	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	1	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	5
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	1	7
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01576712	01580000	01580000	01581649
Stream name	NADED number	Little Conestoga Creek	Deer Creek	Deer Creek	James Run
Date–Time		8/22/2005–1420	9/1/2004–0945	8/30/2005–1030	8/18/2005–1230
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	1
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	2	3	—
Encyonema silesiacum (Bleisch) Mann	110005	—	3	1	1
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	2	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	1	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	1	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	1	10	2
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	2	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	3	—	—	2
Sellaphora seminulum (Grunow) Mann	170014	5	2	4	32
Staurosira construens Ehrenberg	172001	4	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	4	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	1	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	1	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	1	—	2	—
Kolbesia ploenensis (Hustedt) Kingston	207003	2	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	1	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	1	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	1	1
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	1	4	1
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	1	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01581700	01581800	01583100	01583500
Stream name	NADED number	Winters Run	Gunpowder Falls	Piney Run	Western Run
Date–Time		8/18/2005–1400	8/24/2005–1300	8/16/2004–0930	8/27/2005–1000
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	62	37	7	9
Achnanthidium sp.	1022	273	185	14	281
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	23
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	12	11	—	2
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	4	1	—	1
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	13	41	6	3
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	—	3	—	5
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	—	6	—	1
Amphora copulata (Kützing) Schoeman et Archibald	7075	1	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	—	1	—	1
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	6	1	—	1
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	3	16	—	4
Cocconeis pediculus Ehrenberg	16011	—	—	—	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	2	1	—	1
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	—	—	2
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	19	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	2	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01581700	01581800	01583100	01583500
Stream name	NADED number	Winters Run	Gunpowder Falls	Piney Run	Western Run
Date–Time		8/18/2005–1400	8/24/2005–1300	8/16/2004–0930	8/27/2005–1000
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	—	—
Eunotia elegans Ostrup	33013	—	—	—	1
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	4	—	—	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	2	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	3	—	1
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	2	—	3	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	—	—	—	1
Gomphonema kobayasii Kociolek et Kingston	37197	2	3	—	2
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	7	2	—	—
Gomphonema lagenula Kützing	37278	—	1	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	7	12	1	1
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	3	1	—	—
Navicula gregaria Donkin	46023	2	9	5	2

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01581700	01581800	01583100	01583500
Stream name	NADED number	Winters Run	Gunpowder Falls	Piney Run	Western Run
Date–Time		8/18/2005–1400	8/24/2005–1300	8/16/2004–0930	8/27/2005–1000
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	3	19	1	9
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	—	—	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	3	—	1
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	1	—	—	—
Navicula symmetrica Patrick	46400	1	10	—	2
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	1	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	10	2	—	4
Navicula perminuta Grunow	46538	4	2	3	1
Navicula subminuscula Manguin	46562	—	—	—	—
Navicula germainii Wallace	46616	4	7	—	1
Navicula caterva Hohn et Hellermann	46646	1	—	—	1
Navicula erifuga Lange-Bertalot	46648	—	—	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	—	18	—	6
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	—	1	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	2	4	—	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	—	4	5	—
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	11	11	—	—
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	1	5	—	11
Nitzschia fonticola Grunow	48011	—	2	—	—
Nitzschia frustulum (Kützing) Grunow	48013	—	11	418	93
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	1	—	—
Nitzschia palea (Kützing) Smith	48025	2	5	—	4

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01581700	01581800	01583100	01583500
Stream name	NADED number	Winters Run	Gunpowder Falls	Piney Run	Western Run
Date–Time		8/18/2005–1400	8/24/2005–1300	8/16/2004–0930	8/27/2005–1000
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	—	—
Nitzschia inconspicua Grunow	48122	—	2	21	—
Nitzschia pusilla Grunow	48123	—	1	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	—	5	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	—	8	—	2
Nitzschia sp. 1	48990	2	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	2	6	2	7
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	—	3	—	9
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	1	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	1	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	1	—
Synedra acus Kützing	66042	10	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	1	1	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01581700	01581800	01583100	01583500
Stream name	NADED number	Winters Run	Gunpowder Falls	Piney Run	Western Run
Date–Time		8/18/2005–1400	8/24/2005–1300	8/16/2004–0930	8/27/2005–1000
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	2	2	—	—
Encyonema silesiacum (Bleisch) Mann	110005	13	—	3	4
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	1	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	5	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	1	2	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	13	2	2
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	—	14	—	—
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	1	—	1
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	1	1	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	1	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	1	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	1	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01583500	01586000	01587300	01589300
Stream name		Western Run	North Branch Patapsco River	South Branch Patapsco River	Gwynns Falls
Date–Time		8/27/2005–1005	8/16/2004–1115	9/6/2005–1230	8/24/2004–1315
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	9	48	16	42
Achnanthidium sp.	1022	187	101	105	53
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	16	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	5	38	1	—
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	3	1	2	5
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	6	19	87	14
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	6	—	3	3
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	2	2	1	13
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	2	—	—	2
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	3	—	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	4	7	1	9
Cocconeis pediculus Ehrenberg	16011	—	—	—	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	1	—	2	—
Cyclotella pseudostelligera Hustedt	20012	1	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	1	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	2	1	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	1
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01583500	01586000	01587300	01589300
Stream name		Western Run	North Branch Patapsco River	South Branch Patapsco River	Gwynns Falls
Date–Time		8/27/2005–1005	8/16/2004–1115	9/6/2005–1230	8/24/2004–1315
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	1	2
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	1	1	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	1	3	—	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	2
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	—	—	—	—
Gomphonema kobayasii Kociolek et Kingston	37197	—	55	—	8
Gomphonema aquamineralis Krammer	37204	—	—	—	2
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	10
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	1	1	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	1	—	1	1
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	—	—	—
Navicula gregaria Donkin	46023	6	4	8	24

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01583500	01586000	01587300	01589300
Stream name		Western Run	North Branch Patapsco River	South Branch Patapsco River	Gwynns Falls
Date–Time		8/27/2005–1005	8/16/2004–1115	9/6/2005–1230	8/24/2004–1315
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	4	6	5	15
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	—	—	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	2	3
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	2
Navicula symmetrica Patrick	46400	2	4	10	4
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	5	6	4	20
Navicula perminuta Grunow	46538	6	2	2	—
Navicula subminuscula Manguin	46562	1	—	2	—
Navicula germainii Wallace	46616	2	11	1	3
Navicula caterva Hohn et Hellermann	46646	1	—	—	—
Navicula erifuga Lange-Bertalot	46648	—	—	—	2
Navicula recens Lange-Bertalot	46649	—	—	2	114
Navicula capitatoradiata Germain	46661	3	7	2	4
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	4
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	10	1	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	2	4	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	—	33	7	3
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	1
Neidium binodis (Ehrenberg) Hustedt	47078	1	—	—	—
Nitzschia amphibia Grunow	48004	—	—	6	1
Nitzschia capitellata Hustedt	48006	—	—	—	1
Nitzschia dissipata (Kützing) Grunow	48008	3	9	6	36
Nitzschia fonticola Grunow	48011	2	—	—	—
Nitzschia frustulum (Kützing) Grunow	48013	195	89	159	11
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	1
Nitzschia heufleriana Grunow	48020	—	—	—	1
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	3
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	1	—	5	3

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01583500	01586000	01587300	01589300
Stream name	NADED number	Western Run	North Branch Patapsco River	South Branch Patapsco River	Gwynns Falls
Date–Time		8/27/2005–1005	8/16/2004–1115	9/6/2005–1230	8/24/2004–1315
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	—	—
Nitzschia inconspicua Grunow	48122	—	11	3	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	1
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	21
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	2	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	—	13
Nitzschia palea var. debilis (Kützing) Grunow	48228	1	—	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	1	10	—
Nitzschia archibaldii Lange-Bertalot	48417	2	—	3	3
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	1
Pinnularia subgibba Krammer	52173	—	—	—	1
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	5	38	7	10
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	3	1	1	11
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	1	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	1
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	—	3
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	2	16	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	2
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	1	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01583500	01586000	01587300	01589300
Stream name		Western Run	North Branch Patapsco River	South Branch Patapsco River	Gwynns Falls
Date–Time		8/27/2005–1005	8/16/2004–1115	9/6/2005–1230	8/24/2004–1315
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	4	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	8	—	—
Encyonema silesiacum (Bleisch) Mann	110005	2	7	1	3
Encyonema prostratum (Berkeley) Kützing	110013	—	—	1	1
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	1	5	—	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	1	—	20	—
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	2	2
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	3	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	2	2
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	2	2

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01589440	01591000	01593900	01594000
Stream name		Jones Falls	Patuxent River	Middle Patuxent River	Little Patuxent River
Date–Time		8/24/2004–1030	8/4/2004–1030	7/27/2005–1100	7/25/05–1100
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	28	16	41	4
Achnanthidium sp.	1022	4	345	256	423
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	3	—	—	1
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	4	28	8	1
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	2	—	6	—
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	2	—	—	10
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	6	—	—	—
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	40	—	2	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	6	—	—	—
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	3	—	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	13	1	4	2
Cocconeis pediculus Ehrenberg	16011	2	—	—	2
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	—	1
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	3	—	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	2	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01589440	01591000	01593900	01594000
Stream name	NADED number	Jones Falls	Patuxent River	Middle Patuxent River	Little Patuxent River
Date–Time		8/24/2004–1030	8/4/2004–1030	7/27/2005–1100	7/25/05–1100
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	2	—	1	—
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	1	—	1
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	—	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	2	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	—	5	1	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	1	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	—	2	—	—
Gomphonema kobayasii Kociolek et Kingston	37197	—	4	—	—
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	19	—	—
Gomphonema sp. 2	37277	—	46	—	—
Gomphonema lagenula Kützing	37278	—	—	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	1	—	—	1
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	7	4	3	1
Meridion circulare (Greville) Agardh	45001	1	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	1	—	—
Navicula gregaria Donkin	46023	21	1	14	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01589440	01591000	01593900	01594000
Stream name	NADED number	Jones Falls	Patuxent River	Middle Patuxent River	Little Patuxent River
Date–Time		8/24/2004–1030	8/4/2004–1030	7/27/2005–1100	7/25/05–1100
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	16	—	23	1
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	—	2	—
Navicula rhynchocephala Kützing	46154	—	1	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	1	—	—	—
Navicula symmetrica Patrick	46400	7	3	—	1
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	20	—	1	—
Navicula perminuta Grunow	46538	—	—	62	4
Navicula subminuscula Manguin	46562	—	—	2	—
Navicula germainii Wallace	46616	—	—	—	2
Navicula caterva Hohn et Hellermann	46646	—	—	—	—
Navicula erifuga Lange-Bertalot	46648	1	1	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	19	—	—	—
Navicula reichardtiana Lange-Bertalot	46666	2	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	11	—	—	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	—	—	1
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	4	—	5	2
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	2	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	2	—	2	2
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	38	—	—	—
Nitzschia fonticola Grunow	48011	—	—	—	2
Nitzschia frustulum (Kützing) Grunow	48013	78	—	9	—
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	4	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	2
Nitzschia palea (Kützing) Smith	48025	3	1	6	10

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01589440	01591000	01593900	01594000
Stream name		Jones Falls	Patuxent River	Middle Patuxent River	Little Patuxent River
Date–Time		8/24/2004–1030	8/4/2004–1030	7/27/2005–1100	7/25/05–1100
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	2	—	—	—
Nitzschia inconspicua Grunow	48122	—	—	3	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	1
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	1	1	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	1	—	—	9
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	1	—
Nitzschia archibaldii Lange-Bertalot	48417	—	—	8	6
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	31	—	14	6
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	72	—	—	—
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	1	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	1	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	12	4	1	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01589440	01591000	01593900	01594000
Stream name	NADED number	Jones Falls	Patuxent River	Middle Patuxent River	Little Patuxent River
Date–Time		8/24/2004–1030	8/4/2004–1030	7/27/2005–1100	7/25/05–1100
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	—	—	1
Encyonema silesiacum (Bleisch) Mann	110005	1	10	2	2
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	2	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	17	1	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	1	—	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	4	—	4	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	1	—	—
Sellaphora seminulum (Grunow) Mann	170014	—	—	3	—
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	2	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	3	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	5	1
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—	3	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01614000	01616500	01617800	01619000
Stream name	NADED number	Back Creek	Opequon Creek	Marsh Run	Antietam Creek
Date–Time		8/9/2005–1000	8/31/2004–1420	7/19/2005–1300	8/17/2004–1300
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	75	1	81	4
Achnanthidium sp.	1022	109	—	—	3
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	2	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	59	—	6	1
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	—	—	—	2
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	—	1	—	1
Achnanthes duthii Screenivasa	2280	7	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	1	2	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	—	8	2	9
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	2	100	—	128
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	5	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	4	—	26	2
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	4	—	—
Cocconeis placentula Ehrenberg	16004	—	1	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	1	10	3	5
Cocconeis pediculus Ehrenberg	16011	—	—	1	1
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	—	—
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	1	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	1	1	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	1	—	—
Cymbella delicatula Kützing	23072	31	—	—	—
Cymbella affinis Kützing	23073	16	1	26	1
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	12	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01614000	01616500	01617800	01619000
Stream name	NADED number	Back Creek	Opequon Creek	Marsh Run	Antietam Creek
Date–Time		8/9/2005–1000	8/31/2004–1420	7/19/2005–1300	8/17/2004–1300
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	29	—	2
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	1	—	3	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	2	—	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	1	—	1	1
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	2	—
Gomphonema parvulum (Kützing) Kützing	37010	—	—	—	1
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	1	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	1	—
Gomphonema apuncto Wallace	37070	103	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	1	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	2	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	3	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	—	18	2	3
Gomphonema kobayasii Kociolek et Kingston	37197	—	6	6	2
Gomphonema aquamineralis Krammer	37204	—	—	1	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	—	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	2	—	2
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	2	1	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	1	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	—	12	—	—
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	5	—	17	2
Navicula gregaria Donkin	46023	2	6	4	19

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01614000	01616500	01617800	01619000
Stream name	NADED number	Back Creek	Opequon Creek	Marsh Run	Antietam Creek
Date–Time		8/9/2005–1000	8/31/2004–1420	7/19/2005–1300	8/17/2004–1300
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	1	43	4	92
Navicula subhamulata Grunow	46076	2	1	28	11
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	—	9	46	12
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	1	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	—	—	—	—
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	4	32	59	30
Navicula perminuta Grunow	46538	—	—	—	—
Navicula subminuscula Manguin	46562	—	—	—	1
Navicula germainii Wallace	46616	—	9	—	—
Navicula caterva Hohn et Hellermann	46646	—	—	—	—
Navicula erifuga Lange-Bertalot	46648	—	4	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	2	8	—	27
Navicula reichardtiana Lange-Bertalot	46666	2	—	—	1
Navicula trivialis Lange-Bertalot	46774	—	—	7	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	6	12	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	—	8	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	—	1	2
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	—	4	1	1
Navicula sp. 5	46906	2	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	—	—	—	5
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	1	68	42	31
Nitzschia fonticola Grunow	48011	—	—	—	—
Nitzschia frustulum (Kützing) Grunow	48013	1	67	—	20
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	2
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	2	1
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	—	5	4	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01614000	01616500	01617800	01619000
Stream name	NADED number	Back Creek	Opequon Creek	Marsh Run	Antietam Creek
Date–Time		8/9/2005–1000	8/31/2004–1420	7/19/2005–1300	8/17/2004–1300
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	2	1
Nitzschia inconspicua Grunow	48122	—	—	—	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	9	—	—	—
Nitzschia sociabilis Hustedt	48225	—	9	4	9
Nitzschia palea var. debilis (Kützing) Grunow	48228	2	4	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	8	—	—	—
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	—	2	—	1
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	—	21	—	40
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	1	—
Surirella stalagma Hohn et Hellermann	65045	1	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	1	1	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	1	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	1	—
Synedra ulna var. contracta Ostrup	66058	—	—	—	3
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	11	—	39	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01614000	01616500	01617800	01619000
Stream name	NADED number	Back Creek	Opequon Creek	Marsh Run	Antietam Creek
Date–Time		8/9/2005–1000	8/31/2004–1420	7/19/2005–1300	8/17/2004–1300
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	—	3	—
Encyonema silesiacum (Bleisch) Mann	110005	4	—	1	1
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	—	—	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	2	—	3	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	6	—
Sellaphora seminulum (Grunow) Mann	170014	2	—	—	14
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	6	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	2	—	20	4
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	5	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	3	1
Tryblionella apiculata Gregory	185023	—	2	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	1	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	1	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	1
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01619500	01636690	01637500	01638480
Stream name	NADED number	Antietam Creek	Piney Run	Catoctin Creek	Catoctin Creek
Date–Time		8/17/2004–1030	8/31/2004–1045	9/8/2004–1100	8/5/2004–1100
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	3	17	4	2
Achnanthidium sp.	1022	—	256	279	125
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	2	2	—	2
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	3	3	1	—
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	—	18	9	191
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	1	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	5	—	—	—
Amphora montana Krasske	7042	1	—	—	—
Amphora pediculus (Kützing) Grunow	7043	176	2	—	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	—	3	—	1
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	25	4	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	19	6	12	4
Cocconeis pediculus Ehrenberg	16011	12	—	—	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	2	—	1	—
Cyclotella pseudostelligera Hustedt	20012	—	2	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	1	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	2	—	1
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01619500	01636690	01637500	01638480
Stream name	NADED number	Antietam Creek	Piney Run	Catoctin Creek	Catoctin Creek
Date–Time		8/17/2004–1030	8/31/2004–1045	9/8/2004–1100	8/5/2004–1100
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	4	—	—	—
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	1	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	—	—	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	—	1
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	2	1	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	1	1	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	1	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	5	1	—	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	1	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	3	1	2	—
Gomphonema kobayasii Kociolek et Kingston	37197	16	7	—	5
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	—	1	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	2
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	—	3	—	—
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	1	—	—
Navicula gregaria Donkin	46023	3	9	1	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01619500	01636690	01637500	01638480
Stream name	NADED number	Antietam Creek	Piney Run	Catoctin Creek	Catoctin Creek
Date–Time		8/17/2004–1030	8/31/2004–1045	9/8/2004–1100	8/5/2004–1100
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	91	11	7	52
Navicula subhamulata Grunow	46076	2	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	13	—	—	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	1	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	6	—	—
Navicula symmetrica Patrick	46400	—	14	—	1
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	1	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	23	7	—	—
Navicula perminuta Grunow	46538	—	1	—	—
Navicula subminuscula Manguin	46562	—	—	19	1
Navicula germainii Wallace	46616	—	3	3	—
Navicula caterva Hohn et Hellermann	46646	—	—	—	—
Navicula erifuga Lange-Bertalot	46648	1	—	—	1
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	9	5	2	1
Navicula reichardtiana Lange-Bertalot	46666	4	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	8	—	—	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	5	5	—	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	1	6	—	—
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	1	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	2	2	—	30
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	10	8	—	—
Nitzschia fonticola Grunow	48011	—	—	—	—
Nitzschia frustulum (Kützing) Grunow	48013	2	3	76	9
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	3	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	1	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	5	2	3	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01619500	01636690	01637500	01638480
Stream name	NADED number	Antietam Creek	Piney Run	Catoctin Creek	Catoctin Creek
Date–Time		8/17/2004–1030	8/31/2004–1045	9/8/2004–1100	8/5/2004–1100
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	2	—	—	—
Nitzschia inconspicua Grunow	48122	1	1	19	8
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	2	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	3	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	3	—	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	2	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	—	2
Nitzschia archibaldii Lange-Bertalot	48417	—	2	3	—
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	1	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	2	8	43	33
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	21	6	—	5
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	3	1	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	2	—	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	3	1	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	1	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01619500	01636690	01637500	01638480
Stream name	NADED number	Antietam Creek	Piney Run	Catoctin Creek	Catoctin Creek
Date–Time		8/17/2004–1030	8/31/2004–1045	9/8/2004–1100	8/5/2004–1100
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	1	—	—
Navicula hintzii Lange-Bertalot	93187	1	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	2	—	—
Encyonema silesiacum (Bleisch) Mann	110005	—	13	—	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	—
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	5	—	2
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	—	11	—	2
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	2	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	1	—
Sellaphora seminulum (Grunow) Mann	170014	6	1	3	19
Staurosira construens Ehrenberg	172001	7	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	4	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	4	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	2	—	—	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	1	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	1	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	1	2	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01639500	01642000	01642500	01643110
Stream name	NADED number	Big Pipe Creek	Monocacy River	Linganore Creek	Bush Creek
Date–Time		8/10/2004–1045	8/23/2005–1515	8/10/2004–1415	8/23/2005–1100
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	1	3	21	4
Achnanthidium sp.	1022	11	13	15	2
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	1	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	5	3	39	—
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	2	—	2	—
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	57	—	9	45
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	—	—	—	5
Amphora montana Krasske	7042	—	—	—	—
Amphora pediculus (Kützing) Grunow	7043	—	5	—	5
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	18	—
Caloneis bacillum (Grunow) Cleve	12001	7	—	—	1
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	1	10	—	—
Cocconeis placentula Ehrenberg	16004	—	2	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	5	321	8	19
Cocconeis pediculus Ehrenberg	16011	—	17	2	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	—	—
Cyclotella pseudostelligera Hustedt	20012	—	—	1	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	—	8	1
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	—	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01639500	01642000	01642500	01643110
Stream name		Big Pipe Creek	Monocacy River	Linganore Creek	Bush Creek
Date–Time		8/10/2004–1045	8/23/2005–1515	8/10/2004–1415	8/23/2005–1100
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	—	6
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	—	—	—	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	6	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	27	—
Fragilaria sp. 1	34990	—	1	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	1
Gomphonema parvulum (Kützing) Kützing	37010	—	—	4	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	2
Gomphonema sarcophagus Gregory	37152	—	—	—	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	1	—	1	—
Gomphonema kobayasii Kociolek et Kingston	37197	4	—	111	—
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	1	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	—	2	13	—
Gomphonema sp. 3	37333	—	—	1	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	—	5	1	5
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	—	3	—
Navicula gregaria Donkin	46023	5	1	—	16

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01639500	01642000	01642500	01643110
Stream name	NADED number	Big Pipe Creek	Monocacy River	Linganore Creek	Bush Creek
Date–Time		8/10/2004–1045	8/23/2005–1515	8/10/2004–1415	8/23/2005–1100
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	20	11	7	52
Navicula subhamulata Grunow	46076	—	—	—	—
Navicula submuralis Hustedt	46078	—	—	—	—
Navicula tripunctata (Müller) Bory	46104	3	1	2	6
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	—	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	2
Navicula symmetrica Patrick	46400	5	7	4	21
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	18	1	34	6
Navicula perminuta Grunow	46538	—	—	—	—
Navicula subminuscula Manguin	46562	—	10	—	9
Navicula germainii Wallace	46616	—	8	—	8
Navicula caterva Hohn et Hellermann	46646	—	1	—	—
Navicula erifuga Lange-Bertalot	46648	—	2	—	—
Navicula recens Lange-Bertalot	46649	—	1	—	1
Navicula capitatoradiata Germain	46661	5	1	21	5
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	—	—
Navicula aff. subminuscula	46789	—	—	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	1	3	—	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	4	—	1	—
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	1	3	—	5
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	—	2	70	5
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	17	—	—	59
Nitzschia fonticola Grunow	48011	—	4	6	2
Nitzschia frustulum (Kützing) Grunow	48013	210	7	16	68
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	—	—	—	—
Nitzschia palea (Kützing) Smith	48025	—	1	—	3

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	01639500	01642000	01642500	01643110
Stream name		Big Pipe Creek	Monocacy River	Linganore Creek	Bush Creek
Date–Time		8/10/2004–1045	8/23/2005–1515	8/10/2004–1415	8/23/2005–1100
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—	—	1
Nitzschia inconspicua Grunow	48122	42	—	8	16
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	—	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	2	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	1	—
Nitzschia sociabilis Hustedt	48225	—	—	—	4
Nitzschia palea var. debilis (Kützing) Grunow	48228	—	3	—	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	1	—
Nitzschia aff. fonticola Grunow	48413	—	—	—	—
Nitzschia archibaldii Lange-Bertalot	48417	—	1	—	4
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	—	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	48	4	27	13
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	5	2	1	11
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	—	—
Surirella tenera Gregory	65020	—	—	—	—
Surirella stalagma Hohn et Hellermann	65045	—	—	—	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	—	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	3	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	5	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	1

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01639500	01642000	01642500	01643110
Stream name	NADED number	Big Pipe Creek	Monocacy River	Linganore Creek	Bush Creek
Date–Time		8/10/2004–1045	8/23/2005–1515	8/10/2004–1415	8/23/2005–1100
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	4
Navicula ruttnerii var. capitata Hustedt	93177	—	—	—	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	2	—	3	—
Encyonema silesiacum (Bleisch) Mann	110005	3	—	—	2
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	1
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	1	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	1	1	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	—	—
Luticola mutica (Kützing) Mann	130002	—	—	—	—
Planothidium lanceolatum	155003	—	—	—	1
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	2	1	—	2
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	1	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	15	29	3	74
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	1	—	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	—	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	1	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	2
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	—	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	1	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	0164380375	01643880	01644000	01644900
Stream name		Crooked Run	Beaverdam Creek	Goose Creek	Great Seneca Creek
Date–Time		8/2/2005–1300	8/2/2005–1100	8/9/2005–1400	9/8/2005–1230
Organism		Number	Number	Number	Number
CHRYSOPHYTA					
Bacillariophyceae					
Achnanthidium minutissimum (Kützing) Czarnecki	1010	6	47	7	29
Achnanthidium sp.	1022	10	107	99	126
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—	1	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	—	15	7	14
Achnanthidium sp. 1	1047	—	—	—	—
Achnanthes conspicua Mayer	2098	—	5	—	1
Achnanthes lemmermannii Hustedt	2129	—	—	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	8	1	20	168
Achnanthes duthii Screenivasa	2280	—	—	—	—
Achnanthes sp. 1	2990	—	—	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—	—	—
Amphora veneta Kützing	7006	—	—	—	—
Amphora inariensis Krammer	7010	—	—	—	—
Amphora montana Krasske	7042	5	3	—	—
Amphora pediculus (Kützing) Grunow	7043	1	—	—	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	—	—	—	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—	—	—
Caloneis bacillum (Grunow) Cleve	12001	8	—	1	—
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	—	22	—
Cocconeis placentula Ehrenberg	16004	—	—	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	3	—	60	3
Cocconeis pediculus Ehrenberg	16011	—	—	—	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—	—	—
Cocconeis neodiminuta Krammer	16019	—	—	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—	—	—
Cyclotella atomus Hustedt	20001	—	—	—	—
Cyclotella meneghiniana Kützing	20007	—	—	3	—
Cyclotella pseudostelligera Hustedt	20012	—	—	—	—
Craticula halophila (Grunow) Mann	21005	—	—	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—	1	—
Cymatopleura solea (Brébisson) Smith	22001	—	—	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	2	5	—	—
Cymbella delicatula Kützing	23072	—	—	—	—
Cymbella affinis Kützing	23073	—	—	—	—
Cymbella hustedtii Krasske	23074	—	—	—	—
Cymbella turgidula Grunow	23083	—	—	—	—
Cymbella sp. 1	23145	—	—	—	—
Cymbella sp. 1	23146	—	1	—	—
Denticula kuetzingii Grunow	25008	—	—	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	0164380375	01643880	01644000	01644900
Stream name		Crooked Run	Beaverdam Creek	Goose Creek	Great Seneca Creek
Date–Time		8/2/2005–1300	8/2/2005–1100	8/9/2005–1400	9/8/2005–1230
Organism		Number	Number	Number	Number
Diatoma vulgaris Bory	27013	—	—	—	4
Eunotia elegans Ostrup	33013	—	—	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—	—	—
Eunotia siolii Hustedt	33218	—	—	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	3	2	5	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—	1	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	—	2	—
Fragilaria sp. 1	34990	—	—	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—	—	—
Gomphonema affine Kützing	37002	—	—	—	—
Gomphonema parvulum (Kützing) Kützing	37010	—	5	—	2
Gomphonema subclavatum (Grunow) Grunow	37029	—	—	—	—
Gomphonema olivaceoides Hustedt	37062	—	—	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—	—	—
Gomphonema apuncto Wallace	37070	—	—	—	—
Gomphonema augur Ehrenberg	37071	—	—	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—	—	—
Gomphonema minusculum Krasske	37118	—	—	—	—
Gomphonema sarcophagus Gregory	37152	—	—	1	—
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	—	—	—	—
Gomphonema micropus Kützing	37168	—	—	—	—
Gomphonema minutum (Agardh) Agardh	37178	1	—	2	—
Gomphonema kobayasii Kociolek et Kingston	37197	2	13	6	1
Gomphonema aquamineralis Krammer	37204	—	—	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—	—	—
Gomphonema sp. 1	37272	—	—	—	—
Gomphonema sp. 2	37277	—	—	—	—
Gomphonema lagenula Kützing	37278	3	—	—	—
Gomphonema sp. 3	37333	—	—	—	—
Gomphonema sp. 1	37990	—	—	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—	3	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—	—	—
Melosira varians Agardh	44073	3	1	21	1
Meridion circulare (Greville) Agardh	45001	—	—	—	—
Navicula angusta Grunow	46002	—	—	—	—
Navicula cryptocephala Kützing	46014	—	—	—	—
Navicula gregaria Donkin	46023	11	11	8	10

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	0164380375	01643880	01644000	01644900
Stream name		Crooked Run	Beaverdam Creek	Goose Creek	Great Seneca Creek
Date–Time		8/2/2005–1300	8/2/2005–1100	8/9/2005–1400	9/8/2005–1230
Organism		Number	Number	Number	Number
Navicula minima Grunow	46039	87	113	13	60
Navicula subhamulata Grunow	46076	—	—	1	—
Navicula submuralis Hustedt	46078	—	—	2	—
Navicula tripunctata (Müller) Bory	46104	—	—	2	—
Navicula rhynchocephala Kützing	46154	—	—	—	—
Navicula kotschyi Grunow	46269	—	—	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—	—	—
Navicula canalis Patrick	46317	—	—	3	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—	—	—
Navicula salinarum Grunow	46389	—	1	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—	—	—
Navicula symmetrica Patrick	46400	7	1	7	3
Navicula tenelloides Hustedt	46401	—	—	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—	—	—
Navicula veneta Kützing	46504	—	—	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	—	—	—	—
Navicula perminuta Grunow	46538	5	18	8	1
Navicula subminuscula Manguin	46562	66	9	8	—
Navicula germainii Wallace	46616	1	—	13	1
Navicula caterva Hohn et Hellermann	46646	—	—	1	—
Navicula erifuga Lange-Bertalot	46648	—	—	—	—
Navicula recens Lange-Bertalot	46649	—	—	—	—
Navicula capitatoradiata Germain	46661	1	—	3	—
Navicula reichardtiana Lange-Bertalot	46666	—	—	—	—
Navicula trivialis Lange-Bertalot	46774	—	—	1	—
Navicula aff. subminuscula	46789	—	1	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	—	1	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—	—	—
Navicula antonii Lange-Bertalot	46893	—	1	2	1
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—	—	—
Navicula rostellata Kützing	46896	3	—	23	1
Navicula sp. 5	46906	—	—	—	—
Navicula sp. 1	46990	—	—	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—	—	—
Nitzschia amphibia Grunow	48004	6	11	—	5
Nitzschia capitellata Hustedt	48006	—	—	—	—
Nitzschia dissipata (Kützing) Grunow	48008	2	—	2	2
Nitzschia fonticola Grunow	48011	10	3	8	—
Nitzschia frustulum (Kützing) Grunow	48013	59	2	4	4
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—	—	—
Nitzschia heufleriana Grunow	48020	—	—	—	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—	—	—
Nitzschia microcephala Grunow	48024	4	3	4	—
Nitzschia palea (Kützing) Smith	48025	6	2	14	1

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	0164380375	01643880	01644000	01644900
Stream name		Crooked Run	Beaverdam Creek	Goose Creek	Great Seneca Creek
Date–Time		8/2/2005–1300	8/2/2005–1100	8/9/2005–1400	9/8/2005–1230
Organism		Number	Number	Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	1	—	—	—
Nitzschia inconspicua Grunow	48122	1	10	4	—
Nitzschia pusilla Grunow	48123	—	—	—	—
Nitzschia subacicularis Hustedt	48124	—	—	1	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—	1	—
Nitzschia liebethruthii Rabenhorst	48156	5	—	—	—
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—	—	—
Nitzschia sociabilis Hustedt	48225	—	—	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	6	4	16	—
Nitzschia angustatula Lange-Bertalot	48229	—	—	—	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—	—	—
Nitzschia incognita Legler et Krasske	48340	—	—	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—	—	—
Nitzschia fossilis Grunow	48383	—	—	—	—
Nitzschia aff. fonticola Grunow	48413	—	—	5	—
Nitzschia archibaldii Lange-Bertalot	48417	4	1	7	3
Nitzschia sp. 1	48990	—	—	—	—
Pinnularia borealis Ehrenberg	52013	—	—	—	—
Pinnularia obscura Krasske	52049	1	—	—	—
Pinnularia subgibba Krammer	52173	—	—	—	—
Pinnularia interrupta Smith	52194	—	—	1	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	56	19	21	6
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	—	6	—	2
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—	—	—
Surirella angusta Kützing	65002	—	—	1	—
Surirella tenera Gregory	65020	—	—	1	—
Surirella stalagma Hohn et Hellermann	65045	—	—	1	—
Surirella minuta Brébisson	65048	—	—	—	—
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—	—	—
Surirella elegans Ehrenberg	65072	—	—	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	—	1	—
Synedra acus Kützing	66042	—	—	—	—
Synedra delicatissima Smith	66046	—	—	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—	—	—
Synedra ulna var. contracta Ostrup	66058	—	—	1	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—	—	—
Bacillaria paradoxa Gmelin	76001	—	—	—	—
Undetermined Centric sp. 1	89895	—	—	—	—
Nupela sp. 1	92001	—	—	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number	NADED number	0164380375	01643880	01644000	01644900
Stream name		Crooked Run	Beaverdam Creek	Goose Creek	Great Seneca Creek
Date–Time		8/2/2005–1300	8/2/2005–1100	8/9/2005–1400	9/8/2005–1230
Organism		Number	Number	Number	Number
Navicula sp. 28	93176	—	—	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	5	1	—
Navicula hintzii Lange-Bertalot	93187	—	—	—	—
Encyonema minutum (Hilse) Mann	110004	—	3	1	2
Encyonema silesiacum (Bleisch) Mann	110005	1	5	4	—
Encyonema prostratum (Berkeley) Kützing	110013	—	—	—	1
Encyonema reichardtii (Krammer) Mann	110014	—	—	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	—	—	—	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—	2	—
Luticola mutica (Kützing) Mann	130002	1	—	—	—
Planothidium lanceolatum	155003	—	1	1	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	1	6	5	1
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—	—	—
Sellaphora seminulum (Grunow) Mann	170014	96	56	10	47
Staurosira construens Ehrenberg	172001	—	—	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—	—	—
Tryblionella apiculata Gregory	185023	—	—	—	—
Tryblionella levidensis Smith	185026	—	2	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—	1	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	—	—	—
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	—	—	—	—
Gomphosphenia aff. minutissimum	209006	—	—	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	—	18	—
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—	1	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	1	5	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	4	—	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01656000	01660400
Stream name	NADED number	Cedar Run	Aquia Creek
Date–Time		8/11/2005–1400	8/1/2005–1100
Organism		Number	Number
CHRYSOPHYTA			
Bacillariophyceae			
Achnanthidium minutissimum (Kützing) Czarnecki	1010	4	20
Achnanthidium sp.	1022	156	157
Achnanthidium pyrenaicum (Hustedt) Kobayasi	1023	—	—
Achnanthidium exiguum (Grunow) Czarnecki	1024	—	—
Achnanthidium atomus (Hustedt) Monnier, Lange-Bertalot et Ector	1037	—	—
Achnanthidium eutrophilum (Lange-Bertalot) Lange-Bertalot	1046	9	83
Achnanthidium sp. 1	1047	—	—
Achnanthes conspicua Mayer	2098	5	—
Achnanthes lemmermannii Hustedt	2129	—	—
Achnanthes subhudsonis var. kraeuselii (Cholnoky) Cholnoky	2132	6	—
Achnanthes duthii Screenivasa	2280	—	—
Achnanthes sp. 1	2990	—	—
Amphora ovalis (Kützing) Kützing	7001	—	—
Amphora veneta Kützing	7006	—	1
Amphora inariensis Krammer	7010	1	2
Amphora montana Krasske	7042	—	—
Amphora pediculus (Kützing) Grunow	7043	—	—
Amphora copulata (Kützing) Schoeman et Archibald	7075	2	—
Aulacoseira granulata (Ehrenberg) Simonsen	10018	—	—
Caloneis bacillum (Grunow) Cleve	12001	—	2
Cocconeis placentula var. lineata (Ehrenberg) Van Heurck	16003	—	9
Cocconeis placentula Ehrenberg	16004	—	—
Cocconeis placentula var. euglypta (Ehrenberg) Grunow	16005	30	5
Cocconeis pediculus Ehrenberg	16011	2	—
Cocconeis placentula var. pseudolineata Geitler	16015	—	—
Cocconeis neodiminuta Krammer	16019	—	—
Cyclostephanos tholiformis Stoermer, Håkansson et Theriot	19001	—	—
Cyclotella atomus Hustedt	20001	—	—
Cyclotella meneghiniana Kützing	20007	—	—
Cyclotella pseudostelligera Hustedt	20012	—	—
Craticula halophila (Grunow) Mann	21005	—	—
Craticula molestiformis (Hustedt) Lange-Bertalot	21015	—	—
Cymatopleura solea (Brébisson) Smith	22001	—	—
Cymbella tumida (Brébisson ex Kützing) Van Heurck	23068	—	1
Cymbella delicatula Kützing	23072	—	—
Cymbella affinis Kützing	23073	1	—
Cymbella hustedtii Krasske	23074	—	1
Cymbella turgidula Grunow	23083	—	—
Cymbella sp. 1	23145	—	1
Cymbella sp. 1	23146	—	—
Denticula kuetzingii Grunow	25008	—	—
Diatoma mesodon (Ehrenberg) Kützing	27002	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01656000	01660400
Stream name	NADED number	Cedar Run	Aquia Creek
Date–Time		8/11/2005–1400	8/1/2005–1100
Organism		Number	Number
Diatoma vulgaris Bory	27013	1	—
Eunotia elegans Ostrup	33013	—	—
Eunotia exigua (Brébisson ex Kützing) Rabenhorst	33015	—	—
Eunotia siolii Hustedt	33218	—	—
Fragilaria vaucheriae (Kützing) Petersen	34030	10	—
Fragilaria capucina var. mesolepta Rabenhorst	34051	—	—
Fragilaria capucina var. gracilis (Ostrup) Hustedt	34098	—	—
Fragilaria capucina var. rumpens (Kützing) Lange-Bertalot	34109	—	1
Fragilaria sp. 1	34990	—	—
Frustulia vulgaris (Thwaites) deToni	35011	—	—
Frustulia amphipleuroides (Grunow) Cleve-Euler	35036	—	—
Gomphoneis minuta Kociolek et Stoermer	36010	—	—
Gomphonema affine Kützing	37002	—	—
Gomphonema parvulum (Kützing) Kützing	37010	—	—
Gomphonema subclavatum (Grunow) Grunow	37029	—	—
Gomphonema olivaceoides Hustedt	37062	—	—
Gomphonema olivaceum (Lyngbye) Kützing	37065	—	—
Gomphonema apuncto Wallace	37070	—	—
Gomphonema augur Ehrenberg	37071	—	—
Gomphonema olivaceoides var. hutchinsoniana Patrick	37075	—	—
Gomphonema minusculum Krasske	37118	—	—
Gomphonema sarcophagus Gregory	37152	—	1
Gomphonema augur var. sphaerophorum (Ehrenberg) Lange-Bertalot	37159	—	—
Gomphonema mexicanum Grunow ex Van Heurck	37163	1	—
Gomphonema micropus Kützing	37168	1	—
Gomphonema minutum (Agardh) Agardh	37178	—	—
Gomphonema kobayasii Kociolek et Kingston	37197	—	2
Gomphonema aquamineralis Krammer	37204	—	—
Gomphonema parvulum var. saprophilum Hustedt	37221	—	—
Gomphonema sp. 1	37272	—	90
Gomphonema sp. 2	37277	—	102
Gomphonema lagenula Kützing	37278	—	—
Gomphonema sp. 3	37333	—	—
Gomphonema sp. 1	37990	—	—
Gyrosigma acuminatum (Kützing) Rabenhorst	38001	—	—
Gyrosigma spencerii (Smith) Griffith et Henfrey	38004	—	—
Gyrosigma attenuatum (Kützing) Rabenhorst	38005	—	—
Gyrosigma scalproides (Rabenhorst) Cleve	38012	—	—
Gyrosigma strigilis (Smith) Cleve	38021	—	—
Gyrosigma reimeri Sterrenburg	38027	—	—
Melosira varians Agardh	44073	12	4
Meridion circulare (Greville) Agardh	45001	—	—
Navicula angusta Grunow	46002	—	—
Navicula cryptocephala Kützing	46014	—	—
Navicula gregaria Donkin	46023	2	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01656000	01660400
Stream name	NADED number	Cedar Run	Aquia Creek
Date–Time		8/11/2005–1400	8/1/2005–1100
Organism		Number	Number
Navicula minima Grunow	46039	18	—
Navicula subhamulata Grunow	46076	—	—
Navicula submuralis Hustedt	46078	—	—
Navicula tripunctata (Müller) Bory	46104	—	—
Navicula rhynchocephala Kützing	46154	—	—
Navicula kotschyi Grunow	46269	—	—
Navicula peregrina (Ehrenberg) Kützing	46289	—	—
Navicula canalis Patrick	46317	—	—
Navicula cincta (Ehrenberg) Ralfs	46324	—	—
Navicula salinarum Grunow	46389	—	—
Navicula schroeteri var. escambia Patrick	46394	—	—
Navicula symmetrica Patrick	46400	3	7
Navicula tenelloides Hustedt	46401	—	—
Navicula viridula (Kützing) Kützing emend. Van Heurck	46408	—	—
Navicula veneta Kützing	46504	—	—
Navicula cryptotenella Lange-Bertalot ex Krammer et Lange-Bertalot	46527	—	—
Navicula perminuta Grunow	46538	—	—
Navicula subminuscula Manguin	46562	—	—
Navicula germainii Wallace	46616	—	—
Navicula caterva Hohn et Hellermann	46646	—	—
Navicula erifuga Lange-Bertalot	46648	—	—
Navicula recens Lange-Bertalot	46649	150	1
Navicula capitatoradiata Germain	46661	—	—
Navicula reichardtiana Lange-Bertalot	46666	—	—
Navicula trivialis Lange-Bertalot	46774	—	—
Navicula aff. subminuscula	46789	—	—
Navicula lenzii Hustedt ex Schmidt	46842	—	—
Navicula lanceolata (Agardh) Ehrenberg	46859	—	—
Navicula vilaplanii (Lange-Bertalot et Sabater) Lange-Bertalot et Sabater	46892	—	—
Navicula antonii Lange-Bertalot	46893	1	1
Navicula viridulacalcis (Hustedt) Lange-Bertalot	46895	—	—
Navicula rostellata Kützing	46896	2	—
Navicula sp. 5	46906	—	—
Navicula sp. 1	46990	—	—
Neidium binodis (Ehrenberg) Hustedt	47078	—	—
Nitzschia amphibia Grunow	48004	8	—
Nitzschia capitellata Hustedt	48006	—	—
Nitzschia dissipata (Kützing) Grunow	48008	2	—
Nitzschia fonticola Grunow	48011	—	—
Nitzschia frustulum (Kützing) Grunow	48013	2	—
Nitzschia gracilis Hantzsch ex Rabenhorst	48015	—	—
Nitzschia heufleriana Grunow	48020	1	—
Nitzschia linearis (Agardh ex Smith) Smith	48023	—	—
Nitzschia microcephala Grunow	48024	—	—
Nitzschia palea (Kützing) Smith	48025	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01656000	01660400
Stream name	NADED number	Cedar Run	Aquia Creek
Date–Time		8/11/2005–1400	8/1/2005–1100
Organism		Number	Number
Nitzschia recta Hantzsch ex Rabenhorst	48029	—	—
Nitzschia inconspicua Grunow	48122	—	—
Nitzschia pusilla Grunow	48123	—	—
Nitzschia subacicularis Hustedt	48124	1	—
Nitzschia filiformis (Smith) Van Heurck	48145	—	—
Nitzschia intermedia Hantzsch ex Cleve et Grunow	48153	—	—
Nitzschia liebethruthii Rabenhorst	48156	—	3
Nitzschia paleacea Grunow ex Van Heurck	48165	—	—
Nitzschia sinuata var. tabellaria (Grunow) Grunow	48178	—	—
Nitzschia sociabilis Hustedt	48225	—	—
Nitzschia palea var. debilis (Kützing) Grunow	48228	4	—
Nitzschia angustatula Lange-Bertalot	48229	1	—
Nitzschia nana Grunow ex Van Heurck	48307	—	—
Nitzschia incognita Legler et Krasske	48340	—	—
Nitzschia bita Hohn et Hellermann	48348	—	—
Nitzschia fossilis Grunow	48383	—	—
Nitzschia aff. fonticola Grunow	48413	—	—
Nitzschia archibaldii Lange-Bertalot	48417	—	—
Nitzschia sp. 1	48990	—	—
Pinnularia borealis Ehrenberg	52013	—	—
Pinnularia obscura Krasske	52049	—	—
Pinnularia subgibba Krammer	52173	—	—
Pinnularia interrupta Smith	52194	—	—
Reimeria sinuata (Gregory) Kociolek et Stoermer	55002	4	—
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot	57002	18	—
Simonsenia delognei (Grunow) Lange-Bertalot	59001	—	—
Stephanodiscus minutulus (Kützing) Cleve et Möller	64018	—	—
Surirella angusta Kützing	65002	—	—
Surirella tenera Gregory	65020	—	—
Surirella stalagma Hohn et Hellermann	65045	1	—
Surirella minuta Brébisson	65048	—	1
Surirella brebissonii var. kuetzingii Krammer et Lange-Bertalot	65064	—	—
Surirella elegans Ehrenberg	65072	—	—
Synedra parasitica (Smith) Hustedt	66014	—	—
Synedra ulna (Nitzsch) Ehrenberg	66024	—	1
Synedra acus Kützing	66042	—	—
Synedra delicatissima Smith	66046	—	—
Synedra parasitica var. subconstricta (Grunow) Hustedt	66055	—	—
Synedra ulna var. contracta Ostrup	66058	—	—
Thalassiosira bramaputrae (Ehrenberg) Håkansson et Locker	70009	—	—
Pseudostaurosira brevistriata (Grunow) Williams et Round	73001	—	—
Bacillaria paradoxa Gmelin	76001	10	—
Undetermined Centric sp. 1	89895	—	—
Nupela sp. 1	92001	—	—
Nupela lapidosa (Krasske) Lange-Bertalot	92006	—	—

Appendix 4. Numbers of diatom species identified by the Academy of Natural Sciences.—Continued

[NADED, North American Diatom Ecological Database; —, species not identified]

Station number		01656000	01660400
Stream name	NADED number	Cedar Run	Aquia Creek
Date–Time		8/11/2005–1400	8/1/2005–1100
Organism		Number	Number
Navicula sp. 28	93176	—	—
Navicula ruttnerii var. capitata Hustedt	93177	—	—
Navicula hintzii Lange-Bertalot	93187	—	—
Encyonema minutum (Hilse) Mann	110004	1	—
Encyonema silesiacum (Bleisch) Mann	110005	3	—
Encyonema prostratum (Berkeley) Kützing	110013	1	—
Encyonema reichardtii (Krammer) Mann	110014	—	—
Fallacia monoculata (Hustedt) Mann	115005	—	—
Fallacia tenera (Hustedt) Mann	115008	—	—
Karayevia clevei (Grunow) Bukhtiyarova	125001	3	—
Karayevia laterostrata (Hantzsch) Bukhtiyarova	125002	—	—
Luticola goeppertiana (Bleisch) Mann	130001	—	—
Luticola mutica (Kützing) Mann	130002	—	—
Planothidium lanceolatum	155003	—	—
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot	155017	7	—
Planothidium rostratum (Ostrup) Lange-Bertalot	155018	—	—
Pleurosira laevis (Ehrenberg) Compère	158001	—	—
Sellaphora laevissima (Kützing) Mann	170001	—	—
Sellaphora pupula (Kützing) Meresckowsky	170006	—	—
Sellaphora seminulum (Grunow) Mann	170014	12	—
Staurosira construens Ehrenberg	172001	—	—
Staurosira construens var. binodis (Ehrenberg) Hamilton	172005	—	—
Staurosira construens var. venter (Ehrenberg) Hamilton	172006	—	—
Staurosirella leptostauron (Ehrenberg) Williams et Round	175001	—	—
Staurosirella pinnata (Ehrenberg) Williams et Round	175005	—	—
Staurosirella leptostauron var. dubia (Grunow) Edlund	175007	—	—
Tryblionella apiculata Gregory	185023	—	—
Tryblionella levidensis Smith	185026	—	—
Psammothidium bioretii (Germain) Bukhtiyarova et Round	186001	—	—
Placoneis elginensis (Gregory) Cox	194005	—	—
Diadesmis contenta (Grunow ex Van Heurck) Mann	197002	—	—
Encyonopsis microcephala (Grunow) Krammer	203002	—	—
Adlafia bryophila (Petersen) Lange-Bertalot	204001	—	3
Adlafia minuscula (Grunow) Lange-Bertalot	204002	—	—
Kolbesia ploenensis (Hustedt) Kingston	207003	—	—
Gomphosphenia lingulatiformis (Lange-Bertalot et Reichardt) Lange-Bertalot	209003	4	—
Gomphosphenia aff. minutissimum	209006	—	—
Geissleria acceptata (Hustedt) Lange-Bertalot et Metzeltin	210001	—	—
Geissleria aikenensis (Patrick) Torgan et Olivera	210002	—	1
Geissleria decussis (Hustedt) Lange-Bertalot et Metzeltin	210003	—	—
Mayamaea agrestis (Hustedt) Lange-Bertalot	211001	—	—
Mayamaea atomus (Kützing) Lange-Bertalot	211003	—	—
Hippodonta capitata (Ehrenberg) Lange-Bertalot, Metzeltin et Witkowski	213001	—	—
Hippodonta hungarica (Grunow) Lange-Bertalot, Metzeltin et Witkowski	213002	—	—
Parlibellus protracta (Grunow) Witkowski, Lange-Bertalot et Metzeltin	214002	—	—