Effectiveness of a Coastal Wetland in Reducing the Movement of Agricultural Pollutants into Lake Erie

by

Kenneth A. Krieger, Ph.D.
Water Quality Laboratory
Heidelberg College
Tiffin, Ohio 44883

FINAL REPORT

to

The Old Woman Creek National Estuarine Research Reserve
and
The Ohio Sea Grant College Program
National Oceanic and Atmospheric Administration (NOAA)
U.S. Department of Commerce

Ohio Sea Grant Publication OHSU-TB-056

and

OWC Technical Report No. 15

2001

ABSTRACT

Coastal wetlands of the Laurentian Great Lakes are believed to be important in mitigating pollution from tributaries draining largely agricultural watersheds. Until the present study, the effectiveness of this role has not been documented in detail or over multiple seasons. The objectives were to develop a surface water budget for a representative coastal wetland on the south shore of Lake Erieand subsequently to estimate the monthly, seasonal, and annual fluxes of total suspended solids, nutrients, and pesticides into and out of the wetland. The study was conducted in and upstream of the Old Woman Creek National Estuarine Research Reserve and State Nature Preserve near Huron, Ohio, from the fall of 1987 through the summer of 1990.

Water budget measurements included precipitation, pan evaporation, upstream discharge into the wetland, and downstream net discharge into Lake Erie. Storm hydrographs were analyzed to estimate residence time of storm water in the wetland. Water samples were collected at upstream and downstream gaging stations via automated samplers that collected discrete samples every eight hours year-around. Composite dryfall-precipitation samples were collected for each major precipitation event and the preceding dry period. The samples were analyzed for total suspended solids (TSS), total phosphorus (TP), soluble reactive phosphorus (SRP), nitrate + nitrite nitrogen (NO_{2+3}), ammonia nitrogen (NH_3), total Kjeldahl nitrogen (TKN), soluble reactive silica, chloride, and specific conductance. Additional samples collected at both gaging stations, more frequently during spring and summer, were analyzed for a suite of current-generation insecticides and herbicides. The removal efficiencies of the wetland for each of the analyzed substances during specific storms, months, seasons, and the 1990 water year (October 1989 – September 1990) were calculated by comparing time-weighted mean concentrations (TWMCs) as well as fluxes between the input and output sites.

A barrier beach intermittently closed the outlet from the wetland throughout the study, varying in total time from about one-fourth to one-half of each year of the three-year study. At those times, surface discharge to Lake Erie was zero. When the barrier beach was open, the wetland water level was marked by rapid, sometimes large, oscillations in response to surface seiches and storm surges on Lake Erie, which resulted in bi-directional flows at the outlet. Residence time of storm water in the wetland was a function of both the water level in the wetland, as controlled by Lake Erie, and the volume of storm water delivered into the wetland. The median wetland volume during 21 storm events when the barrier beach was open was 35% greater than the median volume before the events, which agrees with the paradigm that riverine wetlands slow the delivery of storm water and provide a moderated discharge downstream.

On a monthly basis, TWMCs greatly overestimated the export of TP but provided more-similar estimates of SRP and NO_{2+3} export compared to fluxes. The TSS export calculated from TWMCs was more than twice that calculated from fluxes. During storm runoff events TWMCs generally exaggerated the export of TP, TSS and TKN. Estimates from TWMCs indicated that on average only 60% of the chloride was exported monthly,

and 83% during runoff events, but estimates based on fluxes indicated that all of this conservative substance was exported. Therefore, it appears that the comparison of fluxes, though considerably more complex than the comparison of concentrations, is imperative to achieve a correct understanding of the amount, and in some cases the direction, of change in the delivery of materials to Lake Erie during their traverse through wetlands.

On average, monthly TSS loads increased during passage through the wetland. Although most particulates in entering creek water are probably inorganic and settle out of the water column in the wetland, plankton and hydrophytes produced throughout the wetland probably enrich the organic component of TSS leaving the wetland. Thus, the biogenic/inorganic ratio of TSS is probably considerably greater at export than at import to the wetland.

Also on a monthly basis, more NH_3 and TKN left the wetland than entered, with net export being exaggerated during two storm periods studied. This pattern may reflect the release of NH_3 as the result of storm-induced resuspension of the anaerobic organic-rich sediments of the wetland. Of 12 herbicides analyzed, only four (alachlor, atrazine, metolachlor, and metribuzin) were consistently detected. Their concentrations were substantially lower at the outlet than upstream. The highest concentrations occurred in storm runoff following spring planting, and concentrations were near or below detection limits from late fall through early spring. Four insecticides either were not detected or were found only rarely near detection limits.

Retention of TP in the wetland during the 1990 water year was 4.7 g/m^2-yr calculated on the basis of the median wetland surface area, ranging from 3.3 g/m^2-yr to 39 g/m^2-yr, depending on surface area fluctuations. The wetland retained 282 g TP/ha of watershed while the import into the wetland was 900 g TP/ha of watershed, for a net retention of 31%. Based on the single water year, the unit area yields of TP, SRP, TSS, and TKN in Old Woman Creek appear to be lower than average values for other western Lake Erie streams, probably as a result of the lower proportion of its drainage area devoted to row crop agriculture.

This study quantified the role of a relatively small riverine coastal wetland as a partial sink or transformer for sediment, nutrients, and herbicides. The collective role of Great Lakes wetlands surrounding tributary mouths and their flooded lower reaches is probably important in maintaining and enhancing the water and sediment quality of the lakes. Further research should focus on the effectiveness of coastal wetlands in comparison to OWC Wetland in performing these functions. Additional knowledge is also needed regarding the physical, chemical, and biological mechanisms of removal and transformation of pollutants. The recent extended period of lower water levels throughout the Great Lakes calls into question the future ability of coastal wetlands, which have shrunk in area and volume, to effectively mitigate pollution from tributaries.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

Background

Wetlands of many types have been shown to be effective to a greater or lesser extent in processing sediment, nutrients, and organic pollutants which enter them from tributaries (Kadlec and Knight 1996, Moustafa *et al.* 1998, Reddy *et al.* 1999). Similarly, coastal wetlands of the Laurentian Great Lakes are thought to play a beneficial role in reducing the concentrations and amounts of materials, both of natural and anthropogenic origins, which enter the lakes from the watershed. However, detailed studies to validate that role have been lacking.

Mitigation of the impact of pollutants on the Great Lakes could occur in several ways: (1) pollutants entering the wetlands could be transformed through chemical, physical, or biological processes into less bioavailable or less toxic forms prior to entering the lakes; (2) pollutants could move into long-term sinks within the wetlands; and (3) pollutants could move into short-term storage within the wetland, thereby altering the temporal patterns of pollutant loadings and concentrations entering the lakes. In the absence of wetlands that can intercept and process tributary water, the forms, amounts, and timing of pollutant inputs into the lakes directly match those of the outputs from the tributaries.

The degree of pollution mitigation that takes place within a wetland is likely to vary with stream discharge, from season to season, and from year to year, depending on local climatic conditions and the prevailing level of the adjacent lake. Studies by Krieger (1984), Richards and Baker (1985), and Klarer and Millie (1989) have indicated that two Lake Erie wetland systems of greatly different sizes (Old Woman Creek Wetland and Sandusky Bay) both function in the three ways listed above under different conditions. That information was indirect, based on differences in pollutant concentrations between the upstream and downstream ends of the systems. The absence of discharge measurements at the lake interface of either system precluded the development of mass balance budgets.

Most estimates of the retention of pollutants by wetlands have been based solely on relative differences in concentration of the pollutants between the inflow and outflow of the wetland (e.g., Klarer and Millie 1989, MacCrimmon 1980). This method is satisfactory only when the inflow and outflow volumes are equal and when the input concentrations are constant. Reliance on concentration data in the absence of discharge data could lead to large errors in estimates of the differences between the inputs of materials to, and their outputs from, wetlands. This is particularly true of coastal wetlands whose outlets to the lake are intermittently blocked by the formation of a barrier beach, as is the case with Old Woman Creek (OWC) and numerous other tributaries along the southern shore of Lake Erie.

Furthermore, during drought conditions, upstream inputs of pollutants yield only small quantities of materials at concentrations that have no direct relationship with their concentrations near the wetland outlet, either because export of preceding water masses is blocked by a barrier beach or because, in the absence of a barrier beach, lake water has become a major component of the downstream water mass via intermittent flow reversals.

The inflow and mixing of lake water with wetland water results in a lowering of various chemical constituents of the water column. Thus, a quantitative understanding of the functioning of coastal wetlands with regard to pollutant processing requires not only information on chemical concentrations, but also detailed knowledge of the discharge into and out of the wetland as well as the contribution of lake water to the wetland chemistry.

Hypothesis and Objectives

The general hypothesis posed during the development of this study was that under most hydrological conditions, Lake Erie coastal wetlands which receive tributary inflows function as sinks and transformers of most materials and thereby substantially reduce the impact of those materials on the chemistry and biology of the receiving lake. The hypothesis was organized within the framework of an ecosystem model (Figure 1). In that model, water carries dissolved and particulate materials into the wetland in surface runoff from the watershed, in intrusions of lake water during seiches and storm surges, and in precipitation. Particulates also enter via dry deposition. Depending on the geology of the watershed, input from or output to the groundwater may be significant and may make an important contribution to some materials mass balances. Water and associated materials are exported from the wetland via outflow to the lake by surface flow and perhaps seepage, and via evaporation and volatilization. The routes taken by each material depend on its chemistry. Biota such as waterfowl and fish may provide other important routes of materials inputs and exports in these systems. Materials budgets can be modeled mathematically once the contributions of the individual pathways are determined empirically.

The primary goal of this study was to characterize the nature and efficiency of pollution mitigation over a range of hydrologic conditions and for a broad range of substances within a representative riverine-palustrine coastal wetland. OWC Wetland was selected for study because it is believed to represent many other Lake Erie tributaries prior to their modification by dredging, development into marinas, filling, and other destructive activities. It was also selected because of the relative security of field instrumentation and the presence on site of a professional scientific and management staff.

The specific objectives were

1. To measure inputs of sediment, nutrients and pesticides into the wetland from the major tributary draining the upland watershed, and to estimate the inputs from the unmonitored portion (15.5%) of the watershed;
2. To measure the net outputs of these same materials from the wetland into Lake Erie;
3. To measure combined wet and dry deposition of these pollutants into the wetland;
4. To measure precipitation and evaporation at the wetland;
5. To calculate for the wetland, using the above measurements, the annual and seasonal budgets for water, sediment, nutrients and pesticides.

Acknowledgments

Since the beginning of this project in 1987, funds for the field work and data analysis have been provided from several sources. These, along with the component of the work they supported, are as follows:

Ohio Department of Natural Resources, Division of Natural Areas and Preserves	Equipment, supplies and labor for construction of instrumentation shelters at the upper and lower ends of the wetland
The Ohio Sea Grant College Program NOAA Grant NA90AA-D-SG132, Project R/ES-4	Water sampling instrumentation; sample collection and analysis; data interpretation and reporting
Old Woman Creek National Estuarine Research Reserve and State Nature Preserve, Ohio Department of Natural Resources	Data interpretation and reporting

Many individuals contributed during particular phases or throughout this project. Dr. David Klarer assisted immensely in construction, field sampling, and data management, and later served as project officer. He provided an immeasurable contribution in terms of conceptual ideas and project design. Other members of the OWC staff, especially Gene Wright, Scott Hoffman, and Gary Obermiller, also assisted over the years. Dr. Charles E. (Eddie) Herdendorf assisted in obtaining the initial funds from the Ohio Department of Natural Resources and, along with Dr. Terry Hume, developed the hypsographic relations (Herdendorf and Hume 1991) used in calculating the residence times and loads. The Ohio District of the U.S. Geological Survey established a stream gaging station upstream, provided continuous stage data there and at an existing downstream station, and developed a rating curve for the upstream site. Drs. Klarer, Herdendorf, and Linda Cornell reviewed drafts of this final report.

Most members of the staff of the Water Quality Laboratory at Heidelberg College participated in the project during the phases of station construction and sample collection and analysis. They include Jack Kramer, Barbara Merryfield, Ellen Ewing, and Francine Turose. Drs. David B. Baker and R. Peter Richards, and Nancy Miller provided assistance and advice in many ways. Heidelberg student assistants in the field and laboratory include Amy Cole, Darrin Masters, Michelle Hammond, Lisa Schwalenberg, and Brian Villalon.

STUDY AREA

OWC Wetland (Figure 2) is a relatively unmodified riverine-palustrine (Cowardin *et al.* 1979), drowned river mouth (Keough *et al.* 1999) wetland that consists of the flooded lower channel and floodplain of the watershed. A highway bridge and causeway constrict the wetland near its juncture with Lake Erie, and a railroad bridge and causeway constrict it further inland. During the period of field collections, the submerged area of the wetland

ranged from around 550,000 to 620,000 m^2, depending on the surface elevation, and the volume ranged from around 360,000 to 600,000 m^3 (Appendix G).

The OWC watershed overlies three bedrock formations dating from the Late Devonian (Ohio Shale) and Early Mississippian (Bedford Shale and Berea Sandstone) Ages. The modern soils are mixed with glacial till and glacial lacustrine deposits which were laid down during the Pleistocene Era (Buchanan 1982). During the 1980s, land use in the watershed consisted of 51% cropland of which 33% was corn, 33% soybeans, 17% wheat, 11% hay, and 6% oats; 21% woodland, 16% grassland, 3% vineyards and orchards, and 10% other uses such as water, residential and transportation. The only town in the watershed is Berlin Heights (pop. 800), situated about 9 km upstream of the wetland and served by private septic systems (Erie County SWCD data). A 1993 survey showed land uses consisting of 60% cropland, 25% forest, 3% pasture, 3% orchards and vineyards, 4% residential, 2% water, 3% transportation, and <1% commercial and manufacturing (Herdendorf 1997).

Of the total watershed area of 68.9 km^2 (26.5 mi^2), 85% is drained by OWC, a second-order tributary. An additional 7.5% is drained by a first-order stream, while only 6% of the watershed drains into the wetland via other tributaries. The wetland surface accounts for 1.4% of the watershed area. We constructed an upstream water sampling station on OWC at the Berlin Road bridge, where the creek drains 83% of the watershed and is within about one km of the upstream-most influence of lake levels (Figure 2). We constructed a second water sampling station near the confluence of OWC with Lake Erie. The creek and wetland open to the lake through a natural barrier beach. Storm runoff events create and maintain an open channel between the wetland and the lake, whereas periods of heavy surf close the barrier beach and prevent the surface exchange of water. In most years the mouth of the wetland is closed during much of the summer and fall (Krieger 1984, Krieger and Klarer 1991) because low stream discharges are insufficient to maintain an opening in the barrier beach. During those periods when the beach is open, seiches and storm surges in Lake Erie cause a constant but erratic oscillation in the water level of the wetland and often force lake water into its downstream end.

Prior to the 1980s, the wetland was mostly <1 m deep. During the record lake levels of the middle 1980s, the depth increased to as much as 1.5 m in many areas with a maximum depth approaching 3 m at the two bridge constrictions. The lake level controlled the wetland water level to a distance of approximately 3 km southward of the lakeshore.

Aquatic macrophytes were plentiful within the wetland, dominated in the turbid open-water areas by large, migrating beds of water lotus (*Nelumbo lutea*), which covered as much as one-third of the water surface in late summer (Whyte *et al.* 1997). A swamp dominated by an open overstory of ash (*Fraxinus* sp.) occupied much of the area south of the railroad causeway to Darrow Road (Figure 2) and was bordered on the north by a small sedge meadow (*Scirpus fluviatilis*). The floor of the swamp as well as the margins of the wetland were populated primarily by cattails (*Typha spp*.), sedges, reed (*Phragmites australis*), and arrowhead (*Sagittaria* spp.). Other than the swamp and sedge meadow, the wetland was characterized by open water with a mud bottom mostly devoid of emergent and submersed vegetation all year except for the water lotus in summer and fall.

METHODS

Hydrology

Precipitation and Evaporation

A recording precipitation gage and an evaporation pan [Belfort® recording pan followed by a Class A evaporation pan (Shaw 1988)] were operated in an open field adjacent to the visitor center of the reserve throughout the project period. It was found to be impractical to apply the evaporation readings (Appendix O) in a useful way to the budget calculations for two reasons: (1) Evapotranspiration rates in summer are often several times higher than evaporation rates alone due to a complex of factors (Wetzel 1983, Maidment 1993). (2) Pan evaporation coefficients may vary from less than 0.4 in summer to >1.3 in winter (Shaw 1988).

Discharge

At upland stream sites where flow is not blocked by obstructions (e.g., dams and lakes), discharge is a function of the stage (water depth). Thus, a rating table can be developed that assigns a unique discharge (Q) to each stage. Surface stage was measured continuously at two stations in the watershed (Figure 2). The upland station along OWC at Berlin Road permitted measurement of the creek flow draining 83% of the watershed. Stage was recorded every 15 min with a pressure transducer, and a flow rating curve was developed for that site (USGS Station 04199155) by the U.S. Geological Survey, Ohio District. The rating table is shown in Appendix A, and hourly stage data for the study period are presented in Appendix B.

The second station was situated approximately 70 m inland from Lake Erie and 30 m north of U.S. Hwy 6. A bubble gage and recorder at that site (USGS Station 04199165) were also operated by the U.S. Geological Survey. Because flow reversals are frequent at that site, a recording multidirectional electromagnetic current meter (Marsh-McBirney, Inc.) was installed in Apr 1988 at the U.S. Hwy 6 bridge to measure water current velocity and direction (Kanwisher and Lawson 1975). However, the current meter proved impractical because of its inability to integrate the velocities and directions throughout the cross-section of the water column. The meter was abandoned in favor of using changes in water level to determine direction of flow and the volume of water exchanged at that site (Krieger 1993). Hourly stage data for that site appear in Appendix C.

Storm Hydrographs

Most discrete storm hydrographs appearing in the Berlin Road stage data from Dec 1987 through Aug 1990 during periods when the barrier beach was open were analyzed to determine residence time of the storm water in the wetland. The beginning of the hydrograph was identified as the first hourly stage reading in a series of increasing hourly stages following a constant or declining hydrograph. The end of each storm runoff event was designated as the second consecutive hour on the descending limb of the hydrograph when

the stage was identical (declined <0.01 ft). The duration of the storm hydrograph was determined on that basis. In computing the upstream flux, mean wetland volume, and residence times, the beginning of each hydrograph was chosen as 0100, 0700, 1300, or 1900 h prior to, or at the time of, the beginning of a storm hydrograph, and the end as one of those times following the end of the hydrograph. The trailing portion of the water mass of most storm events was retained within the wetland or lowermost stream reaches below Berlin Road because the stream discharge had declined to such low rates that wetland residence times were long.

Figure 3 shows a typical storm hydrograph recorded in OWC at Berlin Road, the mean volume of the wetland during the hydrograph period, two estimates of the wetland residence time based on different algorithms, and mean number of theoretical total volume replacements within the wetland. The effect of calculating residence time at different endpoints of the storm hydrograph is shown for consecutive time intervals beginning at 42 h past the beginning of the storm hydrograph. This storm hydrograph returned to baseflow after 61 hours (two consecutive hours at the same stage). The effect on the calculated values of extending the length of the storm hydrograph past 61 hours is slight because of the small volume of water discharged at the end of the hydrograph compared to the volume discharged during the earlier stages of the hydrograph.

Chemistry

Field Collection

Water samples were collected upstream at the USGS gaging station on Berlin Road. Samples were collected downstream at a station constructed about 20 m south of the U.S. Hwy 6 bridge (Fig. 2). A submersible pump located near the middle of the channel at each site pumped water continuously into a plastic sink housed within the all-weather sampling stations. An Isco™ automatic water sampler pumped one sample every eight hours daily from the sink into a plastic bottle and maintained the samples at 4°C. The samples were retrieved weekly and were returned the same day to the Water Quality Laboratory for analysis. During low-flow periods, only one sample per day or less was analyzed for water chemistry. During periods of high flow, as many as three samples per day were analyzed in order to obtain more-detailed data on concentration changes during the storm event. At both stations, a second autosampler was used in late spring and summer to pump samples from the sink into glass containers for pesticide analysis. Grab samples for pesticide analysis were collected monthly during the rest of each year from the continuous-pumping system at each station.

A stainless steel sink that drained into a large glass carboy was placed in an open field near the visitor center for the collection of dryfall and precipitation. After precipitation events, the water and particulates in the carboy were mixed and a portion was poured into a sample bottle. The composite dryfall-precipitation samples were analyzed identically to the surface water samples.

Laboratory Analysis

The samples were analyzed for total suspended solids (TSS), total phosphorus (TP), soluble reactive phosphorus (SRP), nitrite + nitrate nitrogen (NO_{2+3}), ammonia N (NH_3), total Kjeldahl N (TKN), soluble reactive silica, chloride, and conductivity. The analytical methods for suspended sediment, nutrients, and conductivity are listed in Baker (1988) and were prescribed by U.S. EPA (1979). Pesticide samples were analyzed by capillary column gas chromatography for twelve herbicides and four insecticides (Table 1) following the methods described by Baker (1988) and Kramer and Baker (1985). Approximate detection limits and mean percent recoveries are also listed in Baker (1988). Quality assurance procedures included split samples, spiked samples, filter blanks, reagent blanks, and bottle blanks. Duplicate field samples were occasionally collected to provide a combined estimate of environmental and analytical variance. Quality control samples were equivalent to 15% of the environmental samples. The laboratory also routinely participated in round-robin sample exchanges with industry, university, and government laboratories during the project period. The concentration data for TSS, nutrients, and conductivity are presented in Appendix D (upstream, Berlin Road) and Appendix E (downstream, US Hwy 6). The data for four herbicides at both sites appear in Appendix F.

Data Analysis

The objective of determining to what extent the wetland functions as a sink, transformer, or source of the materials analyzed was approached in two ways. First, following the conventional approach, upstream and downstream concentrations of each substance were compared for specific periods of time, and the relative amount of loss or gain of that substance was calculated based on the assumption that discharge into the wetland was equal to the discharge out of the wetland. In the second approach, it was assumed that the discharges were not, in fact, equal. Therefore, concentration data were combined with discharge data at both ends of the wetland to compute the load of each substance entering and leaving the wetland during specific time periods. By comparing the results of these two different approaches, it was possible to assess whether concentration data alone are sufficient to quantify these wetland functions, or whether discharge data are also necessary.

Discharge

For OWC at Berlin Road, the discharge (q_i) at every hour was read directly by matching the USGS stage record with the corresponding discharge listed in the rating table (Appendix A). Although the USGS recorded the creek stage at 15-minute intervals, hourly records were judged to provide sufficient information for this study, yielding 24 readings per day.

At the lower end of the wetland, a rating table could not be developed, in part because flow reversals were frequent, and also because no relationship existed between stage and discharge. Stage was primarily controlled, not by upstream discharge, but by the elevation of Lake Erie when the barrier beach was open, and by multiple factors when the barrier beach blocked surface outflow. Therefore, the net volume of water exchanged between the wetland and the lake was calculated for each specific time interval of interest based on (1) the direction of change (up or down) in wetland elevation during the interval, (2) the volume of water exchanged, based on the stage-volume and stage-area

relationships developed by Herdendorf and Hume (1991), and (3) the volume of water calculated to have entered the wetland via surface flow from the watershed. The calculations are described in an earlier report (Krieger 1993).

Although precipitation and evaporation were measured during the study, those data could not be applied with confidence to the computations of volume and so were excluded. However, precipitation and loads directly onto the surface of the wetland were calculated for several storm runoff events and were compared in magnitude to the loads exported during the runoff events.

Infiltration and seepage also were excluded from the water budget calculations. It was shown in the late 1980s that water movement through the sediment-water interface of the wetland played an insignificant role in the total water exchange (Matisoff and Eaker 1989). During the low-water period of Apr 2000, an extensive visual survey from multiple points around the edge of the wetland indicated that no surface seeps or springs were present outside the shallow channel running through the mudflats (D. M. Klarer, pers. commun., 5 Apr 2000).

Residence Times

Knowledge of residence times provides information regarding the length of time available for the wetland to process water that has entered it. The hydraulic residence time of water in the wetland was determined by two algorithms. Mean residence time was calculated as

$$\overline{RT} = \bar{V} / \bar{Q} \qquad (1)$$

where $\bar{V} = \left(\sum v_i\right)/t$, $\bar{Q} = \left(\sum q_i\right)/t$, v_i is the wetland volume (m^3) at hour i, q_i is the discharge (m^3/s) for the entire upland watershed at hour i, and t is the total number of hourly readings during the storm hydrograph.

Mean instantaneous residence time was calculated as

$$\overline{IRT} = \left[\sum \left(v_i / q_i\right)\right] / t \qquad (2)$$

The calculations were performed using "PRGM RES.TIME 3.0" (Appendix P). All programs were written in True Basic© (Kemeny and Kurtz 1988, 1989).

Mean Concentrations

The *simple mean* chemical concentration of a substance during a time period (e.g., month) can be calculated from all samples collected during the period:

$$\bar{c} = (\sum c_i)/\ n \qquad (3)$$

where c_i is the concentration in the i^{th} sample, and n is the number of samples.

Simple means were not used in this study. Because samples were collected at unequal time intervals, *time-weighted mean concentrations* (TWMCs) were calculated to provide a more accurate estimate of the mean concentrations during the storm hydrograph (Richards and Baker 1993a):

$$\bar{c} = (\sum c_i t_i) / \sum t_i \quad (4)$$

where t_i is the time represented by the i^{th} sample. TWMCs were calculated using "PRGM MEAN CONC.Rev" (Appendix P).

TWMCs were employed rather than flux-weighted mean concentrations (as advocated by Baker 1988) because discharge data have not been, and will not be, available in the majority of similar investigations, and one purpose of this study was to determine the usefulness of concentration data alone for estimating the quantitative changes in materials fluxes through coastal wetlands. When discharge data are available, application of the flux-weighted mean concentration to correct for variable discharges is more appropriate than the TWMC (Baker 1988).

Removal efficiency (*RE*) is a measure of the proportion of a substance that has been removed from the water between the inflow and outflow of the wetland. It can be calculated as

$$RE(\%) = \frac{\bar{c}_u - \bar{c}_d}{\bar{c}_u} \times 100 \quad (5)$$

where $\bar{c}_u$ is the upstream TWMC, and $\bar{c}_d$ is the downstream TWMC during the period of interest.

In this study, where ratios between the downstream and upstream concentrations were already computed ($\bar{c}_d / \bar{c}_u$), RE was calculated as

$$RE(\%) = -\left[\left(\frac{\bar{c}_d}{\bar{c}_u} X100\right) - 100\right] \quad (6)$$

Loads

Upstream

Every analyzed water sample characterized chemical concentrations during a time interval ranging from 8 h to several days. For the time interval, t_i, represented by the i^{th} sample, the load (L) of each substance was calculated as

$$L = \sum c_i \bar{q}_i t_i \quad (7)$$

where c_i is the concentration in that sample; $\bar{q}_i$ is the simple mean discharge (m^3/s) computed from all the hourly stages included in interval, t_I; and t_i is one-half the time interval between

the i^{th} sample and the immediately preceding sample, plus one-half the interval between the i^{th} sample and following the sample (Baker 1988).

The total load for the entire period of interest (e.g., month, storm, season) was obtained by summing the individual loads (L) for all samples during the period. These calculations were performed using the program "UP-LOADING PRGR v.2.1a" (Appendix P).

Downstream

The method for calculating loads at the mouth of the wetland (Krieger 1993) is briefly summarized here. During a *falling* stage interval, discharge through the mouth of the wetland was calculated as

$$D = D_{cr} + P - E + \Delta V \tag{8}$$

where D_{cr} is the discharge from the total watershed via the tributaries (m^3/s), which is the mean hourly discharge at the Berlin Road gaging station (based on the stages, Appendix B, and rating table, Appendix A) times a factor of 1.187 to account for unmeasured discharge from the remainder of the watershed (Krieger 1993);
P is the volume of precipitation during the interval (m^3), which equals the measured precipitation (m) times the mean area (m^2) of the wetland during the interval;
D is discharge from the wetland during the interval;
E is the evaporation during the interval (m^3), which equals the evaporation (m) times the mean area (m^2) of the wetland during the interval, with the beginning and ending areas determined from the hypsographic table (Appendix G); and
$\Delta V = |V_b - V_e|$, V_b is the volume of water in the wetland at the beginning of the interval and V_e is the volume at the end of the interval, with volumes determined by the stage-volume table (Appendix G).

During a *rising* stage interval, discharge is calculated as

$$D = D_{cr} + P - E - \Delta V \tag{9}$$

Once the change in volume was determined for each rising and falling interval (using the stage-volume relations in Appendix G), it was necessary to assign chemical concentrations to that interval based on one or more samples taken during the interval. For rising intervals, samples were chosen that had a low conductivity (<35 mS/m), therefore representing the lake water chemistry (Krieger 1993). Thus, the load of materials from the lake into the wetland could be quantified. If no sample with a low conductivity occurred during the rising stage interval, because of the location of the sampling station some distance away from the lake, the nearest low-conductivity sample to that interval was used. For falling intervals, all samples were used that had a conductivity >35 mS/m, thus representing wetland water. Further description of sample selection and loading calculation is given in Krieger (1993).

Net downstream loads were calculated using "SPECIFIC INTVL.PRGM.7.3" and "PGRM-US6 FLUX CALC V.6.1" (Appendix P). Thus, in computing both input and output

loads for a given time period, it was necessary to calculate a total upstream load, via iterations and summation of Eq. 7, and a net downstream load, using both Eq. 8 and Eq. 9 as determined by the alternately rising and falling wetland stage.

RESULTS

Precipitation and Hydrology

Spring through fall of 1988 comprised one of the most severe droughts in Ohio history. Precipitation at the OWC visitor center, which was recorded beginning in Apr 1988, showed that almost all rainfall events through Sep 1988 were less than 20 mm (0.79 inches) and resulted in little or no increase in stream discharge (Fig. 4). Total precipitation Apr-Sep 1988 (Table 2) was 278 mm (10.9 in). Coupled with record heat during much of that period, surface discharge at Berlin Road fell below 0.005 m^3/s in Jun 1988, and remained at essentially zero discharge through Sep with the exception of three small, short-lived peaks in response to storms in Aug and Sep (Fig. 4). At discharges below about 0.005 m^3/s (0.18 ft^3/s), no surface flow is visible in OWC at Berlin Rd., and flow through riffles is hyporheic (personal observation).

The drought ended in Oct 1988 (Table 2), and precipitation followed normal seasonal patterns most months through the end of the study in Sep 1990 (Figs. 5, 6). Total precipitation at the visitor center in the 1989 WY (water year, 1 Oct 1988 - 30 Sep 1989) was 766 mm (30.2 in), and in the 1990 WY was 881 mm (34.7 in). As is typical in the region, discharge declined to an annual minimum during summer both years, dropping below 0.01 m^3/s only briefly in Aug-Sep 1989 (Fig. 5) and for two more-extended periods in May-Jun and late Jul 1990 (Fig. 6). The annual period of highest sustained discharges was Jan-Apr (no data Oct 1988 - Mar 1989). Floods (bankfull ca. 2.7 m) were brief, most lasting less than one day, and occurred infrequently in all seasons (Figs. 4-6).

The barrier beach intermittently opened and closed in response to hydrological events in the watershed and in Lake Erie (Table 3). The beach was closed for about one-fourth to one-half of each year (bottom panel of Figs. 4-6). During periods of closure, the water level in the wetland rose or dropped according to the balance between runoff from the watershed, direct precipitation onto the wetland, evapotranspiration, and seepage through the beach (Matisoff and Eaker 1989). During the prolonged drought of 1988, the water level gradually declined from its highest level in May to a minimum in mid-October. Following a series of runoff events from mid-October through late December 1988, the water level rose quickly after each event until, in late December, the water level topped over the barrier beach. The water quickly eroded a wide channel through it, and the water level in the wetland within a few hours dropped to the same level as Lake Erie (Figs. 4, 5). This sequence of changes in the wetland water level occurred multiple times during the study (Figs. 4-6), as documented on video (Krieger and Wright 1990). The maximum difference in elevation attained by the wetland above Lake Erie, as much as 1.25 m, was determined by the height attained by the barrier beach. That, in turn, was determined by the number and severity of high surf events during the period of closure.

Periods when the barrier beach was open were marked by rapid, sometimes large, oscillations in the water level of the wetland in response to seiches and storm surges on Lake Erie (Figs. 4-6). The levels at those times reflected the average seasonal water level changes characteristic of Lake Erie, which varied from a minimum level in winter to a maximum level in summer (Figs. 4-6).

Storm Hydrograph Characteristics

The 21 storm hydrographs from periods when the barrier beach was open from Dec 1987 through Sep 1990 ranged in duration at Berlin Rd. from 0.83 d accompanied by a maximum discharge of 1.64 m^3/s and an upstream flux of 67,000 m^3, to 4.0 d with a maximum discharge of 10.32 m^3/s and a flux of 1,330,000 m^3 (Table 4). However, the maximum discharge of all 21 storms was 19.91 m^3/s during a hydrograph that lasted only 2.54 d, near the median duration of 2.08 d. The median storm runoff flux was 427,000 m^3.

Correlation analysis (Microsoft Excel '98) showed a strong positive relationship between storm duration and both maximum discharge (r=0.80) and upstream flux (r=0.74). Residence time (RT) was negatively related to flux (r=-0.64) and positively related to wetland volume (r=0.62). Instantaneous residence time (IRT) was somewhat more weakly related to flux and wetland volume, while IRT and RT were strongly related (r=0.97). Therefore, residence time of the storm water was a function both of the water level in the wetland, as controlled by Lake Erie, and the volume of storm water delivered into the wetland. Both RT and IRT showed a negative correlation with storm hydrograph duration (r=-0.51 and –0.48, respectively) and weaker correlations with maximum discharge (r=-0.44 and -0.31, respectively). Mean IRT was slightly to much greater than RT for a given event. For example, for the large 3 Jan 90 storm of 4.00 d duration, RT was 0.07 d, and IRT was 0.09 d; whereas the small 27 Jun 89 storm of 1.58 d duration yielded a RT of 3.81 d and an IRT of 8.55 d (Table 4).

Characteristics of the hydrograph during baseflow for the five days both immediately before and after discrete storm events when the barrier beach was open were also determined (Table 5). In almost every case for which before-after comparisons were possible, the baseflow just after a storm event was higher than the baseflow just prior to the event. For example, during the five days prior to the 15 Dec 87 storm event, maximum discharge was 0.85 m^3/s, and during the five days following the event, the maximum discharge was 2.51 m^3/s, reflecting recharge of groundwater during the storm runoff period (Shaw 1988). The median pre-storm maximum discharge was 0.90 m^3/s, while the median post-storm maximum was 1.02 m^3/s, although not all pre- and post-periods were paired with a given storm. Likewise, the median flux prior to storm events was 206,000 m^3 (mean = 207,000 m^3), while the median flux after events was 221,000 m^3 (mean = 296,000 m^3). On the other hand, median wetland volume was nearly identical both before and after storms (112,000-115,000 m^3). The mean wetland volume during storm events was 151,000 m^3, which suggests that the rapid delivery of water during the events was effective in raising the water level of the wetland, in agreement with the paradigm that riverine wetlands slow the delivery of storm water and provide a moderated discharge downstream (Mitsch and Gosselink 1986, p. 402).

The median residence time (RT) was identical (2.79 d) before and after storm events, whereas the mean RT was about 16% longer before storms (3.24 d), reflecting the higher baseflows after events (Table 5). IRT revealed similar relationships. By comparison, the median RT during storms was only 0.66 d (IRT=1.30 d), or about 24% (IRT, 42%) as long as baseflow periods. In terms of the theoretical total replacements of the wetland water, the RT and IRT based calculations yielded similar results: a median of 1.6 to 1.8 replacements per event (Table 5), compared to 1.8 to 3.4 replacements per event during storm events. Mean values showed a different picture, with only about 70% as many replacements before storms than following them, and 2.8 to 3.6 times (IRT and RT, respectively) more replacements during an event as preceding it.

Pollutant Concentrations

Differences between Upstream and Downstream Concentrations

Concentration patterns are presented for the following time periods: (a) the entire study, (b) seasons, (c) periods when the barrier beach was open versus when it was closed, and (d) storm runoff events versus baseflow periods. Because the central hypothesis in this study addresses the efficacy of coastal wetlands in reducing the delivery of pollutants to Lake Erie, the concentration differences between the upper end of the wetland (Berlin Rd., upstream) and the opening of the wetland at Lake Erie (U.S. Hwy 6, downstream), are of particular concern.

Entire Period of Study

TSS and TP concentrations were almost always much higher downstream than upstream, with the exception of storm runoff events, and peak concentrations during runoff events were highly variable (Figs. 7, 8). TP upstream varied from nondetectable during some baseflow periods to >2.5 mg/L during two storm events. Downstream TP concentrations hovered around 0.1-0.2 mg/L during baseflows and rarely exceeded 0.5 mg/L during storm intervals. SRP concentrations usually were very similar upstream and downstream during baseflow, often being nondetectable; during storm events, upstream concentrations occasionally exceeded 100 µg/L, whereas downstream concentrations rarely exceeded 25 µg/L (Fig. 9).

NO_{2+3} concentrations were usually slightly to much higher upstream than downstream (Fig. 10) and occasionally exceeded 10 mg/L upstream and downstream, especially in 1989. Upstream concentrations exceeded 15 mg/L on four occasions, but in 1988 concentrations remained <6 mg/L (no data late Dec 1987 - mid-Mar 1988).

NH_3 concentrations were usually much higher downstream than upstream but were similar upstream and downstream during the drought of 1988 (Fig. 11). Concentrations both upstream and downstream usually were <0.5 mg/L, but during the autumn of 1989 upstream concentrations rose suddenly to more than 2 mg/L and varied up to 14 mg/L in Sep, with other excursions over 2.5 mg/L in Oct (Fig. 12A). The high concentrations began at the start

of a rising hydrograph after flow had dropped below 0.01 m^3/s, but a similar response was not observed at the end of the drought of 1988.

TKN concentration differences were similar to those of NH_3 except that higher downstream TKN concentrations were maintained more consistently than were higher downstream NH_3 concentrations. As did NH_3, TKN showed an extreme elevation of upstream concentrations in the fall of 1989, remaining >4 mg/L for an extended period (Fig. 12B). Whereas NH_3 concentrations were similar upstream and downstream during the drought of 1988, TKN was considerably elevated (>2 mg/L) downstream during that time (Fig. 13).

Silica concentrations were usually slightly higher upstream than downstream, but were much higher during and for several months following the drought of 1988 as well as in the summer of 1990 (Fig. 14). Concentrations exceeded 10 mg/L on several occasions both upstream and, less frequently, downstream. Chloride followed concentration patterns similar to those of silica, but elevated upstream concentrations were also observed in the summer and fall of 1989 (Fig. 15). Upstream concentrations occasionally exceeded 150 mg/L, primarily in the fall of 1988. Conductivity behaved similarly to silica and chloride but the differences between upstream and downstream concentrations were more marked throughout the study (Fig. 16). Conductivity occasionally was sustained above 100 mS/m in the fall of 1988.

Of the 16 pesticides investigated, only four herbicides—atrazine, cyanazine, alachlor, and metolachlor—were found routinely during some period each year. The others were never found or only rarely, at concentrations near analytical detection limits.

Seasonal Patterns

It is useful to express differences between the downstream and upstream concentrations as ratios. A downstream/upstream ratio >1 indicates a higher concentration on average downstream, and a ratio <1 a lower concentration downstream. The downstream/upstream mean concentration ratio of each parameter varied for each season over the 2.5 years of study (Table 6). (Appendix H provides TWMC's, ratios, samples sizes, and inclusive dates for each season.)

TSS concentration ratios in autumn were 5.35 and 10.36, whereas in other seasons they ranged from 2.03 to 4.46 (Table 6). Similarly, the highest TP ratio was 4.46 in autumn 1988 and otherwise varied from 1.21 to 3.51 during all seasons (Table 6). SRP ratios ranged from 0.42 to 0.79 during all seasons, except summer 1990 (0.29, Table 6).

NO_{2+3} generally had much lower concentration ratios in the summers (0.06-0.19) than the rest of the year, especially winters (0.79-0.81). The ratios for both NH_3 and TKN were strongly affected by the enigmatic concentrations of the fall of 1989. The only NH_3 ratios <1 were summer, fall and winter 1989-1990 (0.10-0.83), whereas all other seasons demonstrated ratios from 1.33 to 6.68 (Table 6). The only TKN ratio <1 was in summer 1989 (0.64), although the succeeding fall and winter ratios were depressed (1.07-1.17); other seasons revealed ratios from 1.38 to 3.35.

Silica and chloride ratios were always <1 and showed the highest ratios in winter (silica 0.81 and 0.86, chloride 0.80 and 0.82), and the lowest ratios in summer (silica 0.24, 0.35, 0.76; chloride 0.44, 0.48, 0.43). Similarly, three of the four lowest conductivity ratios (0.57-0.68) occurred in summer, and the highest (0.85 and 0.87) in winter (Table 6).

The herbicides atrazine, cyanazine, alachlor and metolachlor (Figs. 17-20) were found seasonally both in OWC upstream and in the wetland. They were not detectable during winter months but concentrations rapidly spiked to annual peaks in May and Jun each year, gradually declining throughout the summer and fall to undetectable levels. The timing of the peak concentrations corresponded to the first rainfall runoff events after most spring planting was completed in the watershed, with secondary peaks accompanying later runoff events. The lowest peak concentrations and shortest duration of detectable concentrations occurred during the drought year of 1988. Concentrations in individual storm runoff water masses were always higher in the creek than in the wetland.

Months

Monthly time-weighted mean concentration ratios (Fig. 22) reveal more of the dynamics of the ratios than do the seasonal values. (TWMC's, ratios, samples sizes, and inclusive dates are provided in Appendix I.) TP revealed overall higher ratios (1.18-6.39) during the first ten months of the study (Mar - Dec 88), and ratios >3.6 were only reached two other months (Aug 89, Jun 90). Ratios <1.2 occurred only in Apr and Jun 1989 and Sep 1990 (Table 7). An annual cycle in the ratio was not apparent.

The SRP ratio was <1 for 26 of the 31 months, and each of the ratios ≥ 1 occurred sporadically during a different month. Twenty months revealed ratios between 0.11 and 0.6 (Table 7). TP ratios, and to a lesser extent SRP ratios, showed a gradual decline during the course of the study (Fig. 22).

Monthly NO_{2+3} ratios were always ≤ 1 (median 0.46). A distinct seasonal pattern was evident, with relatively high ratios being maintained beginning Nov-Jan and ending in May or Jun, after which very low ratios (minimum 0.02) were maintained throughout summer into fall (Fig. 22). NH_3 ratios were almost always >1, the exception being the very low ratios that resulted from the elevated concentrations upstream in the fall of 1989. A 9-month period (Dec 88-Aug 89) of very high NH_3 ratios (>4) followed the end of the 1988 drought. TKN ratios, which were >1 in 29 of 31 months, responded in an opposite pattern to the NO_{2+3} pattern, generally maintaining higher ratios during summer and lower ratios during winter and spring. TKN ratios did not reflect the extremely high ratios exhibited by NH_3, even though TKN measurements include NH_3 as well.

The monthly ratios of TSS varied widely (1.02-14.03) but generally were between 2 and 6 (median 3.65); they appeared to be lower in spring and summer and highest in Nov or Dec, though a distinct pattern was not present (Fig. 22). Silica ratios were <1 (0.07-0.94, median 0.67) except Jul 1989 (1.05) and followed a pattern similar to NO_{2+3} in being lowest in summer and highest in winter (Fig. 22), though the pattern was not as distinct as for

NO_{2+3}. The downstream/upstream ratios of chloride and conductivity were very similar, always being <1 (chloride 0.33-0.97, median 0.54); conductivity 0.43-0.99, median 0.73) and annually demonstrated persistent declines from the highest ratios in winter to the lowest ratios in fall (Fig. 22).

Storm Events versus Baseflow Periods

The upstream/downstream ratio of TP varied considerably from <1 to >1 (0.56 to 2.39, mean 1.07) during storm events (Table 8), but during baseflow periods was always >1 (1.08 to 10.86, mean 3.77). Conversely, the SRP ratio was almost always <1 both during storms (0.10 to 1.61, mean 0.51) and during baseflow periods (0.34 to 1.22, mean 0.80) and was usually lower during storms than during baseflow.

NO_{2+3} revealed identical mean ratios (0.67) for storm events (0.24 to 0.88) and baseflow periods (0.24 to 1.05) (Table 8). NH_3 was much more variable, with storm ratios of 0.30 to 10.24 (mean 3.43), and baseflow ratios of 0.60 to 7.18 (mean 2.55). TKN ratios were much less variable, ranging from 0.66 to 1.32 (mean 1.13) during storms, and from 1.15 to 1.76 (mean 1.40) during baseflow periods.

Silica ratios tended to be the same both during storms (0.46 to 0.91, mean 0.77) and during baseflow (0.39 to 1.01, mean 0.79). Chloride ratios were generally slightly higher during storms (0.51 to 1.11, mean 0.83) than during baseflow (0.42 to 0.98, mean 0.69). However, TSS showed much higher ratios (1.50 to 14.27, mean 7.27) during baseflow than during storms (0.47 to 3.77, mean 1.71). Conductivity ratios ranged around 1 (0.61 to 1.11, mean 0.91) during storms and were always <1 (0.63 to 0.99, mean 0.81) during baseflow (Table 8).

Nine of the twelve storm events compared in Table 8 were succeeded by baseflow periods during which the barrier beach remained open. Two-sample *t*-tests on untransformed data revealed significant differences (one-tailed, $p<0.05$) in the ratios of TP, chloride, suspended solids, and conductivity between storm events and baseflow periods (Table 9). The ratios for SRP, the nitrogen forms, and silica were not found to be significantly different. Because the variances of TP and suspended solids were not equal (Bartlett's test), those ratios were also compared with the nonparametric Mann-Whitney test, which confirmed that the differences between the ratios of those two parameters were significant.

Barrier Beach Open versus Closed

During the time of continuous chemical data collection (after mid-March 1988), there were seven periods when the barrier beach was open, i.e., a direct surface connection was maintained between the wetland and Lake Erie, and seven periods when the beach was closed (Table 10). (TWMCs of each chemical parameter, sample sizes, and inclusive dates of the open and closed periods are shown in Appendix K.)

The upstream/downstream ratio of TP ranged from 1.45 to 3.14 for six of the seven open periods, and was 0.76 for the last period (Table 10). When the beach was closed, the

ratio ranged from 1.64 to 5.83. The ratio of SRP was from 0.21 to 0.80 during open periods, from 0.23 to 0.74 during closed periods (Table 10).

NO_{2+3} ratios varied from 0.20 to 1.39 when the beach was open, from 0.06 to 0.70 when it was closed. Open ratios for NH_3 were from 0.82 to 5.74, whereas closed ratios were from 0.10 to 4.26. TKN ratios for open periods were very consistent, ranging from 1.16 to 1.86, but were more variable for closed periods, from 0.66 to 3.37 (Table 10).

There was little difference in the ratios for silica, chloride, and conductivity between open and closed periods. Silica ratios for open periods ranged from 0.37 to 0.91, for closed periods from 0.25 to 1.20. Open chloride ratios were 0.33-0.80, closed ratios were 0.27-1.06. Open TSS ratios were 2.14-6.80, closed ratios were 1.00-13.92. Open conductivity ratios varied from 0.56 to 0.87, and closed ratios from 0.53 to 0.97 (Table 10).

Comparison of the downstream/upstream ratios of open versus closed periods by two-sample *t*-tests (Table 11) showed that the ratio was significantly higher (one-tailed $p<0.05$) while the beach was closed than while it was open for TP and TKN (ratios >1 for both open and closed periods), and significantly lower (<1 for both open and closed periods) for NO_{2+3}. The mean ratios of the remaining parameters appeared very similar for open and closed periods except TSS, for which the mean closed ratio was 6.10 while the mean open ratio was 3.79 (Table 11). The very high variance of the closed ratios (s^2=22.73 vs. 3.54 for open) prevented the statistical validation of differences via the *t*-test. The nonparametric Mann-Whitney test supported the statistical differences between the ratios of TP and NO_{2+3} but not TKN ($p=0.055$).

To summarize, it appears that whether the barrier beach was open or closed had little effect on most of the measured parameters, with the exception of TP, TKN, NO_{2+3}, and perhaps TSS. Concentration ratios show that there was usually more TP, TSS and TKN downstream than upstream at all times, and that the difference was increased when the barrier beach was closed. NO_{2+3} concentrations were almost always lower downstream than upstream when the beach was both open and closed; however, the difference in concentrations was greater during closed periods.

Pollutant Loads

Atmospheric Loads

Pollutant loading by means of direct precipitation onto the surface of the wetland was inconsequential for most storms because the volume of precipitation falling on the surface almost always was small, averaging 1.04% of the storm discharge volume with a median of 0.255% for 14 storms in 1989 and 1990 (Table 12), expressed as the volume derived from the average area of the wetland during each precipitation event. When the percentages are based on a standardized maximum area of 633,544 m^2 at an elevation of 576.0 ft (175.6 m), the volume of precipitation was, on average, 1.75% of the discharge volume with a median of 1.115% (Table 12). The storm with the greatest rainfall, beginning on 23 May 1989, deposited 53.34 mm of water on the wetland, which equaled 1.0% of the upstream discharge. Two storms deposited 37.59 mm of rain, but the one in

Nov 1989 was equivalent to only 0.31% of the storm discharge volume whereas the storm in May 1990 equaled 2.7% of the discharge volume. The maximum and minimum equivalents of storm discharge were 4.84% in May 1990 and 0.04% during two events in Jan 1990 (Table 12).

Each measurement of contaminant concentrations in precipitation (Appendix N) included particulate dry deposition since the time of the preceding sample as well as contaminants present in the rain or snow itself. The atmospheric loads for three storm periods, derived by multiplying sample concentrations by the volume of precipitation onto the wetland, and assuming a maximum area of 633,544 m^2, revealed highly variable inputs of the nutrients and TSS (Table 13). Because the volume of precipitation was small compared to the volume of surface discharge during each storm period (Table 17), and because the concentration of each contaminant (except NH_3) was small relative to its concentration in surface runoff water, the atmospheric loads to the wetland during storm events were negligible.

However, in terms of monthly upstream discharge and loads (Table 14), precipitation made a sizable contribution, equaling as much as 20.6% of the volume of creek discharge into the wetland during months of very low base flows. During one or more of those months, the loads of TP, SRP, TSS, NO_{2+3}, NH_3, and TKN exceeded 5% of the upstream load from the creek. The atmosphere was consistently a major source of NH_3 and TKN to the wetland throughout the 1990 Water Year, but it was a poor source of dissolved reactive silica and chloride (Table 14). For the entire year, the volume of precipitation was 2.5% of the upstream discharge while NH_3 input was 6.4% of upstream creek loads, TKN 1.6%, and each of the other parameters <0.6%. Because the atmospheric contributions were so low, only the loads from surface discharge are compared in the remainder of this report.

Monthly and Annual Loads

The upstream and downstream export volumes of surface water varied greatly from month to month, and did not show a seasonal pattern during the 18 months for which discharge was computed (Fig. 23). However, during most months when the upstream discharge was low, the barrier beach closed the mouth, thereby reducing surface discharge to Lake Erie to zero (Fig. 23). This was largely a characteristic of the summer and fall, although surface discharge was blocked continuously during the drought of 1988 from May through Dec (Figs. 4, 5).

Maximum upstream loads of specific materials into the wetland and their maximum net downstream loads into Lake Erie occurred either in May 1989 or Jan or Feb 1990 (Figs. 23-25, Table 15). Whether the total loads for the 1990 water year (Table 15) are representative of a “typical” year is not known, as insufficient data exist to calculate the loads for other years. The loads and removal efficiency of the wetland in that year are summarized as follows:

Material	Load to Wetland	Load to Lake Erie	Retained in Wetland (%)
water	22.50×10^6 m^3	22.41×10^6 m^3	0.3
TSS	2.700×10^6 kg	3.010×10^6 kg	-11.5
chloride	0.9740×10^6 kg	1.002×10^6 kg	-2.9
TP	5,813 kg	3,867 kg	33.5
SRP	521 kg	283 kg	45.7
NO_{2+3} N	136,700 kg	107,600 kg	21.3
NH_3 N	3,255 kg	6,243 kg	-91.8
TKN	30,120 kg	35,090 kg	-16.5
soluble reactive silica	154,100 kg	145,100 kg	5.8

The calculated upstream and downstream fluxes of water in the 1990 water year were almost identical (downstream flux was 99.7% of upstream flux); and chloride, considered to be a conservative ion, was also calculated to have nearly identical fluxes upstream and downstream (3% greater downstream) (Table 15). Other substances showed either a sizable gain or loss of material within the wetland. The loads of both TP and SRP were reduced as they passed through the wetland, with only 67% of the TP and 54% of the SRP exiting into Lake Erie. Likewise, only 79% of the NO_{2+3} left the wetland, but relatively little (6%) of the silica was lost. To the contrary, more suspended solids (12%), NH_3 (92%) and TKN (17%) left the wetland than entered (Table 15). However, only 86% of the total N, estimated as NO_{2+3} N plus TKN, left the wetland; the total N load was strongly influenced by the amount of NO_{2+3} N because TKN contributed only 18% of the total N upstream and 25% downstream.

Pearson product moment correlation coefficients for the monthly loading data from Apr 89 through Sep 90 (Table 16) revealed highly significant ($p \leq 0.01$) relationships between the amount of water exported and the loads of suspended solids and nutrients. Every pairwise relationship between materials was positive, though several were not significant. In particular, the upstream loads of NH_3 were not significantly correlated with the downstream loads of most of the other substances but were highly correlated ($p<0.01$) with the downstream loads of NO_{2+3}, NH_3, and TKN.

The correlations between the upstream loads of TP and SRP were highly significant upstream. TP upstream was highly correlated with TP downstream ($r=0.95$), but did not show a significant relationship with the downstream load of SRP ($r=0.36$). TP downstream was relatively weakly correlated, though still significantly ($p<0.05$), with SRP downstream ($r=0.57$). Within the upstream and downstream ends of the wetland, TP was strongly correlated ($r \geq 0.91$) with both TSS and TKN, especially downstream ($r=0.99$ for both). TSS also showed a highly significant correlation ($r \geq 0.93$) with TKN. NO_{2+3} was most strongly correlated ($r \geq 0.97$) with silica and chloride. Silica and chloride were also strongly correlated ($p \geq 0.93$) (Table 16).

Loads During Storm Events

To determine the effects of storm runoff events on loadings to the wetland and Lake Erie, four groups of storms were investigated (Table 17). In all four groups, the calculated fluxes of water into the wetland and Lake Erie were essentially identical. However, despite the very short residence times in the wetland (Table 4), large proportions of most materials were lost in transit through the wetland. The pair of storms that occurred in Jan 1990 was different from the other three groups in that there was a net loss of most materials during that time. However, in all four groups of storms, there was a net loss of SRP, NO_{2+3}, and soluble reactive silica. Two groups of storms showed a loss of chloride ($\leq$11%), while one showed a gain (13%). TP and TSS showed a substantial loss in transit in three of the four groups of storms but showed a gain during the Jan 1990 storms. NH_3 was exported into Lake Erie in much greater quantities (up to nearly seven times) than were input to the wetland during three of the four periods, but the pattern did not mirror that of the TP and suspended solids (Table 17).

Two groups of storms were in late spring (May and Jun of 1989 and 1990), whereas the other two groups were in winter (Dec and Jan 1990). However, no patterns in the net gain or loss of materials from the wetland were discernible between the seasons.

Loads During and Following Barrier Beach Closure

The cumulative loads during extended periods when the barrier beach was closed, such as from 1 Jul through 28 Oct 1989, indicate what proportion of the input loads are suddenly released to Lake Erie at those times. During the four-month period of Jul - Oct 89, relatively small loads were received by the wetland because of the very low baseflow of OWC (Figs. 5, 6). Furthermore, the loads during the period, which comprised one-third of the year, accounted for only a small fraction of the total loads for the 12-month period from May 89 – Apr 90 (Table 18). (Most of the period of closure occurred during the 1989 water year; thus, as much of that water year as possible was chosen for comparison.) For example, the amount of water received by the wetland from OWC and its tributaries comprised only 3.90% of the total water received during the year. The 212 kg of TP received accounted for 2.94% of the year's total, and SRP accounted for 5.53% (Table 18). Less than 7% of the total loads of all the measured materials except NH_3 was received by the wetland during the months of Jul – Oct 89, even though that period accounted for 33% of the year. The loads to Lake Erie when the mouth broke open on 28 Oct 89 yielded <4.5% of the annual load of all substances except NH_3. One-fourth of the total NH_3 load was received by the wetland during that period, but the amount released to Lake Erie, which was less than half that entering the wetland, accounted for only 5.75% of the annual load. The loads of all materials into the lake were less than the loads that entered the wetland (Table 18).

Similar percentages of the total annual loads were associated with the shorter period of beach closure in Jun and Jul 1990, even though the beach was closed for only about one-half the length of time as the Jul – Oct 89 period. During both periods, a considerable loss of water was evident, about one-third during Jul – Oct 89 and one-fourth during Jun – Jul 90 (Table 18).

DISCUSSION

TWMCs versus Loads for Estimating Removal Efficiencies

Two similar approaches were taken in this study to quantify the gains, losses, and transformations of materials as they pass through OWC Wetland. One approach compares concentrations in the water entering and leaving the wetland, and this approach has been employed by others both at OWC (Klarer and Millie 1989) and elsewhere (Klopatek 1978). However, measurements of inflow and outflow concentrations alone can be misleading (Kadlec and Knight 1996, p. 111). The preferred approach, which requires measurement of wetland volumes and discharges in conjunction with concentrations, has been used less frequently (e.g., Reeder and Mitsch 1989, Moustafa *et al*. 1996). One of the primary assumptions of this study was that measurement of concentrations alone is not sufficient to obtain accurate estimates of the amounts of materials gained or lost in coastal wetlands. The basis for this assumption was that (1) much of the time, it cannot be assumed that inflow volumes equal outflow volumes, and (2) water masses entering a wetland may be subjected to long delays (detention times) in exiting the wetland so that input and output concentrations measured simultaneously do not represent the same water mass (Kadlec and Knight 1996, p. 114).

The results of this study support the assumption. The downstream/upstream ratios of concentrations as estimated by TWMCs showed large differences from many of the ratios as estimated by fluxes for individual months (Table 19). For example, TP ratios on average were about 1.74 according to TWMCs but only 1.07 according to fluxes, a significant difference ($p<0.05$). When the TWMC ratios for each parameter are graphed against the flux ratios on a monthly basis (Figures 26 and 27), it is apparent that TWMC ratios usually either over-estimated or under-estimated retention. TWMCs greatly overestimated the export of TP but provided more-similar estimates of SRP export. Likewise the ratio of TSS was more than twice as great according to TWMCs as opposed to fluxes ($p<0.01$). For some other materials, such as SRP and NO_{2+3}, the ratios were comparable by the two methods ($p>0.05$).

The same pattern is observed for ratios computed for storm events (Table 20). The TWMC ratios on average exaggerated the export of TP ($p<0.01$), TSS ($p<0.001$), and TKN ($p<0.01$) when compared to flux ratios. In their study of a constructed wetland along the Kissimmee River (Florida), Moustafa *et al.* (1996) found that removal of TP and total N were greatly underestimated by concentration-based calculations as opposed to calculations based on mass balances.

Particularly important in comparing the two approaches is the difference in the ratios of chloride. For those months during which the flux was greater than zero, the mean ratio of TWMCs of chloride was 0.60, whereas the mean ratio of fluxes was 1.02 ($p<0.001$). Thus, TWMCs indicate that 40% of the chloride is retained or somehow "lost" by the wetland, but the fluxes indicate that all (102%) of the chloride entering the

wetland eventually left it (Table 19). Similarly, the TWMC ratios for storms show that, on average, 17% of the chloride entering the wetland is retained, whereas the flux ratios show that 100% of the chloride passes through the wetland (Table 20).

Which set of results is "correct"? Unlike orthophosphate, nitrate, ammonia, and silica, chloride is a conservative substance in aquatic ecosystems; that is, biological and chemical processes do not substantially alter its concentration as it passes through the system (Wetzel 1983, p. 188; Moustafa *et al.* 1998). It also does not sorb strongly on particulates. Therefore, the concentration of chloride is expected to remain relatively unchanged in a water mass as it moves through the wetland. For this reason, some researchers have accounted for the dilution or enrichment of chemical constituents as water masses mix by applying a factor to the downstream concentrations derived from the ratio of upstream to downstream concentrations of chloride (Kadlec and Knight 1996, p. 485; Klarer and Millie 1989; MacCrimmon 1980). In the present study, the fact that the flux ratios of chloride are very close to unity indicates that the measurement of fluxes rather than TWMCs is imperative in order to have a correct understanding of the amount – and even the direction – of change in materials delivery to Lake Erie. For example, TWMC ratios point to a slight net gain of TP during storm runoff events, whereas flux ratios indicate a net loss ($p<0.01$) (Table 20).

Mechanisms of Changes in Loads

Biological, chemical, and physical mechanisms undoubtedly interact to modify the load of each material as it passes through the wetland. The loads of SRP, NO_{2+3}, and silica were reduced during passage on a monthly basis and during storm runoff events. These nutrient forms are readily assimilated by the primary producers (photosynthetic bacteria, algae, and macrophytes; Horne and Goldman 1994) and thus would be expected to disappear gradually from the water column as they move through the wetland. Similar results were seen on a concentration basis both in this study and an earlier study at OWC (Klarer and Millie 1989).

The loads of TP and TSS either increased or decreased during passage through the wetland under differing circumstances. On a monthly basis, which integrated a variety of hydrological conditions, the TP load decreased, as it did during three of four groups of storm events. The TSS load also decreased during the same groups of storm events, but it increased on a monthly basis. The TP and TSS loads were highly significantly correlated ($r=0.92$ to 0.99), as would be expected because 89% of the total load of P entering the wetland in the 1990 Water Year was in particulate form (Table 15). Furthermore, because SRP is taken up by phytoplankton, thereby being converted to TP, the TP-TSS relationship is strengthened during movement through the wetland. In fact, the highest correlation between TP and TSS ($r=0.99$) was found between the downstream loads of TP and TSS (Table 16). That TSS loads increased during passage on a monthly basis indicates that, although many inorganic particulates carried from upstream may settle out of the water column upon entering the wetland, plankton is produced throughout the wetland and upon export may more than compensate for the mass of TSS lost at the upper

end, even if wind resuspension of sediment within the wetland is considered. Thus, the biogenic/inorganic ratio of TSS is probably greater at export than at import to the wetland.

On a monthly basis, more NH_3 and TKN left the wetland than entered, and this net export was exaggerated during two of the four storm periods (Table 17). This pattern seems to reflect the release of NH_3 as the result of storm-induced resuspension of the anaerobic organic-rich sediments of the wetland, originating from organic N reduced by heterotrophic bacteria (Wetzel 1983, p. 233). Heath (1992a, 1992b) and Matisoff and Eaker (1992) discuss our recent understanding of nutrient dynamics and sediment chemistry at OWC, and Reddy *et al.* (1999) present an extensive review of the mechanisms involved in phosphorus retention in wetlands on a broader scale. Kadlec and Knight (1996) extensively describe the fates and mechanisms of N and P retention, release, and transformation in wetlands.

Few other studies of materials budgets have been conducted at OWC. One other attempt was made to develop a budget for TP there. Reeder and Mitsch (1989) studied the TP budget from Apr through Nov 1988 during a prolonged severe drought that reduced inputs to very low levels. Based on their data from that period, they calculated that 8.0 g TP/m^2-yr were retained (sedimented) in OWC Wetland. Calculations from a model that used inputs "from representative loading rates for similar Lake Erie watersheds" (Reeder and Mitsch 1989, p. 83) predicted a retention rate of 2.9 to 4.6 g/m^2-yr. Our data for the 1990 water year (the only year with relatively complete data) yield a retention rate at median surface area during that non-drought year of around 4.7 g/m^2-yr, ranging from 3.3 g/m^2-yr to 39.4 g/m^2-yr (Table 21), depending on the surface area of the wetland as determined by the varying water level throughout the year. Reeder and Mitsch (1989) apparently applied a wetland area of 30 ha (Mitsch 1989), whereas the area in the 1990 water year fluctuated between approximately 4.9 ha and 59.4 ha (Figure 6, Appendix G). When our data are applied to an area of 30 ha, the estimated retention rate is 6.5 g/m^2-yr.

Perhaps more important in understanding the functional value of OWC Wetland than its retention of sediment and nutrients on a unit wetland area basis, is its retention of those materials on a unit watershed area basis. For example, in the 1990 water year, the wetland retained 1,946 kg of TP (Table 21). Converted on the basis of its 68.9 km^2 watershed, the retention was 282 g/ha (0.28 g/m^2) of watershed, whereas the TP import into the wetland was 900 g/ha of watershed (Table 22).

The Old Woman Creek Watershed as a Representative Lake Erie Watershed

Extensive data sets have been developed for streams draining watersheds of western Lake Erie whose drainage areas differ by more than two orders of magnitude (Baker 1993). Most are largely agricultural watersheds, with row crops occupying as much as 83% of the land area, although some more-eastern watersheds, such as the Cuyahoga

River, drain primarily urban and forested landscapes. The annual unit area export (kg/ha) of a given material can be computed for each stream by dividing the total annual export at the sampling station by the watershed area upstream of the station (Baker 1993). When the unit area exports of materials in OWC upstream of the wetland in the 1990 water year are compared with the mean annual unit area exports for other Lake Erie tributaries (Table 22), it is seen that OWC is more similar to the western Lake Erie streams than to the Cuyahoga River, except in the case of chloride. However, its unit area yields of TP, SRP, TSS, and TKN are lower than those of the western Lake Erie streams, probably demonstrating the lower proportion of its drainage area (60%) devoted to row crop agriculture than in the other watersheds (76%-83%, Baker 1993). It should be kept in mind that only a single year of record for OWC is being compared with annual averages for the other streams and that, although 1990 was not a drought year, it may not have produced unit area yields close to the average.

Comparison of the ratio of orthophosphate (SRP) to TP also shows that OWC is similar to nearby watersheds. In OWC, 9.0% of TP was in the form of orthophosphate in the 1990 water year, as compared to 11.4% on average in the slightly larger (88.0 km^2) Rock Creek watershed. In all the other watersheds, ranging in size from 386 km^2 to 16,395 km^2, orthophosphate contributed on average 16.3% to 16.9% of the TP (Table 22). In the huge Mississippi-Atchafalaya River Basin, adjacent to the southern boundary of the Lake Erie drainage, orthophosphate contributed 31% of the TP on average between 1980 and 1996. In the Ohio River Basin, the contribution was 28% (Goolsby *et al.* 1999).

The wide variation in monthly, seasonal, and annual loads exported from OWC is typical of creeks and rivers draining the western Lake Erie watershed (Baker 1988, 1993) and much of the United States (Goolsby *et al.* 1999). Because of this great variability, related directly to storm hydrology, any attempt to estimate seasonal and annual loads (and concentrations for that matter) must be conducted over a long term, preferably many years (Baker 1988, Heath 1992a). This is particularly the case if trends in loads are ever to be detected (Richards and Baker 1993a). For example, although wetland elevation (hence area and volume) during this study followed a general seasonal pattern (Figs. 4-6), sporadic storm hydrographs of varying durations and magnitudes are overlain on that pattern, and it is during the storm runoff events that the majority of the materials is delivered to the wetland (Appendix J). Furthermore, a "typical" year that represents the average loads and concentrations may never be studied, and whether it is typical certainly would not be detectable in an investigation covering such a short time period.

The concentrations of nutrients and pesticides, which are controlled by external and internal loads and transformations, are very important in terms of the physiology of individual species and thus in terms of ecological responses (e.g., productivity) and human health (e.g., Heath 1992a, Krieger *et al.* 1988, Richards and Baker 1998). The seasonal and storm-related patterns of those concentrations in OWC Wetland strongly agree with the patterns characteristic of other creeks and rivers draining into western Lake Erie. Mechanisms responsible for those patterns are described by Baker (1988, 1993).

The only pesticides found routinely in our study – the herbicides alachlor, metolachlor, atrazine, and cyanazine – were, in descending order, the four pesticides applied most heavily in Ohio (Waldron 1989), although the same rankings may or may not have pertained to the OWC watershed. At the time of study, the watershed was mostly agricultural with extensive plantings of corn, soybeans, and wheat, with smaller plantings of a variety of other crops, which is consistent with the land uses in other Midwestern and Canadian watersheds where these herbicides have predominated (Richards and Baker 1993b, Lemieux *et al.* 1995).

Richards and Baker (1993b) describe in detail the seasonal and annual pesticide concentration patterns observed in rivers throughout the Midwest, and discuss the known and suspected mechanisms responsible for those patterns. Of particular note is that in regions with similar pesticide application rates, small creeks exhibit higher peak concentrations than larger creeks and rivers, but the elevated concentrations have a shorter duration in small creeks. The highest concentration of atrazine in OWC (68.9 km^2) measured in our study was 35µg/L in May 1990 (Fig. 17). This value is lower than maximum concentrations recorded by Richards and Baker (1993b) between Apr 1983 and Dec 1991 of 68 µg/L in smaller Lost Creek (11 km^2, Maumee River basin), 49 µg/L in Rock Creek (88 km^2, Sandusky River basin), and 54 µg/L in Honey Creek (386 km^2, Sandusky basin). The value is higher, as expected, than the maxima of 25 µg/L for the lower Sandusky River (3,240 km^2), and 21 µg/L for the lower Maumee River (16,395 km^2) (Richards and Baker 1993b).

Comparison of the maximum concentrations recorded for cyanazine, alachlor, and metolachlor similarly show deviations from the expectations based on watershed scale. However, the concentrations of pesticides in a given stream result from a complex relationship among factors that include duration and intensity of rainfall events, soil type and precedent soil moisture condition, water and soil temperature, time since application, crop condition, pesticide use history, and the chemical characteristics of the pesticide. In rivers, the concentrations also result in part from asynchronous delivery of runoff water from tributaries (Richards and Baker 1993b). The percentage of land planted in row crops in the OWC watershed was only about 60% (Herdendorf 1997) as opposed to 76%-83% in the Maumee and Sandusky basins and subbasins, and only 4% in the Cuyahoga basin (Richards and Baker 1993b), and this difference in land use alone could account largely for the relatively low peak concentrations seen in OWC.

As has been found for other Great Lakes tributaries (Richards and Baker 1993b) and the St. Lawrence River (Lemieux *et al.* 1995), the herbicide concentration patterns are highly seasonal. Concentrations in the largely agricultural river basins of western Lake Erie are near or below detection limits from late fall through early spring and respond to the first storm runoff event following application in the spring. The highest concentration peaks occur in the spring, though not necessarily in the first runoff, and lower peaks occur with later runoff events as summer progresses (Figs. 17-20). The fact that peak concentrations in water exiting the wetland were always much lower than the tributary water entering it indicates that the wetland serves an important function in

partially removing herbicides from the water column and thereby reduces the loads, and thus the concentrations, present in Lake Erie.

Old Woman Creek Wetland as a Representative Great Lakes Coastal Wetland

A vast array of wetland types, accompanied by a great diversity in their hydrology and primary nutrient sources, is present along the Great Lakes (Herdendorf 1992, Prince *et al.* 1992). Long-term studies similar to this one that involve intensive sampling of wetlands for which upland tributaries and seiches play major roles in the wetland hydrology (drowned river mouth wetlands, Keough *et al*. 1999) have not been published, although Mitsch and Wang (2000) recently modeled potential phosphorus retention by large segments of the diked wetland systems associated with Saginaw Bay (Lake Huron) and Sandusky Bay (Lake Erie). As discussed above, the timing of delivery of materials and the variability of their concentrations as they are transported down tributaries to wetlands is scale-dependent (Baker and Richards 2000, Richards and Baker 1998). Furthermore, the residence time – and therefore the time available for processing materials within the wetlands – is dependent on a number of variables, including the size of each wetland relative to its drainage area. (The maximum flooded area of OWC Wetland during this study accounted for about 0.86% of the drainage area.) Thus, materials processing would best be compared among wetlands of similar characteristics and size. At this point in time, extensive studies on wetlands that are similar to OWC Wetland are nonexistent, although a few studies over periods of a few months have been conducted, such as that by Robb and Mitsch (1992), who compared diked and undiked wetlands of western Lake Erie.

Specific studies of sediment and nutrient budgets in wetlands of the Laurentian Great Lakes are few. Sager *et al.* (1985) observed nutrient concentrations at the head of a marsh drainage channel during the "ebb" and "flow" phases of 269 more-or-less regular seiches (mean period 9.9 hr) in Green Bay, Lake Michigan, in Apr, Jul, Aug and Sep. The ebb/flow ratios indicated that there was a net release from the marsh of NH_3 and NO_{2+3} in all months (except NO_{2+3} in Apr). The TKN ratio indicated a net retention of particulate (organic) nitrogen forms in the marsh. It appeared to behave as a sink for TP with a net export of dissolved inorganic phosphate. The data presented by Sager *et al.* (1985) were noted to be preliminary, and the fact that they had only a single water sampling point in the water column (as in our study) was suggested to have some influence on their findings related to the transport of particulate forms of the nutrients. In their study, net fluxes of nitrogen and phosphorus forms were the opposite of our findings, in which we observed (based on TWMCs) a net export of TP, a net retention of SRP, and a net release of TKN-related forms. However, on the basis of fluxes, our study did show a net retention of TP. The two studies are similar in that both showed a net release of NH_3. The differences may be strongly related to the very different hydrological regimes of the two wetlands. The wetlands studied by Sager *et al.* (1985) apparently lacked a tributary, Green Bay serving as the primary water source.

The Value of Riverine Coastal Wetlands in Mitigating Pollution

A plethora of published studies confirms that most wetlands serve an important function by retaining sediment, nutrients, and toxic contaminants or transforming them to forms that are less bioavailable or less toxic. The importance of this role for those Great Lakes wetlands that remain connected directly to the lakes, and more recently those that have been diked (Mitsch and Wang 2000), is bearing more scrutiny.

The present study has confirmed the major role played by OWC Wetland as a partial sink or transformer for sediment, herbicides, and several nutrients, either all the time or under certain sets of hydrological conditions. If other coastal wetlands surrounding tributary mouths perform the same functions, whether or not to the same degree, their collective importance in the mitigation of the pollution of Lake Erie must be substantial.

The total loads of phosphorus and other materials into Lake Erie have historically been calculated from measurements of individual tributary loads derived from samples collected at USGS gaging stations upstream of lake level effects. However, this study and a study of Sandusky Bay by Richards and Baker (1985) reveal that considerable processing and transformation takes place between the gaging stations (often located several km upstream of the influence of lake levels) and the open waters beyond tributary embayments. Thus, more-accurate estimates of loads to Lake Erie could be derived from quantitative knowledge of the processing of materials in each tributary mouth. However, as shown in this study, such quantifications are very laborious and time-consuming, and it is therefore impractical to quantify changes in materials loads as they pass through most wetland and bay systems. On the other hand, modeling efforts (Dortch and Gerald 1995, Mitsch and Wang 2000) may provide an alternative approach to quantifying the potential benefits of existing and restored wetlands.

Topics Awaiting Future Research

1. <u>What are the mechanisms of removal and transformation?</u> This investigation quantified the movement of materials through OWC Wetland. Future research should address the mechanisms responsible for the changes in concentrations and loads. Other investigators, cited above, have made important contributions toward understanding those mechanisms. Because the mechanisms are highly complex and variable over time and space, much work remains to be done.

2. <u>Does the relative size of a wetland affect its removal efficiencies?</u> The relative amount of materials delivered to a wetland (kg/ha of wetland) is a function of the size (area) of the wetland in relation to stream discharge, i.e., the area of the watershed ($A_{wetland}/A_{watershed}$). If a wetland that is large relative to its watershed can remove a greater proportion of pollutants than a smaller one, an appropriate management approach for reducing the inputs of phosphorus and other contaminants to Lake Erie would be to increase the wetland area available to perform that service. Mitsch and Wang (2000)

have investigated the potential of this approach, via modeling, from the standpoint of reconnecting diked wetlands to their adjacent lake tributaries. Further research on this topic would be timely, and would perhaps be conducted best on small wetlands for which hydrologic and materials budgets can be directly measured.

3. Do major changes in the level of Lake Erie affect water and materials budgets? This topic is directly related to the preceding one in that changes in the water level of Lake Erie result in changes in wetland area on the order of two magnitudes (Appendix G). In concert, the area available for retention and transformation of materials changes. A short-term study of a Lake Champlain wetland found that sediment and nutrient dynamics were influenced by lake level (Clausen and Johnson 1990). Since the late 1980s and early 1990s, when the data were generated for this study, the water level of Lake Erie has declined from record highs in 1986 to below-normal levels. The decline in the prevailing lake level has greatly reduced the submersed area of the wetland and therefore the area available to process materials moving through it. Research into the removal efficiencies of OWC Wetland under the present low-water conditions would be appropriate. The data presented in this report would provide a comparison between the two extreme hydrological conditions.

LITERATURE CITED

Baker, D.B. 1988. *Sediment, nutrient and pesticide transport in selected lower Great Lakes tributaries*. EPA-905/4-88-001. U.S. Environmental Protection Agency, Chicago, IL. 225 pp.

Baker, D.B. 1993. The Lake Erie Agroecosystem Program: water quality assessments. *Agriculture, Ecosystems and Environment* 46:197-215.

Baker, D.B., and R.P. Richards. 2000. Ch. 3. Effects of watershed scale on agrochemical concentration patterns in Midwestern streams. pp. 46-64. *In:* Steinheimer, T.R., L.J. Ross, and T.D. Spittler. (eds.) *Agrochemical fate and movement: perspective and scale of study*. Symposium Series 751. Amer. Chem. Soc., Washington, DC.

Buchanan, D.B. 1982. *Transport and deposition of sediment in Old Woman Creek Estuary, Erie County, Ohio*. M.Sc. Thesis, The Ohio State Univ., Columbus.

Clausen, J.C., and G.D. Johnson. 1990. Lake level influences on sediment and nutrient retention in a lakeside wetland. *J. Environ. Qual.* 19:83-88.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States.* FWS/OBS-79/31. Fish and Wildlife Service, U.S. Dept. of Interior, Washington, DC. 131 pp.

Dortch, M.S., and J.A. Gerald. 1995. *Screening-level model for estimating pollutant removal by wetlands.* Wetlands Research Program Tech. Rept. WRP-CP-9. US Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS. 56 pp. + app. www.wes.army.mil/el/elmodels/pdf/wrp-cp-9.pdf

Goolsby, D.A., W.A. Battaglin, G.B. Lawrence, R.S. Artz, B.T. Aulenbach, R.P. Hooper, D.R. Keeney, and G.J. Stensland. 1999. *Flux and sources of nutrients in the Mississippi-Atchafalaya River Basin: Topic 3 report for the integrated assessment on hypoxia in the Gulf of Mexico.* NOAA Coastal Ocean Program Decision Analysis Series No. 17. U.S. Dept. Commerce, NOAA, National Ocean Service, Coastal Ocean Program, Silver Spring, MD 130 pp.

Heath, R.T. 1992a. Nutrient dynamics in Great Lakes coastal wetlands: future directions. *J. Great Lakes Res.* 18:590-602.

Heath, R.T. 1992b. Phosphorus dynamics in Old Woman Creek National Estuarine Research Reserve. pp. 122-129. *In:* Kusler, J., and R. Smardon. (eds.) *Wetlands of the Great Lakes: protection and restoration policies; status of the science.* Proc. Internat. Symposium, May 16-18, 1990, Niagara Fall, NY.

Herdendorf, C.E. 1992. Lake Erie coastal wetlands: an overview. *J. Great Lakes Res.* 18:533-551.

Herdendorf, C.E., and T.M. Hume. 1991. *Morphometry and water storage in Old Woman Creek: a freshwater estuary in western Lake Erie*. OWC Tech. Rept. No. 7. Ohio Dept. Natural Resources, Div. Natural Areas and Preserves, Columbus, OH. 22 pp. + 5 app.

Herdendorf, R. 1997. *Land use/land cover map for Old Woman Creek Watershed (1993), including numerical designation of each land use parcel and gazetteer of parcel areas by land use and summary table by political subdivision*. Ecosphere Tech. Rept. No. 171. Huron, OH.

Horne, A. J., and C. R. Goldman. 1994. *Limnology*. 2nd Ed. McGraw-Hill, Inc., New York. 575 pp.

Kadlec, R.H., and R.L. Knight. 1996. *Treatment wetlands*. Lewis Publ., New York, NY. 893 pp.

Kanwisher, J., and K. Lawson. 1975. Electromagnetic flow sensors. *Limnol. Oceanogr*. 20:174-182.

Kemeny, J.G., and T.E. Kurtz. 1988. *True BASIC Reference Manual*. The Country Press Inc., Middleborough, MA. 438 pp.

Kemeny, J.G., and T.E. Kurtz. 1989. *True BASIC Macintosh User's Guide*. The Country Press Inc., Middleborough, MA. 173 pp.

Keough, J.R., T.A. Thompson, G.R. Guntenspergen, and D.A. Wilcox. 1999. Hydrogeomorphic factors and ecosystem responses in coastal wetlands of the Great Lakes. *Wetlands* 19:821-834.

Klarer, D.M., and D.F. Millie. 1989. Amelioration of storm-water quality by a freshwater estuary. *Arch. Hydrobiol*. 116:375-389.

Klopatek, J.M. 1978. Nutrient dynamics of freshwater riverine marshes and the role of emergent macrophytes. *In:* Good, R.E., D.F. Whigham, and R.L. Simpson. (eds.) *Freshwater Wetlands Ecological Processes and Management Potential* Academic Press. NY. pp. 195-216.

Kramer, J.W., and D.B. Baker. 1985. An analytical method and quality control program for studies of currently used pesticides in surface waters. pp. 116-132. *In*: Taylor, J.K., and T.W. Stanley. (eds.) *Quality assurance for environmental measurements, ASTM STP 867*. Amer. Soc. Testing and Materials, Philadelphia, PA.

Krieger, K.A. 1984. *Transport and assimilation of nutrients and pesticides in a Lake Erie estuary*. U.S. Dept. Commerce, NOAA, Office of Ocean and Coastal Resources Management, Washington, DC. 29 pp. + app.

Krieger, K.A. 1993. *A method for estimating fluxes from coastal wetlands into the Great Lakes, with an example from Lake Erie*. Tech. Bull. OHSU-TB-025-93. Ohio Sea Grant College Program, The Ohio State University, Columbus, OH. 27 pp.

Krieger, K.A., D.B. Baker, and J.W. Kramer. 1988. Effects of herbicides on stream *Aufwuchs* productivity and nutrient uptake. *Arch. Environ. Contam. Toxicol.* 17:299-306.

Krieger, K.A., and D.M. Klarer. 1991. Zooplankton dynamics in a Great Lakes coastal marsh. *J. Great Lakes Res.* 17:255-269.

Krieger, K.A., and Wright, E. 1990. *Currents of change: physical processes in Great Lakes coastal wetlands*. Video documentary. Water Quality Laboratory, Heidelberg College, Tiffin, OH. 22 min.

Lemieux, C., B. Qu_merais, and K.R. Lum. 1995. Seasonal patterns of atrazine loading for the St Lawrence River (Canada) and its tributaries. *Wat. Res.* 29:1491-1504.

MacCrimmon, H.R. 1980. Nutrient and sediment retention in a temperate marsh ecosystem. *Int. Revue ges. Hydrobiol*. 65:719-744.

Maidment, D. R. (Ed.) 1993. *Handbook of hydrology*. McGraw-Hill, Inc., NY. (Chapters separately numbered).

Matisoff, G., and J.P. Eaker. 1989. *The importance of groundwater advection on sediment-water chemical exchange at Old Woman Creek freshwater estuary*. NOAA Final Report #NA88AA-D-CZ-012.

Matisoff, G., and J.P. Eaker. 1992. Summary of sediment chemistry research at Old Woman Creek, Ohio. *J. Great Lakes Res.* 18:603-621.

Mitsch, W.J. 1989. Wetlands of coastal Lake Erie in Ohio – a hierarchy of systems. pp. 1-16. *In:* Mitsch, W.J. (ed.) *Wetlands of Ohio's coastal Lake Erie: a hierarchy of systems.* The Ohio State Univ., Columbus, OH.

Mitsch, W.J., and J.G. Gosselink. 1986. *Wetlands*. Van Nostrand Reinhold Co., NY. 539 pp.

Mitsch, W.J., and N.M. Wang. 2000. Large-scale coastal wetland restoration on the Laurentian Great Lakes: determining the potential for water quality improvement. *Ecological Engineering* 15:267-282.

Moustafa, M.Z., M.J. Chimney, T.D. Fontaine, G. Shih, and S. Davis. 1996. The response of a freshwater wetland to long-term "low level" nutrient loads – marsh efficiency. *Ecological Engineering* 7:15-33.

Moustafa, M.Z., T.D. Fontaine, M. Guardo, and R.T. James. 1998. The response of a freshwater wetland to long-term "low level" nutrient loads: nutrients and water budget. *Hydrobiologia* 364:41-53.

National Climatic Data Center. 1987. *Climatalogical data annual summary, Ohio*. Vol. 92, No. 13. NOAA, National Weather Service, Asheville, NC.

National Climatic Data Center. 1988. *Climatalogical data annual summary, Ohio*. Vol. 93, No. 13. NOAA, National Weather Service, Asheville, NC.

National Climatic Data Center. 1989. *Climatalogical data annual summary, Ohio*. Vol. 94, No. 13. NOAA, National Weather Service, Asheville, NC.

National Climatic Data Center. 1990. *Climatalogical data annual summary, Ohio*. Vol. 95, No. 13. NOAA, National Weather Service, Asheville, NC.

Prince, H.H., P.I. Padding, and R.W. Knapton. 1992. Waterfowl use of the Laurentian Great Lakes. *J. Great Lakes Res*. 18:673-699.

Reddy, K.R., R.H. Kadlec, E. Flaig, and P.M. Gale. 1999. Phosphorus retention in streams and wetlands: a review. *Critical Reviews in Environmental Science and Technology* 29:83-146.

Reeder, B.C., and W.J. Mitsch. 1989. Bioavailable phosphorus and a phosphorus budget of a freshwater coastal wetland. pp. 81-95. *In:* Mitsch, W.J. (ed.) *Wetlands of Ohio's coastal Lake Erie: a hierarchy of systems.* The Ohio State Univ., Columbus, OH.

Richards, R.P., and D.B. Baker. 1985. *Assimilation and flux of sediments and pollutants in the Sandusky River Estuary, Sandusky Bay, and the adjacent nearshore zone of Lake Erie.* U.S. Dept. Commerce, NOAA, Seattle, WA. 158 pp.

Richards, R.P., and D.B. Baker. 1993a. Trends in nutrient and suspended sediment concentrations in Lake Erie tributaries, 1975-1990. *J. Great Lakes Res.* 19:200-211.

Richards, R.P., and D.B. Baker. 1993b. Pesticide concentration patterns in agricultural drainage networks in the Lake Erie Basin. *Environ. Toxicol. Chem.* 12:13-26.

Richards, R.P., and D.B. Baker. 1998. Triazines in waters of the Midwest: exposure patterns. pp. 336-346. *In:* Ballantine, L.G., J.E. McFarland, and D.S. Hackett. (eds.) *Triazine herbicides: risk assessment.* ACS Symposium Series 683. Amer. Chem. Soc., Washington, DC.

Robb, D.M., and W.J. Mitsch. 1992. Selected chemical parameters of diked and undiked Lake Erie marshes. pp. 130-136. *In:* Kusler, J., and R. Smardon. (eds.) *Wetlands of the Great Lakes: protection and restoration policies; status of the science.* Proc. Internat. Symposium, May 16-18, 1990, Niagara Fall, NY.

Sager, P.E., S. Richman, H.J. Harris, and G. Fewless. 1985. Ch. 4. Preliminary observations on the seiche-induced flux of carbon, nitrogen and phosphorus in a Great Lakes coastal marsh. pp. 59-68. *In:* Prince, H.H., and F.M. D'Itri. (eds.) *Coastal wetlands.* Lewis Publishers, Inc.

Shaw, E. M. 1988. *Hydrology in practice*. 2nd Ed. Van Nostrand Reinhold (International), London. 539 pp.

U.S. EPA (Environmental Protection Agency). 1979. *Methods for chemical analysis of water and wastes*. EPA-600/4-79-020. Cincinnati, OH.

Waldron, A.C. 1989. *Surveying application of potential agricultural pollutants in the Lake Erie basin of Ohio: pesticide use on major crops 1986.* Cooperative Extension Service Bull. 787. The Ohio State Univ., Columbus, OH.

Wetzel, R.G. 1983. *Limnology*. 2nd Ed. Saunders College Publishing, Philadelphia, PA. 767 pp. + references.

Whyte, R.S., D.A. Francko, and D.M. Klarer. 1997. Distribution of the floating-leaf macrophyte *Nelumbo lutea* (American water lotus) in a coastal wetland on Lake Erie. *Wetlands* 17:567-573.

Table 1. Agricultural pesticides analyzed in this study.

Common Name	Trade Name	Chemical Class	Percent[1]
HERBICIDES			
alachlor	Lasso	acetanilide	30.6
atrazine	Aatrex	triazine	18.2
butylate	Sutan	thiocarbamate	0.4
cyanazine	Bladex	triazine	6.3
EPTC	Eradicane	thiocarbamate	0.8
ethoprop	Mocap	phosphorodithioate	*
linuron	Lorox	urea	3.1
metolachlor	Dual	acetanilide	20.8
metribuzin	Sencor, Lexone	triazine	5.9
pendimethalin	Prowl	dinitrobenzenamine	1.1
simazine	Princep	triazine	0.6
trifluralin	Treflan	dinitroaniline	1.5
			89.3%
INSECTICIDES			
carbofuran	Furadan	carbamate	19.6
fonofos	Dyfonate	organophosphorus	10.2
phorate	Thimet	organophosphorus	12.8
terbufos	Counter	organophosphorus	30.4
			73.0%

[1]Percent by weight of active ingredient of all herbicides or insecticides applied in Ohio in the Lake Erie Basin in 1986 (Waldron 1989)

* Not listed by Waldron (1989)

Table 2. Monthly precipitation (mm) and average monthly temperatures (°C) at Old Woman Creek visitor center compared with values and their departures from normal at Sandusky and Norwalk, Ohio. Data are modified from National Climatic Data Center (1987, 1988, 1989, 1990). P = partial data.

	OWC	Sandusky		Norwalk		OWC	Sandusky		Norwalk	
	Precip.	Precip.	Departure	Precip.	Departure	Temp.	Temp.	Departure	Temp.	Departure
1987										
O		45.21	-3.56	46.23	6.35		9.0	-3.3	8.2	-3.3
N		46.99	-14.99	48.51	-17.53		7.3	1.6	6.6	1.4
D		70.87	9.91	66.04	4.57		1.6	2.1	1.0	2.0
1988										
J		10.67	-44.96	19.81	-37.59		-4.3	-0.8	-4.8	-1.0
F		47.24	2.03	59.69	13.21		-3.9	-1.4	-4.4	-1.7
M		43.18	-26.42	P 36.32			2.8	0.3	2.4	-0.1
A	38.61	52.83	-27.94	41.40	-46.99		8.3	-1.1	7.8	-1.4
M	20.83	17.78	-63.25	14.48	-74.68		15.9	0.5	14.7	-0.2
J	16.51	17.27	-77.22	5.59	-94.74		21.4	0.5	P 20.3	0.2
J	69.09	67.06	-29.72	94.49	-15.24		24.4	1.1	23.1	0.9
A	104.65	116.59	23.11	114.30	30.48		23.6	1.3	22.5	1.2
S	27.94	30.23	-42.16	31.50	-43.18		17.8	-0.9	16.3	-1.4
O	64.26	88.39	39.62	40.64	-11.94		8.7	-3.7	7.1	-4.4
N	87.38	81.03	19.05	89.41	23.37		6.3	0.6	4.8	-0.3
D	49.78	P 41.91		48.51	-12.95		-1.4	-0.9	-2.7	-1.7
1989										
J	48.51	53.85	-1.78	39.62	-17.78		0.6	4.1	-0.7	3.1
F	21.08	19.56	-25.65	27.69	-18.80		-3.7	-1.2	-5.1	-2.4
M	49.78	54.10	-15.49	57.40	-16.76		P 1.3	-1.2	1.2	-1.2
A	72.39	86.36	5.59	87.38	-1.02		6.7	-2.7	5.7	-3.5
M	113.03	127.25	46.23	161.04	71.88		13.7	-1.7	12.3	-2.6
J	67.06	86.11	-8.38	116.08	15.75		20.6	-0.4	19.3	-0.8
J	76.45	82.80	-13.97	57.66	-52.07		23.6	0.3	21.6	-0.6
A	35.31	18.54	-74.93	30.73	-53.09		21.9	-0.5	20.9	-0.3
S	81.28	74.93	2.54	100.58	25.91	P 15.5	17.6	-1.2	17.2	-0.5
O	93.47	57.40	8.64	65.02	12.45	11.7	12.2	-0.2	11.9	0.4
N	71.12	66.55	4.57	75.95	9.91	4.5	4.5	-1.2	4.2	-1.0
D	25.15	28.96	-32.00	30.73	-30.73	-6.4	-8.2	-7.7	-8.3	-7.3
1990										
J	35.56	36.07	-19.56	35.05	-22.35	2.5	1.6	5.1	1.7	5.4
F	93.22	107.44	62.23	75.69	29.21	P 1.9	0.7	3.2	0.6	3.2
M	23.37	31.75	-37.85	24.13	-50.04	P 5.7	4.8	2.3	5.1	2.6
A	75.18	54.86	-25.91	86.61	-1.78	9.4	9.2	-0.2	9.2	0.1
M	100.84	104.65	23.62	109.22	20.07	P 13.1	13.8	-1.6	13.8	-1.1
J	57.91	90.68	-3.81	51.31	-49.02	P 19.3	19.9	-1.1	19.7	-0.4
J	91.95	97.28	0.51	141.73	32.00	21.5	P 22.3	-0.9	21.7	-0.4
A	68.33	76.20	-17.27	100.33	16.51	21.0	21.4	-1.1	20.9	-0.4
S	145.03	104.90	32.51	173.48	98.81	17.0	18.0	-0.8	17.4	-0.3

Table 3. Dates when the mouth of Old Woman Creek Wetland opened and closed, as determined by observations and changes in USGS stage records.

Date Closed	Time Closed	Date Opened	Time Opened	Notes
1987				
mid-August	-	17 November	0700	Was dug open
27 December	2300			Froze closed
1988				
		2 January	1600	
14 March	1700	19 March	0600	
18 April	0500	9 May	1500	
14 April	2000	31 December	0300	
1989				
1 July	1700	28 October	1300	Was dug open
1990				
5 April	1100	10 April	0900	
28 May	1100	27 July	1100	Was dug open
22 August	1100	9 September	1800	
25 October	-			

Table 4. Hydrograph characteristics* of 21 storm runoff events when the barrier beach was open.

Storm Began	Duration days	Maximum Discharge m^3/s	Upstream Flux 1000 m^3	Mean Wetland Volume 1000 m^3	Mean IRT days	Mean RT days	Replacements IRT	Replacements RT
15 Dec 87	1.79	5.85	358	116	1.39	0.58	1.28	3.10
24 Mar 88	3.58	13.22	1087	136	0.77	0.47	4.90	8.00
7 Apr 88	2.17	8.95	730	254	1.30	0.80	1.76	2.87
17 Apr 89	3.08	3.53	427	85	0.84	0.66	3.90	5.00
5 May 89	0.83	1.64	67	90	2.57	1.40	0.40	0.74
6 May 89	2.54	3.21	383	96	0.86	0.70	3.23	4.00
10 May 89	1.21	3.46	268	189	1.24	1.08	1.24	1.42
12 May 89	3.58	5.21	837	137	0.78	0.62	4.85	6.12
23 May 89	2.33	13.58	1015	157	0.85	0.39	3.01	6.46
30 May 89	2.08	11.23	622	151	1.43	0.61	1.78	4.13
3 Jun 89	2.54	19.91	1056	187	1.49	0.49	1.88	5.65
13 Jun 89	1.08	5.90	317	207	1.32	0.84	0.98	1.53
27 Jun 89	1.58	2.77	115	245	8.55	3.81	0.21	0.47
3 Jan 90	4.00	10.32	1330	20	0.09	0.07	49.98	67.23
9 Jan 90	3.38	3.32	628	14	0.11	0.08	33.21	46.52
17 Jan 90	2.92	3.86	490	21	0.13	0.11	19.29	22.82
12 May 90	2.08	2.23	182	167	3.23	1.87	0.63	1.09
15 May 90	1.67	8.37	524	153	1.26	0.52	1.42	3.42
20 May 90	1.71	3.69	210	240	4.00	2.33	0.51	0.88
14 Sep 90	1.63	3.21	210	128	2.22	1.11	0.81	1.62
16 Sep 90	2.00	3.04	214	188	2.93	2.01	0.78	1.14
MEAN	2.28	6.50	527	142	1.78	0.98	6.48	9.25
MEDIAN	2.08	3.86	427	151	1.30	0.66	1.76	3.42

* IRT (instantaneous residence time), RT (residence time). See text for calculations.

Table 5. Hydrograph characteristics* during baseflow for eight 5-day periods immediately preceding, and thirteen 5-day periods immediately following storm runoff events, when the barrier beach was open.

Beginning of 5-day Period	Maximum Discharge m^3/s	Upstream Flux 1000 m^3	Mean Wetland Volume 1000 m^3	Mean IRT days	Mean RT days	Replacements IRT	Replacements RT
BEFORE STORM EVENT							
10 Dec 87	0.85	202	87	2.44	2.16	2.06	2.33
19 Mar 88	0.95	290	163	2.89	2.83	1.75	1.78
29 Mar 88	0.71	209	152	3.82	3.67	1.32	1.37
30 Apr 89	0.21	80	93	5.91	5.87	0.85	0.86
18 May 89	1.17	195	106	3.25	2.75	1.55	1.84
8 Jun 89	0.81	167	186	6.54	5.62	0.77	0.90
27 Jan 90	1.21	279	29	0.60	0.53	8.44	9.54
15 Apr 90	1.04	238	118	2.76	2.51	1.83	2.01
MEAN	0.87	207	117	3.53	3.24	2.32	2.58
MEDIAN	0.90	206	112	3.07	2.79	1.65	1.81
AFTER STORM EVENT							
16 Dec 87	2.51	374	92	1.86	1.24	2.72	4.07
28 Mar 88	1.04	251	153	3.34	3.07	1.51	1.64
9 Apr 88	1.02	221	195	4.98	4.44	1.01	1.13
20 Apr 89	0.69	166	92	3.08	2.79	1.64	1.81
16 May 89	0.80	193	107	3.11	2.80	1.62	1.80
6 Jun 89	0.81	194	182	5.44	4.73	0.93	1.07
14 Jun 89	1.83	363	187	3.51	2.59	1.44	1.95
19 Nov 89	0.46	130	34	1.53	1.33	3.29	3.79
23 Jan 90	1.72	531	22	0.25	0.21	20.43	24.19
8 Feb 90	1.79	451	35	0.45	0.39	11.13	12.85
12 Apr 90	3.53	669	115	1.06	0.87	4.74	5.82
23 Apr 90	0.85	188	129	3.94	3.46	1.28	1.46
22 May 90	0.43	115	187	8.66	8.17	0.58	0.62
MEAN	1.34	296	118	3.17	2.78	4.02	4.78
MEDIAN	1.02	221	115	3.11	2.79	1.62	1.81

* IRT (instantaneous residence time), RT (residence time). See text for calculations.

Table 6. Downstream:upstream ratios of time-weighted mean concentrations, and mean removal efficiencies, of nutrients, total suspended solids, and conductivity at Berlin Road and US Hwy 6 during spring (Apr-Jun), summer (Jul-Sep), fall (Oct-Dec), and winter (Jan-Mar). Refer to Appendix H for mean concentrations, sample sizes, and inclusive dates.

SEASON	Total P	Soluble Reactive P	Total Susp. Solids	Nitrate + Nitrite N	Ammonia N	Total Kjel-dahl N	Conduc-tivity	Soluble Reac. Silica	Chlor-ide
1988									
SPRING	3.51	0.50	4.15	0.60	1.33	2.12	0.71	0.46	0.49
SUMMER	2.03	0.65	4.26	0.06	2.39	2.61	0.57	0.24	0.44
FALL	4.46	0.56	10.36	0.14	4.29	3.35	0.58	0.48	0.47
1989									
WINTER	2.08	0.68	4.46	0.79	4.89	1.66	0.87	0.81	0.82
SPRING	1.21	0.42	2.12	0.56	6.68	1.38	0.80	0.64	0.67
SUMMER	2.86	0.59	2.07	0.06	0.10	0.64	0.68	0.76	0.48
FALL	2.21	0.55	5.35	0.53	0.46	1.07	0.79	0.79	0.66
1990									
WINTER	1.59	0.79	3.04	0.81	0.83	1.17	0.85	0.86	0.80
SPRING	2.23	0.48	2.60	0.52	1.59	1.57	0.75	0.55	0.61
SUMMER	1.43	0.29	2.03	0.19	1.79	1.63	0.63	0.35	0.43
MEAN RATIO	2.36	0.55	4.04	0.43	2.44	1.72	0.72	0.59	0.59
MEAN R.E. (%)	-136	45	-304	57	-144	-72	28	41	41

Table 7. Monthly ratios (downstream/upstream) of time-weighted mean concentrations, and mean monthly removal efficiencies, of nutrients, suspended sediments, and conductivity. (P) indicates only part of month is included. Refer to Appendix I for mean concentrations, samples sizes, and inclusive dates.

MONTH	Total P	Soluble Reactive P	Total Susp. Solids	Nitrate + Nitrite N	Ammonia N	Total Kjel-dahl N	Conduc-tivity	Soluble Reac. Silica	Chlor-ide
MAR 88 (P)	4.66	0.23	12.04	0.61	1.52	1.75	0.67	0.84	0.53
APR 88	2.35	0.21	3.47	0.64	1.90	2.10	0.80	0.74	0.69
MAY 88	5.99	1.07	5.55	0.46	1.31	2.41	0.67	0.45	0.49
JUN 88	3.40	0.70	4.21	0.27	0.87	2.00	0.68	0.24	0.40
JUL 88	1.18	1.00	3.44	0.09	2.16	1.97	0.75	0.20	0.53
AUG 88	3.22	0.51	4.58	0.05	3.34	3.05	0.54	0.27	0.45
SEP 88 (P)	6.39	0.48	5.88	0.33	1.24	3.32	0.43	0.26	0.34
OCT 88 (P)	2.93	0.11	11.22	0.46	1.11	3.73	0.45	0.07	0.33
NOV 88	5.19	0.64	14.03	0.03	3.62	3.31	0.52	0.36	0.40
DEC 88	4.75	0.80	4.94	0.24	6.66	3.24	0.68	0.81	0.61
JAN 89	2.03	0.61	4.61	0.82	12.06	1.87	0.89	0.93	0.81
FEB 89	1.72	1.02	5.22	0.82	2.56	1.53	0.89	0.77	0.86
MAR 89	2.51	0.74	4.00	0.71	6.49	1.53	0.83	0.60	0.79
APR 89	1.01	0.58	3.33	0.68	4.80	1.49	0.81	0.73	0.76
MAY 89	1.56	0.34	2.13	0.62	7.16	1.35	0.83	0.75	0.75
JUN 89	1.08	0.38	1.46	0.35	8.11	1.31	0.76	0.52	0.50
JUL 89	2.40	0.71	1.02	0.12	4.26	2.15	0.75	1.05	0.55
AUG 89	3.75	0.52	3.75	0.14	4.03	2.97	0.68	0.53	0.50
SEP 89	2.74	0.51	3.20	0.02	0.04	0.24	0.62	0.67	0.42
OCT 89	2.11	0.41	3.55	0.09	0.17	0.84	0.65	0.67	0.47
NOV 89	2.13	0.46	5.88	0.63	0.82	1.35	0.79	0.84	0.67
DEC 89 (P)	2.54	1.07	12.53	1.00	0.99	1.30	0.99	0.86	0.96
JAN 90	1.39	0.62	2.70	0.92	1.27	1.19	0.97	0.94	0.97
FEB 90	1.33	0.76	1.96	0.89	0.38	1.19	0.93	0.88	0.90
MAR 90	2.94	1.19	8.19	0.56	0.69	1.14	0.68	0.72	0.56
APR 90	2.76	0.90	3.80	0.75	1.50	1.50	0.85	0.94	0.77
MAY 90	1.34	0.44	1.78	0.51	1.39	1.24	0.67	0.56	0.53
JUN 90	3.67	0.23	3.91	0.16	2.33	2.22	0.73	0.19	0.55
JUL 90	2.61	0.30	2.70	0.13	3.11	2.24	0.72	0.19	0.55
AUG 90	1.46	0.29	1.80	0.25	1.33	1.45	0.55	0.33	0.33
SEP 90	0.93	0.28	1.74	0.29	1.32	1.28	0.60	0.51	0.41
MEAN RATIO	2.71	0.58	4.79	0.44	2.86	1.88	0.72	0.59	0.59
MEAN R.E. (%)	-171	42	-379	56	-186	-88	28	41	41

Table 8. Ratios (downstream/upstream) of TWMCs, and mean removal efficiencies, of nutrients, suspended sediments, and conductivity for twelve storm runoff events and their successive baseflow intervals. Only those baseflow intervals are included that occurred when the barrier beach was open. Refer to Appendix J for mean concentrations and inclusive dates.

	Total P	Soluble Reactive P	Total Susp. Solids	Nitrate + Nitrite N	Ammonia N	Total Kjel-dahl N	Conduc-tivity	Soluble Reac. Silica	Chlor-ide
STORM	1.05	0.40	1.16	0.56	7.84	1.19	0.88	0.70	0.74
EVENTS	0.74	0.23	0.94	0.55	10.24	1.26	0.85	0.75	0.80
	0.88	0.10	2.38	0.61	0.38	1.32	0.77	0.69	0.73
	0.56	0.62	0.47	0.88	6.65	0.82	1.11	0.86	0.95
	0.87	0.72	1.04	0.85	1.56	1.03	0.95	0.91	0.92
	0.99	0.30	1.83	0.77	1.27	1.00	1.05	0.89	0.94
	1.45	0.37	3.08	0.79	1.52	1.32	1.04	0.90	0.99
	0.89	0.72	0.84	0.78	6.37	0.96	1.07	0.84	1.11
	2.39	0.73	3.77	0.77	2.60	1.66	0.92	0.84	0.80
	0.86	0.15	1.56	0.60	1.04	1.01	0.77	0.68	0.63
	0.85	0.17	2.59	0.24	0.30	0.66	0.61	0.46	0.51
	1.31	1.61	0.80	0.62	1.36	1.27	0.85	0.68	0.83
MEAN RATIO	1.07	0.51	1.71	0.67	3.43	1.13	0.91	0.77	0.83
MEAN R.E. (%)	-7	49	-71	33	-243	-13	9	23	17
BASEFLOW	1.09	0.67	2.76	0.29	7.18	1.41	0.63	0.51	0.48
PERIODS	1.15	0.34	1.55	0.24	7.11	1.31	0.79	0.39	0.42
	3.75	0.90	14.27	0.94	0.81	1.25	0.97	0.84	0.93
	1.64	0.00*	6.65	0.98	0.90	1.15	0.99	1.00	0.98
	2.52	0.79	4.50	1.05	0.63	1.35	0.95	0.98	0.94
	4.91	1.22	9.68	0.83	1.38	1.62	0.86	1.01	0.77
	10.86	0.58	10.27	0.63	0.60	1.51	0.66	0.91	0.51
	6.90	1.00	14.27	0.51	1.58	1.76	0.64	0.90	0.49
	1.08	0.93	1.50	0.59	2.72	1.24	0.76	0.61	0.67
MEAN RATIO	3.77	0.80*	7.27	0.67	2.55	1.40	0.81	0.79	0.69
MEAN R.E. (%)	-277	20*	-627	33	-155	-40	19	21	31

* Downstream SRP was below detection limits; mean ratio and R.E. were computed without that value.

Table 9. One-tailed probabilities from t-tests for comparisons of upstream and downstream ratios of TWMCs for nine storm runoff events and their succeeding baseflow intervals. Bolded values are significantly different (P<0.05).

	Total P	Soluble Reactive P	Total Susp. Solids	Nitrate + Nitrite N	Ammonia N
Mean storm ratio	**1.16**	0.559	**1.73**	0.681	3.66
Mean baseflow ratio	**3.77**	0.714	**7.27**	0.673	2.55
S.D. storm ratio	0.52	0.466	1.09	0.114	3.56
S.D. baseflow ratio	3.33	0.370	5.09	0.297	2.69
t	-2.58	-0.81	-3.47	0.11	1.68
one-tailed P	0.016	0.221	0.004	0.459	0.066

	Total Kjel-dahl N	Conduc-tivity	Soluble Reac. Silica	Chloride
Mean storm ratio	1.22	**0.900**	0.777	**0.839**
Mean baseflow ratio	1.40	**0.806**	0.794	**0.688**
S.D. storm ratio	0.214	0.105	0.095	0.145
S.D. baseflow ratio	0.197	0.145	0.232	0.224
t	-1.65	1.93	-0.28	2.35
one-tailed P	0.069	0.045	0.393	0.023

Table 10. Ratios (downstream/upstream) of TWMCs, and mean removal efficiencies, of nutrients, suspended sediments, and conductivity for seven periods when the barrier beach was open and seven periods when it was closed. Refer to Appendix K for mean concentrations and inclusive dates.

	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduc-tivity	Soluble Reac. Silica	Chlor-ide
OPEN	3.14	0.33	6.00	1.39	1.00	1.86	0.56	0.59	0.33
	1.45	0.51	2.54	0.69	5.74	1.49	0.84	0.72	0.77
	2.37	0.62	6.80	0.78	0.82	1.35	0.87	0.91	0.80
	1.64	0.80	3.11	0.81	0.86	1.17	0.84	0.85	0.79
	1.64	0.64	2.14	0.62	1.38	1.31	0.75	0.74	0.62
	1.58	0.40	2.20	0.20	1.84	1.48	0.58	0.37	0.39
	0.76	0.21	3.74	0.31	1.41	1.16	0.61	0.45	0.49
MEAN RATIO	1.80	0.50	3.79	0.69	1.86	1.40	0.72	0.66	0.60
MEAN R.E. (%)	-80	50	-279	31	-86	-40	29	34	40
CLOSED	5.83	0.39	8.05	0.47	1.41	3.04	0.84	0.52	0.77
	2.28	0.72	4.32	0.08	1.52	2.43	0.59	0.25	0.43
	4.46	0.56	10.24	0.11	4.26	3.37	0.57	0.48	0.47
	2.64	0.54	2.20	0.06	0.10	0.66	0.67	0.71	0.47
	3.91	0.74	13.92	0.70	1.57	1.77	0.97	1.20	1.06
	2.92	0.23	2.95	0.15	2.69	2.19	0.73	0.16	0.55
	1.64	0.42	1.00	0.25	1.06	1.63	0.53	0.51	0.27
MEAN RATIO	3.38	0.51	6.10	0.26	1.80	2.16	0.70	0.55	0.57
MEAN R.E. (%)	-238	49	-510	74	-80	-116	30	45	43

Table 11. One-tailed probabilities from t-tests for comparisons of upstream and downstream ratios of TWMCs for seven periods when the barrier beach was open and seven periods when it was closed. Bolded values are significantly different (P<0.05).

	TP	SRP	TSS	NO_{2+3} N	NH_3 N
Mean open ratio	**1.80**	0.501	3.79	**0.686**	1.86
Mean closed ratio	**3.38**	0.514	6.10	**0.260**	1.80
Variance open ratio	0.57	0.041	3.54	0.150	3.05
Variance closed ratio	2.07	0.034	22.73	0.057	1.76
t	-2.58	-0.124	-1.19	2.470	0.076
one-tailed P	0.012	0.452	0.128	0.015	0.470

	TKN	Conduc-tivity	Soluble Reactive Silica	Chloride
Mean open ratio	**1.40**	0.721	0.661	0.599
Mean closed ratio	**2.16**	0.700	0.547	0.574
Variance open ratio	0.058	0.018	0.040	0.039
Variance closed ratio	0.833	0.025	0.116	0.068
t	-2.12	0.271	0.764	0.196
one-tailed P	0.028	0.395	0.230	0.424

Table 12. Precipitation associated with storm runoff events, showing amount of precipitation as depth (mm) and as a percentage of the total upstream runoff from the event based on both the average area of the wetland during precipitation and with a fixed area. Refer to Appendix M.

Runoff Event		Precipitation	Precipitation as Percentage of Upstream Discharge Based on	
Began	Ended	mm	Average Area	Area at 576.00 ft
9 May 89	15 May 89	15.75	0.64%	0.89%
9 May 89	16 May 89	15.75	0.57%	0.80%
23 May 89	28 May 89	53.34	1.01%	1.29%
23 May 89	29 May 89	53.34	0.98%	1.25%
30 May 89	2 Jun 89	18.29	1.45%	1.95%
30 May 89	3 Jun 89	20.83	1.48%	1.99%
3 Jun 89	6 Jun 89	2.54	0.12%	0.15%
3 Jun 89	7 Jun 89	2.54	0.12%	0.15%
12 Jun 89	15 Jun 89	26.17	2.80%	3.40%
12 Jun 89	16 Jun 89	27.69	2.44%	2.97%
14 Nov 89	19 Nov 89	37.59	0.31%	1.98%
14 Nov 89	20 Nov 89	37.59	0.30%	1.90%
30 Dec 89	3 Jan 89	16.01	0.19%	0.94%
3 Jan 90	8 Jan 90	4.32	0.04%	0.21%
3 Jan 90	9 Jan 90	4.32	0.04%	0.19%
9 Jan 90	13 Jan 90	5.84	0.04%	0.57%
9 Jan 90	14 Jan 90	5.84	0.03%	0.54%
17 Jan 90	20 Jan 90	6.6	0.07%	0.79%
20 Jan 90	23 Jan 90	8.13	0.20%	0.62%
20 Jan 90	24 Jan 90	9.65	0.20%	0.63%
4 May 90	7 May 90	37.59	2.67%	3.25%
4 May 90	8 May 90	37.59	2.54%	3.09%
12 May 90	14 May 90	19.31	4.84%	6.72%
12 May 90	15 May 90	19.31	4.04%	5.61%
15 May 90	17 May 90	16.25	0.14%	1.78%
15 May 90	18 May 90	19.55	0.15%	1.95%
		Average (n = 14)	1.04%	1.75%
		Average + 24 hours (n = 12)	1.07%	1.76%

Table 13. Volume of precipitation (m^3) and atmospheric loads (kg) of total suspended solids and nutrients to the OWC wetland during three storm runoff periods. Each load is also expressed as a percentage of the storm runoff load into the wetland during the period.

Three Storms, 23 May - 7 Jun 89

	Precipitation	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Atmospheric Load	46,990	3.41	0.300	467	31.5	24.8	57.2	0.00	15.1
Percent of Runoff Load	1.04%	0.12%	0.26%	0.023%	0.15%	10.8%	0.45%	0.00%	0.017%

Two Storms, 17 - 24 Jan 90

	Precipitation	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Atmospheric Load	10,295	0.22	0.028	170	12.9	5.3	7.0	0.00	18.3
Percent of Runoff Load	0.68%	0.13%	0.30%	0.335%	0.11%	2.5%	0.46%	0.00%	0.019%

Two Storms, 12-18 May 90

	Precipitation	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Atmospheric Load	27,838	1.72	0.124	237	44.5	17.3	36.2	30.9	105.1
Percent of Runoff Load	3.26%	0.62%	2.16%	0.058%	0.61%	5.7%	1.91%	0.49%	0.414%

Table 14. Volume of precipitation (m^3) and atmospheric loads (kg) of total suspended solids and nutrients to the OWC wetland during each month of the 1990 Water Year. Each load is also expressed as a percentage of the monthly upstream load into the wetland.

Monthly Precipitation and Loads

	Precip., mm	Precip., m^3	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Oct	93.47	59,217	1.940	0.727	60.5	45.5	27.77	52.73	0.24	26.2
Nov	71.12	45,058	2.807	0.292	1,116.7	41.4	11.61	38.81	3.15	31.6
Dec	25.14	15,927								
Jan	35.55	22,522	2.135	0.036	851.9	29.3	11.59	28.47	0.35	27.9
Feb	93.23	59,065	1.407	0.114	744.3	61.7	27.73	46.12	0.64	40.7
Mar	21.59	13,678	0.435	0.018	179.9	35.6	14.81	25.54	0.12	30.9
Apr	76.98	48,770	0.721	0.100	169.6	52.8	31.78	60.25	0.00	49.6
May	100.83	63,880	3.377	0.159	513.9	113.9	30.83	71.70	78.53	259.7
Jun	57.92	36,695	2.128	0.00	306.0	41.8	13.68	49.05	0.00	15.0
Jul	91.96	58,261	2.308	0.888	38.0	32.6	16.45	40.72	0.00	13.5
Aug	67.05	42,479	0.870	0.00	28.8	36.7	8.89	21.70	0.00	0.0
Sep	146.32	92,700	2.999	0.338	41.4	55.0	13.57	44.48	0.00	39.9
Total	881.16	558,254	21.126	2.672	4051.0	546.1	208.73	479.56	83.04	535.0

As Percent of Upstream Load into the Wetland

	Precip., m^3	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Oct	14.8%	2.9%	5.9%	0.34%	2.4%	8.7%	6.8%	0.008%	0.10%
Nov	2.9%	0.2%	0.5%	0.51%	0.4%	3.8%	1.3%	0.024%	0.04%
Dec	4.6%								
Jan	0.4%	0.3%	0.0%	0.40%	0.1%	1.4%	0.5%	0.001%	0.01%
1-16 Feb*	1.2%	0.2%	0.1%	0.15%	0.2%	8.6%	0.8%	0.002%	0.02%
12-31 Mar*	2.6%	3.3%	1.7%	3.94%	1.6%	16.7%	7.1%	0.006%	0.11%
Apr	1.5%	0.1%	0.2%	0.05%	0.3%	13.2%	1.3%	0.000%	0.05%
May	3.0%	0.4%	0.6%	0.08%	0.8%	4.7%	1.5%	0.580%	0.37%
Jun	19.7%	15.0%	0.0%	6.99%	7.2%	137.5%	36.1%	0.000%	0.12%
Jul	11.6%	2.0%	5.0%	0.06%	0.4%	11.7%	5.1%	0.000%	0.06%
Aug	20.6%	2.0%	0.0%	0.15%	8.4%	69.8%	9.1%	0.000%	0.00%
Sep	4.9%	0.3%	0.3%	0.01%	0.7%	12.2%	1.2%	0.000%	0.11%
Percent of Total Upstream Load, 1990 WY (without Dec. 89)	2.52%	0.36%	0.52%	0.15%	0.40%	6.84%	1.61%	0.05%	0.06%

* Atmospheric inputs for the entire month are compared to loads for the partial month.

Table 15. Maximum monthly loads of water, nutrients, and suspended solids into the Old Woman Creek Wetland and into Lake Erie between April 1989 and September 1990, and total loads for the 1990 water year (Oct 89 - Sep 90). See Appendix L.

	Loads to Wetland			
	Maximum Monthly Load	Month	Total Load 1990 Water Year	
water	6.432 X 10^6 m^3	Jan 90	22.485 X 10^6 m^3	
TP	2,252 kg	May 89	5,813 kg	
SRP	143.1 kg	Feb 90	521.2 kg	
TSS	1.484 X 10^6 kg	May 89	2.700 X 10^6 kg	
NO_{2+3} N	47,319 kg	Jan 90	136,733 kg	
NH_3 N	849 kg	Jan 90	3,255 kg	
TKN	11,733 kg	May 89	30,123 kg	
SiO_2	49,482 kg	Jan 90	154,104 kg	
Cl	372,979 kg	Jan 90	0.974 X 10^6 kg	
	Loads to Lake Erie			
	Maximum Monthly Load	Month	Total Load 1990 Water Year	Percent of Load to Wetland
water	6.377 X 10^6 m^3	Feb 90	22.413 X 10^6 m^3	99.7%
TP	1,588 kg	May 89	3,867 kg	66.5%
SRP	111.8 kg	Feb 90	283.1 kg	54.3%
TSS	1.192 X 10^6 kg	May 89	3.010 X 10^6 kg	111.5%
NO_{2+3} N	34,918 kg	Jan 90	107,610 kg	78.7%
NH_3 N	1,961 kg	Jan 90	6,243 kg	191.8%
TKN	11,177 kg	May 89	35,093 kg	116.5%
SiO_2	38,943 kg	Jan 90	145,121 kg	94.2%
Cl	307,219 kg	Jan 90	1.002 X 10^6 kg	102.9%

Table 16. Pearson product moment correlation coefficients between monthly loads at upstream and downstream sites. Shaded values are not significant ($p>0.05$); values with asterisk (*) are significant at $p\leq0.05$. All other values are significant at $p\leq0.01$.

	Upstream								
	Water	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Upstream									
Water	1.00								
TP	0.71	1.00							
SRP	0.82	0.70	1.00						
TSS	0.64	0.92	0.61	1.00					
NO_{2+3} N	0.97	0.61	0.73	0.52*	1.00				
NH_3 N	0.59	0.28	0.36	0.17	0.69	1.00			
TKN	0.87	0.93	0.73	0.93	0.78	0.41	1.00		
SiO_2	0.99	0.70	0.81	0.62	0.98	0.62	0.85	1.00	
Cl	0.91	0.44	0.68	0.32	0.97	0.71	0.62	0.94	1.00
Downstream									
Water	0.98	0.70	0.85	0.64	0.92	0.54*	0.85	0.95	0.86
TP	0.82	0.95	0.77	0.91	0.70	0.34	0.97	0.78	0.53*
SRP	0.76	0.36	0.87	0.30	0.68	0.37	0.49*	0.71	0.70
TSS	0.80	0.92	0.73	0.89	0.68	0.28	0.95	0.76	0.52*
NO_{2+3} N	0.96	0.56*	0.80	0.45	0.95	0.64	0.72	0.95	0.95
NH_3 N	0.84	0.69	0.58*	0.64	0.88	0.67	0.80	0.88	0.81
TKN	0.89	0.91	0.78	0.86	0.80	0.41	0.97	0.86	0.66
SiO_2	0.97	0.67	0.89	0.57*	0.93	0.58*	0.79	0.96	0.90
Cl	0.93	0.50*	0.79	0.37	0.94	0.65	0.65	0.93	0.96

	Downstream								
	Water	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
Downstream									
Water	1.00								
TP	0.87	1.00							
SRP	0.83	0.57*	1.00						
TSS	0.84	0.99	0.56*	1.00					
NO_{2+3} N	0.96	0.69	0.84	0.69	1.00				
NH_3 N	0.76	0.80	0.39	0.67	0.74	1.00			
TKN	0.91	0.99	0.61	0.98	0.79	0.79	1.00		
SiO_2	0.98	0.80	0.85	0.77	0.97	0.78	0.87	1.00	
Cl	0.93	0.61	0.84	0.62	0.99	0.73	0.74	0.96	1.00

Table 17. Cumulative inputs (10^6 m^3) of water and loads (kg) of nutrients and suspended solids into the Old Woman Creek Wetland and Lake Erie during four time periods consisting of multiple storm runoff events.

	Three Storms, 23 May - 7 Jun 89			Three Storms, 30 Dec 89 - 14 Jan 90		
	Load to Wetland	Load to Lake Erie	Lake Erie Load/ Wetland Load	Load to Wetland	Load to Lake Erie	Lake Erie Load/ Wetland Load
water	4.540	4.494	99.0%	3.277	3.280	100.1%
TP	2,756	1,754	63.6%	546	344	63.0%
SRP	115.3	27.3	23.7%	74.4	51.1	68.7%
TSS	1,989,400	1,327,300	66.7%	195,000	146,100	74.9%
NO_{2+3} N	21,350	14,580	68.3%	25,650	20,510	80.0%
NH_3 N	230.4	1,564.0	678.8%	551.2	1,595.0	289.4%
TKN	12,810	11,000	85.9%	3,810	3,280	86.1%
SiO_2	32,140	25,340	78.8%	24,580	21,570	87.8%
Cl	86,400	97,500	112.8%	179,100	166,500	93.0%

	Two Storms, 17-24 Jan 90			Two Storms, 12 - 18 May 90		
	Load to Wetland	Load to Lake Erie	Lake Erie Load/ Wetland Load	Load to Wetland	Load to Lake Erie	Lake Erie Load/ Wetland Load
water	1.510	1.514	100.3%	0.855	0.867	101.4%
TP	164	200	122.0%	278	201	72.3%
SRP	9.35	3.80	40.6%	5.74	4.54	79.1%
TSS	50,800	113,900	224.2%	404,600	162,900	40.3%
NO_{2+3} N	11,220	9,100	81.1%	7,290	3,670	50.3%
NH_3 N	213.7	268.0	125.4%	304.1	287.0	94.4%
TKN	1,520	1,770	116.4%	1,900	1,550	81.6%
SiO_2	12,440	11,500	92.4%	6,270	4,110	65.6%
Cl	94,600	94,300	99.7%	25,400	22,700	89.4%

Table 18. Cumulative inputs (10^6 m^3) of water and loads (kg) of nutrients and suspended solids into the Old Woman Creek Wetland and Lake Erie during two periods of beach closure and immediately after re-opening.

	July - October 1989				
	Load to Wetland	Percent of Annual Load (May 89 - Apr 90) to Wetland	Load to Lake Erie	Percent of Annual Load (May 89 - Apr 90) to Lake Erie	Lake Erie Load/ Wetland Load
water	1.010	3.90%	0.653	2.53%	64.7%
TP	212	2.94%	181	2.91%	85.4%
SRP	29.8	5.53%	5.1	1.87%	17.1%
TSS	150,670	3.94%	49,306	1.21%	32.7%
NO_{2+3} N	3,782	2.56%	781	0.65%	20.7%
NH_3 N	799	25.23%	413	5.75%	51.7%
TKN	2,653	6.74%	1,381	3.19%	52.1%
SiO_2	8,794	4.84%	7,231	4.36%	82.2%
Cl	56,799	5.37%	34,762	3.23%	61.2%

	June - July 1990				
	Load to Wetland	Percent of Annual Load (1990 WY) to Wetland	Load to Lake Erie	Percent of Annual Load (1990 WY) to Lake Erie	Lake Erie Load/ Wetland Load
water	0.690	3.07%	0.498	2.22%	72.2%
TP	132	2.75%	88	2.28%	66.7%
SRP	20.2	3.88%	2.3	0.81%	11.4%
TSS	64,151	2.38%	29,798	0.99%	46.4%
NO_{2+3} N	8,203	6.00%	1,127	1.05%	13.7%
NH_3 N	151	4.64%	185	2.96%	122.5%
TKN	941	3.12%	913	2.60%	97.0%
SiO_2	5,480	3.56%	1,074	0.74%	19.6%
Cl	36,719	3.77%	22,979	2.29%	62.6%

Table 19. Comparison of downstream/upstream ratios of time-weighted mean concentrations (TWMCs) and fluxes for individual months for which complete data are available. (See Appendices I and L.)

		TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
May 89	TWMC	1.56	0.34	2.13	0.62	7.16	1.35	0.75	0.75
	Flux	0.71	0.20	0.80	0.68	6.47	0.95	0.74	1.01
June 89	TWMC	1.08	0.38	1.46	0.35	8.11	1.31	0.52	0.50
	Flux	0.72	0.32	0.70	0.62	8.43	1.07	0.92	0.96
July 89[†]	TWMC	2.40	0.71	1.02	0.12	4.26	2.15	1.05	0.55
	Flux	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
August 89[†]	TWMC	3.75	0.52	3.75	0.14	4.03	2.97	0.53	0.50
	Flux	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
September 89[†]	TWMC	2.74	0.51	3.20	0.02	0.04	0.24	0.67	0.42
	Flux	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
October 89[£]	TWMC	2.11	0.41	3.55	0.09	0.17	0.84	0.67	0.47
	Flux	2.68	0.41	2.80	0.41	1.29	1.78	2.27	1.37
November 89	TWMC	2.13	0.46	5.88	0.63	0.82	1.35	0.84	0.67
	Flux	0.51	0.14	1.88	0.93	1.91	1.48	1.07	1.31
January 90	TWMC[‡]	1.39	0.62	2.70	0.92	1.27	1.19	0.94	0.97
	Flux	0.98	0.61	1.50	0.74	2.31	1.03	0.79	0.82
April 90[§]	TWMC	2.76	0.90	3.80	0.75	1.50	1.50	0.94	0.77
	Flux	1.31	0.74	1.64	0.82	3.42	1.28	0.96	1.01
May 90[#]	TWMC	1.34	0.44	1.78	0.51	1.39	1.24	0.56	0.53
	Flux	0.70	0.35	0.67	0.59	1.46	0.93	0.74	0.89
June 90[†]	TWMC	3.67	0.23	3.91	0.16	2.33	2.22	0.19	0.55
	Flux	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
July 90[£]	TWMC	2.61	0.30	2.70	0.13	3.11	2.24	0.19	0.55
	Flux	0.74	0.13	0.50	0.15	1.31	1.13	0.24	0.94
August 90[#]	TWMC	1.46	0.29	1.80	0.25	1.33	1.45	0.33	0.33
	Flux	1.85	1.19	1.34	0.12	11.39	2.46	0.93	0.90
September 90[£]	TWMC	0.93	0.28	1.74	0.29	1.32	1.28	0.51	0.41
	Flux	0.55	0.32	0.41	0.48	3.36	0.77	0.86	1.00
Mean TWMC Ratio[@]		1.74 *	0.44	2.75 **	0.45	2.62	1.38	0.63	0.60 ***
Mean Flux Ratio[@]		1.07 *	0.44	1.22 **	0.55	4.14	1.29	0.95	1.02 ***

[†] Barrier beach was closed the entire month

[§] Barrier beach was open at the beginning and end of the month but closed for some period in between

[#] Barrier beach was open at the beginning of the month but closed before the end of the month

[£] Barrier beach was closed at the beginning of the month but open at month's end

[‡] TWMC was calculated from 3 Jan 90

[@] Mean TWMC ratios and flux ratios exclude months when downstream flux was zero

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 20. Comparison of downstream/upstream ratios of time-weighted mean concentrations (TWMCs) and fluxes for storm runoff events that occurred when the barrier beach was open.

Inclusive Dates & Times		TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	SiO_2	Cl
3 Jun 89 1300	TWMC	1.05	0.40	1.16	0.56	7.84	1.19	0.70	0.74
7 Jun 89 0700	Flux	0.67	0.29	0.59	0.81	5.37	0.85	0.98	1.38
12 Jun 89 1300	TWMC	0.74	0.23	0.94	0.55	10.24	1.26	0.75	0.80
16 Jun 89 1300	Flux	0.48	0.19	0.55	0.60	8.97	1.12	0.87	1.00
14 Nov 89 1900	TWMC	0.88	0.10	2.38	0.61	0.38	1.32	0.69	0.73
20 Nov 89 1300	Flux	0.42	0.07	1.60	0.89	0.46	1.22	0.88	0.96
30 Dec 89 1900	TWMC	0.56	0.62	0.47	0.88	6.65	0.82	0.86	0.95
3 Jan 90 0100	Flux	0.46	0.77	0.34	0.93	9.21	0.72	0.87	0.95
3 Jan 90 1300	TWMC	0.87	0.72	1.04	0.85	1.56	1.03	0.91	0.92
9 Jan 90 0100	Flux	0.63	0.65	0.62	0.76	2.40	0.91	0.86	0.95
17 Jan 90 1300	TWMC	0.99	0.30	1.83	0.77	1.27	1.00	0.89	0.94
20 Jan 90 0100	Flux	0.86	0.27	1.45	0.77	1.42	0.95	0.89	0.95
20 Jan 90 0700	TWMC	1.45	0.37	3.08	0.79	1.52	1.32	0.90	0.99
24 Jan 90 1900	Flux	1.41	0.49	2.86	0.82	1.13	1.29	0.94	1.02
10 Apr 90 0700	TWMC	0.89	0.72	0.84	0.78	6.37	0.96	0.84	1.11
13 Apr 90 0100	Flux	0.93	0.57	1.05	0.71	6.63	1.00	0.83	1.35
20 Apr 90 1900	TWMC	2.39	0.73	3.77	0.77	2.60	1.66	0.84	0.80
24 Apr 90 0100	Flux	1.78	0.71	2.82	0.86	3.30	1.53	0.93	0.76
4 May 90 0700	TWMC	0.86	0.15	1.56	0.60	1.04	1.01	0.68	0.63
8 May 90 1900	Flux	0.56	0.15	0.84	0.59	1.36	0.81	0.72	1.05
12 May 90 1900	TWMC	0.85	0.17	2.59	0.24	0.30	0.66	0.46	0.51
15 May 90 1900	Flux	0.69	0.26	1.68	0.20	0.24	0.55	0.41	0.45
15 May 90 1900	TWMC	1.31	1.61	0.80	0.62	1.36	1.27	0.68	0.83
18 May 90 1300	Flux	0.73	1.37	0.37	0.58	1.11	0.86	0.72	1.15
Mean TWMC Ratio		1.07 **	0.51	1.71 **	0.67	3.43	1.13 **	0.77	0.83 *
Mean Flux Ratio		0.80 **	0.48	1.23 **	0.71	3.47	0.98 **	0.83	1.00 *

* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Table 21. Annual retention (or loss) rates of materials in Old Woman Creek Wetland during the 1990 Water Year.

Substance	kg retained (released)[1]	Percent retained (released)	Maximum Retention (4.93 ha) g/m^2-yr (174.2 m elev.)	Minimum Retention (59.4 ha) g/m^2-yr (175.4 m elev.)	Approximate Median Retention (41.4 ha) g/m^2-yr (174.6 m elev.)
TP	1,946	33.5%	39.4	3.3	4.7
SRP	238	45.7%	4.8	0.40	0.57
TSS	(310,000)	(11.5%)	(6,282)	(522)	(748)
NO_{2+3} N	29,123	21.3%	590	49	70
NH_3 N	(2,988)	(91.8%)	(61)	(5.0)	(7.2)
TKN	(4,970)	(16.5%)	(101)	(8.4)	(12.0)
SiO_2	8,983	5.8%	182	15	22
Cl	(28,000)	(2.9%)	(567)	(47)	(68)

[1]From Table 15.

Table 22. Unit area yields of western Lake Erie tributaries. Rock Creek and Honey Creek are tributaries of the Sandusky River. The Cuyahoga River, which drains a largely urban and forested watershed into the central basin, is shown for comparison. Basin areas (km^2) upstream of the sampling points are shown. OWC values are based on the 1990 WY (this study) whereas the values for the remaining streams are based on average annual yields (Baker 1993).

		Annual Unit Area Yields, kg/ha					
Substance	OWC -- 1990 WY Total Export[a], kg	Old Woman Cr. 68.9 km^2	Rock Cr. 88.0 km^2	Honey Cr. 386 km^2	Sandusky R. 3,240 km^2	Maumee R. 16,395 km^2	Cuyahoga R. 1,831 km^2
TP	6,204	0.900	1.14	1.23	1.41	1.30	1.89
SRP	556	0.081	0.13	0.20	0.23	0.21	0.32
TSS	2,881,819	418	643	565	760	610	1000
NO_{2+3} N	136,733	19.8	11.5	15.4	15.8	16.0	8.7
NH_3 N	3,255	0.47					
TKN	30,123	4.4	5.3	5.6	6.3	6.0	5.5
SiO_2	154,104	22.4					
Cl	973,950	141.4	61.4	62.6	77.8	78.6	466.0

[a] Sum of monthly fluxes measured upstream of the wetland at Berlin Road (Appendix L); partial data for some months yielded a total of 342 d (0.937 yr), which was adjusted to 365 d.

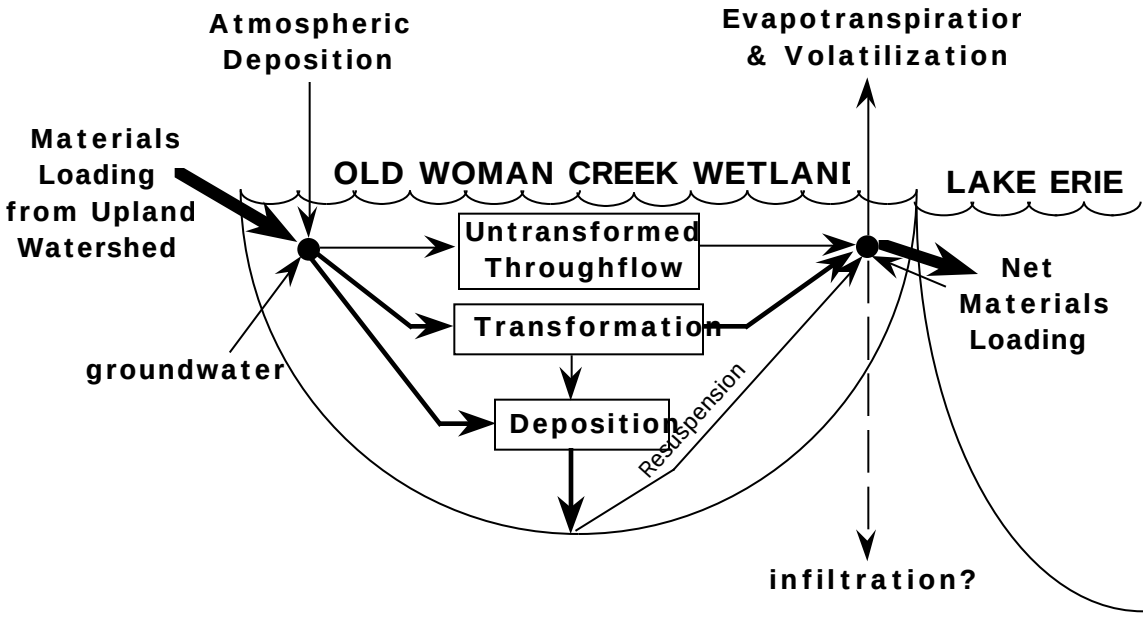

Figure 1. Conceptual model of materials fluxes through Great Lakes coastal wetlands.

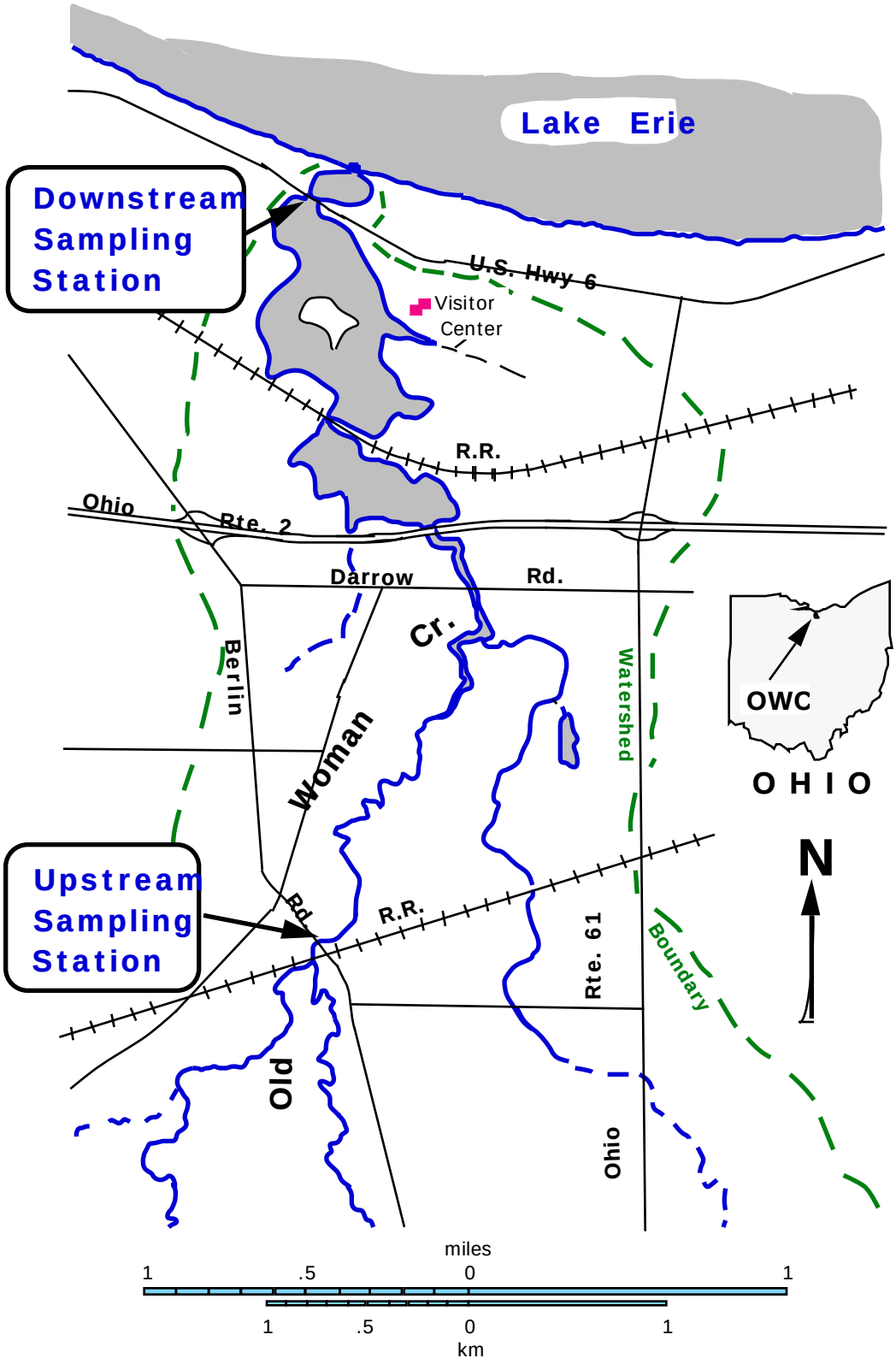

Figure 2. Lower part of the Old Woman Creek watershed, showing locations of the upstream and downstream sampling and gaging stations.

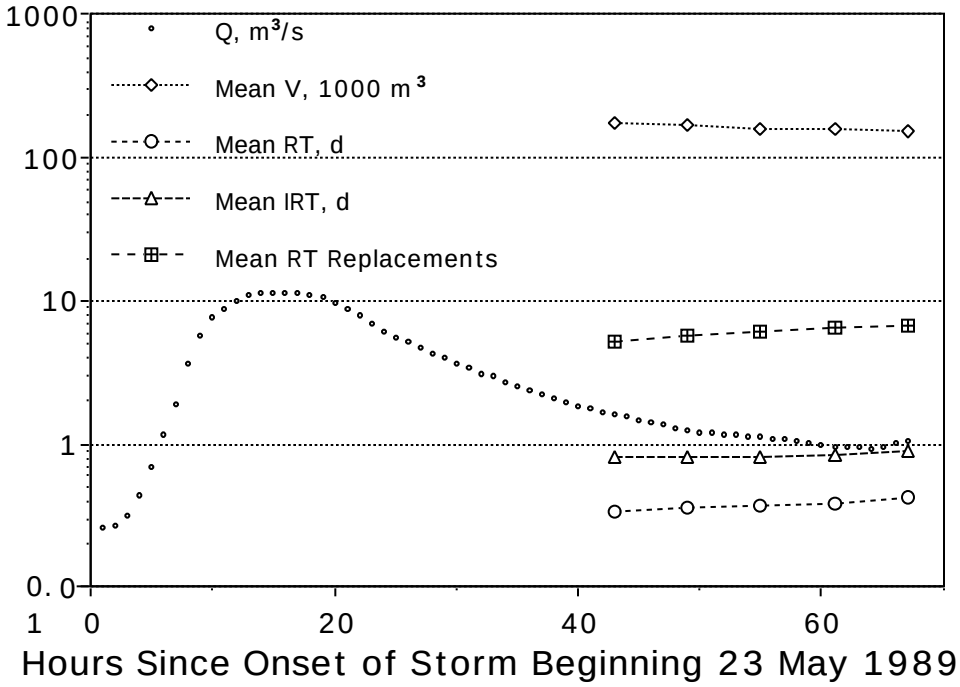

Figure 3. Typical storm hydrograph recorded upstream at Berlin Road. RT = residence time, IRT = instantaneous residence time.

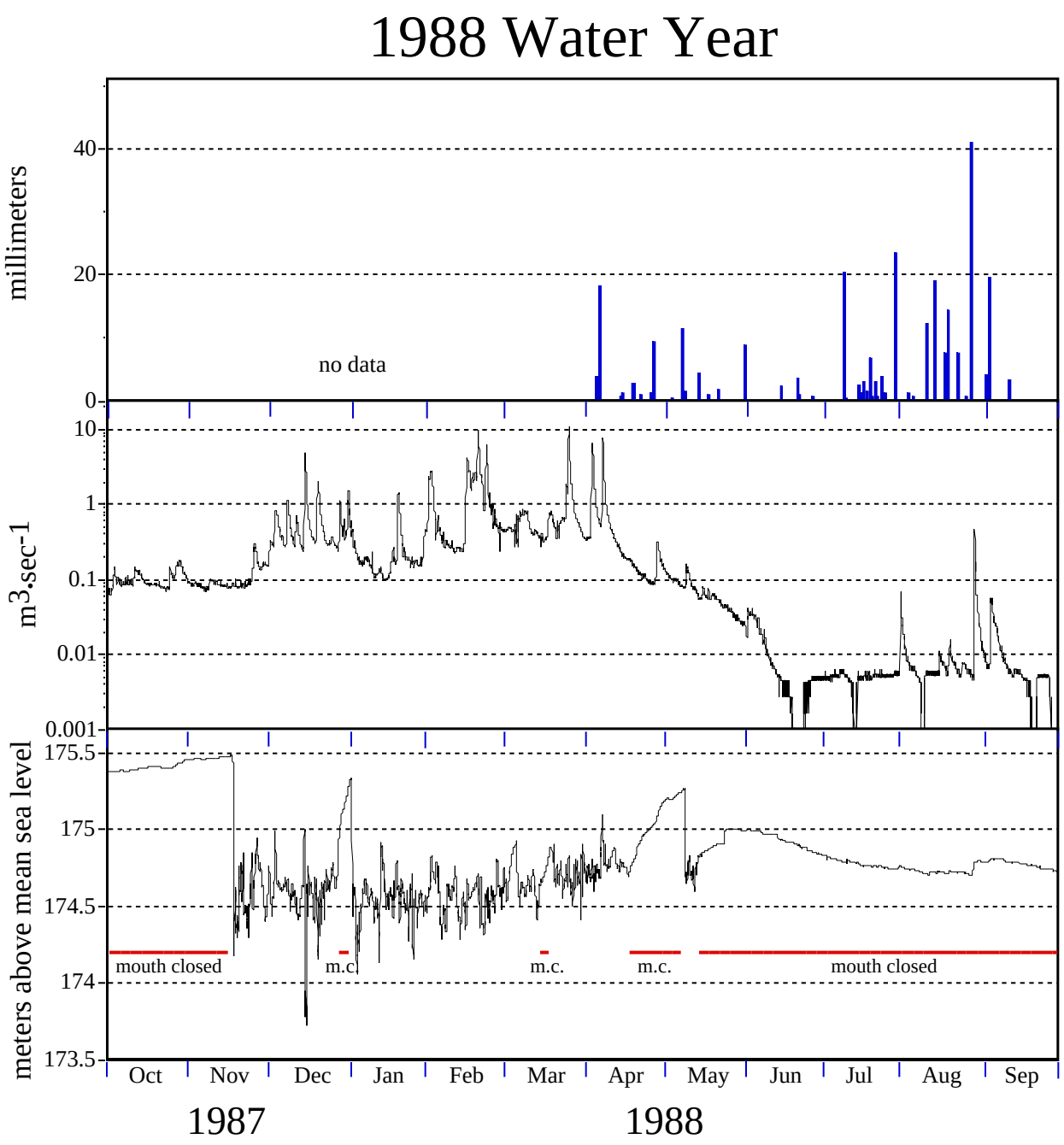

Figure 4 Precipitation at the Old Woman Creek wetland (upper graph), upstream discharge at Berlin Rd.(middle graph), and water level at the mouth of the wetland (lower graph), with horizont bar showing periods when barrier beach closed the mouth

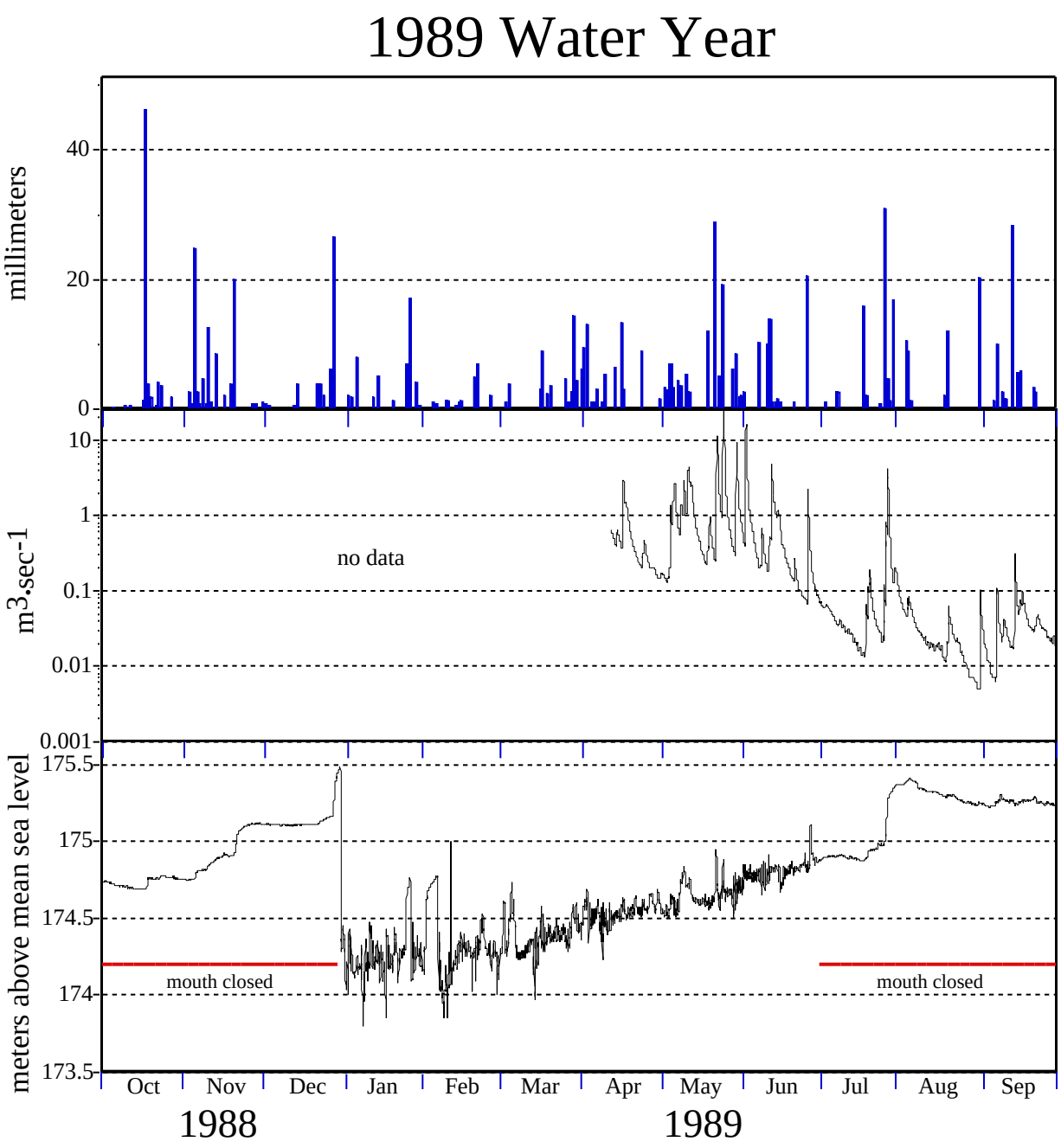

Figure 5. Precipitation at the Old Woman Creek wetland (upper graph), upstream discharge at Berlin Rd.(middle graph), and water level at the mouth of the wetland (lower graph), with horizontal bars showing periods when barrier beach closed the mouth

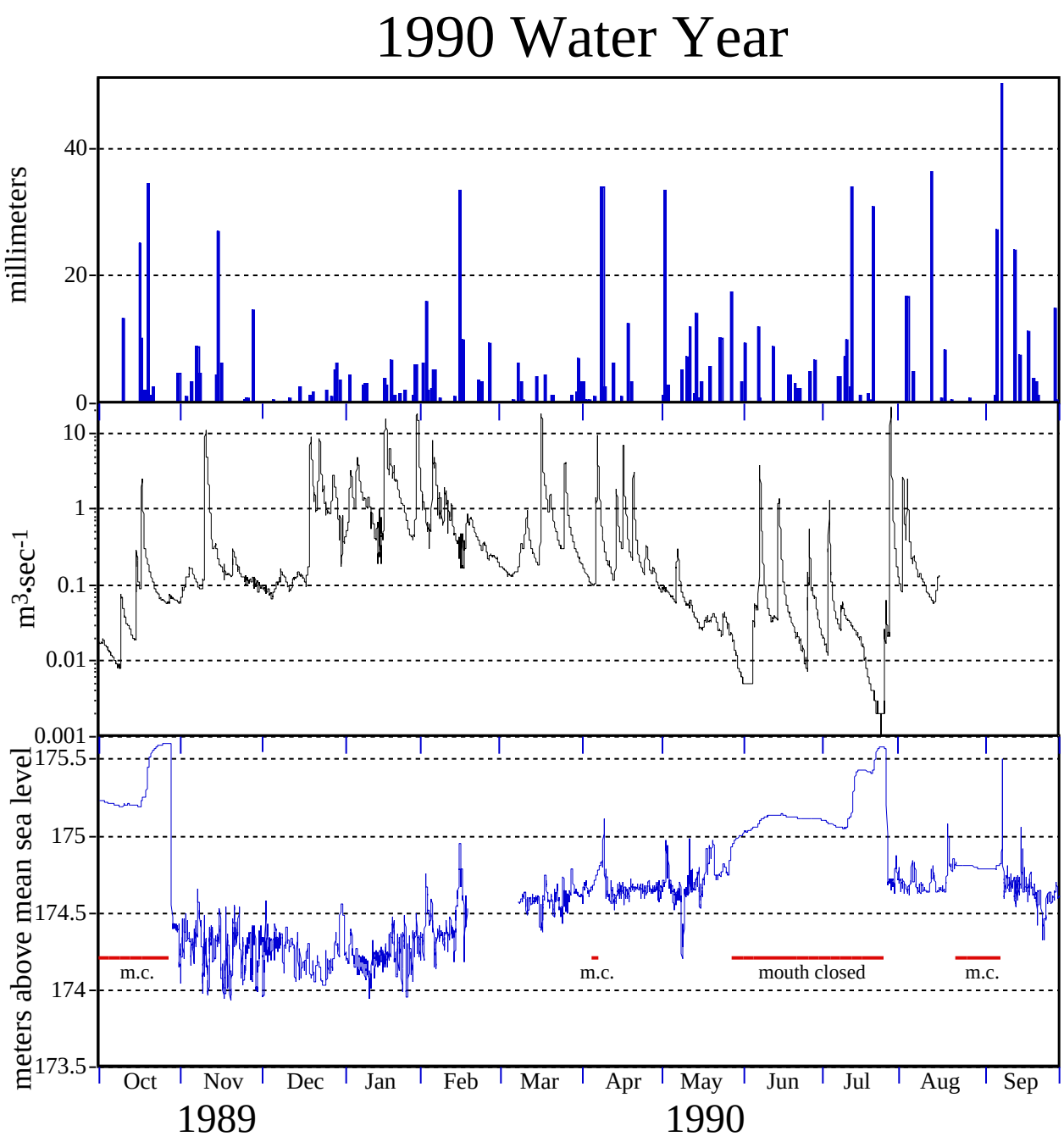

Figure 6. Precipitation at the Old Woman Creek wetland (upper graph), upstream discharge at Berlin Rd.(middle graph), and water level at the mouth of the wetland (lower graph), with horizont bars showing periods when barrier beach closed the mouth

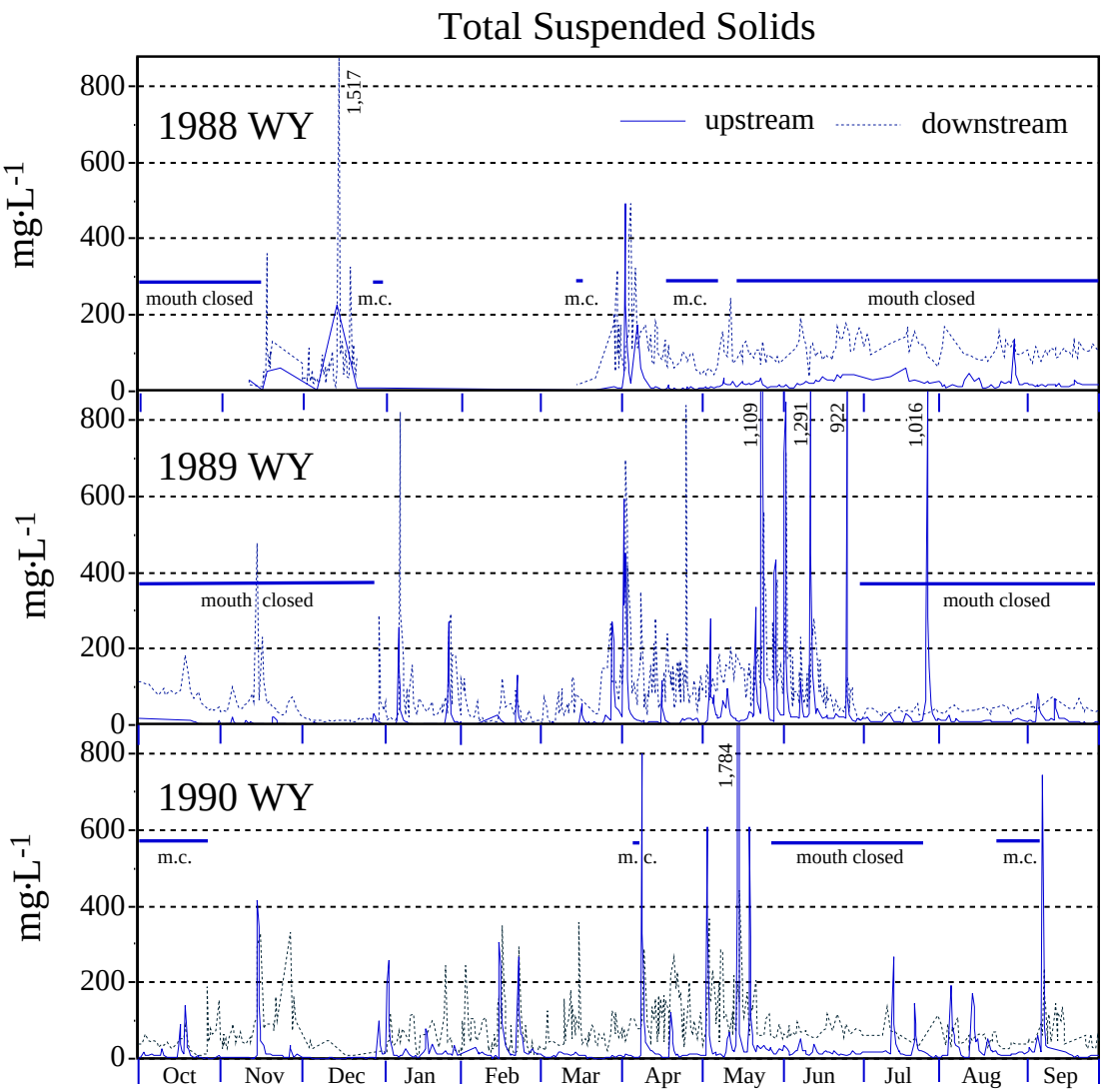

Figure 7. Concentrations of total suspended solids at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

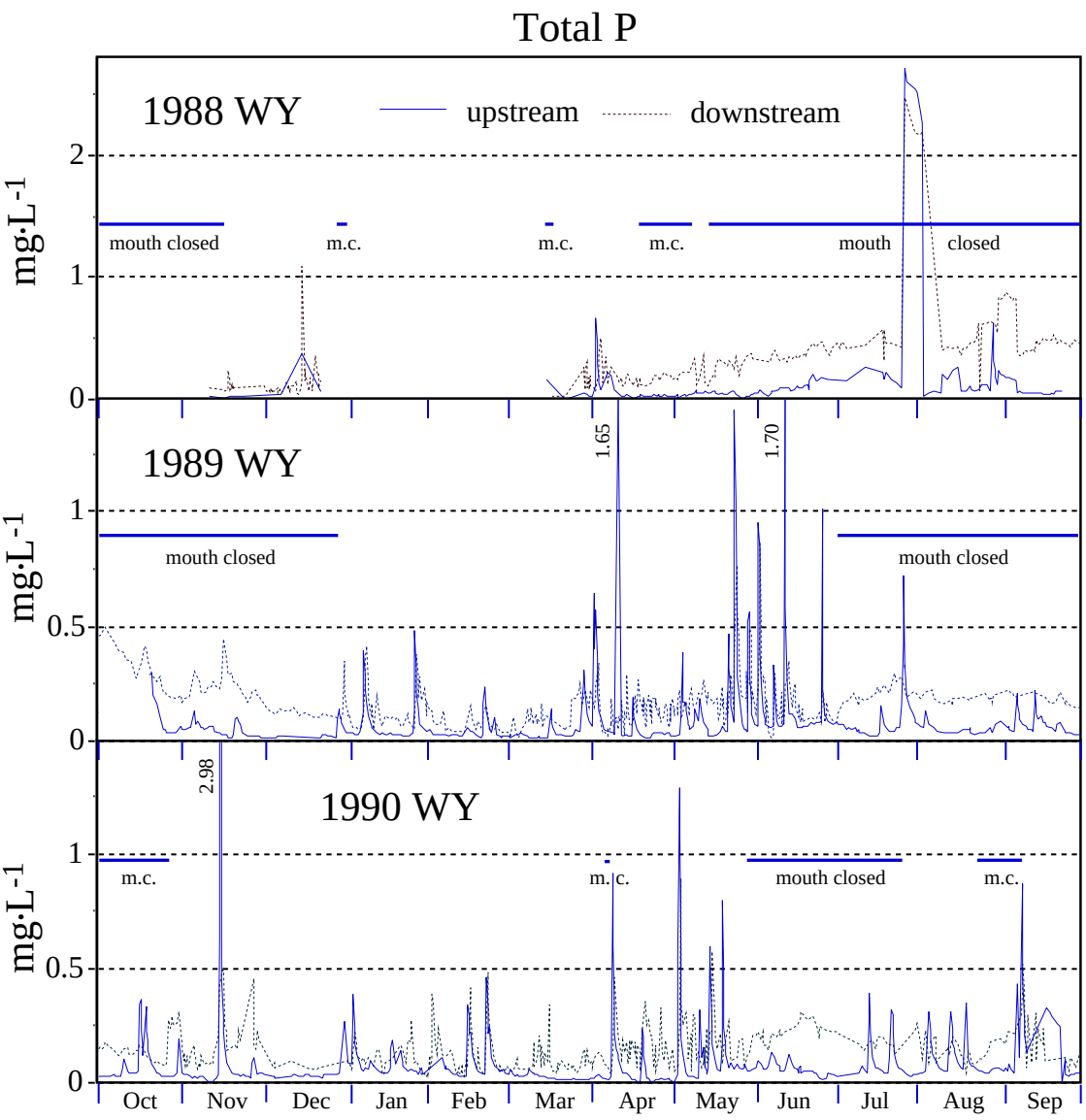

Figure 8. Concentrations of total phosphorus at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

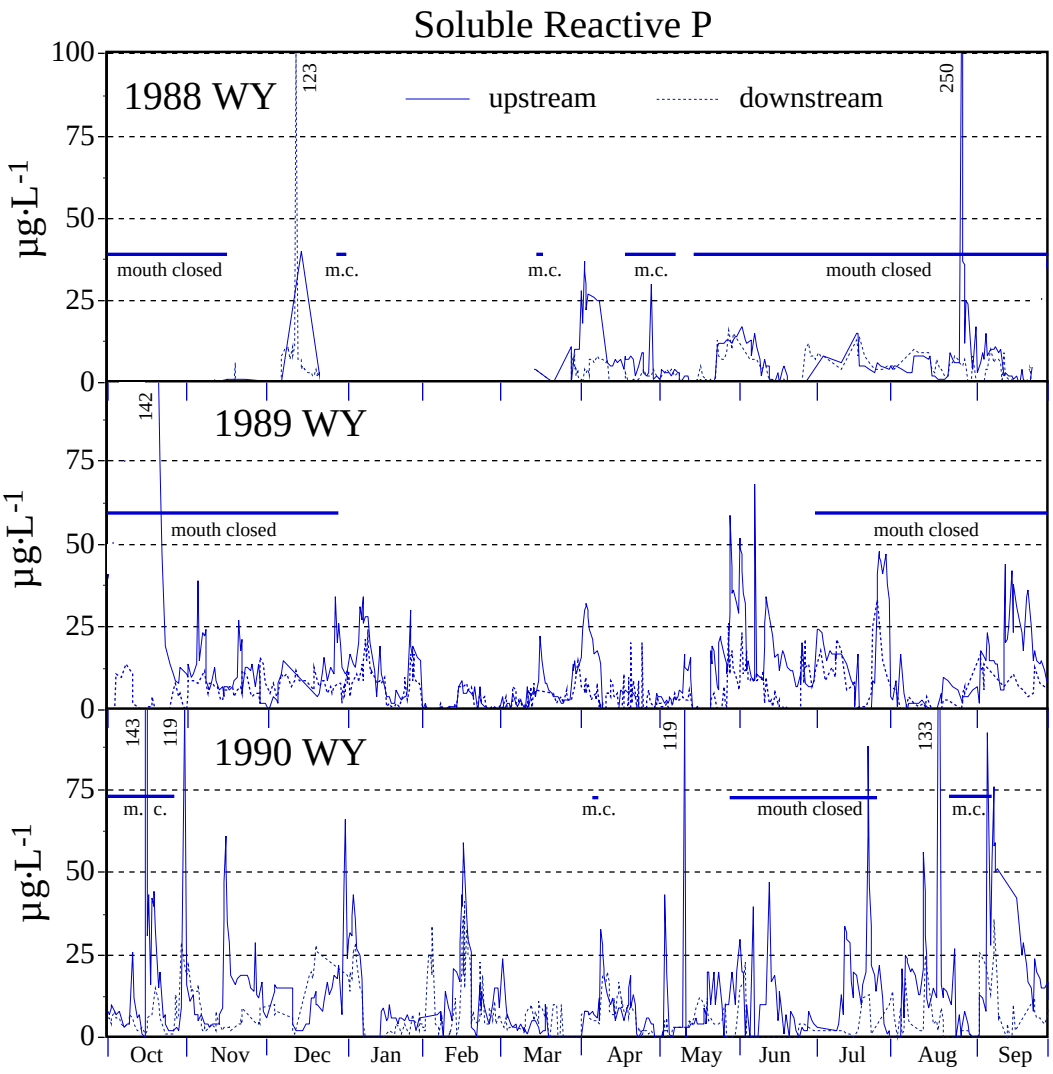

Figure 9. Concentrations of soluble reactive phosphorus at the upstream (Berlin Rd.) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

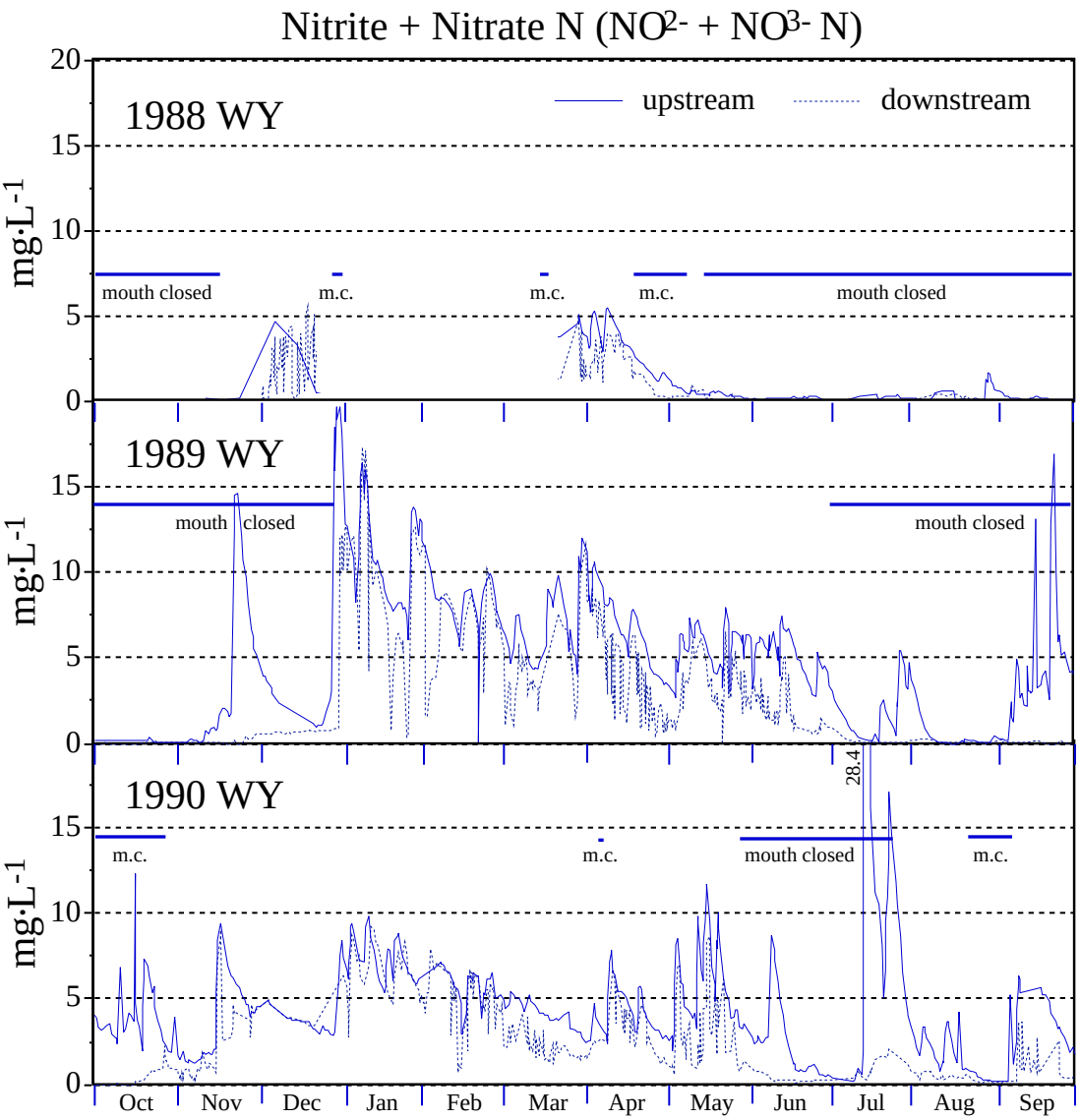

Figure 10. Concentrations of nitrite plus nitrate nitrogen at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

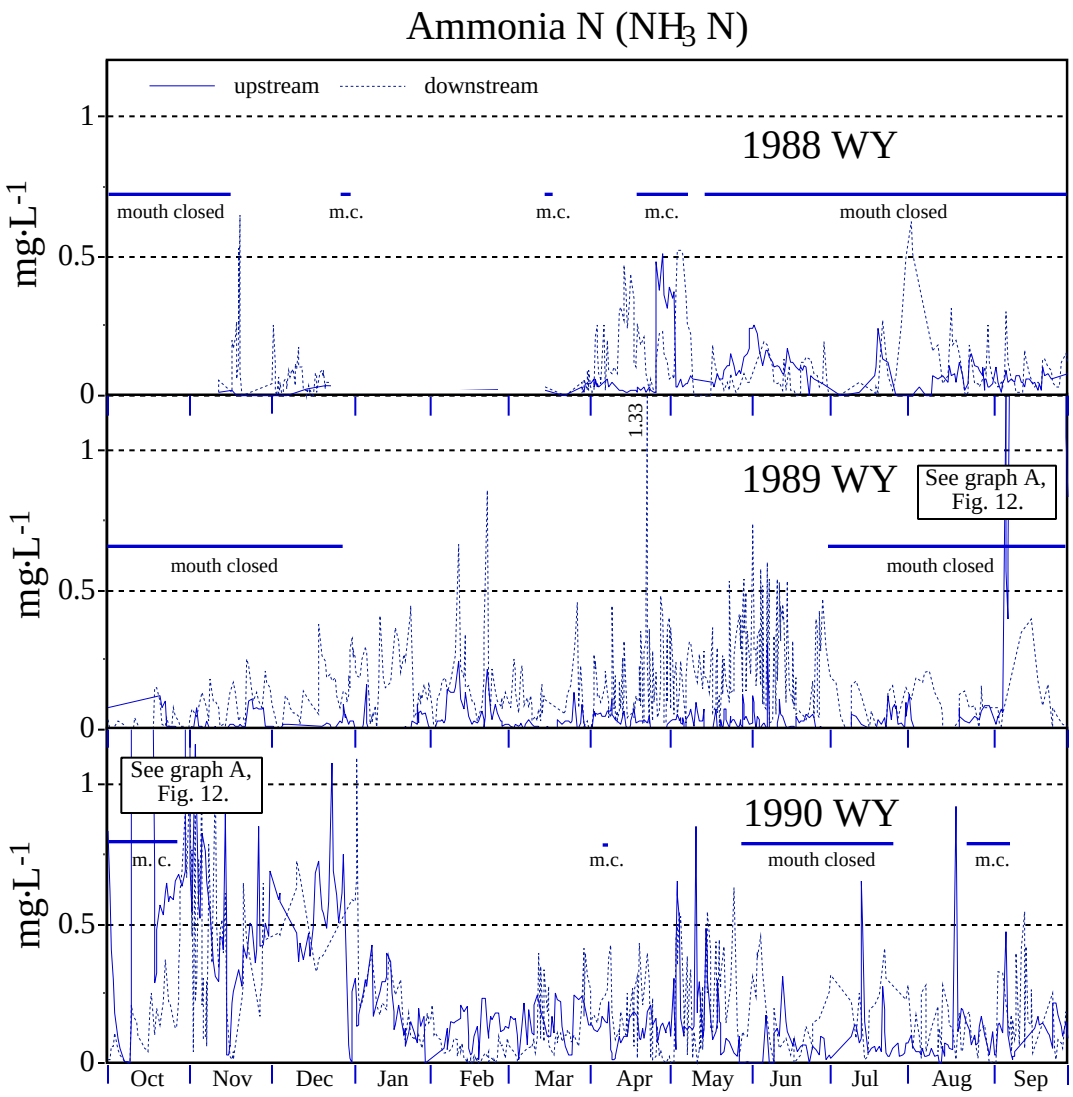

Figure 11. Concentrations of ammonia nitrogen at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

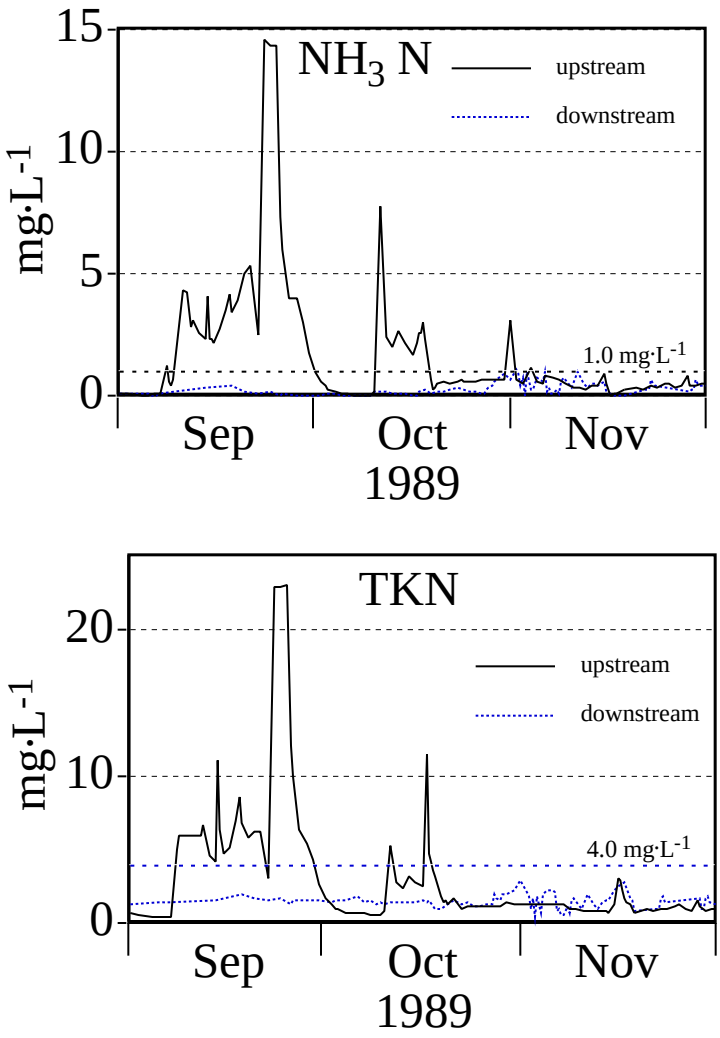

Figure 12. Concentrations of ammonia nitrogen and total Kjeldahl N at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the months of September, October, and November 1989. See Figures 11 and 13.

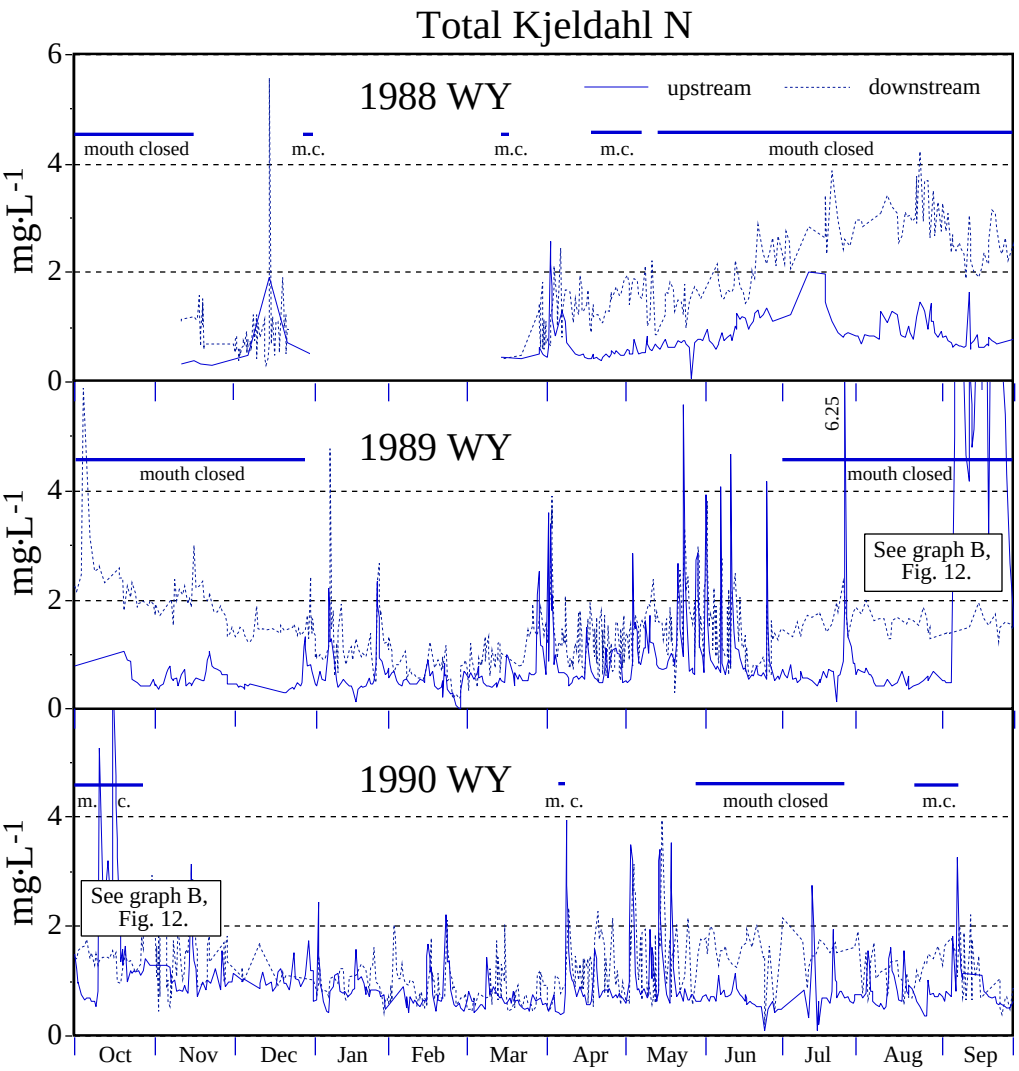

Figure 13. Concentrations of total kjeldahl nitrogen at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

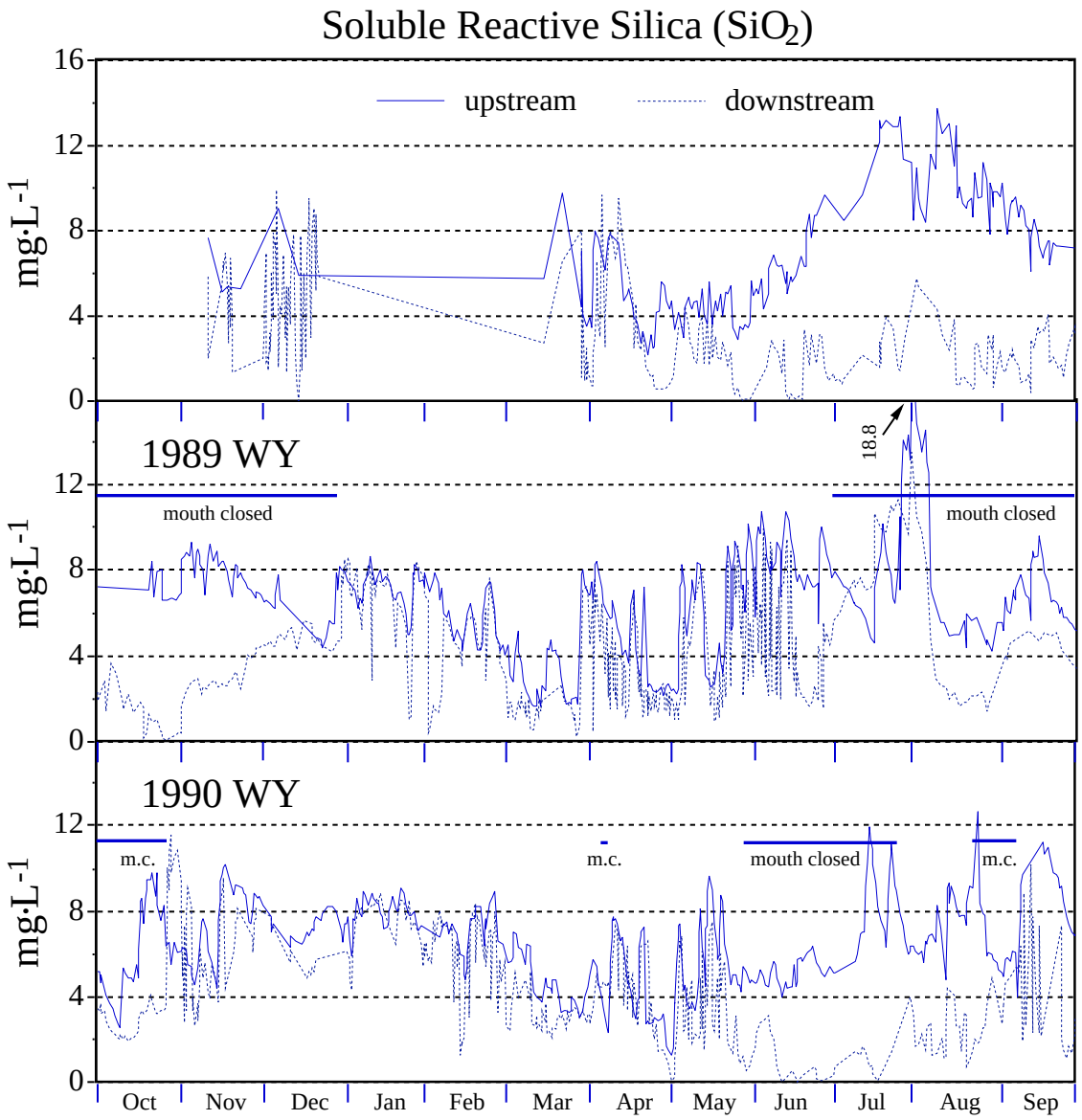

Figure 14. Concentrations of soluble reactive silica at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

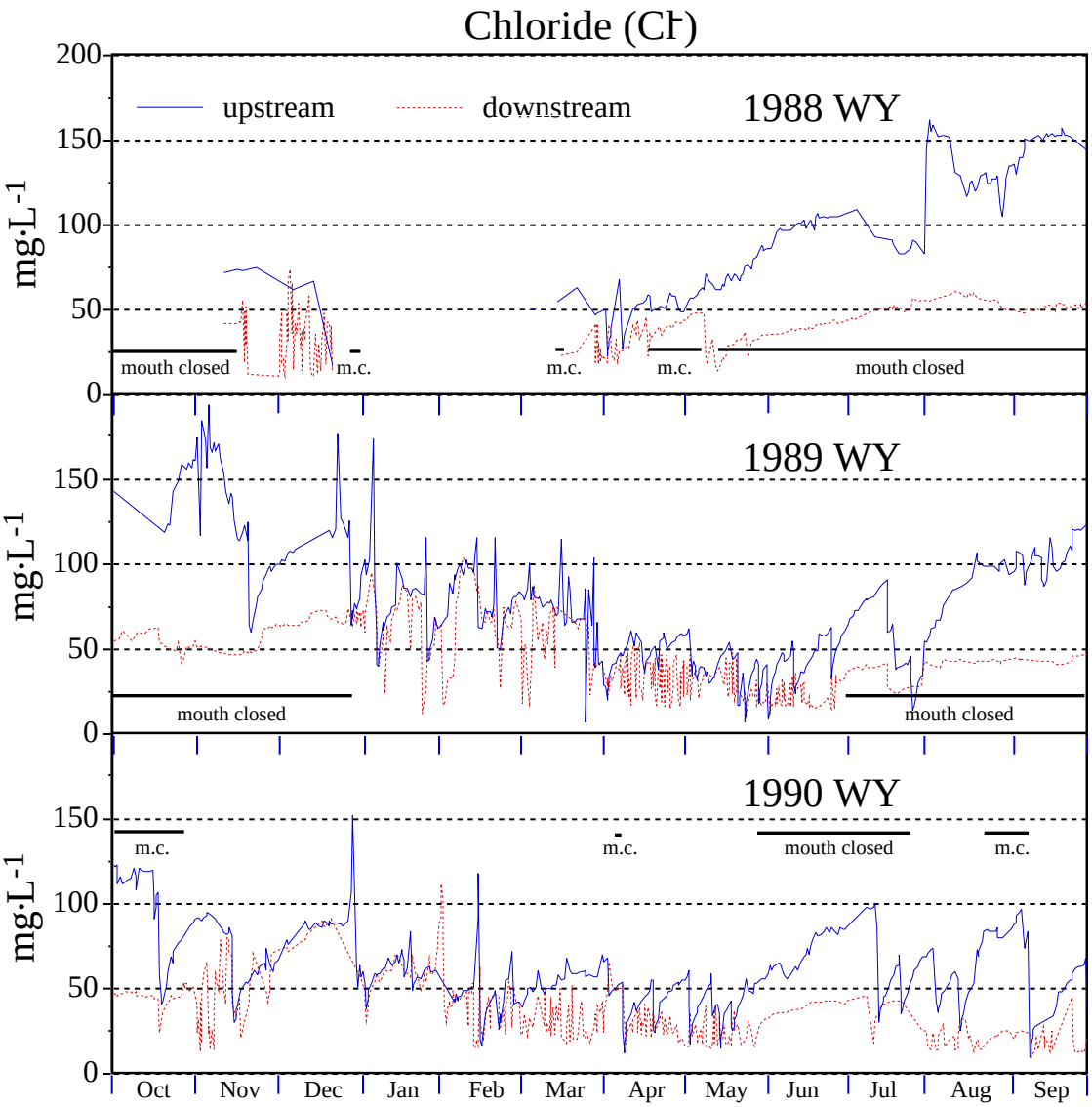

Figure 15. Concentrations of chloride at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

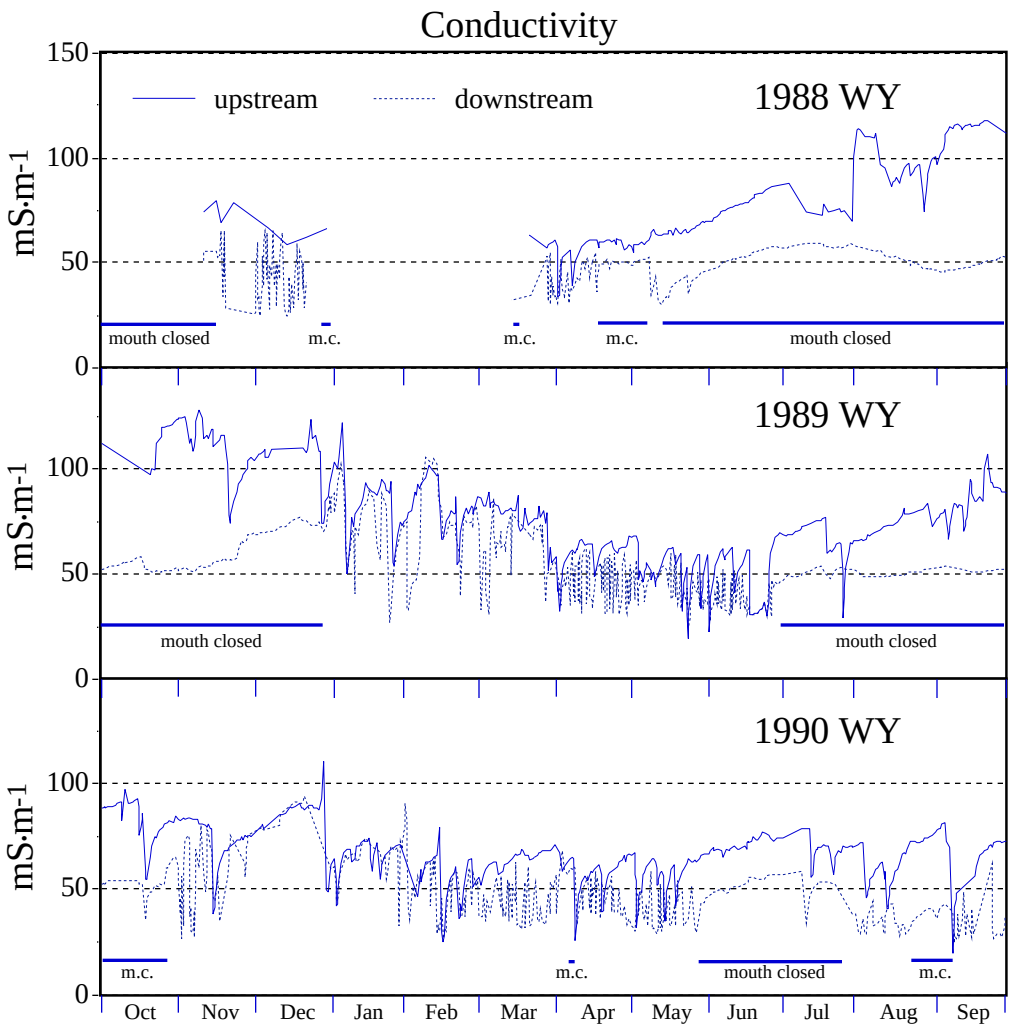

Figure 16. Specific conductance at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

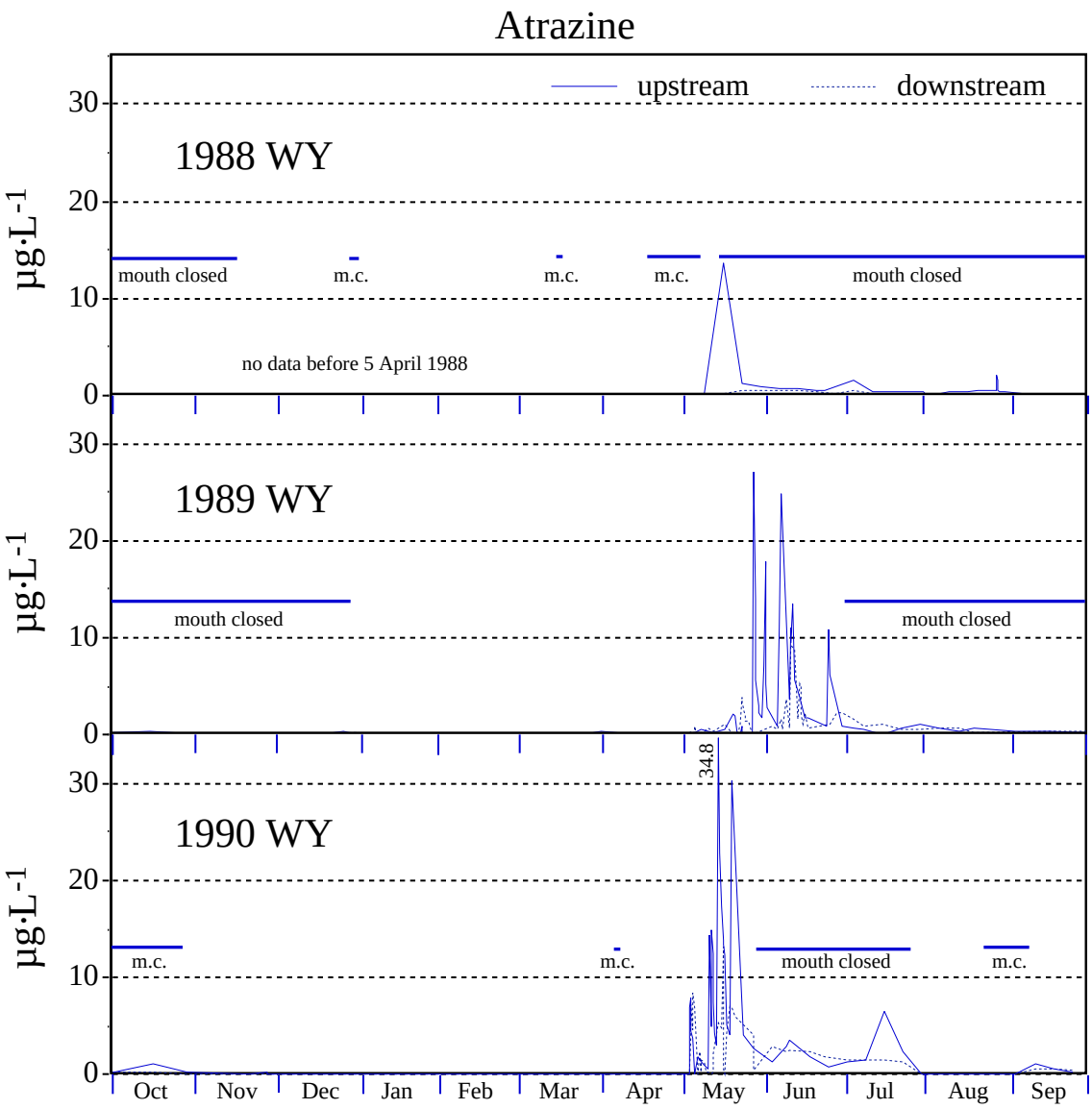

Figure 17. Concentrations of atrazine at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

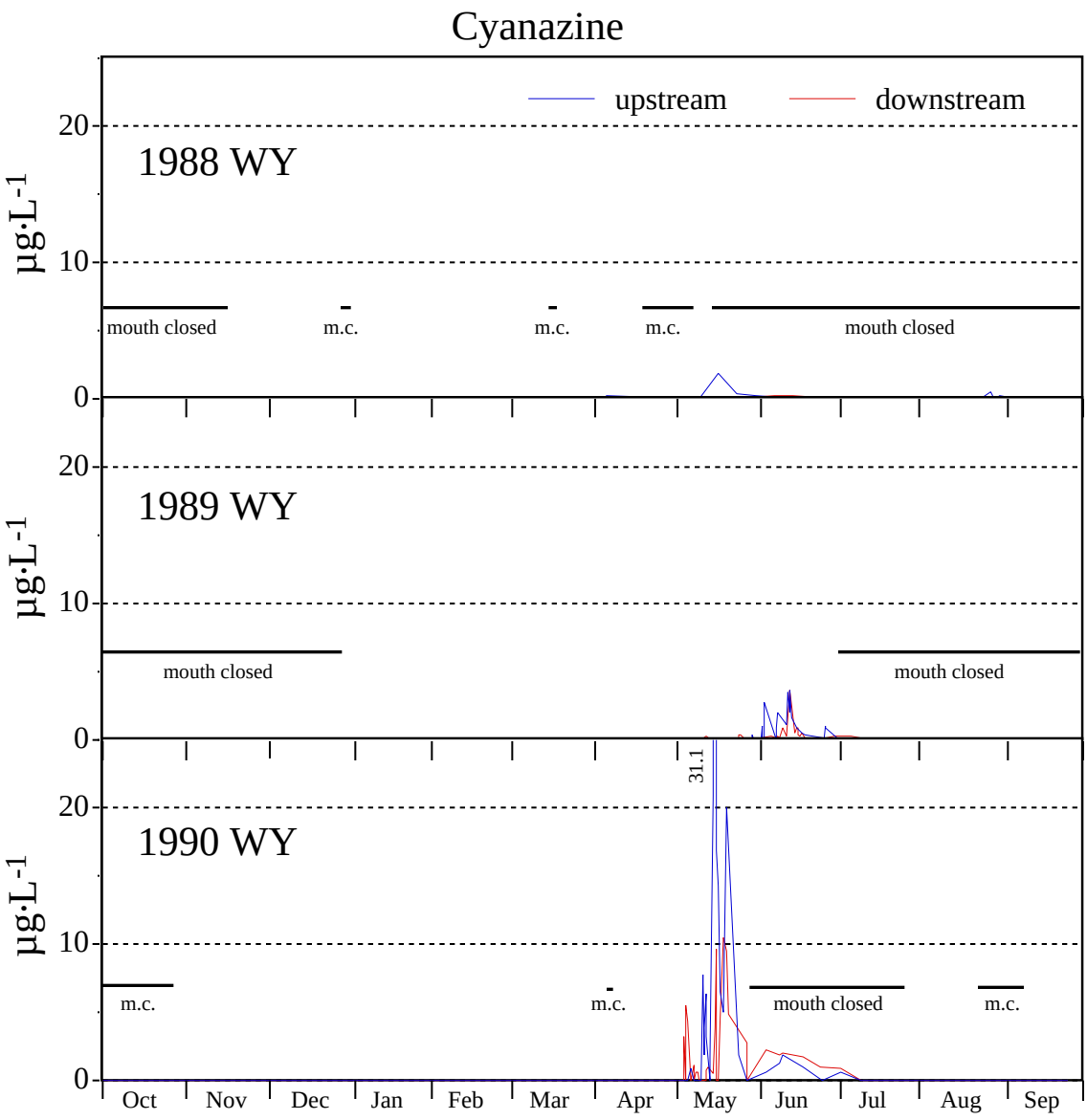

Figure 18. Concentrations of cyanazine at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

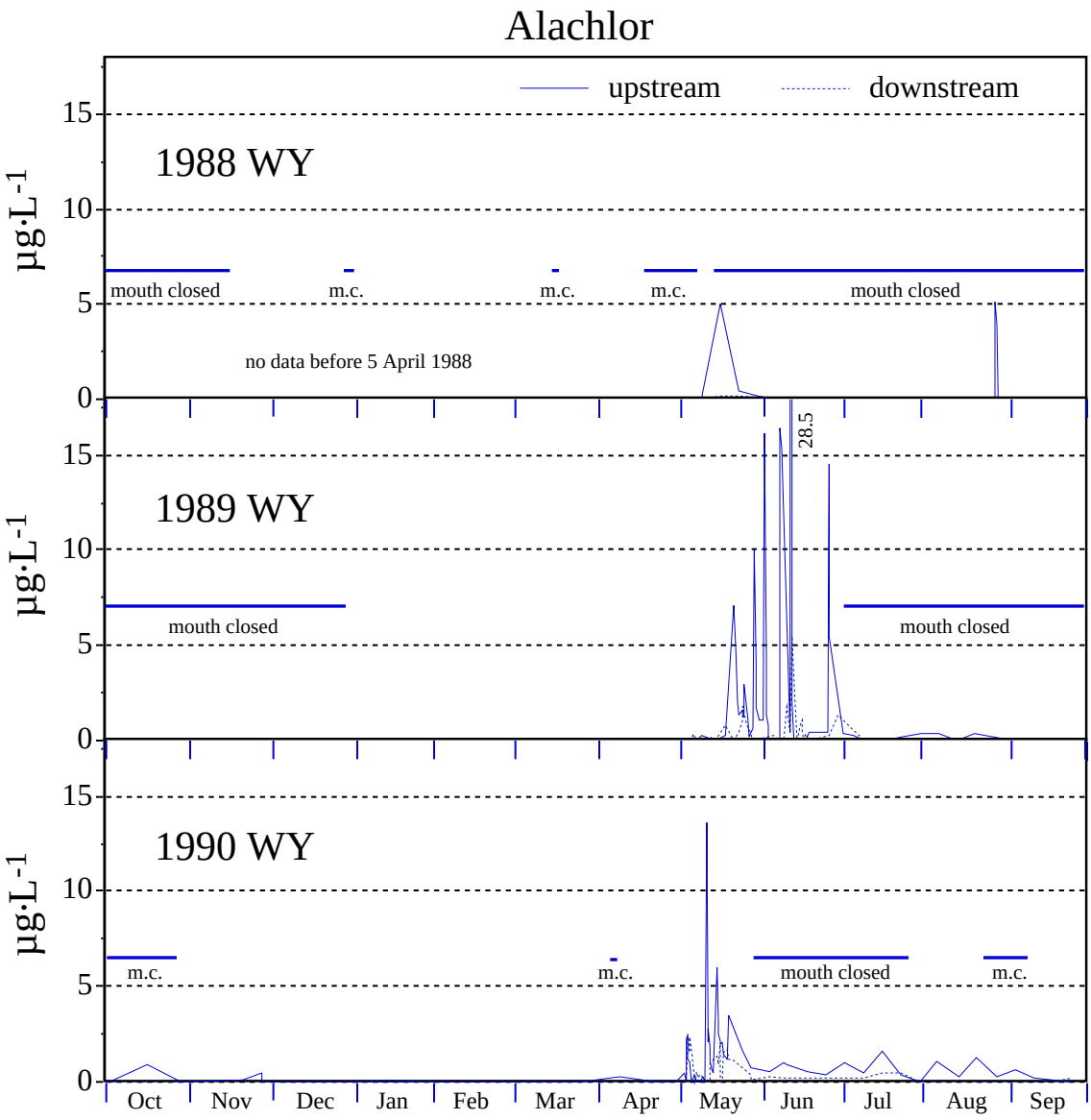

Figure 19. Concentrations of alachlor at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

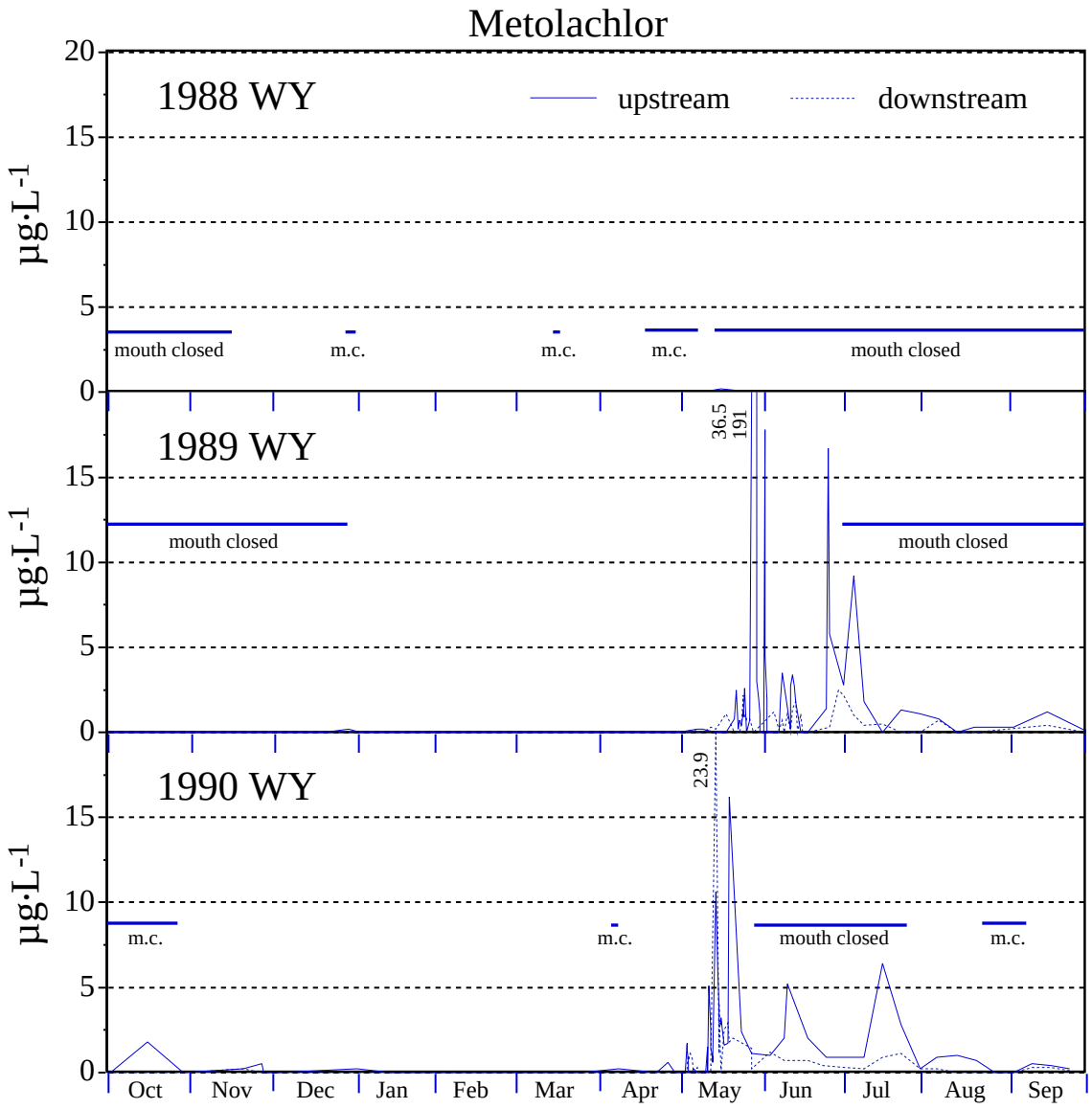

Figure 20. Concentrations of metolachlor at the upstream (Berlin Road) and downstream (US Hwy 6) stations in the 1988, 1989, and 1990 water years.

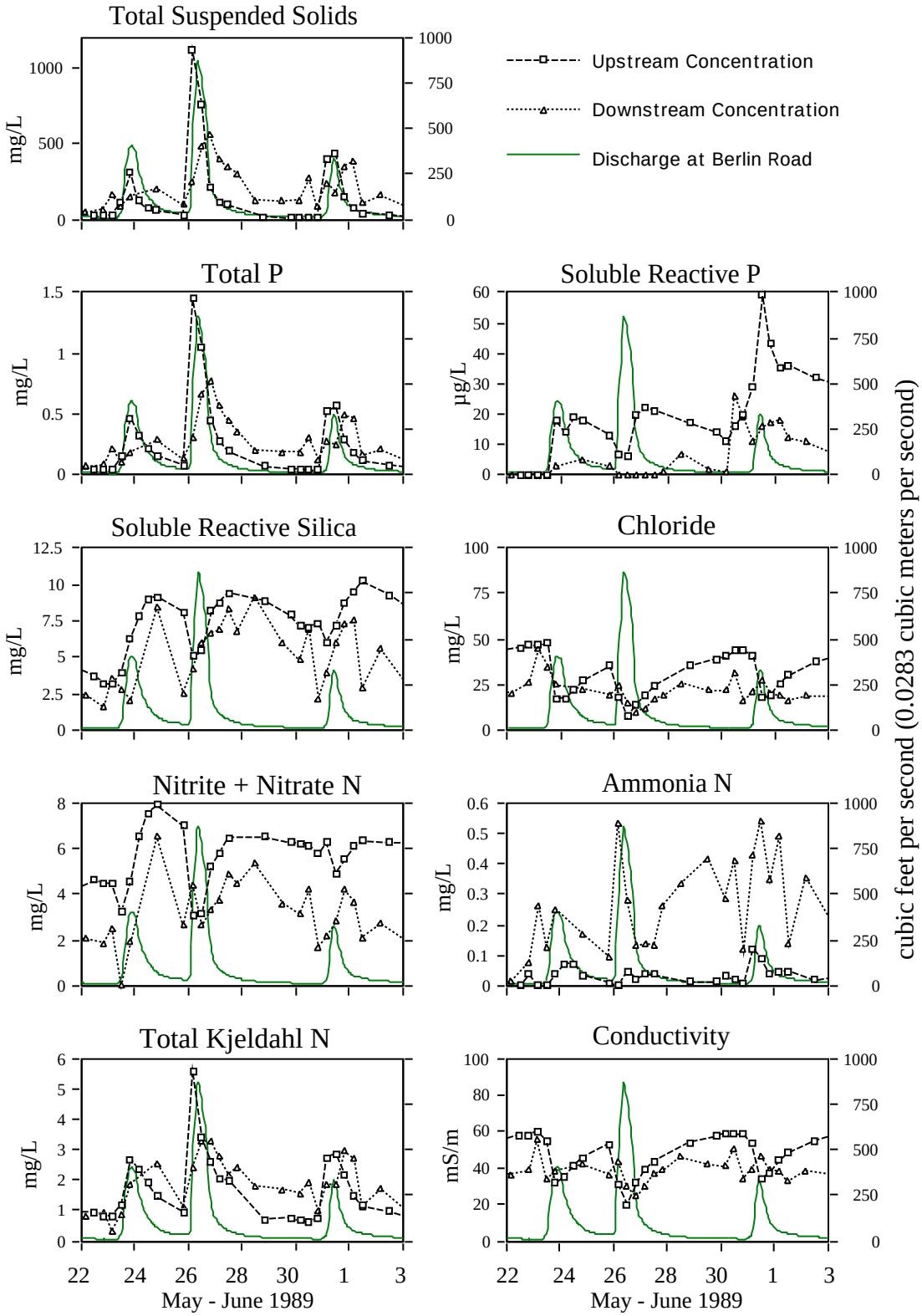

Figure 21. Conductivity and concentrations of total suspended solids and nutrients at the upstream (Berlin Road) and downstream (US Hwy 6) stations in response to three storm runoff events in late May and early June 1989.

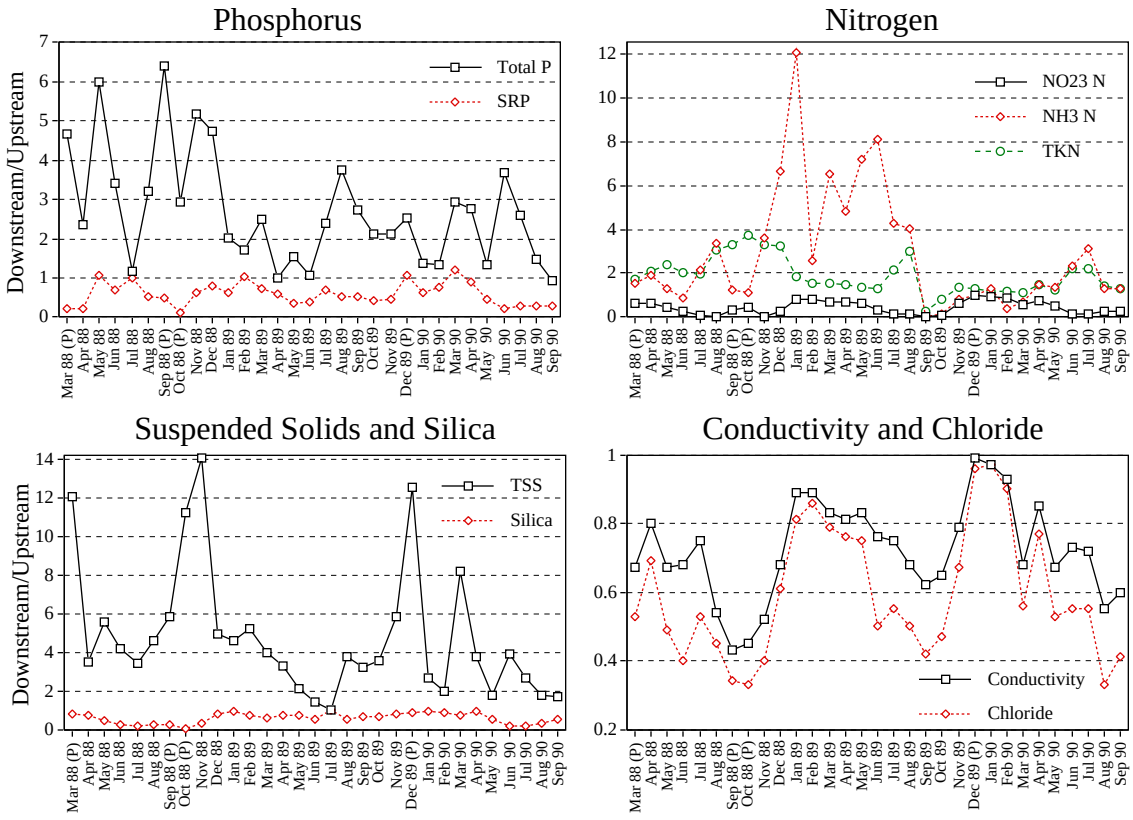

Figure 22. Downstream:upstream ratios of monthly time-weighted mean conductivity and concentrations of nutrients and total suspended solids. Months accompanied by (P) had only partial data.

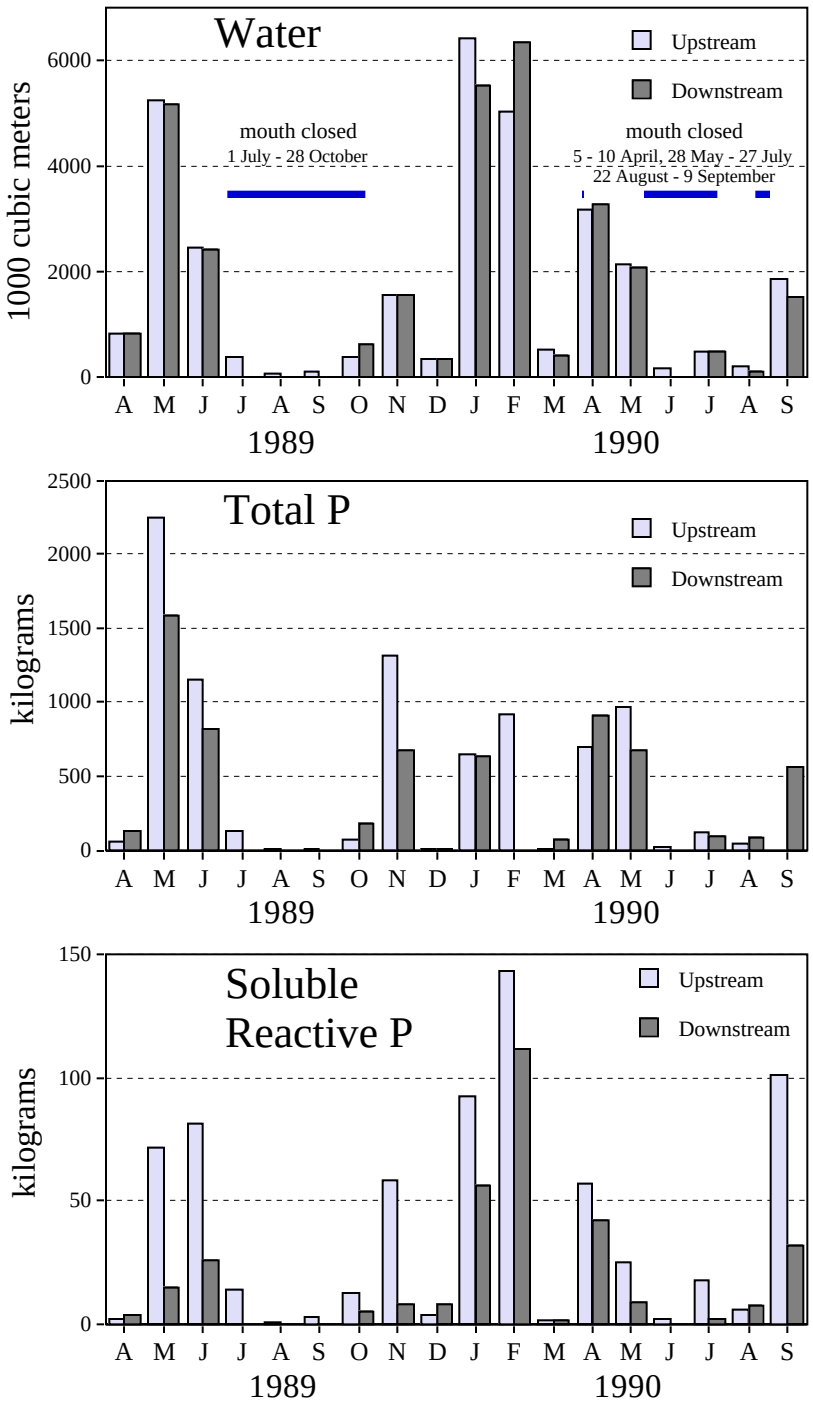

Figure 23. Upstream and downstream discharge and loads of total phosphorus and soluble reactive phosphorus at Old Woman Creek Wetland.

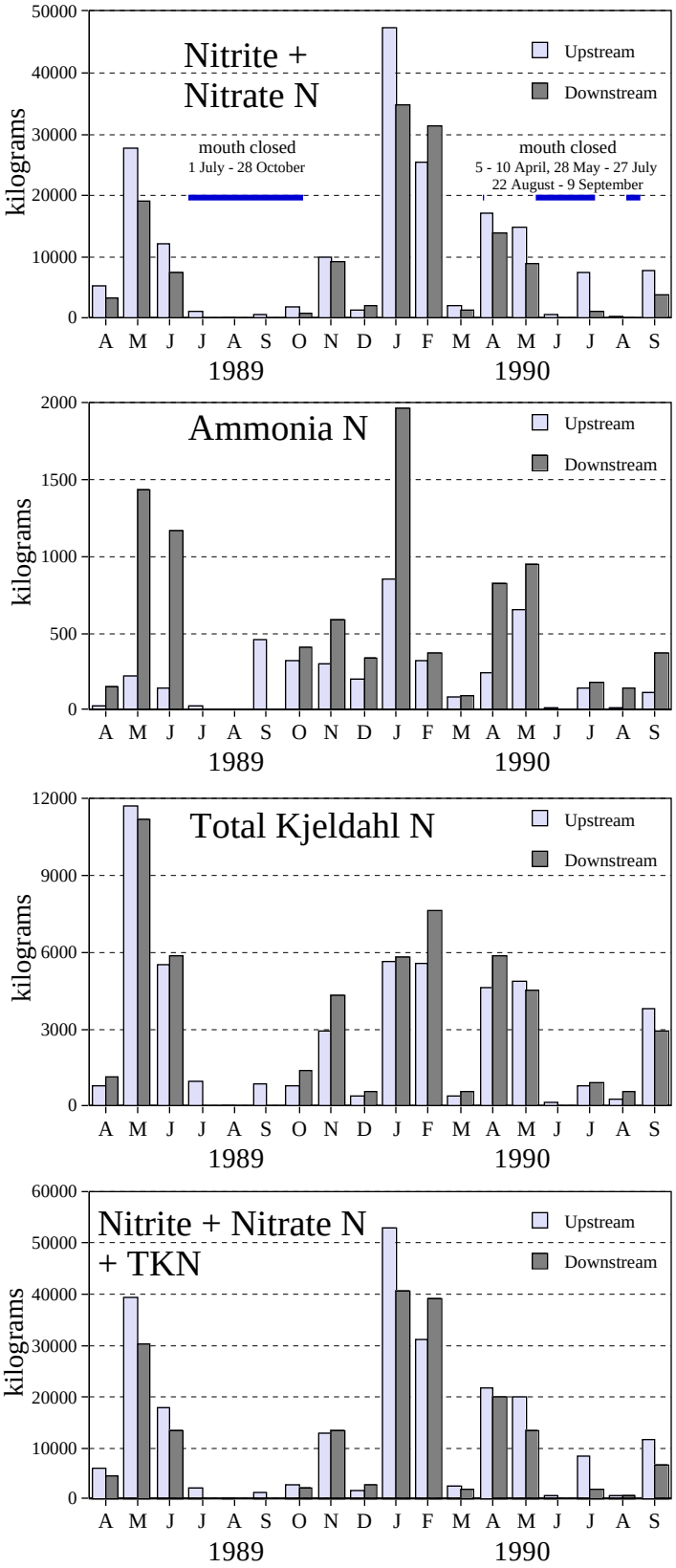

Figure 24. Upstream and downstream loads of nitrite+nitrate N, ammonia N, total Kjeldahl N (TKN), and the sum of nitrite+nitrate N and TKN.

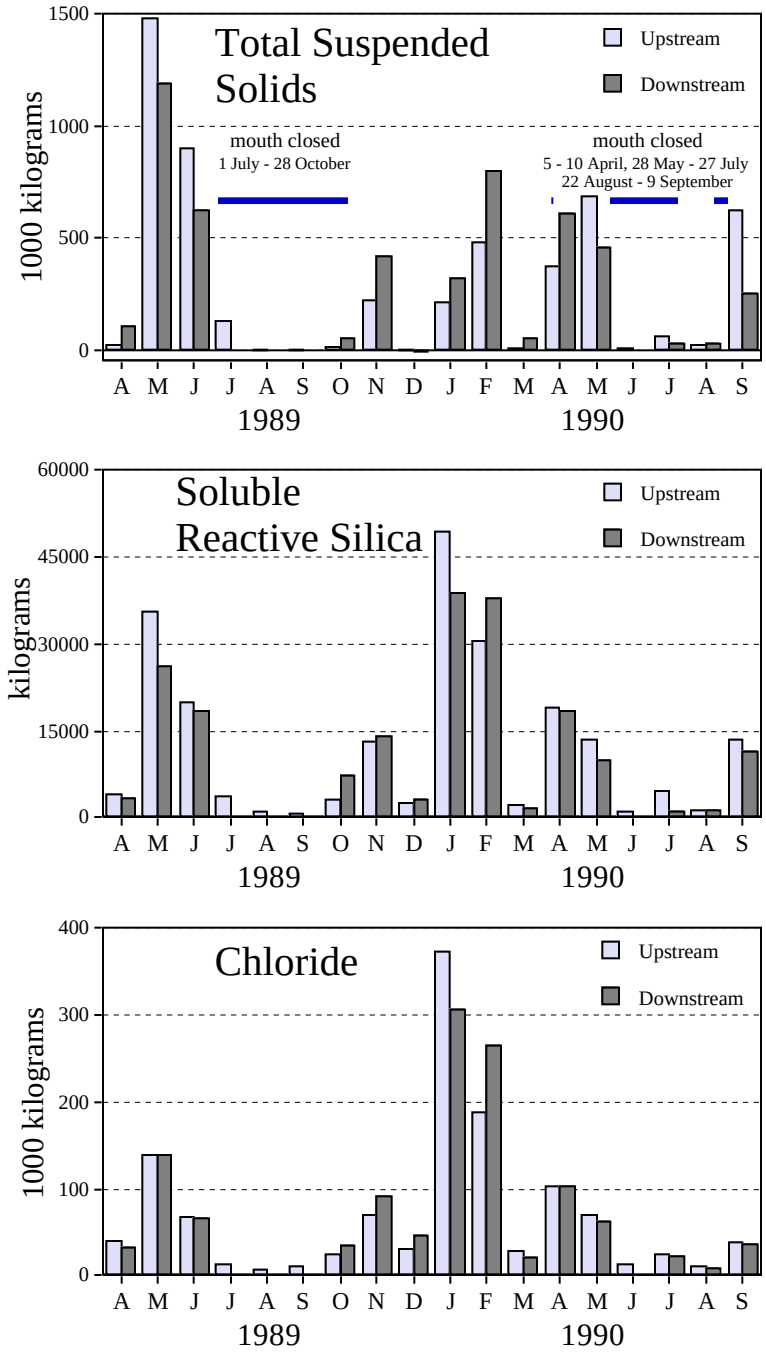

Figure 25. Upstream and downstream loads of total suspended solids, soluble reactive silica, and chloride.

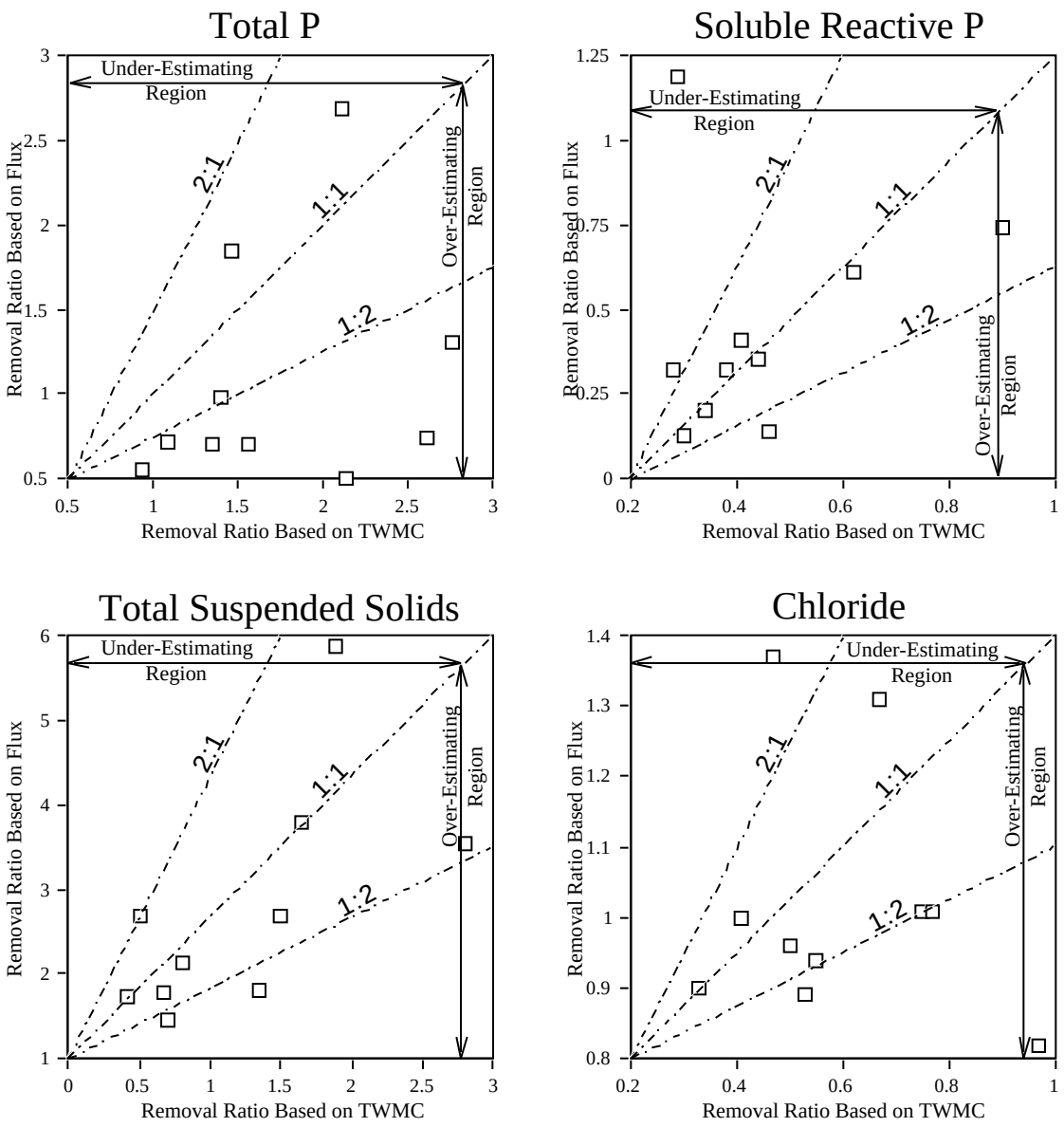

Figure 26. Comparison of monthly removal ratios of TP, SRP, TSS, and chloride based on fluxes with the ratios based on time-weighted mean concentrations.

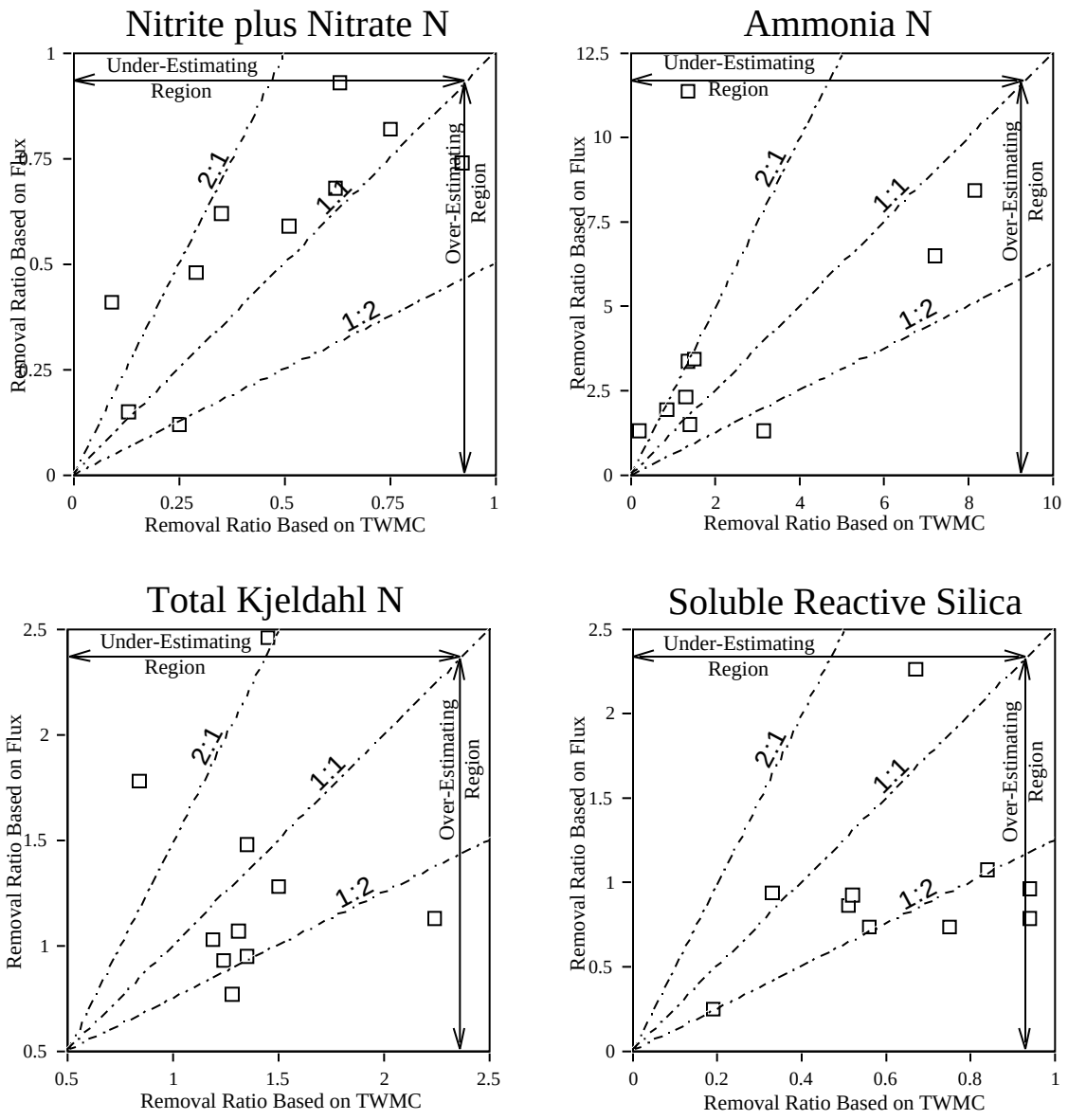

Figure 27. Comparison of monthly removal ratios of NO_{2+3}, NH_3, TKN, and soluble reactive silica based on fluxes with the ratios based on time-weighted mean concentrations.

Appendix A. **Rating table published by U.S. Geological Survey for Old Woman Creek at Berlin Road (USGS gaging station 04199155), Erie County, Ohio.**

Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs	Stage, feet	Discharge, cfs
2.03	0.000	2.38	0.263	2.73	1.957	3.08	8.140	3.43	22.32	3.78	40.28	4.13	61.46
2.04	0.000	2.39	0.281	2.74	2.050	3.09	8.448	3.44	22.77	3.79	40.84	4.14	62.06
2.05	0.000	2.40	0.300	2.75	2.146	3.10	8.764	3.45	23.23	3.80	41.41	4.15	62.66
2.06	0.000	2.41	0.323	2.76	2.246	3.11	9.091	3.46	23.70	3.81	41.99	4.16	63.26
2.07	0.000	2.42	0.347	2.77	2.350	3.12	9.428	3.47	24.17	3.82	42.57	4.17	63.87
2.08	0.000	2.43	0.372	2.78	2.458	3.13	9.774	3.48	24.66	3.83	43.16	4.18	64.49
2.09	0.000	2.44	0.399	2.79	2.569	3.14	10.13	3.49	25.14	3.84	43.75	4.19	65.10
2.10	0.000	2.45	0.428	2.80	2.685	3.15	10.50	3.50	25.64	3.85	44.35	4.20	65.72
2.11	0.001	2.46	0.459	2.81	2.805	3.16	10.85	3.51	26.14	3.86	44.95	4.21	66.34
2.12	0.001	2.47	0.491	2.82	2.930	3.17	11.22	3.52	26.65	3.87	45.56	4.22	66.97
2.13	0.001	2.48	0.525	2.83	3.059	3.18	11.59	3.53	27.17	3.88	46.17	4.23	67.60
2.14	0.001	2.49	0.562	2.84	3.193	3.19	11.97	3.54	27.69	3.89	46.79	4.24	68.23
2.15	0.001	2.50	0.600	2.85	3.331	3.20	12.37	3.55	28.23	3.90	47.42	4.25	68.87
2.16	0.001	2.51	0.635	2.86	3.474	3.21	12.77	3.56	28.76	3.91	48.05	4.26	69.51
2.17	0.001	2.52	0.672	2.87	3.623	3.22	13.19	3.57	29.31	3.92	48.69	4.27	70.16
2.18	0.001	2.53	0.710	2.88	3.777	3.23	13.61	3.58	29.87	3.93	49.33	4.28	70.81
2.19	0.001	2.54	0.751	2.89	3.936	3.24	14.05	3.59	30.43	3.94	49.98	4.29	71.46
2.20	0.001	2.55	0.793	2.90	4.100	3.25	14.50	3.60	31.00	3.95	50.64	4.30	72.11
2.21	0.002	2.56	0.837	2.91	4.264	3.26	14.88	3.61	31.47	3.96	51.30	4.31	72.77
2.22	0.003	2.57	0.883	2.92	4.434	3.27	15.26	3.62	31.95	3.97	51.96	4.32	73.44
2.23	0.005	2.58	0.931	2.93	4.609	3.28	15.65	3.63	32.43	3.98	52.64	4.33	74.10
2.24	0.008	2.59	0.982	2.94	4.790	3.29	16.05	3.64	32.92	3.99	53.32	4.34	74.77
2.25	0.013	2.60	1.034	2.95	4.976	3.30	16.46	3.65	33.41	4.00	54.00	4.35	75.45
2.26	0.022	2.61	1.089	2.96	5.169	3.31	16.88	3.66	33.91	4.01	54.55	4.36	76.12
2.27	0.036	2.62	1.146	2.97	5.367	3.32	17.30	3.67	34.41	4.02	55.11	4.37	76.81
2.28	0.058	2.63	1.206	2.98	5.572	3.33	17.73	3.68	34.92	4.03	55.67	4.38	77.49
2.29	0.094	2.64	1.268	2.99	5.783	3.34	18.17	3.69	35.43	4.04	56.23	4.39	78.18
2.30	0.150	2.65	1.333	3.00	6.000	3.35	18.62	3.70	35.95	4.05	56.80	4.40	78.87
2.31	0.161	2.66	1.401	3.01	6.239	3.36	19.08	3.71	36.47	4.06	57.37	4.41	79.57
2.32	0.173	2.67	1.471	3.02	6.485	3.37	19.55	3.72	37.00	4.07	57.94	4.42	80.27
2.33	0.186	2.68	1.544	3.03	6.740	3.38	20.02	3.73	37.53	4.08	58.52	4.43	80.97
2.34	0.200	2.69	1.621	3.04	7.003	3.39	20.51	3.74	38.07	4.09	59.10	4.44	81.68
2.35	0.214	2.70	1.700	3.05	7.274	3.40	21.00	3.75	38.61	4.10	59.69	4.45	82.39
2.36	0.230	2.71	1.783	3.06	7.554	3.41	21.43	3.76	39.16	4.11	60.27	4.46	83.10
2.37	0.246	2.72	1.868	3.07	7.843	3.42	21.87	3.77	39.72	4.12	60.86	4.47	83.82
4.48	84.54	4.83	107.7	5.18	133.7	5.53	162.4	5.88	191.8	6.23	223.7	6.58	258.1
4.49	85.27	4.84	108.4	5.19	134.4	5.54	163.2	5.89	192.7	6.24	224.7	6.59	259.1
4.50	86.00	4.85	109.1	5.20	135.2	5.55	164.0	5.90	193.6	6.25	225.6	6.60	260.1
4.51	86.62	4.86	109.8	5.21	136.0	5.56	164.8	5.91	194.5	6.26	226.6	6.61	261.1
4.52	87.24	4.87	110.5	5.22	136.8	5.57	165.6	5.92	195.4	6.27	227.5	6.62	262.1
4.53	87.87	4.88	111.2	5.23	137.6	5.58	166.5	5.93	196.2	6.28	228.5	6.63	263.2
4.54	88.49	4.89	112.0	5.24	138.4	5.59	167.3	5.94	197.1	6.29	229.4	6.64	264.2
4.55	89.12	4.90	112.7	5.25	139.2	5.60	168.1	5.95	198.0	6.30	230.4	6.65	265.2
4.56	89.75	4.91	113.4	5.26	140.0	5.61	168.9	5.96	198.9	6.31	231.4	6.66	266.3
4.57	90.39	4.92	114.1	5.27	140.8	5.62	169.7	5.97	199.8	6.32	232.3	6.67	267.3
4.58	91.03	4.93	114.8	5.28	141.6	5.63	170.6	5.98	200.7	6.33	233.3	6.68	268.3
4.59	91.66	4.94	115.5	5.29	142.4	5.64	171.4	5.99	201.6	6.34	234.3	6.69	269.4
4.60	92.31	4.95	116.3	5.30	143.2	5.65	172.2	6.00	202.5	6.35	235.2	6.70	270.4
4.61	92.95	4.96	117.0	5.31	144.0	5.66	173.1	6.01	203.4	6.36	236.2	6.71	271.4
4.62	93.60	4.97	117.7	5.32	144.9	5.67	173.9	6.02	204.3	6.37	237.2	6.72	272.5
4.63	94.24	4.98	118.5	5.33	145.7	5.68	174.7	6.03	205.2	6.38	238.1	6.73	273.5
4.64	94.90	4.99	119.2	5.34	146.5	5.69	175.6	6.04	206.1	6.39	239.1	6.74	274.6
4.65	95.55	5.00	119.9	5.35	147.3	5.70	176.4	6.05	207.0	6.40	240.1	6.75	275.6
4.66	96.20	5.01	120.7	5.36	148.2	5.71	177.2	6.06	207.9	6.41	241.1	6.76	276.7
4.67	96.86	5.02	121.4	5.37	149.0	5.72	178.1	6.07	208.8	6.42	242.1	6.77	277.7
4.68	97.52	5.03	122.2	5.38	149.8	5.73	178.9	6.08	209.8	6.43	243.0	6.78	278.8
4.69	98.19	5.04	122.9	5.39	150.7	5.74	179.8	6.09	210.7	6.44	244.0	6.79	279.8
4.70	98.85	5.05	123.7	5.40	151.5	5.75	180.6	6.10	211.6	6.45	245.0	6.80	280.9
4.71	99.52	5.06	124.4	5.41	152.3	5.76	181.5	6.11	212.5	6.46	246.0	6.81	282.0
4.72	100.2	5.07	125.2	5.42	153.2	5.77	182.3	6.12	213.4	6.47	247.0	6.82	283.0
4.73	100.9	5.08	125.9	5.43	154.0	5.78	183.2	6.13	214.4	6.48	248.0	6.83	284.1
4.74	101.5	5.09	126.7	5.44	154.9	5.79	184.0	6.14	215.3	6.49	249.0	6.84	285.2
4.75	102.2	5.10	127.5	5.45	155.7	5.80	184.9	6.15	216.2	6.50	250.0	6.85	286.2
4.76	102.9	5.11	128.2	5.46	156.6	5.81	185.8	6.16	217.2	6.51	251.0	6.86	287.3
4.77	103.6	5.12	129.0	5.47	157.4	5.82	186.6	6.17	218.1	6.52	252.0	6.87	288.4
4.78	104.3	5.13	129.8	5.48	158.3	5.83	187.5	6.18	219.0	6.53	253.0	6.88	289.4
4.79	104.9	5.14	130.5	5.49	159.1	5.84	188.4	6.19	220.0	6.54	254.0	6.89	290.5
4.80	105.6	5.15	131.3	5.50	160.0	5.85	189.2	6.20	220.9	6.55	255.0	6.90	291.6
4.81	106.3	5.16	132.1	5.51	160.8	5.86	190.1	6.21	221.8	6.56	256.0	6.91	292.7
4.82	107.0	5.17	132.9	5.52	161.6	5.87	191.0	6.22	222.8	6.57	257.0	6.92	293.8

Appendix A. Continued.

6.93	294.8	7.28	334.1	7.63	374.8	7.98	416.0	8.33	459.2	8.68	504.4	9.03	551.6
6.94	295.9	7.29	335.2	7.64	375.9	7.99	417.2	8.34	460.5	8.69	505.8	9.04	553.0
6.95	297.0	7.30	336.4	7.65	377.1	8.00	418.4	8.35	461.8	8.70	507.1	9.05	554.4
6.96	298.1	7.31	337.6	7.66	378.2	8.01	419.6	8.36	463.0	8.71	508.4	9.06	555.8
6.97	299.2	7.32	338.7	7.67	379.4	8.02	420.8	8.37	464.3	8.72	509.7	9.07	557.1
6.98	300.3	7.33	339.9	7.68	380.6	8.03	422.1	8.38	465.6	8.73	511.1	9.08	558.5
6.99	301.4	7.34	341.1	7.69	381.7	8.04	423.3	8.39	466.8	8.74	512.4	9.09	559.9
7.00	302.5	7.35	342.2	7.70	382.9	8.05	424.5	8.40	468.1	8.75	513.7	9.10	561.3
7.01	303.6	7.36	343.4	7.71	384.0	8.06	425.7	8.41	469.4	8.76	515.0	9.11	562.7
7.02	304.7	7.37	344.6	7.72	385.2	8.07	426.9	8.42	470.7	8.77	516.4	9.12	564.1
7.03	305.8	7.38	345.7	7.73	386.4	8.08	428.2	8.43	471.9	8.78	517.7	9.13	565.5
7.04	306.9	7.39	346.9	7.74	387.5	8.09	429.4	8.44	473.2	8.79	519.1	9.14	566.9
7.05	308.0	7.40	348.1	7.75	388.7	8.10	430.6	8.45	474.5	8.80	520.4	9.15	568.3
7.06	309.1	7.41	349.3	7.76	389.9	8.11	431.8	8.46	475.8	8.81	521.7	9.16	569.7
7.07	310.2	7.42	350.5	7.77	391.0	8.12	433.1	8.47	477.1	8.82	523.1	9.17	571.0
7.08	311.4	7.43	351.6	7.78	392.2	8.13	434.3	8.48	478.4	8.83	524.4	9.18	572.4
7.09	312.5	7.44	352.8	7.79	393.4	8.14	435.5	8.49	479.6	8.84	525.8	9.19	573.8
7.10	313.6	7.45	354.0	7.80	394.6	8.15	436.7	8.50	480.9	8.85	527.1	9.20	575.3
7.11	314.7	7.46	355.2	7.81	395.7	8.16	438.0	8.51	482.2	8.86	528.5	9.21	576.7
7.12	315.8	7.47	356.4	7.82	396.9	8.17	439.2	8.52	483.5	8.87	529.8	9.22	578.1
7.13	317.0	7.48	357.6	7.83	398.1	8.18	440.5	8.53	484.8	8.88	531.2	9.23	579.5
7.14	318.1	7.49	358.8	7.84	399.3	8.19	441.7	8.54	486.1	8.89	532.5	9.24	580.9
7.15	319.2	7.50	360.0	7.85	400.5	8.20	442.9	8.55	487.4	8.90	533.9	9.25	582.3
7.16	320.4	7.51	361.1	7.86	401.7	8.21	444.2	8.56	488.7	8.91	535.2	9.26	583.7
7.17	321.5	7.52	362.3	7.87	402.8	8.22	445.4	8.57	490.0	8.92	536.6	9.27	585.1
7.18	322.6	7.53	363.4	7.88	404.0	8.23	446.7	8.58	491.3	8.93	537.9	9.28	586.5
7.19	323.8	7.54	364.5	7.89	405.2	8.24	447.9	8.59	492.6	8.94	539.3	9.29	587.9
7.20	324.9	7.55	365.7	7.90	406.4	8.25	449.2	8.60	493.9	8.95	540.7	9.30	589.4
7.21	326.0	7.56	366.8	7.91	407.6	8.26	450.4	8.61	495.2	8.96	542.0	9.31	590.8
7.22	327.2	7.57	367.9	7.92	408.8	8.27	451.7	8.62	496.5	8.97	543.4	9.32	592.2
7.23	328.3	7.58	369.1	7.93	410.0	8.28	452.9	8.63	497.9	8.98	544.8	9.33	593.6
7.24	329.5	7.59	370.2	7.94	411.2	8.29	454.2	8.64	499.2	8.99	546.1	9.34	595.1
7.25	330.6	7.60	371.4	7.95	412.4	8.30	455.4	8.65	500.5	9.00	547.5	9.35	596.5
7.26	331.8	7.61	372.5	7.96	413.6	8.31	456.7	8.66	501.8	9.01	548.9	9.36	597.9
7.27	332.9	7.62	373.6	7.97	414.8	8.32	458.0	8.67	503.1	9.02	550.2	9.37	599.3
9.38	600.8	9.73	651.9	10.08	705.0	10.43	759.9	10.78	816.9	11.13	875.7		
9.39	602.2	9.74	653.4	10.09	706.5	10.44	761.5	10.79	818.5				
9.40	603.6	9.75	654.9	10.10	708.0	10.45	763.1	10.80	820.2				
9.41	605.1	9.76	656.4	10.11	709.6	10.46	764.8	10.81	821.8				
9.42	606.5	9.77	657.9	10.12	711.1	10.47	766.4	10.82	823.5				
9.43	608.0	9.78	659.4	10.13	712.7	10.48	768.0	10.83	825.2				
9.44	609.4	9.79	660.8	10.14	714.2	10.49	769.6	10.84	826.8				
9.45	610.8	9.80	662.3	10.15	715.8	10.50	771.2	10.85	828.5				
9.46	612.3	9.81	663.8	10.16	717.4	10.51	772.8	10.86	830.2				
9.47	613.7	9.82	665.3	10.17	718.9	10.52	774.4	10.87	831.8				
9.48	615.2	9.83	666.9	10.18	720.5	10.53	776.0	10.88	833.5				
9.49	616.6	9.84	668.4	10.19	722.0	10.54	777.6	10.89	835.2				
9.50	618.1	9.85	669.9	10.20	723.6	10.55	779.2	10.90	836.8				
9.51	619.5	9.86	671.4	10.21	725.2	10.56	780.9	10.91	838.5				
9.52	621.0	9.87	672.9	10.22	726.7	10.57	782.5	10.92	840.2				
9.53	622.4	9.88	674.4	10.23	728.3	10.58	784.1	10.93	841.9				
9.54	623.9	9.89	675.9	10.24	729.9	10.59	785.7	10.94	843.5				
9.55	625.4	9.90	677.4	10.25	731.4	10.60	787.4	10.95	845.2				
9.56	626.8	9.91	678.9	10.26	733.0	10.61	789.0	10.96	846.9				
9.57	628.3	9.92	680.5	10.27	734.6	10.62	790.6	10.97	848.6				
9.58	629.7	9.93	682.0	10.28	736.1	10.63	792.2	10.98	850.3				
9.59	631.2	9.94	683.5	10.29	737.7	10.64	793.9	10.99	851.9				
9.60	632.7	9.95	685.0	10.30	739.3	10.65	795.5	11.00	853.6				
9.61	634.1	9.96	686.5	10.31	740.9	10.66	797.1	11.01	855.3				
9.62	635.6	9.97	688.1	10.32	742.5	10.67	798.8	11.02	857.0				
9.63	637.1	9.98	689.6	10.33	744.0	10.68	800.4	11.03	858.7				
9.64	638.6	9.99	691.1	10.34	745.6	10.69	802.1	11.04	860.4				
9.65	640.0	10.00	692.7	10.35	747.2	10.70	803.7	11.05	862.1				
9.66	641.5	10.01	694.2	10.36	748.8	10.71	805.3	11.06	863.8				
9.67	643.0	10.02	695.7	10.37	750.4	10.72	807.0	11.07	865.5				
9.68	644.5	10.03	697.3	10.38	752.0	10.73	808.6	11.08	867.2				
9.69	645.9	10.04	698.8	10.39	753.6	10.74	810.3	11.09	868.9				
9.70	647.4	10.05	700.3	10.40	455.2	10.75	811.9	11.10	870.6				
9.71	648.9	10.06	701.9	10.41	756.8	10.76	813.6	11.11	872.3				
9.72	650.4	10.07	703.4	10.42	758.3	10.77	815.2	11.12	874.0				

Appendix B. Hourly stages of Old Woman Creek at the Berlin Road sampling station (USGS gaging station 04199155) reported by the U.S. Geological Survey.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8710010100	2.78	2.76	2.76	2.76	2.78	2.78	2.78	2.78	2.80	2.78	2.80	2.80
8710011300	2.80	2.80	2.80	2.80	2.78	2.78	2.80	2.78	2.80	2.80	2.80	2.78
8710020100	2.78	2.78	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.78	2.78
8710021300	2.78	2.78	2.78	2.78	2.80	2.78	2.78	2.80	2.80	2.82	2.83	2.83
8710030100	2.82	2.82	2.82	2.85	2.89	2.89	2.89	2.89	2.90	2.90	2.90	2.90
8710031300	2.92	2.94	2.94	2.96	2.94	2.96	2.96	2.94	2.94	2.92	2.90	2.89
8710040100	2.89	2.89	2.87	2.87	2.85	2.87	2.87	2.85	2.85	2.85	2.85	2.85
8710041300	2.85	2.85	2.85	2.83	2.85	2.85	2.87	2.89	2.87	2.89	2.89	2.89
8710050100	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.85
8710051300	2.85	2.85	2.85	2.85	2.83	2.85	2.85	2.83	2.85	2.83	2.83	2.82
8710060100	2.83	2.82	2.82	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.85	2.83
8710061300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8710070100	2.83	2.85	2.83	2.83	2.83	2.83	2.85	2.85	2.85	2.85	2.85	2.85
8710071300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.87	2.89	2.87	2.85	2.83
8710080100	2.85	2.83	2.83	2.83	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85
8710081300	2.83	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85
8710090100	2.90	2.83	2.83	2.83	2.83	2.83	2.83	2.85	2.85	2.85	2.83	2.83
8710091300	2.85	2.85	2.85	2.85	2.83	2.85	2.85	2.87	2.85	2.85	2.87	2.85
8710100100	2.85	2.83	2.85	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8710101300	2.83	2.83	2.82	2.83	2.83	2.83	2.83	2.83	2.85	2.87	2.87	2.87
8710110100	2.89	2.87	2.90	2.90	2.90	2.94	2.92	2.92	2.92	2.94	2.94	2.94
8710111300	2.96	2.94	2.96	2.94	2.94	2.94	2.94	2.94	2.94	2.92	2.94	2.94
8710120100	2.94	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.90	2.90	2.90
8710121300	2.92	2.90	2.90	2.90	2.90	2.92	2.90	2.92	2.94	2.92	2.94	2.92
8710130100	2.92	2.92	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
8710131300	2.90	2.90	2.90	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.88
8710140100	2.90	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
8710141300	2.88	2.88	2.86	2.86	2.86	2.86	2.88	2.88	2.86	2.86	2.86	2.86
8710150100	2.86	2.86	2.86	2.86	2.84	2.84	2.86	2.86	2.86	2.84	2.84	2.84
8710151300	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8710160100	2.84	2.83	2.84	2.84	2.84	2.84	2.84	2.83	2.83	2.84	2.84	2.84
8710161300	2.84	2.84	2.83	2.83	2.83	2.83	2.84	2.83	2.83	2.83	2.83	2.83
8710170100	2.84	2.83	2.83	2.83	2.83	2.81	2.81	2.83	2.83	2.83	2.83	2.83
8710171300	2.83	2.83	2.83	2.83	2.83	2.84	2.84	2.83	2.83	2.84	2.84	2.83
8710180100	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8710181300	2.83	2.83	2.83	2.83	2.84	2.83	2.83	2.84	2.83	2.83	2.84	2.83
8710190100	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.81	2.83	2.83	2.83
8710191300	2.83	2.84	2.83	2.84	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8710200100	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8710201300	2.83	2.83	2.83	2.83	2.82	2.82	2.82	2.85	2.83	2.83	2.83	2.83
8710210100	2.83	2.82	2.83	2.83	2.82	2.80	2.80	2.80	2.82	2.82	2.80	2.80
8710211300	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82
8710220100	2.82	2.82	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
8710221300	2.80	2.80	2.82	2.82	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.80
8710230100	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.80	2.78	2.80	2.80
8710231300	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.82	2.80	2.80	2.80	2.80
8710240100	2.80	2.80	2.80	2.81	2.81	2.81	2.81	2.79	2.81	2.81	2.81	2.81
8710241300	2.81	2.81	2.79	2.81	2.83	2.84	2.84	2.86	2.86	2.90	2.97	2.93
8710250100	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.91
8710251300	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.88	2.90	2.90
8710260100	2.90	2.88	2.90	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8710261300	2.88	2.88	2.88	2.90	2.90	2.90	2.90	2.88	2.90	2.90	2.90	2.90
8710270100	2.90	2.90	2.90	2.90	2.90	2.91	2.91	2.91	2.95	2.95	2.97	2.97
8710271300	2.98	2.98	3.00	2.98	2.98	3.00	3.00	3.00	3.00	3.00	3.00	2.98
8710280100	2.98	2.98	2.97	2.98	2.97	2.97	2.97	2.97	3.00	3.00	3.00	3.00
8710281300	3.00	3.00	3.02	3.00	3.00	3.02	3.00	3.00	3.02	3.00	3.00	2.98
8710290100	2.98	3.00	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.97	2.95	2.97
8710291300	2.95	2.95	2.97	2.93	2.93	2.93	2.95	2.93	2.93	2.93	2.93	2.93
8710300100	2.91	2.91	2.91	2.91	2.93	2.91	2.93	2.93	2.91	2.91	2.90	2.90
8710301300	2.90	2.90	2.90	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.88
8710310100	2.90	2.88	2.88	2.90	2.88	2.88	2.88	2.88	2.86	2.88	2.88	2.87
8710311300	2.85	2.85	2.84	2.85	2.84	2.85	2.84	2.85	2.84	2.85	2.84	2.85
8711010100	2.85	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8711011300	2.84	2.84	2.82	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8711020100	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.82	2.82	2.84	2.84
8711021300	2.84	2.84	2.82	2.84	2.84	2.84	2.84	2.84	2.82	2.84	2.84	2.84
8711030100	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8711031300	2.85	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8711040100	2.84	2.84	2.82	2.82	2.82	2.82	2.82	2.84	2.84	2.82	2.82	2.84
8711041300	2.82	2.82	2.82	2.84	2.82	2.82	2.84	2.84	2.82	2.84	2.84	2.84
8711050100	2.82	2.84	2.84	2.82	2.84	2.84	2.82	2.84	2.82	2.82	2.82	2.82
8711051300	2.82	2.82	2.82	2.82	2.80	2.84	2.82	2.82	2.82	2.82	2.82	2.82
8711060100	2.82	2.82	2.80	2.80	2.82	2.82	2.82	2.80	2.80	2.82	2.82	2.80
8711061300	2.80	2.80	2.82	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.80	2.80
8711070100	2.80	2.78	2.78	2.78	2.80	2.80	2.80	2.80	2.80	2.78	2.80	2.78
8711071300	2.78	2.80	2.78	2.80	2.80	2.78	2.80	2.81	2.81	2.81	2.81	2.79
8711080100	2.79	2.79	2.81	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.81	2.79
8711081300	2.81	2.79	2.81	2.81	2.79	2.79	2.79	2.81	2.81	2.81	2.83	2.83
8711090100	2.83	2.83	2.83	2.83	2.86	2.86	2.88	2.86	2.86	2.86	2.86	2.86
8711091300	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.85	2.85	2.85	2.85	2.85
8711100100	2.85	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.85	2.85
8711101300	2.85	2.85	2.85	2.85	2.83	2.85	2.86	2.86	2.86	2.86	2.86	2.86
8711110100	2.86	2.86	2.86	2.86	2.85	2.85	2.85	2.85	2.85	2.83	2.85	2.83
8711111300	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.86	2.86	2.85	2.85	2.85
8711120100	2.85	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8711121300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8711130100	2.85	2.83	2.83	2.83	2.83	2.81	2.81	2.81	2.81	2.83	2.83	2.81
8711131300	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.81
8711140100	2.81	2.81	2.83	2.83	2.83	2.81	2.81	2.81	2.81	2.81	2.81	2.83
8711141300	2.81	2.81	2.83	2.81	2.83	2.83	2.81	2.83	2.83	2.83	2.81	2.83
8711150100	2.81	2.81	2.81	2.81	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82
8711151300	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.84	2.82	2.82	2.84
8711160100	2.82	2.80	2.80	2.80	2.82	2.80	2.82	2.80	2.82	2.80	2.82	2.82
8711161300	2.80	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.80	2.80
8711170100	2.82	2.80	2.82	2.80	2.82	2.80	2.82	2.82	2.82	2.80	2.82	2.82
8711171300	2.82	2.82	2.82	2.82	2.82	2.84	2.82	2.82	2.84	2.84	2.84	2.84
8711180100	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.82	2.82	2.82	2.82
8711181300	2.82	2.82	2.82	2.82	2.82	2.84	2.82	2.82	2.86	2.86	2.87	2.84
8711190100	2.84	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.80
8711191300	2.82	2.80	2.82	2.82	2.82	2.82	2.80	2.82	2.82	2.82	2.82	2.80
8711200100	2.82	2.82	2.80	2.80	2.80	2.80	2.82	2.82	2.82	2.82	2.82	2.82
8711201300	2.82	2.82	2.82	2.84	2.82	2.82	2.84	2.84	2.84	2.86	2.84	2.82
8711210100	2.86	2.84	2.84	2.82	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.82
8711211300	2.82	2.82	2.82	2.84	2.84	2.84	2.84	2.82	2.84	2.84	2.82	2.82

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8711220100	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
8711221300	2.81	2.81	2.81	2.83	2.83	2.83	2.81	2.83	2.85	2.83	2.85	2.83
8711230100	2.81	2.81	2.81	2.81	2.81	2.81	2.83	2.83	2.83	2.83	2.83	2.83
8711231300	2.81	2.83	2.83	2.83	2.83	2.83	2.85	2.85	2.88	2.83	2.83	2.83
8711240100	2.83	2.83	2.85	2.83	2.83	2.83	2.85	2.85	2.83	2.83	2.83	2.85
8711241300	2.83	2.85	2.85	2.85	2.85	2.83	2.87	2.85	2.85	2.85	2.85	2.85
8711250100	2.85	2.85	2.85	2.85	2.87	2.88	2.90	2.90	2.90	2.90	2.92	2.92
8711251300	2.92	2.94	2.95	2.95	2.95	3.04	3.04	3.08	3.09	3.13	3.11	3.11
8711260100	3.11	3.09	3.09	3.09	3.11	3.16	3.16	3.16	3.16	3.14	3.14	3.14
8711261300	3.14	3.14	3.13	3.13	3.11	3.11	3.13	3.11	3.09	3.09	3.09	3.08
8711270100	3.06	3.04	3.04	3.04	3.04	3.04	3.04	3.02	3.02	3.02	3.01	3.01
8711271300	2.99	3.01	3.01	2.99	2.99	3.01	2.99	2.99	3.01	2.99	2.99	2.99
8711280100	2.99	2.97	2.97	2.97	2.97	2.95	2.95	2.95	2.94	2.95	2.94	2.95
8711281300	2.95	2.95	2.94	2.94	2.95	2.95	2.94	2.94	2.94	2.97	2.95	2.95
8711290100	2.95	2.95	2.95	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97
8711291300	2.99	2.97	2.99	2.99	2.97	2.97	2.99	2.99	3.00	2.98	3.00	3.00
8711300100	3.00	2.98	2.98	2.98	2.98	3.00	3.00	3.00	3.00	3.00	3.00	2.98
8711301300	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.96	2.96
8712010100	2.96	2.96	2.96	2.96	2.98	2.98	2.98	2.98	2.96	2.98	2.98	2.98
8712011300	2.98	2.98	2.98	3.00	3.00	3.02	3.03	3.05	3.07	3.09	3.09	3.10
8712020100	3.10	3.12	3.14	3.14	3.14	3.14	3.15	3.17	3.17	3.17	3.19	3.17
8712021300	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17
8712030100	3.15	3.15	3.15	3.15	3.14	3.15	3.14	3.14	3.14	3.12	3.12	3.12
8712031300	3.17	3.14	3.16	3.16	3.18	3.18	3.21	3.23	3.24	3.28	3.30	3.31
8712040100	3.33	3.37	3.40	3.43	3.47	3.49	3.52	3.54	3.54	3.56	3.56	3.56
8712041300	3.56	3.56	3.56	3.56	3.56	3.56	3.57	3.57	3.56	3.56	3.54	3.54
8712050100	3.52	3.50	3.50	3.50	3.49	3.47	3.45	3.45	3.43	3.42	3.42	3.40
8712051300	3.38	3.37	3.37	3.35	3.35	3.33	3.33	3.33	3.31	3.31	3.30	3.30
8712060100	3.30	3.28	3.28	3.28	3.26	3.28	3.31	3.23	3.21	3.21	3.21	3.21
8712061300	3.19	3.18	3.19	3.19	3.18	3.18	3.19	3.19	3.21	3.23	3.23	3.21
8712070100	3.23	3.21	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.16	3.16	3.14
8712071300	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
8712080100	3.12	3.12	3.12	3.14	3.14	3.14	3.14	3.16	3.16	3.16	3.18	3.19
8712081300	3.19	3.23	3.30	3.37	3.45	3.54	3.62	3.68	3.73	3.75	3.78	3.78
8712090100	3.76	3.75	3.73	3.70	3.68	3.64	3.62	3.61	3.59	3.57	3.54	3.54
8712091300	3.52	3.50	3.50	3.50	3.49	3.43	3.43	3.42	3.40	3.38	3.38	3.37
8712100100	3.37	3.35	3.33	3.31	3.33	3.31	3.30	3.28	3.28	3.28	3.26	3.26
8712101300	3.24	3.24	3.24	3.23	3.23	3.23	3.21	3.23	3.21	3.19	3.21	3.19
8712110100	3.19	3.19	3.19	3.18	3.18	3.18	3.18	3.16	3.16	3.16	3.16	3.14
8712111300	3.14	3.14	3.14	3.14	3.12	3.14	3.14	3.16	3.18	3.19	3.21	3.23
8712120100	3.23	3.24	3.26	3.26	3.30	3.37	3.42	3.45	3.47	3.47	3.49	3.49
8712121300	3.45	3.45	3.43	3.42	3.40	3.38	3.40	3.38	3.37	3.35	3.35	3.33
8712130100	3.31	3.30	3.30	3.28	3.26	3.26	3.24	3.24	3.23	3.23	3.23	3.23
8712131300	3.21	3.21	3.21	3.19	3.19	3.19	3.19	3.18	3.18	3.16	3.16	3.16
8712140100	3.14	3.14	3.14	3.14	3.12	3.12	3.14	3.14	3.12	3.12	3.12	3.11
8712141300	3.11	3.11	3.11	3.11	3.09	3.11	3.11	3.12	3.11	3.11	3.11	3.11
8712150100	3.11	3.11	3.11	3.12	3.16	3.24	3.35	3.59	3.83	4.13	4.73	5.22
8712151300	5.53	5.67	5.62	5.56	5.46	5.29	5.15	4.99	4.85	4.73	4.63	4.53
8712160100	4.42	4.34	4.23	4.16	4.09	4.04	3.97	3.92	3.87	3.83	3.78	3.76
8712161300	3.71	3.68	3.64	3.62	3.61	3.59	3.56	3.54	3.52	3.50	3.50	3.49
8712170100	3.47	3.45	3.43	3.43	3.42	3.40	3.38	3.38	3.37	3.37	3.35	3.35
8712171300	3.33	3.33	3.33	3.31	3.31	3.30	3.30	3.30	3.28	3.28	3.26	3.26
8712180100	3.26	3.24	3.24	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.21	3.21

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8712181300	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.19	3.19	3.19
8712190100	3.19	3.21	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
8712191300	3.18	3.18	3.18	3.18	3.16	3.18	3.18	3.18	3.19	3.19	3.21	3.21
8712200100	3.23	3.26	3.28	3.35	3.40	3.50	3.62	3.80	3.97	4.13	4.23	4.30
8712201300	4.34	4.34	4.34	4.32	4.27	4.23	4.20	4.16	4.13	4.08	4.04	3.99
8712210100	3.94	3.89	3.85	3.83	3.80	3.76	3.73	3.70	3.68	3.66	3.62	3.61
8712211300	3.57	3.54	3.52	3.50	3.50	3.47	3.45	3.43	3.43	3.42	3.40	3.40
8712220100	3.38	3.38	3.37	3.37	3.35	3.35	3.35	3.33	3.33	3.31	3.31	3.30
8712221300	3.30	3.28	3.28	3.28	3.28	3.26	3.28	3.28	3.26	3.26	3.26	3.24
8712230100	3.24	3.24	3.23	3.23	3.21	3.21	3.23	3.23	3.21	3.19	3.19	3.19
8712231300	3.19	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.16	3.16
8712240100	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
8712241300	3.14	3.14	3.16	3.14	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.14
8712250100	3.14	3.16	3.16	3.16	3.16	3.16	3.16	3.18	3.16	3.16	3.16	3.18
8712251300	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.19	3.18	3.18	3.19	3.19
8712260100	3.21	3.21	3.19	3.19	3.19	3.19	3.19	3.19	3.18	3.18	3.18	3.18
8712261300	3.18	3.18	3.18	3.18	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
8712270100	3.14	3.16	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.12	3.14
8712271300	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.11	3.11	3.12	3.12	3.12
8712280100	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.09	3.11	3.11	3.11	3.12
8712281300	3.14	3.16	3.18	3.21	3.24	3.28	3.35	3.40	3.45	3.49	3.54	3.62
8712290100	3.71	3.75	3.76	3.76	3.75	3.73	3.71	3.68	3.66	3.61	3.59	3.56
8712291300	3.52	3.50	3.49	3.47	3.43	3.43	3.42	3.38	3.31	3.30	3.30	3.28
8712300100	3.28	3.24	3.21	3.26	3.26	3.28	3.28	3.30	3.31	3.35	3.24	3.24
8712301300	3.33	3.43	3.42	3.42	3.40	3.35	3.33	3.30	3.26	3.26	3.24	3.23
8712310100	3.23	3.19	3.19	3.21	3.21	3.23	3.23	3.24	3.26	3.28	3.28	3.28
8712311300	3.24	3.26	3.26	3.26	3.28	3.28	3.31	3.35	3.38	3.40	3.45	3.61
8801010100	3.66	3.71	3.75	3.76	3.75	3.71	3.87	3.97	4.02	4.01	3.97	3.92
8801011300	3.61	3.56	3.56	3.54	3.54	3.49	3.54	3.61	3.59	3.56	3.49	3.38
8801020100	3.33	3.33	3.35	3.35	3.38	3.40	3.40	3.40	3.40	3.42	3.40	3.35
8801021300	3.21	3.24	3.28	3.28	3.26	3.26	3.30	3.28	3.26	3.23	3.21	3.19
8801030100	3.18	3.18	3.16	3.14	3.14	3.12	3.12	3.12	3.11	3.11	3.11	3.18
8801031300	3.11	3.11	3.12	3.12	3.12	3.11	3.12	3.11	3.11	3.12	3.11	3.11
8801040100	3.11	3.11	3.11	3.09	3.09	3.09	3.07	3.07	3.09	3.09	3.09	3.07
8801041300	3.07	3.07	3.07	3.07	3.07	3.05	3.04	3.05	3.04	3.05	3.05	3.04
8801050100	3.05	3.05	3.05	3.04	3.02	3.04	3.00	3.00	3.02	2.98	2.98	2.98
8801051300	2.98	3.00	3.04	3.02	3.02	3.02	3.02	3.02	3.00	3.02	3.00	3.00
8801060100	3.00	2.98	2.98	2.98	2.98	3.00	3.00	2.98	2.98	2.98	3.00	2.98
8801061300	2.98	2.97	2.98	2.98	3.00	3.00	3.02	2.98	3.00	2.98	2.98	2.97
8801070100	2.97	2.98	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.02	3.04	3.04
8801071300	2.98	3.00	2.98	3.02	3.02	3.04	3.04	3.02	3.02	3.02	3.02	3.02
8801080100	3.05	3.05	3.04	3.05	3.02	3.05	3.05	3.05	3.05	3.05	3.04	3.02
8801081300	3.05	3.04	3.02	3.00	3.02	3.00	3.04	3.02	3.02	3.00	3.02	3.04
8801090100	3.02	3.00	3.02	3.02	3.00	3.00	3.00	3.00	3.00	3.02	3.00	2.97
8801091300	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.97	2.98	2.97	2.97	2.97
8801100100	2.97	2.95	2.97	2.97	2.95	2.95	2.95	2.95	2.95	2.93	2.93	2.93
8801101300	3.00	3.09	2.93	2.93	2.91	2.93	2.93	2.91	2.91	2.91	2.91	2.90
8801110100	2.90	2.91	2.91	2.90	2.90	2.90	2.90	2.91	2.90	2.90	2.88	2.88
8801111300	2.88	2.90	2.90	2.90	2.90	2.88	2.91	2.90	2.90	2.90	2.90	2.91
8801120100	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.91	2.91	2.91	2.91	2.91
8801121300	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.93	2.95	2.95
8801130100	2.95	2.95	2.95	2.95	2.95	2.93	2.95	2.93	2.93	2.93	2.93	2.95
8801131300	2.93	2.95	2.95	2.97	2.97	2.95	2.95	2.95	2.95	2.93	2.93	2.93

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8801140100	2.91	2.91	2.90	2.90	2.91	2.91	2.91	2.90	2.90	2.90	2.88	2.90
8801141300	2.90	2.88	2.88	2.90	2.88	2.86	2.88	2.88	2.86	2.86	2.88	2.88
8801150100	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
8801151300	2.88	2.88	2.88	2.86	2.86	2.88	2.88	2.86	2.88	2.88	2.88	2.88
8801160100	2.88	2.88	2.88	2.88	2.88	2.86	2.86	2.86	2.86	2.86	2.88	2.88
8801161300	2.88	2.88	2.90	2.90	2.90	2.88	2.90	2.88	2.88	2.90	2.90	2.90
8801170100	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.93	2.93	2.91	2.91
8801171300	2.91	2.91	2.93	2.93	2.97	2.97	2.98	2.98	3.00	3.00	3.00	3.00
8801180100	3.00	3.02	3.02	3.04	3.04	3.04	3.04	3.05	3.05	3.05	3.07	3.09
8801181300	3.11	3.11	3.12	3.12	3.12	3.12	3.09	3.07	3.04	3.02	3.00	3.00
8801190100	3.02	3.04	3.04	3.02	3.00	3.00	3.00	2.98	2.98	2.98	3.00	3.00
8801191300	3.00	3.00	3.00	3.00	3.00	3.00	3.02	3.04	3.04	3.05	3.18	3.21
8801200100	3.24	3.24	3.30	3.33	3.43	3.64	3.80	3.89	3.92	3.94	3.94	3.95
8801201300	3.94	3.94	3.90	3.90	3.85	3.80	3.78	3.73	3.70	3.66	3.61	3.57
8801210100	3.54	3.52	3.49	3.45	3.43	3.40	3.37	3.33	3.31	3.31	3.30	3.28
8801211300	3.28	3.26	3.26	3.24	3.24	3.21	3.19	3.18	3.16	3.14	3.14	3.16
8801220100	3.12	3.11	3.11	3.09	3.07	3.05	3.05	3.05	3.05	3.05	3.05	3.07
8801221300	3.07	3.09	3.11	3.12	3.12	3.12	3.12	3.11	3.11	3.09	3.09	3.09
8801230100	3.07	3.07	3.05	3.05	3.05	3.04	3.04	3.02	3.02	3.04	3.04	3.04
8801231300	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04
8801240100	3.04	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
8801241300	3.02	3.02	3.02	3.02	3.02	3.02	3.04	3.02	3.02	3.02	3.00	3.00
8801250100	3.00	2.98	2.97	2.97	2.97	2.97	2.95	2.95	2.95	2.98	2.98	3.02
8801251300	3.02	3.04	3.02	3.04	3.04	3.04	3.04	3.02	3.00	3.00	3.00	2.98
8801260100	2.98	3.00	3.00	3.00	3.00	3.02	3.00	3.00	2.98	2.97	2.97	2.95
8801261300	2.95	2.97	2.95	2.97	2.97	2.98	3.00	3.00	3.00	3.02	3.02	3.02
8801270100	3.02	3.02	3.00	3.00	3.00	3.00	3.02	3.02	3.02	3.02	3.00	3.00
8801271300	3.02	3.02	3.00	3.00	3.00	2.98	2.98	3.00	2.98	2.98	2.98	2.98
8801280100	2.97	2.97	2.97	2.97	2.97	2.98	2.98	2.98	2.97	2.97	2.98	2.97
8801281300	2.98	2.98	2.98	2.98	2.98	2.98	2.98	3.04	2.98	2.98	2.97	3.00
8801290100	2.98	2.98	2.97	2.98	2.98	2.98	2.97	2.97	2.98	2.98	2.98	2.98
8801291300	2.98	2.98	2.98	2.98	2.98	3.00	3.04	3.00	3.02	3.02	3.04	3.04
8801300100	3.05	3.05	3.05	3.07	3.07	3.07	3.09	3.09	3.09	3.11	3.12	3.16
8801301300	3.21	3.23	3.24	3.26	3.28	3.28	3.30	3.28	3.28	3.28	3.28	3.28
8801310100	3.26	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28
8801311300	3.26	3.28	3.28	3.28	3.30	3.31	3.38	3.43	3.49	3.57	3.73	3.97
8802010100	4.16	4.32	4.41	4.44	4.47	4.49	4.44	4.41	4.41	4.37	4.37	4.35
8802011300	4.35	4.37	4.37	4.41	4.42	4.47	4.53	4.59	4.63	4.65	4.67	4.65
8802020100	4.65	4.65	4.67	4.67	4.72	4.73	4.73	4.73	4.70	4.65	4.58	4.51
8802021300	4.42	4.35	4.28	4.20	4.14	4.08	4.02	3.97	3.94	3.87	3.85	3.80
8802030100	3.76	3.73	3.70	3.68	3.64	3.62	3.59	3.56	3.54	3.50	3.50	3.49
8802031300	3.47	3.47	3.45	3.42	3.42	3.43	3.43	3.38	3.31	3.18	3.23	3.26
8802040100	3.28	3.26	3.26	3.28	3.26	3.26	3.28	3.28	3.28	3.28	3.31	3.35
8802041300	3.37	3.40	3.43	3.45	3.49	3.45	3.43	3.42	3.40	3.35	3.35	3.35
8802050100	3.31	3.30	3.30	3.28	3.28	3.28	3.28	3.30	3.30	3.30	3.28	3.28
8802051300	3.28	3.31	3.33	3.33	3.33	3.31	3.30	3.28	3.24	3.24	3.23	3.23
8802060100	3.21	3.19	3.18	3.19	3.19	3.19	3.19	3.19	3.19	3.23	3.19	3.16
8802061300	3.18	3.21	3.23	3.24	3.24	3.26	3.24	3.23	3.21	3.19	3.19	3.19
8802070100	3.16	3.14	3.12	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.12	3.12
8802071300	3.14	3.14	3.16	3.18	3.18	3.19	3.18	3.19	3.18	3.19	3.19	3.18
8802080100	3.18	3.18	3.16	3.16	3.18	3.16	3.16	3.16	3.14	3.16	3.14	3.16
8802081300	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.14	3.14	3.12
8802090100	3.12	3.12	3.11	3.11	3.12	3.11	3.11	3.12	3.12	3.11	3.12	3.12

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8802091300	3.12	3.12	3.14	3.14	3.14	3.12	3.12	3.14	3.12	3.12	3.18	3.12
8802100100	3.12	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.09	3.11	3.09
8802101300	3.09	3.11	3.09	3.09	3.11	3.09	3.09	3.09	3.11	3.11	3.09	3.09
8802110100	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.09	3.07	3.07	3.07	3.09
8802111300	3.09	3.09	3.09	3.09	3.09	3.09	3.11	3.12	3.12	3.12	3.12	3.11
8802120100	3.11	3.12	3.12	3.11	3.12	3.11	3.12	3.12	3.12	3.12	3.12	3.11
8802121300	3.12	3.12	3.12	3.12	3.11	3.12	3.11	3.12	3.11	3.12	3.11	3.12
8802130100	3.11	3.11	3.09	3.09	3.11	3.11	3.09	3.09	3.11	3.12	3.11	3.11
8802131300	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.11	3.09
8802140100	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.11	3.09	3.09
8802141300	3.10	3.12	3.13	3.13	3.14	3.15	3.16	3.17	3.17	3.18	3.19	3.21
8802150100	3.22	3.25	3.27	3.29	3.35	3.44	3.52	3.62	3.83	4.08	4.34	4.69
8802151300	4.91	5.01	5.11	5.22	5.30	5.31	5.32	5.32	5.33	5.33	5.32	5.28
8802160100	5.22	5.16	5.09	5.02	4.94	4.85	4.78	4.69	4.65	4.64	4.61	4.64
8802161300	4.64	4.66	4.70	4.70	4.70	4.66	4.66	4.61	4.51	4.44	4.39	4.33
8802170100	4.27	4.21	4.19	4.17	4.15	4.12	4.11	4.07	4.03	4.03	4.02	4.00
8802171300	4.02	4.05	4.07	4.09	4.15	4.19	4.26	4.31	4.36	4.37	4.47	4.58
8802180100	4.66	4.65	4.63	4.60	4.53	4.49	4.42	4.33	4.28	4.25	4.27	4.32
8802181300	4.33	4.37	4.40	4.40	4.38	4.39	4.38	4.41	4.45	4.52	4.62	4.65
8802190100	4.65	4.64	4.64	4.62	4.60	4.55	4.52	4.48	4.45	4.46	4.43	4.38
8802191300	4.33	4.31	4.35	4.45	4.61	4.84	5.23	5.79	6.22	6.71	6.95	7.17
8802200100	7.31	7.41	7.46	7.46	7.43	7.32	7.16	6.90	6.64	6.37	6.14	5.93
8802201300	5.76	5.64	5.57	5.52	5.50	5.46	5.45	5.38	5.29	5.14	5.00	4.79
8802210100	4.60	4.55	4.49	4.43	4.45	4.49	4.47	4.49	4.52	4.54	4.56	4.54
8802211300	4.35	4.28	4.26	4.29	4.24	4.17	4.05	3.91	3.83	3.74	3.71	3.70
8802220100	3.70	3.70	3.68	3.70	3.68	3.68	3.64	3.57	3.57	3.61	3.70	3.80
8802221300	3.89	3.90	3.87	3.87	3.89	3.95	4.03	4.14	4.41	4.64	4.80	5.02
8802230100	5.25	5.49	5.76	5.97	6.13	6.18	6.16	6.13	6.01	5.85	5.68	5.49
8802231300	5.34	5.22	5.08	4.99	4.92	4.84	4.79	4.71	4.66	4.58	4.51	4.46
8802240100	4.40	4.32	4.25	4.14	4.04	3.92	3.73	3.64	3.81	3.91	3.93	3.96
8802241300	3.96	3.94	3.93	3.89	3.86	3.79	3.75	3.70	3.65	3.58	3.51	3.49
8802250100	3.48	3.48	3.48	3.48	3.50	3.52	3.53	3.57	3.64	3.69	3.57	3.53
8802251300	3.64	3.69	3.69	3.60	3.59	3.55	3.50	3.47	3.45	3.41	3.40	3.38
8802260100	3.34	3.33	3.31	3.38	3.41	3.41	3.41	3.41	3.47	3.48	3.36	3.53
8802261300	3.53	3.59	3.55	3.50	3.48	3.47	3.45	3.43	3.40	3.40	3.40	3.38
8802270100	3.38	3.38	3.36	3.38	3.38	3.36	3.34	3.34	3.36	3.36	3.36	3.36
8802271300	3.34	3.34	3.33	3.33	3.32	3.32	3.32	3.30	3.32	3.32	3.30	3.30
8802280100	3.27	3.23	3.23	3.25	3.21	3.20	3.16	3.09	3.20	3.27	3.27	3.30
8802281300	3.39	3.33	3.30	3.32	3.32	3.32	3.32	3.32	3.32	3.30	3.30	3.30
8802290100	3.28	3.28	3.30	3.28	3.28	3.28	3.28	3.28	3.28	3.27	3.27	3.28
8802291300	3.27	3.27	3.27	3.27	3.27	3.28	3.27	3.30	3.28	3.28	3.28	3.30
8803010100	3.28	3.28	3.28	3.30	3.30	3.28	3.28	3.28	3.28	3.28	3.27	3.28
8803011300	3.28	3.27	3.27	3.27	3.27	3.28	3.27	3.28	3.28	3.28	3.28	3.30
8803020100	3.28	3.28	3.28	3.30	3.30	3.28	3.28	3.28	3.30	3.30	3.28	3.30
8803021300	3.30	3.28	3.28	3.30	3.30	3.32	3.32	3.32	3.33	3.33	3.32	3.32
8803030100	3.31	3.32	3.32	3.32	3.32	3.34	3.34	3.34	3.34	3.34	3.34	3.34
8803031300	3.31	3.31	3.32	3.34	3.34	3.34	3.34	3.34	3.32	3.32	3.32	3.31
8803040100	3.31	3.29	3.26	3.26	3.26	3.27	3.26	3.26	3.26	3.27	3.31	3.31
8803041300	3.31	3.31	3.31	3.31	3.31	3.29	3.29	3.29	3.29	3.26	3.24	3.13
8803050100	3.13	3.12	3.17	3.34	3.38	3.36	3.36	3.36	3.34	3.24	3.15	3.26
8803051300	3.51	3.46	3.36	3.34	3.38	3.38	3.36	3.36	3.32	3.29	3.29	3.15
8803060100	3.20	3.19	3.13	3.22	3.36	3.41	3.45	3.48	3.48	3.26	3.26	3.48
8803061300	3.48	3.41	3.41	3.43	3.43	3.41	3.41	3.39	3.39	3.41	3.41	3.41

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8803070100	3.43	3.48	3.51	3.52	3.54	3.56	3.54	3.54	3.52	3.50	3.50	3.49
8803071300	3.49	3.47	3.47	3.47	3.47	3.47	3.49	3.49	3.50	3.50	3.52	3.56
8803080100	3.59	3.59	3.59	3.59	3.59	3.59	3.57	3.57	3.57	3.56	3.54	3.52
8803081300	3.50	3.50	3.50	3.49	3.50	3.49	3.50	3.50	3.50	3.52	3.54	3.56
8803090100	3.54	3.56	3.56	3.56	3.54	3.56	3.54	3.54	3.52	3.54	3.54	3.52
8803091300	3.52	3.52	3.52	3.54	3.54	3.54	3.54	3.52	3.54	3.56	3.54	3.52
8803100100	3.52	3.52	3.50	3.49	3.49	3.47	3.45	3.45	3.44	3.44	3.42	3.40
8803101300	3.40	3.40	3.38	3.38	3.37	3.37	3.37	3.35	3.35	3.35	3.35	3.33
8803110100	3.33	3.31	3.31	3.30	3.30	3.31	3.30	3.30	3.28	3.29	3.27	3.27
8803111300	3.27	3.25	3.27	3.25	3.25	3.25	3.25	3.25	3.25	3.27	3.27	3.25
8803120100	3.24	3.24	3.25	3.25	3.25	3.25	3.24	3.24	3.25	3.24	3.24	3.25
8803121300	3.25	3.25	3.25	3.27	3.27	3.27	3.29	3.29	3.27	3.27	3.30	3.29
8803130100	3.29	3.27	3.27	3.27	3.29	3.29	3.27	3.27	3.27	3.27	3.27	3.27
8803131300	3.27	3.27	3.25	3.25	3.25	3.25	3.25	3.27	3.27	3.25	3.25	3.25
8803140100	3.24	3.24	3.24	3.24	3.24	3.24	3.22	3.22	3.24	3.22	3.22	3.22
8803141300	3.22	3.20	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.18
8803150100	3.17	3.18	3.18	3.18	3.17	3.15	3.13	3.15	3.17	3.18	3.22	3.22
8803151300	3.25	3.25	3.20	3.21	3.19	3.19	3.21	3.21	3.21	3.19	3.19	3.19
8803160100	3.19	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17
8803161300	3.17	3.17	3.17	3.17	3.19	3.19	3.19	3.21	3.21	3.19	3.21	3.21
8803170100	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
8803171300	3.23	3.23	3.23	3.24	3.24	3.26	3.28	3.29	3.33	3.35	3.36	3.36
8803180100	3.42	3.47	3.50	3.52	3.54	3.55	3.54	3.54	3.54	3.54	3.52	3.52
8803181300	3.50	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.52	3.52	3.54	3.54
8803190100	3.55	3.55	3.55	3.55	3.57	3.55	3.55	3.52	3.50	3.48	3.48	3.47
8803191300	3.45	3.45	3.43	3.43	3.42	3.42	3.40	3.43	3.40	3.39	3.39	3.37
8803200100	3.37	3.37	3.39	3.39	3.37	3.35	3.34	3.34	3.37	3.37	3.34	3.32
8803201300	3.34	3.32	3.34	3.32	3.32	3.30	3.32	3.30	3.34	3.30	3.30	3.32
8803210100	3.32	3.30	3.30	3.30	3.20	3.20	3.25	3.28	3.41	3.35	3.28	3.28
8803211300	3.27	3.28	3.30	3.30	3.32	3.34	3.34	3.34	3.34	3.35	3.34	3.34
8803220100	3.32	3.27	3.20	3.28	3.32	3.30	3.28	3.30	3.28	3.28	3.32	3.37
8803221300	3.39	3.37	3.39	3.41	3.41	3.41	3.39	3.39	3.37	3.37	3.37	3.39
8803230100	3.39	3.41	3.41	3.42	3.44	3.44	3.46	3.44	3.46	3.46	3.46	3.44
8803231300	3.46	3.44	3.46	3.44	3.44	3.44	3.44	3.46	3.46	3.47	3.47	3.47
8803240100	3.44	3.44	3.43	3.41	3.41	3.40	3.43	3.43	3.45	3.45	3.48	3.52
8803241300	3.55	3.59	3.65	3.73	3.81	3.90	3.97	4.07	4.14	4.19	4.19	4.19
8803250100	4.14	4.11	4.07	4.04	4.00	3.95	3.92	3.92	3.95	4.05	4.17	4.35
8803251300	4.64	5.35	6.10	6.63	7.03	7.32	7.58	7.76	7.79	7.74	7.57	7.25
8803260100	6.84	6.44	6.08	5.82	5.61	5.42	5.25	5.11	4.99	4.88	4.78	4.71
8803261300	4.64	4.57	4.50	4.45	4.42	4.37	4.31	4.28	4.24	4.21	4.19	4.16
8803270100	4.16	4.12	4.11	4.07	4.04	4.00	3.97	3.93	3.92	3.90	3.86	3.83
8803271300	3.81	3.78	3.76	3.74	3.73	3.71	3.69	3.67	3.65	3.64	3.64	3.62
8803280100	3.60	3.59	3.59	3.57	3.55	3.53	3.53	3.52	3.49	3.49	3.47	3.47
8803281300	3.47	3.47	3.45	3.45	3.44	3.44	3.44	3.45	3.44	3.42	3.42	3.42
8803290100	3.42	3.42	3.40	3.40	3.40	3.40	3.40	3.40	3.39	3.39	3.39	3.37
8803291300	3.39	3.37	3.35	3.35	3.37	3.37	3.35	3.35	3.35	3.35	3.33	3.33
8803300100	3.33	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.28	3.30	3.30
8803301300	3.28	3.28	3.28	3.26	3.26	3.26	3.25	3.25	3.25	3.25	3.23	3.25
8803310100	3.23	3.23	3.23	3.23	3.23	3.21	3.21	3.21	3.21	3.21	3.21	3.21
8803311300	3.20	3.20	3.20	3.21	3.21	3.20	3.20	3.20	3.21	3.21	3.20	3.20
8804010100	3.20	3.20	3.18	3.20	3.20	3.18	3.18	3.18	3.18	3.18	3.18	3.20
8804011300	3.20	3.20	3.19	3.19	3.20	3.20	3.19	3.20	3.22	3.22	3.20	3.20
8804020100	3.20	3.20	3.20	3.20	3.22	3.22	3.20	3.22	3.22	3.22	3.20	3.22

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8804021300	3.22	3.22	3.20	3.20	3.20	3.20	3.22	3.22	3.22	3.22	3.22	3.22
8804030100	3.22	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.22	3.27	3.34	3.50
8804031300	3.81	4.15	4.50	5.31	5.90	6.20	6.35	6.35	6.29	6.18	6.13	6.06
8804040100	6.02	5.94	5.82	5.66	5.49	5.31	5.14	5.00	4.88	4.74	4.64	4.55
8804041300	4.47	4.38	4.29	4.24	4.19	4.14	4.07	4.03	4.00	3.95	3.90	3.88
8804050100	3.84	3.81	3.77	3.74	3.74	3.72	3.71	3.67	3.65	3.63	3.63	3.62
8804051300	3.60	3.58	3.58	3.57	3.57	3.55	3.53	3.50	3.50	3.50	3.49	3.47
8804060100	3.47	3.47	3.45	3.45	3.43	3.42	3.43	3.42	3.42	3.40	3.40	3.40
8804061300	3.40	3.38	3.38	3.38	3.38	3.37	3.38	3.38	3.37	3.37	3.37	3.35
8804070100	3.33	3.33	3.33	3.33	3.33	3.33	3.35	3.38	3.56	3.87	4.34	4.75
8804071300	5.29	5.91	6.29	6.50	6.60	6.66	6.64	6.62	6.62	6.59	6.54	6.40
8804080100	6.22	6.00	5.76	5.53	5.34	5.17	5.05	4.89	4.79	4.68	4.58	4.51
8804081300	4.44	4.35	4.28	4.21	4.18	4.13	4.06	4.02	3.99	3.94	3.89	3.87
8804090100	3.83	3.80	3.78	3.75	3.73	3.70	3.68	3.66	3.64	3.62	3.62	3.59
8804091300	3.59	3.57	3.57	3.54	3.54	3.54	3.50	3.50	3.50	3.49	3.49	3.47
8804100100	3.47	3.44	3.42	3.42	3.42	3.41	3.41	3.41	3.39	3.39	3.39	3.39
8804101300	3.37	3.37	3.36	3.36	3.34	3.34	3.34	3.34	3.34	3.32	3.32	3.30
8804110100	3.32	3.30	3.30	3.29	3.29	3.29	3.30	3.29	3.29	3.29	3.27	3.29
8804111300	3.27	3.27	3.25	3.25	3.25	3.25	3.25	3.23	3.25	3.23	3.23	3.23
8804120100	3.22	3.22	3.20	3.20	3.22	3.22	3.20	3.22	3.20	3.20	3.20	3.20
8804121300	3.20	3.20	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.17	3.18	3.17
8804130100	3.17	3.17	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
8804131300	3.15	3.15	3.13	3.15	3.13	3.13	3.13	3.15	3.13	3.13	3.13	3.13
8804140100	3.13	3.13	3.13	3.11	3.11	3.11	3.11	3.10	3.10	3.10	3.12	3.10
8804141300	3.10	3.10	3.10	3.09	3.10	3.09	3.09	3.09	3.09	3.09	3.07	3.09
8804150100	3.07	3.07	3.07	3.05	3.05	3.05	3.07	3.07	3.05	3.05	3.05	3.05
8804151300	3.05	3.07	3.05	3.03	3.03	3.03	3.05	3.07	3.05	3.07	3.05	3.05
8804160100	3.03	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.03	3.05
8804161300	3.03	3.03	3.03	3.05	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.03
8804170100	3.02	3.03	3.03	3.03	3.02	3.02	3.02	3.02	3.03	3.03	3.03	3.03
8804171300	3.03	3.03	3.02	3.03	3.02	3.02	3.03	3.03	3.02	3.03	3.02	3.02
8804180100	3.02	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.03	3.02	3.03	3.03
8804181300	3.03	3.01	3.02	3.01	3.01	3.02	3.02	3.01	3.02	3.01	3.01	2.99
8804190100	3.01	2.99	2.99	2.97	2.99	2.99	2.99	2.99	2.99	2.97	2.99	2.97
8804191300	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.99	2.97	2.95	2.99
8804200100	2.95	2.95	2.95	2.97	2.97	2.95	2.95	2.95	2.95	2.95	2.95	2.95
8804201300	2.95	2.95	2.95	2.95	2.92	2.92	2.92	2.92	2.94	2.92	2.94	2.92
8804210100	2.94	2.96	2.92	2.92	2.94	2.94	2.94	2.94	2.94	2.92	2.94	2.92
8804211300	2.92	2.92	2.92	2.90	2.90	2.90	2.93	2.93	2.93	2.93	2.91	2.93
8804220100	2.91	2.93	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.90	2.90	2.91
8804221300	2.90	2.90	2.91	2.90	2.90	2.90	2.90	2.90	2.86	2.88	2.88	2.88
8804230100	2.88	2.86	2.86	2.88	2.88	2.88	2.88	2.88	2.90	2.91	2.91	2.91
8804231300	2.90	2.90	2.88	2.90	2.91	2.90	2.90	2.91	2.91	2.91	2.91	2.89
8804240100	2.91	2.89	2.89	2.89	2.89	2.89	2.89	2.87	2.87	2.87	2.87	2.87
8804241300	2.87	2.87	2.86	2.86	2.87	2.86	2.86	2.86	2.86	2.87	2.87	2.86
8804250100	2.86	2.86	2.84	2.86	2.86	2.86	2.86	2.86	2.84	2.84	2.86	2.86
8804251300	2.86	2.84	2.84	2.86	2.84	2.84	2.84	2.84	2.84	2.86	2.84	2.86
8804260100	2.84	2.85	2.83	2.83	2.83	2.85	2.85	2.85	2.83	2.85	2.85	2.85
8804261300	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.83
8804270100	2.83	2.85	2.85	2.83	2.83	2.85	2.85	2.85	2.83	2.83	2.85	2.85
8804271300	2.85	2.85	2.85	2.83	2.83	2.83	2.83	2.85	2.85	2.85	2.87	2.85
8804280100	2.85	2.85	2.87	2.87	2.88	2.88	2.89	2.91	2.93	2.96	2.98	3.00
8804281300	3.01	3.01	3.03	3.05	3.07	3.07	3.08	3.13	3.17	3.17	3.15	3.13

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8804290100	3.13	3.13	3.13	3.13	3.12	3.12	3.12	3.10	3.10	3.10	3.10	3.10
8804291300	3.08	3.08	3.07	3.07	3.07	3.05	3.05	3.05	3.05	3.05	3.03	3.03
8804300100	3.03	3.01	3.01	3.03	3.01	3.01	3.01	3.01	3.01	3.01	3.02	3.01
8804301300	3.01	3.01	3.01	2.99	2.99	2.97	2.97	2.99	2.97	2.99	2.99	2.97
8805010100	2.97	2.97	2.95	2.95	2.95	2.95	2.95	2.94	2.95	2.95	2.95	2.94
8805011300	2.95	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.92	2.92
8805020100	2.92	2.92	2.92	2.92	2.90	2.92	2.90	2.90	2.92	2.92	2.91	2.91
8805021300	2.91	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.91	2.91	2.90
8805030100	2.90	2.90	2.90	2.90	2.90	2.88	2.88	2.90	2.90	2.88	2.90	2.90
8805031300	2.90	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.90	2.88	2.88
8805040100	2.88	2.88	2.86	2.86	2.86	2.86	2.88	2.86	2.86	2.86	2.88	2.86
8805041300	2.86	2.86	2.88	2.88	2.86	2.86	2.88	2.86	2.86	2.88	2.86	2.86
8805050100	2.86	2.86	2.86	2.84	2.88	2.88	2.88	2.86	2.88	2.88	2.88	2.88
8805051300	2.88	2.88	2.86	2.86	2.86	2.85	2.85	2.87	2.87	2.87	2.87	2.85
8805060100	2.85	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.85	2.85	2.85
8805061300	2.87	2.85	2.85	2.83	2.85	2.85	2.85	2.83	2.85	2.83	2.85	2.83
8805070100	2.85	2.83	2.83	2.85	2.83	2.83	2.82	2.82	2.83	2.83	2.83	2.83
8805071300	2.83	2.83	2.83	2.83	2.82	2.82	2.82	2.83	2.82	2.82	2.82	2.82
8805080100	2.83	2.82	2.82	2.82	2.82	2.83	2.83	2.82	2.82	2.82	2.82	2.82
8805081300	2.82	2.82	2.80	2.82	2.82	2.80	2.80	2.80	2.82	2.82	2.80	2.80
8805090100	2.82	2.80	2.80	2.80	2.80	2.80	2.80	2.82	2.80	2.80	2.80	2.80
8805091300	2.80	2.80	2.80	2.80	2.85	2.83	2.99	2.94	2.94	2.95	2.95	2.94
8805100100	2.94	2.95	2.94	2.94	2.91	2.93	2.94	2.96	2.94	2.94	2.94	2.93
8805101300	2.93	2.91	2.93	2.94	2.94	2.94	2.94	2.93	2.93	2.93	2.91	2.91
8805110100	2.91	2.89	2.89	2.89	2.88	2.88	2.86	2.88	2.86	2.86	2.88	2.86
8805111300	2.86	2.86	2.84	2.84	2.84	2.82	2.82	2.82	2.82	2.82	2.82	2.84
8805120100	2.82	2.82	2.81	2.81	2.81	2.82	2.82	2.82	2.81	2.82	2.81	2.81
8805121300	2.81	2.81	2.81	2.79	2.79	2.79	2.79	2.81	2.81	2.81	2.81	2.79
8805130100	2.79	2.81	2.81	2.81	2.81	2.81	2.79	2.79	2.81	2.79	2.81	2.79
8805131300	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.77	2.79	2.77	2.77
8805140100	2.77	2.77	2.77	2.75	2.75	2.77	2.77	2.75	2.75	2.75	2.77	2.75
8805141300	2.77	2.75	2.75	2.74	2.73	2.74	2.74	2.73	2.74	2.74	2.74	2.74
8805150100	2.73	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74
8805151300	2.74	2.74	2.74	2.74	2.74	2.73	2.73	2.74	2.76	2.76	2.76	2.76
8805160100	2.76	2.78	2.80	2.80	2.81	2.80	2.80	2.80	2.81	2.80	2.81	2.81
8805161300	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.78	2.78	2.78	2.78
8805170100	2.78	2.76	2.78	2.76	2.76	2.76	2.76	2.76	2.76	2.74	2.76	2.76
8805171300	2.76	2.74	2.74	2.74	2.76	2.74	2.76	2.76	2.74	2.74	2.76	2.74
8805180100	2.74	2.74	2.74	2.74	2.74	2.74	2.73	2.74	2.74	2.76	2.80	2.80
8805181300	2.78	2.76	2.76	2.74	2.74	2.74	2.74	2.74	2.73	2.74	2.74	2.74
8805190100	2.74	2.74	2.73	2.73	2.73	2.73	2.72	2.73	2.72	2.72	2.73	2.73
8805191300	2.73	2.73	2.73	2.75	2.75	2.75	2.75	2.77	2.77	2.77	2.77	2.75
8805200100	2.77	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.77	2.77	2.75	2.75
8805201300	2.77	2.75	2.75	2.77	2.75	2.75	2.75	2.73	2.75	2.75	2.75	2.75
8805210100	2.75	2.75	2.75	2.75	2.73	2.75	2.75	2.75	2.73	2.73	2.73	2.73
8805211300	2.75	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.72	2.73	2.73	2.73
8805220100	2.73	2.72	2.73	2.73	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
8805221300	2.70	2.70	2.72	2.70	2.70	2.70	2.70	2.72	2.70	2.72	2.70	2.72
8805230100	2.70	2.70	2.68	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.68	2.70
8805231300	2.70	2.69	2.69	2.67	2.67	2.67	2.67	2.67	2.69	2.69	2.69	2.69
8805240100	2.69	2.69	2.69	2.69	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.69
8805241300	2.69	2.69	2.67	2.69	2.69	2.67	2.67	2.67	2.69	2.69	2.67	2.69
8805250100	2.69	2.69	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8805251300	2.69	2.67	2.69	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.65
8805260100	2.67	2.67	2.65	2.67	2.67	2.67	2.67	2.67	2.65	2.65	2.67	2.67
8805261300	2.67	2.67	2.67	2.67	2.67	2.65	2.65	2.65	2.67	2.65	2.67	2.67
8805270100	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.64	2.64	2.65	2.65	2.64
8805271300	2.65	2.65	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	2.62	2.64
8805280100	2.61	2.63	2.61	2.61	2.61	2.63	2.63	2.63	2.61	2.61	2.64	2.63
8805281300	2.61	2.63	2.63	2.61	2.61	2.59	2.59	2.61	2.59	2.61	2.61	2.63
8805290100	2.63	2.61	2.63	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.63
8805291300	2.61	2.59	2.61	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.61	2.59
8805300100	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
8805301300	2.59	2.59	2.59	2.57	2.59	2.59	2.57	2.57	2.57	2.57	2.57	2.57
8805310100	2.57	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.57	2.57
8805311300	2.59	2.57	2.57	2.56	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57
8806010100	2.57	2.57	2.57	2.57	2.59	2.57	2.57	2.57	2.57	2.59	2.57	2.56
8806011300	2.56	2.56	2.55	2.55	2.55	2.53	2.53	2.53	2.53	2.53	2.51	2.51
8806020100	2.51	2.51	2.50	2.51	2.51	2.51	2.53	2.56	2.58	2.60	2.62	2.60
8806021300	2.65	2.67	2.65	2.67	2.67	2.63	2.63	2.63	2.63	2.63	2.62	2.63
8806030100	2.62	2.62	2.62	2.62	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.65
8806031300	2.63	2.63	2.63	2.65	2.63	2.63	2.62	2.62	2.63	2.62	2.63	2.63
8806040100	2.63	2.63	2.62	2.62	2.63	2.63	2.63	2.63	2.63	2.67	2.65	2.65
8806041300	2.65	2.65	2.63	2.63	2.63	2.63	2.63	2.62	2.62	2.63	2.62	2.62
8806050100	2.60	2.60	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.63
8806051300	2.63	2.63	2.63	2.62	2.62	2.60	2.60	2.60	2.60	2.58	2.57	2.55
8806060100	2.57	2.57	2.55	2.55	2.55	2.57	2.57	2.59	2.57	2.59	2.61	2.59
8806061300	2.61	2.61	2.59	2.59	2.59	2.57	2.57	2.57	2.57	2.55	2.55	2.54
8806070100	2.55	2.54	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.54	2.55	2.54
8806071300	2.54	2.54	2.54	2.54	2.54	2.52	2.52	2.52	2.52	2.52	2.52	2.52
8806080100	2.50	2.50	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.47	2.49	2.47
8806081300	2.47	2.47	2.49	2.50	2.52	2.52	2.54	2.52	2.52	2.52	2.52	2.50
8806090100	2.50	2.50	2.49	2.47	2.47	2.45	2.47	2.47	2.45	2.47	2.45	2.45
8806091300	2.45	2.45	2.45	2.45	2.43	2.43	2.43	2.43	2.45	2.45	2.43	2.45
8806100100	2.43	2.43	2.42	2.43	2.43	2.43	2.43	2.42	2.42	2.42	2.41	2.41
8806101300	2.41	2.41	2.41	2.41	2.41	2.42	2.41	2.41	2.41	2.41	2.41	2.39
8806110100	2.41	2.39	2.41	2.39	2.39	2.39	2.39	2.39	2.37	2.37	2.39	2.39
8806111300	2.39	2.37	2.39	2.37	2.39	2.37	2.37	2.37	2.37	2.39	2.39	2.37
8806120100	2.37	2.37	2.37	2.36	2.36	2.37	2.37	2.37	2.36	2.37	2.36	2.36
8806121300	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.34
8806130100	2.36	2.34	2.36	2.36	2.34	2.34	2.34	2.34	2.34	2.36	2.36	2.34
8806131300	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.34
8806140100	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.32	2.34	2.29	2.34
8806141300	2.34	2.34	2.34	2.34	2.34	2.32	2.32	2.32	2.31	2.33	2.33	2.31
8806150100	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31
8806151300	2.31	2.31	2.31	2.29	2.31	2.31	2.31	2.29	2.29	2.29	2.29	2.31
8806160100	2.29	2.31	2.31	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
8806161300	2.29	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.29	2.29	2.31
8806170100	2.29	2.29	2.31	2.29	2.29	2.29	2.31	2.29	2.29	2.31	2.29	2.31
8806171300	2.29	2.29	2.29	2.29	2.29	2.29	2.31	2.29	2.31	2.29	2.31	2.29
8806180100	2.31	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
8806181300	2.29	2.29	2.29	2.29	2.29	2.29	2.28	2.28	2.29	2.29	2.29	2.29
8806190100	2.28	2.29	2.28	2.28	2.28	2.29	2.29	2.28	2.27	2.27	2.28	2.27
8806191300	2.28	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
8806200100	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.25	2.27	2.27	2.27
8806201300	2.25	2.27	2.25	2.25	2.25	2.27	2.27	2.27	2.25	2.25	2.25	2.25

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8806210100	2.27	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
8806211300	2.23	2.25	2.25	2.25	2.25	2.23	2.23	2.23	2.23	2.21	2.21	2.21
8806220100	2.21	2.21	2.21	2.20	2.20	2.21	2.20	2.20	2.20	2.20	2.16	2.20
8806221300	2.18	2.16	2.16	2.18	2.20	2.18	2.18	2.21	2.20	2.20	2.20	2.20
8806230100	2.20	2.20	2.20	2.23	2.20	2.21	2.20	2.21	2.23	2.20	2.21	2.25
8806231300	2.23	2.20	2.23	2.21	2.28	2.28	2.28	2.28	2.30	2.28	2.28	2.28
8806240100	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.30	2.25
8806241300	2.28	2.30	2.28	2.30	2.28	2.28	2.30	2.30	2.28	2.30	2.30	2.28
8806250100	2.30	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.30	2.28	2.28	2.30
8806251300	2.28	2.30	2.28	2.30	2.29	2.29	2.29	2.29	2.29	2.31	2.29	2.31
8806260100	2.29	2.31	2.29	2.31	2.31	2.29	2.31	2.31	2.31	2.31	2.31	2.31
8806261300	2.31	2.31	2.29	2.31	2.29	2.31	2.31	2.31	2.31	2.31	2.31	2.31
8806270100	2.31	2.31	2.33	2.31	2.31	2.33	2.31	2.31	2.31	2.31	2.31	2.33
8806271300	2.31	2.31	2.33	2.31	2.33	2.31	2.31	2.31	2.31	2.33	2.31	2.31
8806280100	2.33	2.31	2.31	2.33	2.31	2.31	2.31	2.31	2.31	2.31	2.33	2.31
8806281300	2.33	2.31	2.31	2.31	2.31	2.31	2.33	2.33	2.31	2.31	2.31	2.33
8806290100	2.31	2.31	2.31	2.31	2.33	2.33	2.31	2.31	2.33	2.31	2.33	2.31
8806291300	2.33	2.31	2.31	2.33	2.31	2.31	2.33	2.33	2.31	2.33	2.33	2.31
8806300100	2.33	2.31	2.31	2.31	2.33	2.31	2.31	2.31	2.33	2.33	2.33	2.31
8806301300	2.33	2.33	2.31	2.31	2.33	2.31	2.31	2.31	2.33	2.31	2.31	2.31
8807010100	2.33	2.31	2.31	2.33	2.31	2.31	2.33	2.33	2.33	2.33	2.33	2.31
8807011300	2.31	2.31	2.31	2.31	2.31	2.33	2.31	2.31	2.33	2.31	2.31	2.35
8807020100	2.33	2.31	2.33	2.33	2.31	2.33	2.33	2.33	2.33	2.31	2.31	2.33
8807021300	2.31	2.31	2.31	2.33	2.31	2.31	2.31	2.31	2.31	2.31	2.33	2.33
8807030100	2.31	2.31	2.33	2.31	2.31	2.33	2.33	2.31	2.33	2.33	2.31	2.31
8807031300	2.31	2.33	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.32	2.32	2.32
8807040100	2.32	2.34	2.32	2.32	2.30	2.32	2.32	2.32	2.32	2.32	2.34	2.32
8807041300	2.32	2.32	2.34	2.32	2.32	2.34	2.30	2.32	2.32	2.34	2.34	2.32
8807050100	2.32	2.34	2.32	2.32	2.34	2.34	2.32	2.32	2.32	2.32	2.32	2.32
8807051300	2.34	2.32	2.32	2.32	2.34	2.32	2.32	2.32	2.32	2.34	2.34	2.34
8807060100	2.36	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.32	2.32	2.32
8807061300	2.32	2.34	2.32	2.32	2.32	2.32	2.32	2.32	2.34	2.32	2.32	2.32
8807070100	2.32	2.32	2.32	2.32	2.34	2.32	2.32	2.32	2.32	2.32	2.32	2.32
8807071300	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.34	2.34	2.34
8807080100	2.36	2.34	2.36	2.34	2.34	2.36	2.36	2.36	2.36	2.34	2.34	2.36
8807081300	2.34	2.34	2.34	2.36	2.34	2.34	2.34	2.34	2.36	2.34	2.36	2.34
8807090100	2.36	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34
8807091300	2.34	2.32	2.34	2.32	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34
8807100100	2.34	2.32	2.34	2.32	2.32	2.34	2.32	2.32	2.32	2.32	2.32	2.32
8807101300	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.30	2.32	2.32	2.32	2.32
8807110100	2.32	2.30	2.30	2.30	2.30	2.32	2.32	2.32	2.32	2.30	2.30	2.30
8807111300	2.32	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
8807120100	2.30	2.29	2.30	2.31	2.31	2.30	2.30	2.31	2.30	2.31	2.30	2.30
8807121300	2.30	2.30	2.30	2.28	2.30	2.30	2.28	2.28	2.30	2.30	2.28	2.30
8807130100	2.28	2.28	2.26	2.28	2.28	2.28	2.28	2.26	2.26	2.26	2.26	2.26
8807131300	2.26	2.24	2.26	2.26	2.24	2.24	2.24	2.24	2.24	2.26	2.24	2.24
8807140100	2.23	2.23	2.23	2.26	2.26	2.24	2.30	2.30	2.28	2.30	2.26	2.28
8807141300	2.26	2.33	2.33	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.35	2.33
8807150100	2.33	2.31	2.33	2.33	2.31	2.33	2.33	2.33	2.33	2.31	2.33	2.33
8807151300	2.31	2.33	2.33	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
8807160100	2.33	2.31	2.31	2.33	2.33	2.33	2.33	2.33	2.31	2.33	2.31	2.33
8807161300	2.31	2.33	2.33	2.31	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.33
8807170100	2.33	2.33	2.33	2.33	2.33	2.35	2.33	2.33	2.33	2.33	2.33	2.33

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8807171300	2.33	2.33	2.33	2.33	2.33	2.31	2.33	2.33	2.31	2.33	2.33	2.33
8807180100	2.35	2.33	2.33	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.31	2.33
8807181300	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.35	2.33	2.33
8807190100	2.35	2.33	2.33	2.33	2.31	2.33	2.33	2.33	2.31	2.33	2.33	2.33
8807191300	2.33	2.31	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
8807200100	2.33	2.33	2.33	2.33	2.33	2.31	2.33	2.33	2.32	2.34	2.32	2.34
8807201300	2.34	2.34	2.32	2.32	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.36
8807210100	2.34	2.34	2.34	2.34	2.32	2.32	2.32	2.32	2.32	2.34	2.34	2.34
8807211300	2.34	2.32	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.34	2.34
8807220100	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.32	2.34
8807221300	2.32	2.34	2.34	2.32	2.32	2.34	2.34	2.34	2.34	2.34	2.32	2.36
8807230100	2.34	2.34	2.32	2.32	2.32	2.32	2.34	2.34	2.34	2.32	2.32	2.34
8807231300	2.32	2.34	2.34	2.34	2.32	2.32	2.34	2.34	2.34	2.34	2.36	2.34
8807240100	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.32	2.34	2.32
8807241300	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.34	2.34
8807250100	2.32	2.34	2.34	2.34	2.32	2.32	2.32	2.32	2.32	2.34	2.32	2.34
8807251300	2.34	2.32	2.32	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.34
8807260100	2.34	2.34	2.32	2.32	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.32
8807261300	2.32	2.34	2.32	2.34	2.32	2.32	2.34	2.32	2.32	2.34	2.34	2.32
8807270100	2.34	2.32	2.32	2.34	2.34	2.34	2.32	2.32	2.32	2.32	2.34	2.32
8807271300	2.32	2.32	2.32	2.32	2.34	2.32	2.32	2.32	2.34	2.32	2.34	2.32
8807280100	2.34	2.32	2.32	2.34	2.34	2.34	2.32	2.32	2.34	2.34	2.32	2.34
8807281300	2.34	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.35	2.33	2.35
8807290100	2.35	2.33	2.35	2.35	2.33	2.33	2.33	2.35	2.33	2.35	2.33	2.35
8807291300	2.33	2.35	2.33	2.33	2.35	2.33	2.33	2.33	2.35	2.35	2.35	2.33
8807300100	2.35	2.35	2.33	2.33	2.35	2.35	2.33	2.33	2.33	2.35	2.33	2.35
8807301300	2.33	2.35	2.35	2.35	2.33	2.33	2.33	2.35	2.35	2.33	2.35	2.35
8807310100	2.56	2.78	2.77	2.75	2.73	2.71	2.71	2.71	2.70	2.70	2.66	2.64
8807311300	2.64	2.64	2.61	2.61	2.61	2.61	2.59	2.57	2.57	2.56	2.57	2.56
8808010100	2.56	2.54	2.54	2.54	2.52	2.52	2.52	2.52	2.52	2.51	2.51	2.51
8808011300	2.49	2.51	2.49	2.49	2.47	2.47	2.47	2.47	2.45	2.47	2.45	2.45
8808020100	2.44	2.45	2.45	2.44	2.44	2.44	2.42	2.44	2.42	2.42	2.42	2.42
8808021300	2.40	2.40	2.40	2.40	2.42	2.40	2.40	2.40	2.40	2.40	2.40	2.39
8808030100	2.40	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.37	2.37	2.39
8808031300	2.37	2.39	2.37	2.37	2.35	2.35	2.37	2.37	2.37	2.37	2.37	2.37
8808040100	2.37	2.37	2.37	2.35	2.35	2.35	2.37	2.37	2.37	2.35	2.35	2.35
8808041300	2.35	2.35	2.35	2.35	2.35	2.37	2.35	2.37	2.37	2.35	2.37	2.37
8808050100	2.35	2.35	2.35	2.37	2.37	2.37	2.35	2.35	2.35	2.37	2.35	2.35
8808051300	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.33	2.35	2.33	2.35	2.35
8808060100	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.32
8808061300	2.33	2.33	2.32	2.33	2.33	2.32	2.32	2.32	2.33	2.33	2.32	2.32
8808070100	2.32	2.30	2.32	2.32	2.32	2.30	2.32	2.32	2.32	2.30	2.30	2.32
8808071300	2.30	2.30	2.30	2.30	2.28	2.28	2.28	2.28	2.28	2.30	2.28	2.30
8808080100	2.30	2.28	2.28	2.28	2.26	2.26	2.26	2.26	2.26	2.26	2.25	2.26
8808081300	2.26	2.25	2.25	2.25	2.25	2.25	2.26	2.26	2.26	2.26	2.26	2.26
8808090100	2.28	2.26	2.25	2.26	2.28	2.28	2.26	2.26	2.32	2.28	2.28	2.28
8808091300	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.35	2.35	2.33	2.35
8808100100	2.33	2.33	2.33	2.35	2.35	2.33	2.33	2.33	2.33	2.33	2.33	2.33
8808101300	2.33	2.33	2.35	2.33	2.33	2.33	2.35	2.33	2.33	2.35	2.35	2.35
8808110100	2.35	2.35	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.35	2.33	2.33
8808111300	2.33	2.35	2.33	2.33	2.35	2.33	2.33	2.33	2.35	2.35	2.33	2.35
8808120100	2.35	2.33	2.33	2.33	2.33	2.33	2.35	2.35	2.35	2.33	2.33	2.35
8808121300	2.33	2.33	2.33	2.33	2.35	2.33	2.35	2.35	2.35	2.35	2.33	2.35

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8808130100	2.33	2.33	2.35	2.35	2.35	2.33	2.33	2.33	2.33	2.35	2.33	2.35
8808131300	2.33	2.35	2.33	2.33	2.35	2.35	2.35	2.35	2.33	2.35	2.35	2.33
8808140100	2.35	2.35	2.35	2.33	2.33	2.33	2.35	2.35	2.35	2.33	2.33	2.33
8808141300	2.33	2.35	2.35	2.33	2.37	2.40	2.40	2.40	2.40	2.42	2.44	2.42
8808150100	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.40	2.40	2.42	2.42	2.40
8808151300	2.40	2.40	2.40	2.40	2.40	2.40	2.39	2.40	2.39	2.40	2.39	2.39
8808160100	2.39	2.40	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.37	2.39
8808161300	2.39	2.39	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37
8808170100	2.37	2.37	2.37	2.35	2.35	2.35	2.35	2.35	2.35	2.37	2.35	2.35
8808171300	2.35	2.35	2.35	2.35	2.35	2.33	2.33	2.35	2.35	2.35	2.35	2.35
8808180100	2.35	2.33	2.33	2.35	2.35	2.35	2.37	2.37	2.37	2.37	2.37	2.37
8808181300	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.40	2.42
8808190100	2.45	2.47	2.49	2.49	2.49	2.47	2.45	2.45	2.45	2.44	2.44	2.42
8808191300	2.44	2.44	2.42	2.42	2.40	2.40	2.42	2.42	2.42	2.40	2.40	2.40
8808200100	2.40	2.40	2.40	2.40	2.40	2.40	2.39	2.39	2.39	2.40	2.39	2.39
8808201300	2.39	2.39	2.39	2.39	2.37	2.39	2.39	2.39	2.39	2.39	2.39	2.39
8808210100	2.37	2.39	2.39	2.37	2.37	2.39	2.39	2.39	2.37	2.36	2.38	2.36
8808211300	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.34
8808220100	2.36	2.36	2.34	2.34	2.36	2.36	2.34	2.34	2.34	2.34	2.34	2.36
8808221300	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.32	2.34
8808230100	2.34	2.32	2.34	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.38
8808231300	2.38	2.38	2.38	2.38	2.38	2.38	2.39	2.39	2.38	2.38	2.38	2.38
8808240100	2.39	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
8808241300	2.39	2.38	2.38	2.38	2.38	2.38	2.38	2.36	2.38	2.36	2.38	2.38
8808250100	2.38	2.38	2.36	2.36	2.36	2.38	2.38	2.38	2.36	2.36	2.36	2.36
8808251300	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.34	2.36	2.36
8808260100	2.36	2.36	2.36	2.34	2.34	2.36	2.36	2.34	2.36	2.36	2.34	2.34
8808261300	2.34	2.36	2.34	2.34	2.36	2.34	2.34	2.34	2.34	2.34	2.34	2.34
8808270100	2.36	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.32
8808271300	2.32	2.32	2.32	2.34	2.32	2.32	2.31	2.32	2.32	2.32	2.34	2.32
8808280100	2.32	2.31	2.31	2.31	2.32	2.34	2.41	2.48	2.60	2.63	3.02	3.19
8808281300	3.31	3.19	3.07	2.98	2.93	2.98	3.00	2.96	2.93	2.89	2.86	2.83
8808290100	2.81	2.79	2.77	2.76	2.76	2.74	2.72	2.72	2.72	2.72	2.70	2.70
8808291300	2.70	2.69	2.69	2.65	2.65	2.65	2.65	2.63	2.63	2.62	2.62	2.60
8808300100	2.60	2.60	2.60	2.58	2.58	2.56	2.58	2.58	2.56	2.56	2.55	2.55
8808301300	2.55	2.55	2.53	2.53	2.53	2.53	2.51	2.51	2.51	2.50	2.50	2.50
8808310100	2.50	2.48	2.48	2.46	2.48	2.48	2.46	2.46	2.46	2.46	2.46	2.44
8808311300	2.46	2.44	2.46	2.44	2.46	2.44	2.43	2.44	2.44	2.44	2.44	2.44
8809010100	2.43	2.44	2.43	2.43	2.43	2.43	2.41	2.41	2.41	2.43	2.41	2.41
8809011300	2.41	2.41	2.41	2.41	2.41	2.39	2.41	2.41	2.41	2.39	2.39	2.39
8809020100	2.39	2.39	2.39	2.39	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.36
8809021300	2.38	2.36	2.38	2.36	2.36	2.36	2.36	2.38	2.36	2.38	2.36	2.36
8809030100	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
8809031300	2.39	2.43	2.46	2.48	2.72	2.74	2.70	2.72	2.72	2.72	2.74	2.70
8809040100	2.72	2.70	2.69	2.69	2.70	2.70	2.69	2.67	2.67	2.67	2.65	2.65
8809041300	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.60	2.62	2.60	2.58	2.60
8809050100	2.60	2.58	2.58	2.58	2.56	2.58	2.58	2.58	2.56	2.56	2.56	2.56
8809051300	2.58	2.58	2.56	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.53	2.55
8809060100	2.53	2.53	2.53	2.53	2.53	2.51	2.51	2.51	2.51	2.51	2.51	2.50
8809061300	2.51	2.51	2.51	2.51	2.50	2.50	2.50	2.50	2.48	2.50	2.48	2.48
8809070100	2.48	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.44	2.44	2.46
8809071300	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.46	2.44	2.43
8809080100	2.43	2.44	2.43	2.43	2.43	2.43	2.41	2.41	2.41	2.43	2.43	2.41

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8809081300	2.41	2.41	2.41	2.41	2.41	2.39	2.39	2.41	2.39	2.41	2.39	2.41
8809090100	2.41	2.39	2.39	2.38	2.39	2.39	2.39	2.39	2.39	2.38	2.39	2.38
8809091300	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.36
8809100100	2.38	2.36	2.36	2.38	2.38	2.36	2.36	2.36	2.36	2.36	2.36	2.36
8809101300	2.36	2.36	2.34	2.36	2.34	2.34	2.36	2.36	2.36	2.36	2.34	2.36
8809110100	2.36	2.36	2.36	2.34	2.34	2.34	2.36	2.34	2.34	2.34	2.36	2.34
8809111300	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.34
8809120100	2.34	2.34	2.34	2.32	2.32	2.32	2.32	2.32	2.32	2.34	2.34	2.34
8809121300	2.34	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
8809130100	2.36	2.36	2.34	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.34	2.36
8809131300	2.36	2.36	2.36	2.34	2.36	2.36	2.36	2.34	2.36	2.34	2.36	2.36
8809140100	2.34	2.36	2.36	2.34	2.34	2.36	2.34	2.34	2.34	2.34	2.34	2.34
8809141300	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.36	2.34	2.34
8809150100	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.32	2.34	2.34	2.32
8809151300	2.32	2.32	2.32	2.32	2.32	2.34	2.32	2.32	2.32	2.32	2.32	2.32
8809160100	2.32	2.31	2.32	2.32	2.32	2.32	2.31	2.31	2.31	2.31	2.31	2.32
8809161300	2.32	2.31	2.31	2.31	2.32	2.32	2.31	2.31	2.31	2.31	2.32	2.32
8809170100	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.32	2.31	2.31	2.31	2.31
8809171300	2.31	2.31	2.31	2.29	2.31	2.31	2.31	2.31	2.31	2.31	2.29	2.31
8809180100	2.31	2.29	2.29	2.29	2.29	2.29	2.31	2.29	2.31	2.29	2.31	2.29
8809181300	2.31	2.29	2.29	2.29	2.29	2.29	2.27	2.29	2.29	2.29	2.29	2.27
8809190100	2.29	2.29	2.29	2.29	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
8809191300	2.29	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.25	2.27	2.25
8809200100	2.25	2.25	2.24	2.25	2.25	2.24	2.24	2.24	2.24	2.22	2.22	2.24
8809201300	2.22	2.24	2.24	2.24	2.24	2.24	2.25	2.25	2.25	2.27	2.27	2.27
8809210100	2.25	2.25	2.25	2.25	2.27	2.29	2.27	2.29	2.27	2.32	2.32	2.32
8809211300	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.34	2.34	2.34	2.34	2.32
8809220100	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32
8809221300	2.34	2.34	2.32	2.32	2.32	2.34	2.34	2.34	2.32	2.34	2.32	2.32
8809230100	2.34	2.32	2.32	2.32	2.32	2.34	2.34	2.32	2.32	2.32	2.32	2.32
8809231300	2.32	2.32	2.34	2.32	2.32	2.32	2.32	2.34	2.34	2.34	2.34	2.34
8809240100	2.34	2.32	2.34	2.34	2.34	2.34	2.34	2.32	2.32	2.34	2.32	2.34
8809241300	2.32	2.34	2.32	2.32	2.34	2.32	2.32	2.32	2.34	2.34	2.34	2.34
8809250100	2.34	2.34	2.34	2.32	2.32	2.32	2.34	2.34	2.32	2.32	2.32	2.32
8809251300	2.34	2.32	2.32	2.32	2.34	2.34	2.32	2.34	2.34	2.32	2.34	2.32
8809260100	2.34	2.32	2.32	2.32	2.31	2.32	2.31	2.31	2.31	2.29	2.29	2.29
8809261300	2.31	2.29	2.29	2.29	2.27	2.27	2.29	2.29	2.27	2.27	2.25	2.27
8809270100	2.25	2.25	2.24	2.24	2.22	2.22	2.20	2.20	2.22	2.20	2.18	2.20
8809271300	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.17	2.17	2.18	2.17	2.17
8809280100	2.17	2.17	2.15	2.15	2.15	2.13	2.13	2.15	2.15	2.13	2.13	2.13
8809281300	2.13	2.13	2.13	2.13	2.13	2.13	2.12	2.12	2.12	2.12	2.12	2.10
8809290100	2.10	2.10	2.12	2.10	2.10	2.10	2.08	2.08	2.08	2.08	2.10	2.08
8809291300	2.08	2.08	2.10	2.08	2.10	2.10	2.08	2.09	2.07	2.07	2.07	2.05
8809300100	2.07	2.07	2.05	2.05	2.05	2.05	2.05	2.05	2.04	2.05	2.05	2.05
8809301300	2.04	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
8810010100	2.44	2.44	2.43	2.43	2.43	2.44	2.44	2.44	2.44	2.44	2.44	2.43
8810011300	2.44	2.43	2.43	2.43	2.44	2.44	2.43	2.43	2.44	2.43	2.43	2.43
8810020100	2.43	2.41	2.43	2.43	2.43	2.43	2.43	2.43	2.44	2.42	2.42	2.42
8810021300	2.42	2.42	2.42	2.42	2.40	2.42	2.42	2.42	2.42	2.42	2.40	2.42
8810030100	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
8810031300	2.40	2.40	2.41	2.40	2.40	2.40	2.42	2.40	2.42	2.40	2.40	2.40
8810040100	2.41	2.41	2.39	2.41	2.41	2.39	2.39	2.39	2.39	2.39	2.39	2.41
8810041300	2.39	2.39	2.39	2.39	2.41	2.41	2.39	2.40	2.41	2.39	2.39	2.41

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8810050100	2.39	2.39	2.39	2.39	2.40	2.39	2.39	2.39	2.39	2.39	2.39	2.38
8810051300	2.39	2.39	2.39	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.42	2.40
8810060100	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.39	2.39	2.40	2.39	2.39
8810061300	2.40	2.40	2.41	2.40	2.40	2.40	2.42	2.41	2.40	2.40	2.42	2.40
8810070100	2.40	2.40	2.39	2.40	2.40	2.40	2.41	2.41	2.41	2.41	2.40	2.40
8810071300	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.42	2.41	2.41	2.41	2.41
8810080100	2.41	2.40	2.40	2.41	2.41	2.41	2.41	2.40	2.40	2.41	2.40	2.41
8810081300	2.41	2.40	2.41	2.41	2.41	2.41	2.43	2.41	2.43	2.41	2.42	2.42
8810090100	2.42	2.42	2.41	2.41	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
8810091300	2.42	2.42	2.42	2.44	2.42	2.42	2.42	2.43	2.42	2.42	2.42	2.42
8810100100	2.42	2.42	2.41	2.41	2.42	2.42	2.42	2.42	2.42	2.41	2.41	2.42
8810101300	2.42	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
8810110100	2.43	2.42	2.43	2.43	2.43	2.42	2.43	2.43	2.43	2.43	2.42	2.43
8810111300	2.42	2.42	2.42	2.43	2.43	2.43	2.42	2.43	2.43	2.42	2.42	2.43
8810120100	2.43	2.42	2.42	2.42	2.42	2.44	2.43	2.43	2.43	2.43	2.43	2.43
8810121300	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.44	2.44	2.43	2.43	2.43
8810130100	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.44	2.43	2.43
8810131300	2.43	2.43	2.43	2.44	2.43	2.44	2.44	2.44	2.45	2.45	2.44	2.44
8810140100	2.45	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.42	2.42
8810141300	2.44	2.44	2.44	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
8810150100	2.44	2.44	2.45	2.45	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.42
8810151300	2.45	2.43	2.44	2.45	2.45	2.45	2.45	2.46	2.46	2.46	2.46	2.48
8810160100	2.48	2.48	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.45	2.46
8810161300	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
8810170100	2.46	2.46	2.46	2.47	2.47	2.46	2.46	2.46	2.46	2.47	2.47	2.47
8810171300	2.47	2.47	2.47	2.47	2.46	2.47	2.47	2.47	2.47	2.47	2.47	2.47
8810180100	2.47	2.51	2.58	2.56	2.58	2.56	2.54	2.54	2.53	2.54	2.53	2.53
8810181300	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.53	2.52	2.52	2.52	2.54
8810190100	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.54	2.55
8904131300	3.43	3.43	3.42	3.42	3.40	3.40	3.39	3.39	3.39	3.38	3.37	3.36
8904140100	3.36	3.35	3.35	3.34	3.34	3.34	3.33	3.32	3.32	3.32	3.31	3.31
8904141300	3.30	3.30	3.29	3.29	3.28	3.28	3.27	3.27	3.27	3.27	3.26	3.25
8904150100	3.25	3.25	3.24	3.24	3.24	3.24	3.25	3.26	3.29	3.31	3.33	3.34
8904151300	3.37	3.38	3.40	3.41	3.42	3.42	3.44	3.44	3.44	3.44	3.44	3.43
8904160100	3.42	3.41	3.40	3.39	3.39	3.38	3.37	3.37	3.36	3.35	3.35	3.34
8904161300	3.33	3.33	3.32	3.31	3.30	3.30	3.29	3.28	3.29	3.28	3.28	3.27
8904170100	3.26	3.26	3.25	3.25	3.25	3.24	3.24	3.23	3.23	3.22	3.22	3.22
8904171300	3.21	3.21	3.21	3.21	3.21	3.24	3.30	3.41	3.55	3.76	3.96	4.15
8904180100	4.41	4.72	4.79	4.77	4.72	4.66	4.60	4.51	4.43	4.36	4.29	4.23
8904181300	4.17	4.12	4.07	4.02	4.00	3.99	3.97	3.98	3.98	3.99	4.00	4.01
8904190100	4.02	4.02	4.02	4.00	3.99	3.97	3.94	3.92	3.89	3.87	3.84	3.82
8904191300	3.80	3.78	3.76	3.73	3.72	3.70	3.68	3.66	3.64	3.63	3.61	3.60
8904200100	3.59	3.57	3.56	3.55	3.54	3.52	3.51	3.50	3.49	3.48	3.47	3.46
8904201300	3.45	3.44	3.43	3.42	3.41	3.40	3.39	3.39	3.38	3.38	3.37	3.36
8904210100	3.36	3.35	3.35	3.34	3.34	3.33	3.32	3.32	3.31	3.31	3.30	3.30
8904211300	3.29	3.29	3.28	3.28	3.27	3.26	3.26	3.25	3.25	3.24	3.24	3.24
8904220100	3.23	3.23	3.22	3.22	3.22	3.22	3.21	3.21	3.21	3.20	3.20	3.20
8904221300	3.19	3.19	3.18	3.18	3.17	3.17	3.16	3.16	3.16	3.15	3.15	3.15
8904230100	3.14	3.14	3.14	3.14	3.14	3.13	3.13	3.13	3.13	3.13	3.12	3.12
8904231300	3.12	3.12	3.11	3.11	3.10	3.10	3.10	3.10	3.09	3.09	3.09	3.09
8904240100	3.08	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.07	3.07	3.07	3.07
8904241300	3.07	3.06	3.06	3.06	3.05	3.05	3.05	3.05	3.05	3.04	3.04	3.04
8904250100	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.05	3.08	3.10

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8904251300	3.14	3.13	3.14	3.15	3.16	3.17	3.17	3.17	3.17	3.18	3.20	3.24
8904260100	3.26	3.29	3.30	3.30	3.29	3.28	3.27	3.26	3.26	3.25	3.24	3.23
8904261300	3.22	3.21	3.21	3.20	3.19	3.18	3.17	3.17	3.16	3.16	3.15	3.15
8904270100	3.14	3.14	3.13	3.13	3.13	3.12	3.12	3.12	3.12	3.12	3.11	3.11
8904271300	3.11	3.10	3.10	3.09	3.09	3.08	3.08	3.08	3.07	3.07	3.06	3.06
8904280100	3.06	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
8904281300	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
8904290100	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05
8904291300	3.05	3.05	3.05	3.05	3.05	3.05	3.04	3.04	3.04	3.04	3.04	3.03
8904300100	3.03	3.03	3.03	3.03	3.03	3.02	3.02	3.02	3.02	3.02	3.02	3.02
8904301300	3.01	3.01	3.01	3.00	3.00	3.00	2.99	2.99	2.98	2.98	2.98	2.98
8905010100	2.98	2.98	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97
8905011300	2.97	2.97	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
8905020100	2.96	2.96	2.96	2.97	2.99	2.99	2.99	2.99	3.00	3.00	3.00	3.00
8905021300	3.00	3.00	3.00	3.00	3.00	2.99	2.99	2.99	2.99	2.99	3.00	3.00
8905030100	3.00	3.00	3.00	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
8905031300	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.97	2.96	2.96	2.96	2.96
8905040100	2.96	2.96	2.96	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
8905041300	2.95	2.95	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.93	2.93	2.94
8905050100	2.95	2.95	2.96	2.96	2.96	2.97	2.97	2.97	2.97	2.97	2.97	2.97
8905051300	2.97	2.97	2.98	2.97	2.97	2.99	3.00	3.05	3.04	3.05	3.07	3.09
8905060100	3.35	3.69	3.86	3.92	3.89	3.85	3.79	3.74	3.69	3.64	3.60	3.56
8905061300	3.53	3.53	3.52	3.52	3.52	3.54	3.55	3.57	3.59	3.63	3.73	3.83
8905070100	3.92	3.98	4.01	4.04	4.06	4.09	4.14	4.20	4.24	4.26	4.27	4.27
8905071300	4.30	4.33	4.39	4.49	4.58	4.65	4.65	4.61	4.54	4.46	4.38	4.30
8905080100	4.22	4.15	4.08	4.02	3.97	3.91	3.87	3.84	3.80	3.77	3.74	3.71
8905081300	3.69	3.66	3.65	3.62	3.60	3.58	3.56	3.55	3.53	3.52	3.50	3.49
8905090100	3.47	3.46	3.45	3.44	3.43	3.42	3.41	3.40	3.40	3.39	3.38	3.38
8905091300	3.37	3.37	3.37	3.37	3.37	3.38	3.39	3.41	3.43	3.45	3.48	3.51
8905100100	3.56	3.61	3.68	3.77	3.85	3.90	3.92	3.93	3.92	3.91	3.89	3.86
8905101300	3.84	3.81	3.79	3.76	3.74	3.72	3.70	3.70	3.69	3.69	3.70	3.73
8905110100	3.79	3.90	4.10	4.35	4.58	4.70	4.76	4.76	4.73	4.70	4.63	4.55
8905111300	4.47	4.39	4.32	4.24	4.18	4.11	4.05	4.00	3.95	3.90	3.86	3.82
8905120100	3.80	3.77	3.75	3.74	3.74	3.75	3.77	3.82	3.90	4.07	4.29	4.48
8905121300	4.63	4.78	4.91	5.03	5.13	5.21	5.25	5.28	5.31	5.32	5.37	5.43
8905130100	5.44	5.43	5.39	5.33	5.25	5.16	5.08	4.98	4.90	4.82	4.74	4.67
8905131300	4.61	4.55	4.51	4.48	4.49	4.51	4.58	4.65	4.70	4.71	4.71	4.69
8905140100	4.65	4.59	4.53	4.47	4.43	4.39	4.36	4.34	4.32	4.29	4.24	4.20
8905141300	4.16	4.12	4.08	4.05	4.02	3.99	3.95	3.93	3.90	3.87	3.84	3.82
8905150100	3.80	3.78	3.75	3.74	3.72	3.70	3.68	3.67	3.65	3.64	3.62	3.61
8905151300	3.59	3.58	3.57	3.55	3.54	3.53	3.52	3.52	3.50	3.49	3.48	3.47
8905160100	3.46	3.46	3.45	3.44	3.44	3.43	3.42	3.42	3.41	3.40	3.40	3.39
8905161300	3.38	3.37	3.37	3.36	3.35	3.34	3.34	3.34	3.33	3.32	3.32	3.31
8905170100	3.31	3.30	3.30	3.29	3.29	3.29	3.28	3.28	3.27	3.27	3.26	3.26
8905171300	3.25	3.25	3.24	3.23	3.22	3.21	3.21	3.21	3.20	3.20	3.19	3.19
8905180100	3.18	3.18	3.18	3.18	3.17	3.17	3.17	3.17	3.16	3.16	3.16	3.15
8905181300	3.15	3.15	3.14	3.13	3.13	3.12	3.12	3.12	3.12	3.12	3.11	3.11
8905190100	3.11	3.11	3.11	3.11	3.10	3.10	3.10	3.10	3.10	3.10	3.09	3.09
8905191300	3.10	3.09	3.09	3.09	3.08	3.08	3.08	3.07	3.07	3.07	3.07	3.07
8905200100	3.07	3.07	3.07	3.08	3.09	3.11	3.13	3.18	3.18	3.19	3.20	3.22
8905201300	3.23	3.23	3.23	3.23	3.23	3.22	3.23	3.23	3.22	3.23	3.25	3.32
8905210100	3.36	3.48	3.58	3.66	3.68	3.67	3.64	3.62	3.60	3.58	3.54	3.51
8905211300	3.48	3.46	3.44	3.41	3.38	3.36	3.35	3.34	3.32	3.31	3.29	3.28

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8905220100	3.27	3.26	3.25	3.25	3.24	3.23	3.22	3.22	3.21	3.20	3.20	3.19
8905221300	3.19	3.18	3.17	3.16	3.15	3.14	3.13	3.13	3.12	3.12	3.11	3.11
8905230100	3.11	3.10	3.10	3.10	3.10	3.10	3.11	3.12	3.17	3.28	3.48	3.79
8905231300	4.23	5.10	5.97	6.69	7.09	7.46	7.70	7.84	7.86	7.88	7.83	7.76
8905240100	7.60	7.34	7.05	6.76	6.45	6.19	5.96	5.76	5.59	5.42	5.26	5.13
8905241300	5.00	4.87	4.78	4.68	4.58	4.49	4.41	4.33	4.26	4.20	4.15	4.10
8905250100	4.05	4.01	3.97	3.93	3.91	3.87	3.85	3.82	3.81	3.80	3.79	3.78
8905251300	3.77	3.75	3.75	3.73	3.71	3.69	3.67	3.67	3.65	3.63	3.67	3.70
8905260100	3.72	4.16	6.23	7.89	8.83	9.47	10.31	11.01	11.11	11.00	10.80	10.55
8905261300	10.23	9.89	9.57	9.21	8.73	7.74	6.72	6.11	5.76	5.50	5.28	5.10
8905270100	4.94	4.80	4.67	4.57	4.49	4.41	4.34	4.28	4.22	4.17	4.13	4.08
8905271300	4.03	3.99	3.96	3.92	3.88	3.85	3.81	3.78	3.75	3.73	3.70	3.68
8905280100	3.66	3.64	3.62	3.61	3.59	3.57	3.56	3.54	3.53	3.53	3.51	3.50
8905281300	3.48	3.47	3.46	3.45	3.44	3.42	3.41	3.40	3.39	3.39	3.38	3.37
8905290100	3.36	3.36	3.35	3.35	3.34	3.34	3.33	3.33	3.32	3.32	3.32	3.31
8905291300	3.31	3.30	3.29	3.28	3.28	3.27	3.26	3.25	3.25	3.24	3.24	3.23
8905300100	3.23	3.23	3.23	3.22	3.22	3.22	3.21	3.21	3.21	3.20	3.20	3.20
8905301300	3.19	3.19	3.18	3.17	3.16	3.16	3.15	3.15	3.14	3.14	3.14	3.24
8905310100	3.29	3.48	3.54	3.68	4.19	5.17	5.95	6.63	6.96	7.20	7.28	7.08
8905311300	6.74	6.39	6.07	5.77	5.52	5.28	5.07	4.87	4.71	4.56	4.45	4.35
8906010100	4.26	4.19	4.13	4.07	4.03	3.98	3.95	3.92	3.89	3.87	3.84	3.82
8906011300	3.79	3.77	3.75	3.73	3.70	3.68	3.66	3.64	3.62	3.60	3.58	3.57
8906020100	3.56	3.56	3.55	3.55	3.55	3.54	3.53	3.52	3.51	3.50	3.49	3.48
8906021300	3.47	3.45	3.44	3.42	3.41	3.39	3.38	3.37	3.35	3.34	3.33	3.32
8906030100	3.31	3.31	3.30	3.30	3.29	3.28	3.28	3.28	3.27	3.27	3.26	3.26
8906031300	3.25	3.25	3.24	3.24	3.24	3.48	4.16	5.22	6.06	7.20	7.93	8.53
8906040100	9.00	9.26	9.32	9.26	9.04	8.67	8.05	7.25	6.56	6.03	5.67	5.43
8906041300	5.23	5.03	4.87	4.73	4.60	4.48	4.39	4.30	4.23	4.16	4.10	4.04
8906050100	3.99	3.95	3.91	3.88	3.85	3.82	3.80	3.76	3.74	3.72	3.70	3.69
8906051300	3.67	3.66	3.65	3.63	3.61	3.60	3.59	3.58	3.56	3.55	3.53	3.52
8906060100	3.51	3.50	3.49	3.48	3.48	3.46	3.45	3.45	3.44	3.43	3.42	3.42
8906061300	3.41	3.39	3.39	3.37	3.36	3.35	3.34	3.33	3.32	3.30	3.29	3.29
8906070100	3.28	3.28	3.27	3.27	3.26	3.26	3.25	3.25	3.25	3.24	3.24	3.24
8906071300	3.23	3.22	3.22	3.21	3.20	3.19	3.18	3.17	3.17	3.16	3.16	3.15
8906080100	3.15	3.15	3.14	3.14	3.14	3.13	3.13	3.13	3.13	3.13	3.12	3.12
8906081300	3.12	3.11	3.11	3.10	3.09	3.09	3.08	3.07	3.07	3.06	3.06	3.05
8906090100	3.05	3.05	3.05	3.04	3.05	3.04	3.05	3.05	3.05	3.05	3.06	3.07
8906091300	3.07	3.07	3.07	3.07	3.06	3.06	3.15	3.19	3.32	3.40	3.47	3.45
8906100100	3.40	3.37	3.35	3.33	3.34	3.34	3.38	3.39	3.38	3.37	3.35	3.33
8906101300	3.31	3.29	3.28	3.26	3.24	3.23	3.21	3.21	3.19	3.18	3.17	3.16
8906110100	3.16	3.15	3.14	3.14	3.13	3.13	3.12	3.12	3.11	3.11	3.10	3.10
8906111300	3.10	3.09	3.08	3.08	3.07	3.06	3.06	3.06	3.05	3.04	3.03	3.03
8906120100	3.03	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02
8906121300	3.02	3.04	3.08	3.12	3.14	3.16	3.20	3.23	3.25	3.27	3.27	3.27
8906130100	3.27	3.27	3.29	3.30	3.31	3.32	3.33	3.34	3.34	3.34	3.33	3.33
8906131300	3.32	3.31	3.30	3.48	3.77	4.43	5.06	5.62	5.69	5.67	5.60	5.46
8906140100	5.25	5.05	4.89	4.73	4.61	4.51	4.42	4.34	4.26	4.21	4.16	4.12
8906141300	4.08	4.05	4.03	4.02	4.00	4.00	4.01	4.01	4.01	3.98	3.96	3.93
8906150100	3.90	3.87	3.84	3.81	3.79	3.76	3.74	3.73	3.72	3.71	3.71	3.69
8906151300	3.69	3.68	3.67	3.66	3.65	3.63	3.63	3.62	3.64	3.69	3.73	3.77
8906160100	3.80	3.78	3.74	3.72	3.71	3.71	3.73	3.73	3.73	3.72	3.69	3.67
8906161300	3.67	3.69	3.71	3.71	3.71	3.69	3.67	3.65	3.62	3.60	3.57	3.55
8906170100	3.53	3.51	3.49	3.48	3.46	3.45	3.43	3.42	3.40	3.39	3.38	3.37

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8906171300	3.35	3.35	3.34	3.32	3.30	3.29	3.28	3.27	3.26	3.25	3.25	3.24
8906180100	3.23	3.23	3.22	3.22	3.22	3.21	3.21	3.21	3.21	3.21	3.21	3.21
8906181300	3.21	3.21	3.21	3.20	3.19	3.18	3.17	3.16	3.16	3.15	3.15	3.14
8906190100	3.14	3.13	3.13	3.13	3.12	3.12	3.12	3.12	3.12	3.12	3.11	3.11
8906191300	3.11	3.10	3.10	3.09	3.09	3.09	3.08	3.08	3.07	3.07	3.06	3.06
8906200100	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.04
8906201300	3.04	3.04	3.03	3.03	3.02	3.02	3.01	3.01	3.00	3.00	3.00	2.99
8906210100	2.99	2.99	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
8906211300	2.98	2.98	2.98	2.97	2.97	2.97	2.97	2.97	2.96	2.96	2.96	2.95
8906220100	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94	2.94	2.94	2.94	2.94
8906221300	2.94	2.94	2.96	3.03	3.12	3.11	3.12	3.11	3.08	3.06	3.04	3.03
8906230100	3.02	3.01	3.00	2.99	2.98	2.97	2.97	2.97	2.96	2.96	2.96	2.96
8906231300	2.95	2.95	2.95	2.94	2.94	2.93	2.93	2.92	2.92	2.91	2.91	2.90
8906240100	2.90	2.89	2.89	2.89	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
8906241300	2.88	2.88	2.87	2.87	2.87	2.86	2.86	2.86	2.86	2.86	2.85	2.85
8906250100	2.84	2.84	2.84	2.84	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8906251300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.82	2.82	2.82	2.82	2.81
8906260100	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.80
8906261300	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.79	2.78	2.78
8906270100	2.78	2.78	2.78	2.78	2.78	2.77	2.77	2.77	2.77	2.77	2.77	2.77
8906271300	2.77	2.77	2.88	3.05	3.72	3.95	4.31	4.45	4.40	4.17	3.97	3.82
8906280100	3.71	3.62	3.55	3.50	3.47	3.43	3.40	3.37	3.35	3.33	3.30	3.28
8906281300	3.26	3.24	3.22	3.20	3.18	3.16	3.14	3.13	3.11	3.10	3.08	3.07
8906290100	3.06	3.05	3.04	3.03	3.03	3.02	3.02	3.01	3.00	3.00	2.99	2.98
8906291300	2.98	2.97	2.97	2.96	2.95	2.94	2.94	2.93	2.93	2.92	2.92	2.91
8906300100	2.91	2.90	2.90	2.89	2.90	2.89	2.89	2.89	2.89	2.89	2.89	2.88
8906301300	2.89	2.88	2.88	2.88	2.87	2.87	2.86	2.86	2.86	2.85	2.85	2.85
8907010100	2.84	2.84	2.84	2.83	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83
8907011300	2.84	2.83	2.83	2.83	2.82	2.82	2.81	2.81	2.81	2.80	2.80	2.80
8907020100	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.78	2.79	2.78	2.78
8907021300	2.79	2.78	2.78	2.78	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.76
8907030100	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
8907031300	2.76	2.76	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
8907040100	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.76	2.76	2.76
8907041300	2.76	2.76	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76
8907050100	2.76	2.76	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
8907051300	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.73	2.73	2.73
8907060100	2.73	2.73	2.73	2.73	2.73	2.73	2.72	2.72	2.72	2.72	2.72	2.72
8907061300	2.72	2.72	2.72	2.71	2.71	2.71	2.71	2.71	2.71	2.70	2.70	2.70
8907070100	2.70	2.70	2.70	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69
8907071300	2.69	2.69	2.68	2.68	2.68	2.68	2.68	2.68	2.67	2.67	2.67	2.67
8907080100	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.65	2.65	2.65
8907081300	2.65	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
8907090100	2.64	2.64	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.64	2.64	2.65
8907091300	2.65	2.66	2.66	2.67	2.66	2.66	2.65	2.65	2.65	2.65	2.65	2.65
8907100100	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.65	2.65
8907101300	2.64	2.64	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.63	2.63
8907110100	2.63	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.63	2.62
8907111300	2.62	2.62	2.61	2.61	2.60	2.59	2.59	2.59	2.59	2.59	2.59	2.59
8907120100	2.59	2.59	2.59	2.59	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
8907121300	2.60	2.60	2.60	2.60	2.59	2.59	2.58	2.58	2.58	2.58	2.59	2.59
8907130100	2.60	2.60	2.60	2.60	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61
8907131300	2.61	2.61	2.60	2.60	2.59	2.58	2.58	2.58	2.58	2.58	2.58	2.58

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8907140100	2.58	2.58	2.58	2.58	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.58
8907141300	2.58	2.58	2.57	2.57	2.56	2.56	2.55	2.54	2.54	2.54	2.54	2.54
8907150100	2.54	2.54	2.54	2.54	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.56
8907151300	2.56	2.56	2.56	2.55	2.55	2.54	2.54	2.53	2.53	2.52	2.52	2.52
8907160100	2.52	2.52	2.52	2.52	2.52	2.52	2.53	2.53	2.53	2.53	2.54	2.54
8907161300	2.53	2.54	2.53	2.53	2.53	2.52	2.52	2.52	2.51	2.51	2.50	2.50
8907170100	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.50	2.50	2.51
8907171300	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.50	2.50	2.49	2.49
8907180100	2.48	2.48	2.48	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47
8907181300	2.47	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.47
8907190100	2.47	2.47	2.47	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46
8907191300	2.46	2.53	2.59	2.63	2.75	2.77	2.77	2.75	2.73	2.73	2.72	2.72
8907200100	2.71	2.71	2.71	2.71	2.70	2.69	2.69	2.68	2.68	2.68	2.67	2.67
8907201300	2.67	2.67	2.68	2.68	2.73	2.90	2.85	2.86	2.85	2.88	2.87	2.89
8907210100	2.93	2.92	2.91	2.95	2.98	3.00	3.03	3.03	3.02	3.00	2.98	2.96
8907211300	2.94	2.92	2.91	2.89	2.88	2.88	2.87	2.87	2.87	2.86	2.85	2.84
8907220100	2.83	2.82	2.82	2.81	2.81	2.80	2.79	2.78	2.78	2.77	2.77	2.76
8907221300	2.75	2.75	2.74	2.73	2.73	2.72	2.72	2.72	2.71	2.71	2.71	2.70
8907230100	2.70	2.69	2.69	2.69	2.68	2.68	2.68	2.67	2.67	2.67	2.67	2.66
8907231300	2.66	2.65	2.65	2.64	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
8907240100	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.61
8907241300	2.61	2.61	2.61	2.60	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
8907250100	2.59	2.60	2.60	2.60	2.60	2.59	2.59	2.59	2.59	2.59	2.58	2.58
8907251300	2.58	2.57	2.57	2.57	2.56	2.55	2.55	2.55	2.54	2.54	2.54	2.54
8907260100	2.54	2.55	2.56	2.56	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57
8907261300	2.57	2.57	2.56	2.56	2.55	2.66	2.65	2.87	2.91	2.87	2.89	2.86
8907270100	2.84	2.83	2.81	2.80	2.78	2.77	2.76	2.76	2.76	2.82	2.88	3.27
8907271300	3.28	3.24	3.29	3.39	3.56	3.57	3.51	3.46	3.42	3.39	3.38	3.37
8907280100	3.60	4.69	5.40	5.13	4.87	4.95	4.91	4.73	4.61	4.51	4.36	4.20
8907281300	4.05	3.92	3.82	3.74	3.67	3.62	3.57	3.53	3.49	3.45	3.41	3.38
8907290100	3.35	3.32	3.29	3.27	3.25	3.22	3.20	3.18	3.17	3.15	3.13	3.12
8907291300	3.11	3.09	3.08	3.06	3.05	3.03	3.02	3.01	3.00	2.99	2.98	2.97
8907300100	2.96	2.95	2.94	2.94	2.93	2.93	2.92	2.92	2.92	2.93	2.95	2.98
8907301300	3.02	3.03	3.05	3.05	3.04	3.04	3.05	3.04	3.04	3.04	3.04	3.04
8907310100	3.04	3.04	3.04	3.04	3.04	3.04	3.03	3.03	3.03	3.03	3.03	3.03
8907311300	3.02	3.02	3.01	3.00	3.00	2.99	2.98	2.97	2.96	2.95	2.95	2.94
8908010100	2.93	2.92	2.92	2.91	2.91	2.90	2.90	2.89	2.89	2.88	2.88	2.88
8908011300	2.87	2.87	2.86	2.85	2.85	2.85	2.84	2.83	2.83	2.82	2.82	2.81
8908020100	2.81	2.81	2.81	2.80	2.80	2.80	2.79	2.79	2.79	2.79	2.79	2.78
8908021300	2.78	2.78	2.77	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.75	2.75
8908030100	2.74	2.74	2.74	2.74	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.72
8908031300	2.72	2.72	2.72	2.72	2.72	2.72	2.71	2.71	2.71	2.71	2.71	2.70
8908040100	2.70	2.70	2.70	2.70	2.70	2.70	2.69	2.69	2.69	2.69	2.69	2.69
8908041300	2.69	2.70	2.75	2.74	2.75	2.82	2.79	2.78	2.78	2.78	2.77	2.78
8908050100	2.77	2.77	2.76	2.76	2.76	2.76	2.76	2.81	2.79	2.81	2.83	2.82
8908051300	2.81	2.80	2.79	2.79	2.78	2.78	2.77	2.77	2.76	2.76	2.76	2.75
8908060100	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.73	2.73
8908061300	2.73	2.72	2.71	2.71	2.70	2.70	2.69	2.69	2.69	2.69	2.68	2.68
8908070100	2.68	2.68	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.66	2.65
8908071300	2.65	2.65	2.65	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.63
8908080100	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.61
8908081300	2.61	2.61	2.61	2.61	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.60
8908090100	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.59	2.59	2.59

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8908091300	2.59	2.59	2.59	2.58	2.58	2.58	2.57	2.57	2.57	2.58	2.58	2.58
8908100100	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
8908101300	2.58	2.57	2.57	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.55	2.55
8908110100	2.55	2.55	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.57	2.57	2.57
8908111300	2.57	2.56	2.56	2.56	2.55	2.55	2.54	2.54	2.53	2.53	2.53	2.53
8908120100	2.52	2.52	2.53	2.53	2.54	2.54	2.54	2.55	2.55	2.55	2.55	2.55
8908121300	2.54	2.54	2.54	2.54	2.54	2.53	2.53	2.53	2.52	2.52	2.52	2.51
8908130100	2.51	2.51	2.50	2.50	2.50	2.51	2.51	2.52	2.52	2.53	2.53	2.54
8908131300	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.53	2.53	2.53	2.52
8908140100	2.52	2.52	2.52	2.51	2.52	2.52	2.52	2.52	2.53	2.53	2.53	2.53
8908141300	2.53	2.53	2.53	2.53	2.53	2.52	2.52	2.52	2.51	2.51	2.50	2.50
8908150100	2.50	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.50	2.50	2.51	2.52
8908151300	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52
8908160100	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.52	2.52	2.53	2.53	2.53
8908161300	2.53	2.54	2.54	2.53	2.53	2.53	2.53	2.52	2.52	2.52	2.51	2.51
8908170100	2.50	2.50	2.50	2.50	2.49	2.49	2.50	2.50	2.50	2.51	2.52	2.52
8908171300	2.52	2.52	2.52	2.52	2.52	2.51	2.51	2.51	2.50	2.50	2.49	2.49
8908180100	2.48	2.48	2.47	2.47	2.47	2.46	2.46	2.46	2.46	2.46	2.46	2.46
8908181300	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.45	2.45
8908190100	2.45	2.45	2.45	2.44	2.44	2.44	2.44	2.44	2.45	2.46	2.46	2.46
8908191300	2.46	2.46	2.47	2.47	2.49	2.51	2.53	2.55	2.55	2.55	2.55	2.55
8908200100	2.54	2.54	2.54	2.53	2.53	2.54	2.54	2.54	2.54	2.62	2.65	2.64
8908201300	2.70	2.76	2.74	2.71	2.70	2.69	2.69	2.69	2.68	2.68	2.67	2.67
8908210100	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.65	2.65	2.64	2.64
8908211300	2.63	2.62	2.62	2.61	2.61	2.60	2.60	2.60	2.59	2.59	2.59	2.58
8908220100	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
8908221300	2.57	2.57	2.57	2.57	2.56	2.56	2.55	2.55	2.55	2.55	2.55	2.54
8908230100	2.54	2.54	2.54	2.54	2.54	2.55	2.55	2.55	2.55	2.55	2.56	2.55
8908231300	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.55	2.54	2.54	2.54	2.54
8908240100	2.54	2.54	2.54	2.54	2.53	2.53	2.53	2.53	2.54	2.54	2.54	2.54
8908241300	2.54	2.54	2.54	2.53	2.53	2.53	2.52	2.52	2.52	2.51	2.51	2.50
8908250100	2.50	2.49	2.49	2.49	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48
8908251300	2.48	2.48	2.49	2.49	2.49	2.48	2.48	2.48	2.48	2.47	2.47	2.46
8908260100	2.46	2.46	2.45	2.45	2.45	2.44	2.44	2.44	2.44	2.44	2.44	2.44
8908261300	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.43
8908270100	2.43	2.43	2.43	2.43	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
8908271300	2.42	2.42	2.42	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.40
8908280100	2.40	2.40	2.40	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.38	2.38
8908281300	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38
8908290100	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.37	2.37
8908291300	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.36	2.36	2.36
8908300100	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.35	2.35	2.35	2.35
8908301300	2.35	2.35	2.35	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34	2.34
8908310100	2.34	2.34	2.34	2.34	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
8908311300	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.32	2.32	2.32
8909010100	2.32	2.32	2.32	2.32	2.33	2.33	2.33	2.36	2.42	2.50	2.57	2.88
8909011300	2.83	2.79	2.78	2.77	2.77	2.76	2.74	2.72	2.71	2.69	2.69	2.68
8909020100	2.67	2.66	2.66	2.65	2.64	2.64	2.63	2.63	2.63	2.62	2.62	2.61
8909021300	2.60	2.60	2.59	2.58	2.58	2.57	2.57	2.56	2.56	2.55	2.55	2.54
8909030100	2.54	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.52
8909031300	2.52	2.52	2.52	2.51	2.51	2.51	2.50	2.50	2.49	2.48	2.48	2.47
8909040100	2.47	2.47	2.46	2.46	2.46	2.45	2.45	2.45	2.45	2.45	2.45	2.45
8909041300	2.45	2.45	2.45	2.45	2.45	2.45	2.44	2.44	2.44	2.44	2.44	2.43

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8909050100	2.43	2.43	2.43	2.42	2.42	2.42	2.42	2.41	2.41	2.41	2.41	2.40
8909051300	2.40	2.40	2.40	2.40	2.40	2.40	2.39	2.39	2.39	2.39	2.39	2.39
8909060100	2.38	2.38	2.38	2.38	2.38	2.38	2.37	2.37	2.37	2.37	2.37	2.37
8909061300	2.37	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
8909070100	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.36	2.36	2.36
8909071300	2.36	2.36	2.36	2.36	2.36	2.41	2.43	2.47	2.49	2.52	2.54	2.87
8909080100	2.88	2.87	2.84	2.87	2.89	2.85	2.82	2.79	2.77	2.75	2.74	2.72
8909081300	2.71	2.70	2.70	2.68	2.67	2.66	2.66	2.65	2.64	2.63	2.63	2.62
8909090100	2.62	2.62	2.62	2.61	2.61	2.61	2.60	2.60	2.59	2.59	2.59	2.58
8909091300	2.58	2.58	2.57	2.57	2.57	2.56	2.56	2.55	2.54	2.54	2.55	2.56
8909100100	2.56	2.56	2.57	2.62	2.66	2.66	2.65	2.64	2.64	2.64	2.63	2.63
8909101300	2.63	2.63	2.65	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.65
8909110100	2.65	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.62	2.62	2.62	2.62
8909111300	2.61	2.61	2.61	2.60	2.60	2.59	2.59	2.58	2.58	2.57	2.57	2.57
8909120100	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.55	2.55
8909121300	2.55	2.55	2.55	2.55	2.55	2.54	2.54	2.54	2.53	2.53	2.53	2.52
8909130100	2.52	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.52	2.52
8909131300	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.51	2.51	2.51	2.51	2.51
8909140100	2.51	2.51	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.51	2.51	2.53
8909141300	2.55	2.60	2.73	2.81	3.03	3.14	3.11	3.13	3.17	3.16	3.12	3.08
8909150100	3.04	3.00	2.96	2.94	2.92	2.90	2.89	2.87	2.86	2.85	2.83	2.81
8909151300	2.80	2.79	2.79	2.77	2.77	2.77	2.76	2.76	2.75	2.74	2.74	2.73
8909160100	2.73	2.72	2.72	2.71	2.72	2.71	2.71	2.71	2.71	2.72	2.74	2.74
8909161300	2.75	2.80	2.80	2.79	2.79	2.79	2.80	2.80	2.80	2.79	2.79	2.79
8909170100	2.78	2.77	2.77	2.76	2.76	2.77	2.79	2.79	2.82	2.86	2.86	2.86
8909171300	2.86	2.86	2.86	2.86	2.86	2.85	2.85	2.84	2.84	2.83	2.82	2.82
8909180100	2.81	2.80	2.80	2.79	2.79	2.78	2.77	2.77	2.78	2.78	2.77	2.77
8909181300	2.76	2.76	2.76	2.75	2.74	2.74	2.74	2.73	2.73	2.72	2.72	2.71
8909190100	2.71	2.70	2.70	2.69	2.69	2.69	2.68	2.68	2.68	2.68	2.68	2.67
8909191300	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.65	2.64
8909200100	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.62
8909201300	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.61	2.61
8909210100	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.60
8909211300	2.61	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.59	2.59	2.59
8909220100	2.59	2.59	2.59	2.60	2.60	2.60	2.61	2.61	2.62	2.62	2.62	2.63
8909221300	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.64
8909230100	2.64	2.64	2.65	2.65	2.67	2.67	2.67	2.67	2.68	2.69	2.70	2.70
8909231300	2.70	2.69	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68
8909240100	2.67	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.65	2.65	2.64
8909241300	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.62	2.62	2.62	2.61
8909250100	2.61	2.62	2.62	2.61	2.61	2.62	2.62	2.62	2.62	2.62	2.62	2.61
8909251300	2.61	2.62	2.62	2.62	2.62	2.62	2.62	2.61	2.61	2.61	2.60	2.60
8909260100	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.61	2.61	2.61	2.61	2.61
8909261300	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.59	2.58	2.58	2.58	2.57
8909270100	2.57	2.57	2.57	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
8909271300	2.56	2.57	2.57	2.56	2.57	2.57	2.57	2.56	2.56	2.56	2.56	2.56
8909280100	2.56	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
8909281300	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.54
8909290100	2.54	2.54	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.54	2.54	2.54
8909291300	2.55	2.56	2.57	2.57	2.57	2.57	2.57	2.56	2.56	2.55	2.55	2.54
8909300100	2.54	2.54	2.53	2.53	2.53	2.52	2.52	2.52	2.52	2.52	2.52	2.52
8909301300	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.51
8910010100	2.51	2.51	2.51	2.51	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8910011300	2.50	2.50	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.51
8910020100	2.51	2.51	2.51	2.51	2.51	2.50	2.51	2.51	2.51	2.51	2.51	2.51
8910021300	2.51	2.51	2.52	2.52	2.52	2.52	2.53	2.53	2.52	2.52	2.52	2.52
8910030100	2.52	2.51	2.51	2.51	2.51	2.50	2.50	2.50	2.50	2.50	2.50	2.50
8910031300	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
8910040100	2.49	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48	2.48
8910041300	2.48	2.47	2.48	2.48	2.48	2.48	2.48	2.48	2.47	2.47	2.47	2.47
8910050100	2.47	2.47	2.47	2.47	2.46	2.47	2.46	2.46	2.46	2.46	2.46	2.47
8910051300	2.46	2.46	2.46	2.46	2.46	2.47	2.47	2.46	2.46	2.46	2.46	2.46
8910060100	2.46	2.46	2.46	2.46	2.45	2.46	2.46	2.46	2.46	2.45	2.45	2.45
8910061300	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
8910070100	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.43	2.44	2.43	2.43	2.43
8910071300	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.42	2.42	2.42	2.42
8910080100	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.41	2.42	2.41
8910081300	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41
8910090100	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.40	2.41	2.41	2.40
8910091300	2.40	2.40	2.41	2.40	2.41	2.41	2.41	2.41	2.40	2.41	2.40	2.40
8910100100	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.41	2.42	2.44	2.47	2.52
8910101300	2.56	2.57	2.63	2.79	2.80	2.78	2.77	2.77	2.78	2.78	2.77	2.76
8910110100	2.73	2.72	2.72	2.72	2.71	2.71	0.00	0.00	0.00	0.00	0.00	0.00
8910111300	2.70	2.70	2.70	2.70	2.70	2.69	2.69	2.69	2.68	2.68	2.67	2.67
8910120100	2.67	2.67	2.67	2.66	2.65	2.66	2.65	2.65	2.65	2.65	2.64	2.64
8910121300	2.63	2.63	2.62	2.62	2.62	2.62	2.61	2.61	2.61	2.61	2.61	2.61
8910130100	2.61	2.61	2.61	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
8910131300	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.59
8910140100	2.59	2.59	2.59	2.59	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58
8910141300	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.57	2.57	2.57	2.57	2.56
8910150100	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
8910151300	2.55	2.55	2.54	2.54	2.54	2.54	2.54	2.54	2.53	2.53	2.53	2.53
8910160100	2.53	2.53	2.53	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52	2.52
8910161300	2.52	2.52	2.52	2.53	2.52	2.53	2.53	2.65	2.87	2.81	3.13	3.09
8910170100	3.12	3.05	3.01	3.14	3.12	3.12	3.14	3.13	3.12	3.11	3.09	3.08
8910171300	3.06	3.04	3.02	3.01	2.99	2.98	2.96	2.95	2.93	2.92	2.92	2.91
8910180100	2.90	2.89	2.89	2.89	2.88	2.88	2.88	2.87	2.87	2.87	2.86	2.86
8910181300	2.85	2.85	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.85
8910190100	2.85	2.86	2.88	2.91	2.96	3.05	3.25	3.35	3.47	3.70	3.93	4.06
8910191300	4.20	4.28	4.44	4.54	4.56	4.52	4.46	4.37	4.33	4.30	4.25	4.17
8910200100	4.10	4.03	3.96	3.88	3.80	3.70	3.65	3.59	3.53	3.47	3.43	3.39
8910201300	3.36	3.33	3.31	3.28	3.27	3.25	3.23	3.21	3.20	3.19	3.18	3.16
8910210100	3.15	3.14	3.14	3.13	3.12	3.12	3.12	3.11	3.11	3.10	3.10	3.10
8910211300	3.09	3.09	3.09	3.09	3.08	3.08	3.07	3.07	3.07	3.07	3.06	3.06
8910220100	3.06	3.05	3.05	3.05	3.04	3.04	3.04	3.03	3.03	3.03	3.03	3.02
8910221300	3.02	3.02	3.02	3.01	3.01	3.01	3.01	3.00	3.00	3.00	2.99	2.99
8910230100	2.99	2.98	2.98	2.97	2.97	2.97	2.96	2.96	2.96	2.95	2.95	2.95
8910231300	2.94	2.94	2.94	2.94	2.93	2.93	2.93	2.93	2.92	2.92	2.91	2.91
8910240100	2.91	2.91	2.90	2.90	2.90	2.89	2.89	2.89	2.89	2.88	2.88	2.88
8910241300	2.88	2.88	2.88	2.88	2.87	2.87	2.87	2.87	2.86	2.86	2.86	2.86
8910250100	2.85	2.85	2.85	2.85	2.85	2.84	2.84	2.84	2.84	2.84	2.83	2.83
8910251300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.82	2.82	2.82
8910260100	2.82	2.82	2.81	2.81	2.81	2.81	2.81	2.80	2.80	2.80	2.80	2.80
8910261300	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.79	2.79	2.79
8910270100	2.79	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.77
8910271300	2.77	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.77	2.77	2.77	2.77

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8910280100	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
8910281300	2.76	2.76	2.76	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76	2.76
8910290100	2.76	2.76	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
8910291300	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
8910300100	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74
8910301300	2.74	2.74	2.74	2.74	2.75	2.74	2.75	2.75	2.75	2.75	2.75	2.75
8910310100	2.75	2.75	2.75	2.75	2.74	2.75	2.75	2.74	2.75	2.75	2.75	2.75
8910311300	2.76	2.77	2.77	2.77	2.78	2.78	2.79	2.80	2.79	2.79	2.79	2.79
8911010100	2.78	2.78	2.78	2.78	2.79	2.79	2.79	2.78	2.78	2.78	2.78	2.78
8911011300	2.77	2.78	2.78	2.78	2.78	2.78	2.78	2.77	2.78	2.77	2.77	2.77
8911020100	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.76	2.76	2.76
8911021300	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
8911030100	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
8911031300	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.75	2.75	2.75	2.75
8911040100	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
8911041300	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.74	2.75	2.75	2.75	2.75
8911050100	2.75	2.75	2.74	2.74	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.74
8911051300	2.75	2.75	2.76	2.76	2.77	2.77	2.77	2.78	2.78	2.78	2.78	2.79
8911060100	2.80	2.80	2.81	2.82	2.83	2.83	2.84	2.85	2.85	2.84	2.84	2.84
8911061300	2.84	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.84	2.84	2.84
8911070100	2.84	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.86
8911071300	2.87	2.85	2.86	2.86	2.88	2.90	2.90	2.91	2.91	2.91	2.91	2.92
8911080100	2.93	2.93	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
8911081300	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.93	2.93	2.94	2.95
8911090100	2.94	2.95	2.97	2.98	2.98	2.99	3.00	3.01	3.01	3.00	3.00	3.00
8911091300	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
8911100100	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.98	2.98	2.98
8911101300	2.98	2.97	2.97	2.97	2.97	2.97	2.96	2.96	2.96	2.95	2.95	2.95
8911110100	2.94	2.94	2.94	2.93	2.93	2.93	2.93	2.92	2.92	2.92	2.92	2.92
8911111300	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.90
8911120100	2.90	2.90	2.90	2.89	2.89	2.89	2.89	2.89	2.88	2.88	2.88	2.88
8911121300	2.88	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.86	2.86	2.86	2.86
8911130100	2.86	2.85	2.85	2.85	2.85	2.85	2.85	2.84	2.84	2.84	2.84	2.84
8911131300	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8911140100	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8911141300	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.85	2.86
8911150100	2.87	2.86	2.87	2.88	2.90	2.91	2.90	2.90	2.90	2.90	2.90	2.92
8911151300	2.93	2.93	2.95	2.99	3.01	3.15	3.46	4.25	4.73	5.30	6.10	6.71
8911160100	7.17	7.48	7.68	7.71	7.69	7.65	7.54	7.38	7.19	6.97	6.78	6.59
8911161300	6.42	6.26	6.12	6.00	5.87	5.77	5.70	5.64	5.59	5.54	5.48	5.41
8911170100	5.34	5.26	5.17	5.07	4.98	4.88	4.79	4.72	4.63	4.55	4.47	4.40
8911171300	4.33	4.26	4.20	4.15	4.10	4.05	4.01	3.96	3.92	3.87	3.83	3.79
8911180100	3.76	3.72	3.69	3.66	3.63	3.59	3.56	3.53	3.51	3.48	3.46	3.43
8911181300	3.41	3.39	3.37	3.35	3.34	3.32	3.30	3.29	3.27	3.26	3.25	3.24
8911190100	3.23	3.23	3.22	3.21	3.20	3.20	3.19	3.19	3.18	3.18	3.17	3.17
8911191300	3.16	3.16	3.16	3.16	3.16	3.15	3.16	3.16	3.15	3.16	3.15	3.15
8911200100	3.15	3.16	3.16	3.15	3.16	3.16	3.16	3.17	3.17	3.17	3.18	3.18
8911201300	3.19	3.19	3.20	3.19	3.20	3.20	3.19	3.18	3.18	3.17	3.17	3.17
8911210100	3.16	3.16	3.16	3.15	3.14	3.14	3.13	3.13	3.12	3.12	3.12	3.11
8911211300	3.11	3.10	3.10	3.09	3.09	3.08	3.08	3.07	3.07	3.07	3.06	3.06
8911220100	3.06	3.05	3.05	3.05	3.04	3.04	3.04	3.03	3.03	3.03	3.03	3.02
8911221300	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.01	3.01	3.01
8911230100	3.01	3.01	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.99	2.99	2.99

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8911231300	2.99	2.98	2.98	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.97	2.97
8911240100	2.96	2.94	2.94	2.91	2.90	2.91	2.93	2.93	2.92	2.92	2.93	2.93
8911241300	2.95	2.99	3.03	3.02	2.99	2.98	2.96	2.95	2.95	2.95	2.94	2.94
8911250100	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.95
8911251300	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.95	2.94	2.94	2.94
8911260100	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
8911261300	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94
8911270100	2.94	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.93	2.93	2.93	2.93
8911271300	2.93	2.93	2.93	2.94	2.94	2.94	2.94	2.94	2.95	2.95	2.95	2.95
8911280100	3.07	3.02	3.09	3.14	3.16	3.16	3.16	3.15	3.14	3.13	3.12	3.11
8911281300	3.10	3.10	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.08	3.08	3.09
8911290100	3.09	3.09	3.09	3.09	3.08	3.08	3.07	3.06	3.06	3.05	3.05	3.05
8911291300	3.04	3.04	3.03	3.03	3.03	3.02	3.02	3.02	3.01	3.01	3.01	3.00
8911300100	3.00	2.98	2.97	2.97	2.98	2.99	2.99	2.98	2.98	2.98	2.98	2.99
8911301300	3.00	3.00	2.99	2.98	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.96
8912010100	2.96	2.95	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94	2.94	2.94
8912011300	2.94	2.94	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.92	2.92	2.92
8912020100	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
8912021300	2.92	2.92	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.92	2.92
8912030100	2.92	2.92	2.92	2.92	2.90	2.89	2.88	2.88	2.88	2.89	2.90	2.91
8912031300	2.92	2.93	2.94	2.93	2.92	2.91	2.90	2.88	2.87	2.86	2.86	2.86
8912040100	2.86	2.87	2.86	2.86	2.86	2.87	2.87	2.87	2.87	2.88	2.88	2.88
8912041300	2.89	2.89	2.91	2.91	2.92	2.91	2.91	2.90	2.90	2.90	2.90	2.90
8912050100	2.90	2.89	2.88	2.88	2.88	2.88	2.87	2.87	2.87	2.88	2.89	2.89
8912051300	2.89	2.90	2.91	2.91	2.91	2.90	2.90	2.90	2.89	2.89	2.89	2.89
8912060100	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.88	2.89	2.89
8912061300	2.89	2.89	2.89	2.90	2.90	2.91	2.91	2.91	2.91	2.92	2.92	2.92
8912070100	2.92	2.91	2.90	2.87	2.85	2.85	2.86	2.84	2.84	2.85	2.87	2.89
8912071300	2.89	2.90	2.91	2.92	2.93	2.93	2.90	2.88	2.86	2.85	2.85	2.85
8912080100	2.86	2.86	2.86	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
8912081300	2.88	2.89	2.90	2.90	2.90	2.89	2.88	2.88	2.87	2.86	2.86	2.86
8912090100	2.85	2.83	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.83	2.83
8912091300	2.84	2.86	2.87	2.88	2.89	2.89	2.89	2.87	2.87	2.86	2.86	2.86
8912100100	2.85	2.84	2.84	2.85	2.85	2.84	2.84	2.84	2.84	2.85	2.86	2.86
8912101300	2.86	2.86	2.86	2.86	2.86	2.85	2.85	2.85	2.85	2.85	2.85	2.85
8912110100	2.85	2.85	2.85	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.85
8912111300	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85
8912120100	2.84	2.83	2.81	2.80	2.80	2.81	2.81	2.81	2.82	2.83	2.84	2.85
8912121300	2.85	2.86	2.86	2.86	2.85	2.85	2.84	2.82	2.81	2.81	2.81	2.81
8912130100	2.81	2.81	2.81	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.83	2.83
8912131300	2.84	2.84	2.84	2.84	2.83	2.83	2.83	2.82	2.81	2.80	2.80	2.80
8912140100	2.79	2.79	2.79	2.80	2.80	2.80	2.80	2.80	2.80	2.81	2.81	2.82
8912141300	2.82	2.82	2.82	2.82	2.81	2.81	2.80	2.80	2.79	2.79	2.78	2.77
8912150100	2.77	2.77	2.78	2.79	2.78	2.78	2.78	2.79	2.78	2.78	2.79	2.79
8912151300	2.79	2.79	2.80	2.81	2.81	2.81	2.82	2.82	2.82	2.82	2.82	2.82
8912160100	2.82	2.83	2.83	2.83	2.83	2.84	2.84	2.84	2.84	2.84	2.84	2.84
8912161300	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.85	2.85	2.85	2.86
8912170100	2.86	2.87	2.87	2.88	2.88	2.88	2.88	2.88	2.89	2.89	2.89	2.88
8912171300	2.87	2.86	2.86	2.86	2.86	2.86	2.87	2.88	2.88	2.89	2.89	2.90
8912180100	2.91	2.91	2.92	2.92	2.93	2.93	2.93	2.93	2.93	2.92	2.92	2.90
8912181300	2.88	2.88	2.88	2.88	2.88	2.89	2.90	2.91	2.92	2.93	2.94	2.95
8912190100	2.97	2.98	2.99	2.99	2.99	2.98	2.98	2.97	2.97	2.97	2.97	2.96
8912191300	2.96	2.96	2.96	2.95	2.94	2.95	2.94	2.94	2.94	2.94	2.94	2.94

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8912200100	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94
8912201300	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.92	2.92	2.92	2.91
8912210100	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.89
8912211300	2.89	2.89	2.89	2.89	2.89	2.88	2.88	2.88	2.88	2.87	2.87	2.87
8912220100	2.86	2.86	2.86	2.86	2.85	2.86	2.85	2.85	2.85	2.85	2.84	2.83
8912221300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.82	2.82	2.83	2.83
8912230100	2.83	2.83	2.83	2.83	2.83	2.83	2.84	2.84	2.83	2.83	2.83	2.83
8912231300	2.83	2.83	2.83	2.84	2.85	2.85	2.86	2.87	2.87	2.87	2.87	2.88
8912240100	2.88	2.87	2.87	2.88	2.88	2.89	2.90	2.90	2.91	2.91	2.91	2.92
8912241300	2.91	2.91	2.92	2.92	2.92	2.92	2.91	2.91	2.92	2.90	2.92	2.91
8912250100	2.91	2.92	2.92	2.91	2.92	2.93	2.93	2.92	2.92	2.92	2.92	2.91
8912251300	2.91	2.92	2.92	2.91	2.92	2.92	2.93	2.93	2.93	2.93	2.94	2.94
8912260100	2.95	2.95	2.96	2.95	2.95	2.94	2.95	2.95	2.95	2.95	2.95	2.95
8912261300	2.95	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.95	2.95	2.95	2.95
8912270100	2.95	2.95	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.93
8912271300	2.93	2.94	2.94	2.94	2.95	2.95	2.94	2.94	2.94	2.93	2.93	2.94
8912280100	2.94	2.94	2.93	2.93	2.92	2.93	2.93	2.93	2.92	2.92	2.92	2.92
8912281300	2.91	2.91	2.92	2.92	2.92	2.92	2.91	2.91	2.91	2.91	2.91	2.90
8912290100	2.90	2.90	2.90	2.89	2.89	2.89	2.89	2.89	2.88	2.88	2.89	2.88
8912291300	2.85	2.88	2.89	2.89	2.89	2.89	2.89	2.89	2.90	2.91	2.91	2.92
8912300100	2.93	2.93	2.94	2.94	2.94	2.94	2.94	2.95	2.95	2.95	2.95	2.95
8912301300	2.95	2.96	2.96	2.96	2.96	2.96	2.96	2.97	2.98	3.00	3.01	3.02
8912310100	3.04	3.10	3.15	3.18	3.28	3.51	3.85	4.24	4.57	4.96	5.30	5.62
8912311300	6.03	6.21	6.47	6.68	6.91	7.04	7.06	7.07	7.07	7.01	6.94	6.84
9001010100	6.71	6.56	6.42	6.28	6.14	6.01	5.86	5.71	5.60	5.49	5.41	5.32
9001011300	5.24	5.16	5.06	4.98	4.91	4.82	4.75	4.68	4.62	4.55	4.49	4.42
9001020100	4.37	4.31	4.25	4.18	4.11	4.04	3.98	3.94	3.91	3.88	3.86	3.86
9001021300	3.92	4.02	4.05	4.04	4.06	4.08	4.06	4.00	3.93	3.86	3.80	3.75
9001030100	3.72	3.70	3.70	3.70	3.70	3.70	3.70	3.68	3.67	3.66	3.64	3.64
9001031300	3.65	3.66	3.68	3.68	3.72	3.75	3.83	3.88	3.95	4.00	4.04	4.04
9001040100	4.14	4.26	4.32	4.32	4.43	4.44	4.51	4.62	4.80	5.05	5.36	5.77
9001041300	6.13	6.42	6.64	6.79	6.93	6.99	7.02	7.04	7.00	6.91	6.82	6.70
9001050100	6.56	6.41	6.28	6.13	5.99	5.83	5.70	5.57	5.43	5.29	5.18	5.08
9001051300	4.99	4.91	4.85	4.80	4.75	4.71	4.68	4.65	4.63	4.60	4.58	4.56
9001060100	4.54	4.52	4.50	4.47	4.43	4.40	4.32	4.22	4.11	4.15	4.23	4.32
9001061300	4.26	4.19	4.14	4.08	4.03	3.99	3.97	3.94	3.92	3.90	3.87	3.86
9001070100	3.84	3.82	3.81	3.80	3.77	3.66	3.56	3.60	3.66	3.85	3.84	3.79
9001071300	3.72	3.72	3.72	3.73	3.74	3.72	3.71	3.70	3.69	3.68	3.67	3.67
9001080100	3.67	3.66	3.66	3.66	3.66	3.66	3.66	3.65	3.64	3.60	3.67	3.66
9001081300	3.63	3.63	3.63	3.63	3.62	3.61	3.61	3.60	3.60	3.60	3.59	3.60
9001090100	3.59	3.59	3.59	3.59	3.59	3.59	3.60	3.60	3.60	3.59	3.59	3.59
9001091300	3.59	3.59	3.60	3.61	3.63	3.64	3.66	3.68	3.71	3.73	3.76	3.80
9001100100	3.84	3.90	3.98	4.05	4.14	4.22	4.30	4.37	4.43	4.49	4.54	4.57
9001101300	4.61	4.65	4.67	4.69	4.70	4.69	4.68	4.66	4.64	4.62	4.59	4.57
9001110100	4.55	4.52	4.50	4.47	4.45	4.42	4.40	4.37	4.35	4.33	4.30	4.28
9001111300	4.26	4.23	4.21	4.18	4.16	4.15	4.12	4.11	4.09	4.07	4.06	4.04
9001120100	4.03	4.01	4.00	3.98	3.96	3.94	3.92	3.89	3.87	3.85	3.83	3.80
9001121300	3.79	3.76	3.74	3.72	3.70	3.68	3.66	3.62	3.56	3.51	3.48	3.48
9001130100	3.46	3.41	3.33	3.26	3.23	3.23	3.23	3.23	3.25	3.28	3.36	3.43
9001131300	3.58	3.56	3.58	3.57	3.53	3.48	3.44	3.36	3.15	3.02	3.00	3.01
9001140100	3.05	3.09	3.10	3.08	3.04	3.03	3.05	3.08	3.09	3.11	3.19	3.33
9001141300	3.45	3.56	3.57	3.54	3.49	3.45	3.41	3.36	3.32	3.28	3.25	3.24
9001150100	3.23	3.22	3.22	3.22	3.21	3.21	3.21	3.20	3.20	3.20	3.21	3.22

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9001151300	3.23	3.24	3.24	3.25	3.25	3.25	3.26	3.26	3.27	3.27	3.27	3.27
9001160100	3.27	3.27	3.27	3.28	3.29	3.30	3.31	3.32	3.32	3.33	3.34	3.34
9001161300	3.35	3.35	3.36	3.36	3.37	3.37	3.38	3.38	3.39	3.39	3.40	3.41
9001170100	3.42	3.42	3.43	3.44	3.45	3.46	3.47	3.48	3.49	3.50	3.51	3.54
9001171300	3.58	3.63	3.66	3.70	3.75	3.80	3.85	3.92	4.00	4.10	4.18	4.23
9001180100	4.28	4.32	4.37	4.40	4.44	4.49	4.54	4.64	4.75	4.87	4.93	4.93
9001181300	4.90	4.86	4.81	4.76	4.70	4.64	4.59	4.55	4.50	4.46	4.42	4.38
9001190100	4.34	4.30	4.26	4.22	4.18	4.15	4.11	4.07	4.04	4.00	3.96	3.93
9001191300	3.90	3.87	3.85	3.82	3.80	3.78	3.77	3.76	3.75	3.74	3.73	3.72
9001200100	3.72	3.71	3.71	3.70	3.70	3.69	3.69	3.69	3.70	3.71	3.74	3.77
9001201300	3.82	3.88	3.98	4.10	4.20	4.32	4.47	4.67	4.87	5.05	5.24	5.42
9001210100	5.56	5.65	5.68	5.67	5.63	5.58	5.51	5.44	5.36	5.30	5.25	5.20
9001211300	5.18	5.16	5.16	5.15	5.14	5.11	5.07	5.02	4.96	4.91	4.85	4.81
9001220100	4.76	4.71	4.67	4.63	4.59	4.56	4.52	4.49	4.45	4.42	4.39	4.36
9001221300	4.34	4.31	4.29	4.27	4.25	4.23	4.21	4.19	4.17	4.16	4.14	4.13
9001230100	4.11	4.10	4.09	4.07	4.06	4.04	4.02	4.01	3.99	3.97	3.96	3.94
9001231300	3.93	3.91	3.90	3.89	3.88	3.88	3.88	3.89	3.90	3.89	3.90	3.91
9001240100	3.92	3.93	3.94	3.95	3.95	3.95	3.96	3.96	3.96	3.95	3.95	3.94
9001241300	3.92	3.91	3.89	3.88	3.86	3.85	3.83	3.82	3.81	3.79	3.78	3.77
9001250100	3.76	3.75	3.74	3.73	3.72	3.72	3.71	3.71	3.71	3.71	3.71	3.70
9001251300	3.71	3.71	3.75	3.81	3.85	3.86	3.87	3.92	3.93	3.94	3.95	3.95
9001260100	3.96	3.95	3.95	3.96	3.95	3.94	3.94	3.92	3.90	3.88	3.86	3.83
9001261300	3.81	3.79	3.77	3.75	3.72	3.71	3.68	3.67	3.65	3.63	3.62	3.60
9001270100	3.59	3.57	3.50	3.38	3.39	3.44	3.47	3.49	3.54	3.62	3.61	3.57
9001271300	3.53	3.48	3.47	3.46	3.46	3.47	3.47	3.47	3.47	3.47	3.47	3.47
9001280100	3.46	3.45	3.44	3.43	3.42	3.41	3.40	3.38	3.37	3.36	3.34	3.33
9001281300	3.31	3.30	3.29	3.28	3.27	3.26	3.26	3.25	3.25	3.24	3.24	3.24
9001290100	3.24	3.24	3.24	3.24	3.24	3.25	3.26	3.27	3.28	3.29	3.31	3.33
9001291300	3.35	3.37	3.40	3.42	3.43	3.45	3.46	3.46	3.45	3.45	3.47	3.47
9001300100	3.35	3.17	3.13	3.09	3.03	3.06	3.11	3.12	3.13	3.09	3.14	3.29
9001301300	3.61	3.70	3.68	3.60	3.53	3.50	3.48	3.47	3.44	3.40	3.31	3.18
9001310100	3.11	3.15	3.18	3.18	3.16	3.09	3.03	3.07	3.28	3.27	3.35	3.48
9001311300	3.55	3.48	3.37	3.31	3.31	3.31	3.30	3.28	3.27	3.25	3.24	3.24
9002010100	3.24	3.24	3.25	3.25	3.26	3.27	3.28	3.29	3.30	3.31	3.33	3.34
9002011300	3.38	3.43	3.52	3.69	3.92	4.15	4.28	4.50	4.89	5.24	5.55	5.94
9002020100	6.33	6.78	7.10	7.63	8.01	8.30	8.51	8.65	8.75	8.81	8.88	8.94
9002021300	8.98	9.03	9.03	9.03	9.00	8.94	8.83	8.66	8.40	8.12	7.78	7.45
9002030100	7.09	6.79	6.50	6.29	6.11	5.95	5.80	5.67	5.51	5.38	5.29	5.19
9002031300	5.11	5.04	4.98	4.93	4.88	4.85	4.81	4.79	4.76	4.74	4.73	4.72
9002040100	4.74	4.78	4.87	5.04	5.30	5.58	5.88	6.17	6.26	6.26	6.20	6.10
9002041300	6.02	5.93	5.85	5.79	5.74	5.69	5.56	5.49	5.42	5.37	5.29	5.23
9002050100	5.24	5.17	5.11	5.06	5.00	4.94	4.89	4.84	4.79	4.75	4.71	4.66
9002051300	4.63	4.60	4.59	4.59	4.62	4.68	4.75	4.83	4.93	5.04	5.15	5.20
9002060100	5.20	5.16	5.10	5.03	4.96	4.90	4.83	4.76	4.70	4.65	4.59	4.54
9002061300	4.50	4.46	4.45	4.45	4.46	4.49	4.52	4.55	4.57	4.59	4.59	4.59
9002070100	4.58	4.56	4.55	4.53	4.51	4.50	4.49	4.47	4.46	4.44	4.43	4.40
9002071300	4.39	4.36	4.34	4.32	4.30	4.28	4.26	4.24	4.22	4.21	4.18	4.17
9002080100	4.15	4.13	4.12	4.10	4.08	4.07	4.05	4.04	4.03	4.01	4.00	3.99
9002081300	3.99	3.97	3.97	3.96	3.95	3.94	3.93	3.93	3.92	3.90	3.90	3.89
9002090100	3.88	3.87	3.86	3.85	3.84	3.83	3.83	3.82	3.82	3.81	3.81	3.80
9002091300	3.79	3.79	3.78	3.78	3.78	3.78	3.78	3.78	3.77	3.77	3.77	3.77
9002100100	3.77	3.77	3.77	3.77	3.76	3.76	3.76	3.75	3.75	3.74	3.73	3.72
9002101300	3.70	3.69	3.68	3.67	3.66	3.65	3.64	3.63	3.62	3.61	3.60	3.59

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9002110100	3.57	3.57	3.56	3.55	3.54	3.53	3.52	3.52	3.51	3.51	3.50	3.49
9002111300	3.49	3.48	3.48	3.47	3.46	3.46	3.45	3.44	3.43	3.44	3.45	3.45
9002120100	3.44	3.43	3.42	3.41	3.41	3.39	3.38	3.37	3.36	3.35	3.34	3.33
9002121300	3.32	3.32	3.31	3.30	3.30	3.30	3.30	3.30	3.29	3.29	3.29	3.29
9002130100	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.28	3.28	3.28	3.28
9002131300	3.28	3.28	3.28	3.28	3.28	3.27	3.27	3.26	3.26	3.26	3.25	3.25
9002140100	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.25	3.26	3.27	3.27	3.28
9002141300	3.28	3.28	3.27	3.28	3.28	3.29	3.29	3.30	3.30	3.32	3.33	3.36
9002150100	3.38	3.40	3.42	3.44	3.48	3.51	3.56	3.68	4.08	4.80	5.61	6.42
9002151300	7.11	7.66	8.17	8.52	8.82	9.01	9.21	9.37	9.47	9.55	9.62	9.72
9002160100	9.75	9.77	9.77	9.73	9.73	9.67	9.65	9.60	9.58	9.52	9.44	9.36
9002161300	9.26	9.18	9.03	8.94	8.87	8.72	8.57	8.32	7.99	7.61	7.22	6.87
9002170100	6.57	6.30	6.07	5.87	5.66	5.48	5.32	5.21	5.08	5.00	4.90	4.82
9002171300	4.73	4.67	4.59	4.55	4.50	4.44	4.40	4.36	4.33	4.30	4.26	4.22
9002180100	4.18	4.15	4.12	4.07	3.96	3.80	3.67	3.72	3.85	3.96	4.06	4.00
9002181300	3.95	3.94	3.93	3.89	3.88	3.86	3.84	3.84	3.84	3.84	3.85	3.85
9002190100	3.85	3.85	3.84	3.83	3.83	3.81	3.80	3.78	3.76	3.74	3.72	3.71
9002191300	3.69	3.67	3.66	3.64	3.64	3.63	3.62	3.61	3.60	3.59	3.58	3.57
9002200100	3.56	3.53	3.52	3.51	3.50	3.46	3.39	3.38	3.39	3.33	3.43	3.45
9002201300	3.45	3.46	3.47	3.44	3.42	3.42	3.41	3.40	3.39	3.39	3.38	3.37
9002210100	3.37	3.36	3.29	3.29	3.29	3.25	3.18	3.15	3.36	3.40	3.45	3.38
9002211300	3.35	3.38	3.38	3.36	3.34	3.34	3.34	3.34	3.34	3.34	3.33	3.33
9002220100	3.34	3.34	3.34	3.34	3.35	3.36	3.38	3.42	3.47	3.55	3.69	3.94
9002221300	4.42	4.95	5.51	6.23	6.67	6.84	6.89	6.80	6.64	6.41	6.21	5.98
9002230100	5.80	5.62	5.47	5.32	5.19	5.09	5.02	4.98	4.98	5.03	5.12	5.27
9002231300	5.45	5.58	5.65	5.68	5.67	5.63	5.57	5.48	5.39	5.30	5.19	5.10
9002240100	5.01	4.93	4.84	4.78	4.71	4.65	4.60	4.55	4.51	4.48	4.44	4.40
9002241300	4.37	4.33	4.31	4.29	4.27	4.25	4.21	4.16	4.11	3.99	3.85	3.63
9002250100	3.58	3.64	3.72	3.77	3.81	3.85	3.87	3.91	3.93	3.95	3.95	3.94
9002251300	4.12	3.99	3.97	3.95	3.89	3.81	3.71	3.61	3.53	3.56	3.63	3.65
9002260100	3.63	3.58	3.55	3.53	3.55	3.57	3.57	3.57	3.58	3.62	3.67	3.62
9002261300	3.96	3.77	3.76	3.74	3.70	3.64	3.56	3.50	3.46	3.43	3.43	3.43
9002270100	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.43	3.43	3.45
9002271300	3.48	3.51	3.55	3.60	3.70	3.82	3.93	4.00	4.05	4.11	4.21	4.27
9002280100	4.27	4.25	4.22	4.18	4.11	4.00	3.90	3.82	3.79	3.79	3.94	4.14
9002281300	3.98	3.92	3.91	3.87	3.83	3.80	3.78	3.78	3.79	3.80	3.79	3.80
9003010100	3.77	3.73	3.59	3.57	3.45	3.32	3.31	3.47	3.79	3.88	3.81	3.88
9003011300	3.82	3.79	3.76	3.68	3.62	3.58	3.56	3.55	3.55	3.56	3.57	3.59
9003020100	3.61	3.62	3.62	3.62	3.60	3.56	3.53	3.53	3.51	3.50	3.49	3.48
9003021300	3.49	3.52	3.55	3.54	3.55	3.56	3.56	3.58	3.61	3.66	3.71	3.75
9003030100	3.77	3.79	3.78	3.77	3.74	3.71	3.68	3.65	3.61	3.59	3.56	3.53
9003031300	3.51	3.49	3.47	3.45	3.44	3.42	3.42	3.41	3.40	3.39	3.38	3.37
9003040100	3.36	3.36	3.35	3.34	3.32	3.30	3.31	3.28	3.29	3.30	3.29	3.29
9003041300	3.29	3.30	3.30	3.28	3.28	3.28	3.28	3.27	3.27	3.26	3.26	3.26
9003050100	3.25	3.25	3.25	3.25	3.24	3.23	3.23	3.21	3.24	3.22	3.22	3.21
9003051300	3.21	3.21	3.21	3.20	3.20	3.21	3.21	3.21	3.21	3.20	3.20	3.20
9003060100	3.20	3.20	3.19	3.19	3.19	3.18	3.16	3.07	3.26	3.22	3.18	3.16
9003061300	3.16	3.15	3.15	3.16	3.16	3.16	3.16	3.15	3.15	3.14	3.12	3.05
9003070100	2.99	3.05	3.05	3.06	3.07	3.11	3.18	3.29	3.30	3.11	3.11	3.23
9003071300	3.30	3.29	3.23	3.23	3.21	3.18	3.16	3.14	3.14	3.13	3.13	3.12
9003080100	3.09	2.99	3.02	3.01	2.99	3.06	3.14	3.21	3.14	3.17	3.23	3.22
9003081300	3.18	3.17	3.19	3.18	3.16	3.15	3.15	3.15	3.15	3.15	3.15	3.16
9003090100	3.17	3.18	3.19	3.20	3.20	3.21	3.24	3.26	3.30	3.31	3.34	3.37

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9003091300	3.40	3.42	3.44	3.47	3.49	3.51	3.53	3.57	3.58	3.59	3.59	3.59
9003100100	3.59	3.58	3.56	3.54	3.52	3.51	3.49	3.47	3.46	3.44	3.43	3.42
9003101300	3.46	3.47	3.48	3.49	3.50	3.51	3.51	3.51	3.51	3.52	3.52	3.52
9003110100	3.52	3.53	3.53	3.53	3.53	3.53	3.54	3.54	3.54	3.54	3.54	3.53
9003111300	3.53	3.53	3.53	3.52	3.51	3.51	3.51	3.50	3.50	3.49	3.48	3.48
9003120100	3.47	3.47	3.46	3.46	3.45	3.44	3.43	3.43	3.42	3.41	3.41	3.40
9003121300	3.40	3.39	3.39	3.38	3.38	3.37	3.37	3.36	3.36	3.35	3.35	3.34
9003130100	3.34	3.33	3.33	3.32	3.32	3.32	3.31	3.31	3.30	3.30	3.29	3.29
9003131300	3.29	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.27	3.27	3.27
9003140100	3.27	3.26	3.26	3.26	3.26	3.25	3.25	3.25	3.25	3.25	3.24	3.24
9003141300	3.24	3.24	3.24	3.23	3.23	3.23	3.23	3.22	3.22	3.22	3.22	3.21
9003150100	3.21	3.20	3.20	3.20	3.20	3.20	3.19	3.19	3.19	3.19	3.19	3.18
9003151300	3.18	3.17	3.17	3.17	3.17	3.17	3.16	3.16	3.16	3.15	3.16	3.15
9003160100	3.15	3.15	3.14	3.14	3.14	3.14	3.14	3.14	3.15	3.16	3.18	3.18
9003161300	3.18	3.19	3.19	3.19	3.20	3.20	3.20	3.20	3.20	3.21	3.21	3.21
9003170100	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.19	3.20	3.19	3.20	3.19
9003171300	3.19	3.18	3.18	3.18	3.17	3.17	3.17	3.16	3.16	3.16	3.15	3.15
9003180100	3.14	3.14	3.14	3.13	3.13	3.12	3.12	3.12	3.11	3.11	3.11	3.10
9003181300	3.10	3.09	3.09	3.09	3.09	3.08	3.08	3.08	3.08	3.07	3.07	3.07
9003190100	3.07	3.07	3.07	3.06	3.07	3.07	3.07	3.07	3.08	3.08	3.08	3.08
9003191300	3.08	3.08	3.08	3.09	3.09	3.10	3.10	3.10	3.10	3.10	3.11	3.11
9003200100	3.11	3.11	3.11	3.11	3.11	3.11	3.10	3.10	3.10	3.10	3.10	3.10
9003201300	3.10	3.10	3.09	3.10	3.09	3.10	3.10	3.10	3.10	3.10	3.10	3.10
9003210100	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.09	3.10	3.09	3.09
9003211300	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.08
9003220100	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
9003221300	3.08	3.08	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.08	3.08	3.07
9003230100	3.07	3.07	3.07	3.07	3.06	3.06	3.06	3.05	3.05	3.05	3.04	3.04
9003231300	3.04	3.04	3.03	3.03	3.03	3.03	3.02	3.02	3.02	3.02	3.02	3.02
9003240100	3.02	3.01	3.01	3.01	3.01	3.01	3.01	3.01	3.00	3.00	3.00	3.00
9003241300	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
9003250100	3.00	3.00	3.00	3.00	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
9003251300	2.99	2.99	2.99	2.98	2.98	2.98	2.99	2.99	2.99	2.98	2.98	2.98
9003260100	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.97	2.97
9003261300	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.96
9003270100	2.96	2.95	2.95	2.95	2.95	2.95	2.94	2.93	2.93	2.96	2.96	2.95
9003271300	2.95	2.95	2.94	2.94	2.94	2.95	2.95	2.95	2.95	2.94	2.94	2.94
9003280100	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94
9003281300	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.94	2.94
9003290100	2.94	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.94	2.93	2.93	2.93
9003291300	2.93	2.93	2.93	2.94	2.94	2.94	2.94	2.94	2.95	2.95	2.95	2.96
9003300100	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.97	2.97	2.97	2.97	2.97
9003301300	2.97	2.97	2.96	2.96	2.96	2.96	2.97	2.97	2.96	2.96	2.97	2.97
9003310100	2.96	2.96	2.96	2.96	2.97	2.96	2.96	2.97	2.97	2.97	2.98	2.98
9003311300	2.99	2.99	3.00	3.00	3.00	3.00	3.01	3.01	3.01	3.01	3.01	3.01
9004010100	3.01	3.01	3.02	3.03	3.03	3.04	3.05	3.05	3.05	3.06	3.07	3.07
9004011300	3.08	3.08	3.08	3.08	3.09	3.10	3.11	3.13	3.13	3.14	3.14	3.15
9004020100	3.15	3.16	3.16	3.16	3.16	3.17	3.18	3.18	3.19	3.19	3.20	3.20
9004021300	3.20	3.19	3.19	3.19	3.19	3.18	3.18	3.18	3.17	3.17	3.17	3.17
9004030100	3.17	3.16	3.16	3.16	3.16	3.16	3.16	3.17	3.17	3.17	3.18	3.18
9004031300	3.19	3.19	3.20	3.21	3.22	3.23	3.24	3.26	3.27	3.28	3.29	3.31
9004040100	3.32	3.33	3.35	3.36	3.37	3.38	3.39	3.41	3.42	3.42	3.43	3.44
9004041300	3.46	3.47	3.50	3.53	3.55	3.60	3.66	3.68	3.68	3.67	3.65	3.62

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9004050100	3.59	3.56	3.52	3.50	3.47	3.45	3.43	3.41	3.40	3.38	3.37	3.35
9004051300	3.34	3.33	3.32	3.32	3.31	3.30	3.30	3.29	3.28	3.27	3.26	3.25
9004060100	3.25	3.24	3.23	3.23	3.22	3.22	3.21	3.20	3.20	3.20	3.19	3.18
9004061300	3.18	3.17	3.17	3.16	3.16	3.16	3.16	3.15	3.15	3.15	3.14	3.14
9004070100	3.14	3.14	3.14	3.14	3.13	3.13	3.13	3.12	3.12	3.12	3.12	3.12
9004071300	3.11	3.12	3.11	3.11	3.11	3.10	3.10	3.10	3.10	3.09	3.09	3.09
9004080100	3.09	3.09	3.09	3.09	3.08	3.08	3.08	3.07	3.07	3.07	3.07	3.07
9004081300	3.07	3.06	3.06	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.05	3.04
9004090100	3.04	3.05	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.03
9004091300	3.03	3.03	3.03	3.03	3.02	3.02	3.02	3.02	3.02	3.02	3.02	3.03
9004100100	3.03	3.04	3.06	3.07	3.09	3.10	3.11	3.12	3.13	3.15	3.17	3.22
9004101300	3.29	3.51	4.40	5.55	6.76	7.83	8.60	9.08	9.39	9.57	9.71	9.68
9004110100	9.69	9.57	9.39	9.23	9.00	8.65	8.02	7.36	6.82	6.43	6.09	5.91
9004111300	5.74	5.59	5.46	5.34	5.20	5.11	5.03	4.95	4.90	4.84	4.81	4.81
9004120100	4.79	4.79	4.77	4.76	4.74	4.72	4.66	4.61	4.55	4.50	4.44	4.40
9004121300	4.37	4.34	4.32	4.31	4.30	4.31	4.31	4.31	4.29	4.26	4.23	4.19
9004130100	4.16	4.12	4.09	4.05	4.02	3.99	3.93	3.91	3.88	3.86	3.83	3.82
9004131300	3.80	3.78	3.76	3.75	3.73	3.72	3.71	3.70	3.68	3.68	3.67	3.66
9004140100	3.64	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.64	3.65	3.67	3.70
9004141300	3.72	3.76	3.80	3.84	3.89	3.95	4.00	4.03	4.05	4.05	4.04	4.01
9004150100	3.99	3.95	3.92	3.89	3.86	3.84	3.81	3.79	3.76	3.75	3.73	3.71
9004151300	3.69	3.68	3.66	3.65	3.63	3.62	3.60	3.59	3.57	3.56	3.55	3.54
9004160100	3.53	3.51	3.50	3.50	3.48	3.48	3.47	3.46	3.45	3.45	3.44	3.44
9004161300	3.43	3.43	3.42	3.42	3.41	3.41	3.40	3.39	3.39	3.39	3.39	3.38
9004170100	3.38	3.38	3.38	3.38	3.38	3.38	3.37	3.37	3.37	3.36	3.36	3.35
9004171300	3.35	3.35	3.34	3.34	3.33	3.32	3.31	3.31	3.30	3.29	3.29	3.28
9004180100	3.28	3.27	3.27	3.26	3.26	3.25	3.25	3.24	3.24	3.24	3.23	3.23
9004181300	3.22	3.22	3.21	3.21	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.19
9004190100	3.19	3.19	3.19	3.18	3.18	3.18	3.18	3.18	3.17	3.18	3.18	3.17
9004191300	3.17	3.17	3.17	3.16	3.17	3.16	3.16	3.16	3.16	3.16	3.15	3.16
9004200100	3.16	3.15	3.16	3.15	3.16	3.15	3.15	3.15	3.15	3.15	3.15	3.15
9004201300	3.15	3.16	3.16	3.15	3.16	3.17	3.19	3.23	3.29	3.36	3.47	3.61
9004210100	3.78	3.97	4.44	4.84	5.07	5.18	5.27	5.29	5.30	5.32	5.38	5.38
9004211300	5.37	5.31	5.22	5.09	4.95	4.81	4.68	4.54	4.44	4.33	4.24	4.16
9004220100	4.09	4.03	3.98	3.93	3.88	3.84	3.81	3.77	3.75	3.72	3.70	3.67
9004221300	3.65	3.64	3.62	3.60	3.59	3.58	3.57	3.56	3.54	3.53	3.52	3.51
9004230100	3.49	3.48	3.48	3.47	3.46	3.45	3.44	3.43	3.42	3.42	3.42	3.40
9004231300	3.39	3.37	3.37	3.36	3.36	3.35	3.35	3.35	3.34	3.33	3.33	3.32
9004240100	3.32	3.31	3.31	3.30	3.29	3.29	3.29	3.28	3.28	3.27	3.27	3.27
9004241300	3.26	3.26	3.25	3.24	3.24	3.24	3.23	3.23	3.23	3.22	3.22	3.22
9004250100	3.21	3.21	3.21	3.21	3.20	3.20	3.20	3.19	3.19	3.19	3.19	3.18
9004251300	3.18	3.18	3.17	3.16	3.16	3.16	3.16	3.15	3.15	3.15	3.14	3.14
9004260100	3.14	3.14	3.14	3.14	3.13	3.13	3.13	3.13	3.13	3.12	3.12	3.12
9004261300	3.12	3.11	3.11	3.10	3.10	3.10	3.10	3.09	3.09	3.09	3.09	3.08
9004270100	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.07	3.08	3.07	3.07	3.07
9004271300	3.07	3.06	3.06	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.04	3.04
9004280100	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.03
9004281300	3.03	3.03	3.02	3.02	3.02	3.01	3.01	3.01	3.00	3.00	3.00	3.00
9004290100	3.00	3.00	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.98	2.98
9004291300	2.98	2.98	2.97	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.96	2.96
9004300100	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
9004301300	2.95	2.95	2.95	2.95	2.95	2.94	2.94	2.94	2.94	2.94	2.93	2.93
9005010100	2.93	2.93	2.93	2.93	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9005011300	2.91	2.91	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.89	2.89
9005020100	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89
9005021300	2.89	2.89	2.88	2.88	2.88	2.88	2.88	2.88	2.87	2.87	2.87	2.87
9005030100	2.87	2.87	2.87	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
9005031300	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.87	2.87	2.87	2.87
9005040100	2.87	2.86	2.86	2.86	2.86	2.87	2.87	2.87	2.87	2.88	2.90	2.93
9005041300	2.97	3.02	3.03	3.07	3.23	3.52	3.71	3.84	3.94	3.97	3.95	3.87
9005050100	3.82	3.88	4.05	5.61	6.58	7.08	7.22	7.05	6.76	6.41	6.09	5.86
9005051300	5.69	5.57	5.47	5.39	5.33	5.25	5.17	5.07	4.97	4.87	4.77	4.67
9005060100	4.58	4.49	4.42	4.34	4.27	4.21	4.13	4.08	4.03	3.99	3.94	3.91
9005061300	3.86	3.82	3.78	3.75	3.72	3.69	3.66	3.63	3.60	3.58	3.55	3.53
9005070100	3.49	3.46	3.45	3.43	3.41	3.40	3.38	3.37	3.36	3.35	3.34	3.33
9005071300	3.32	3.31	3.30	3.28	3.28	3.27	3.26	3.25	3.24	3.23	3.23	3.22
9005080100	3.21	3.21	3.20	3.19	3.19	3.18	3.18	3.17	3.17	3.17	3.16	3.15
9005081300	3.15	3.14	3.13	3.13	3.12	3.12	3.11	3.11	3.10	3.10	3.09	3.09
9005090100	3.08	3.08	3.08	3.07	3.07	3.07	3.07	3.06	3.06	3.06	3.06	3.06
9005091300	3.05	3.05	3.04	3.04	3.04	3.04	3.03	3.03	3.03	3.03	3.03	3.03
9005100100	3.03	3.02	3.02	3.02	3.02	3.02	3.03	3.06	3.04	3.03	3.03	3.03
9005101300	3.03	3.02	3.02	3.01	3.01	3.01	3.01	3.00	3.00	3.00	2.99	2.99
9005110100	2.99	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.97	2.96	2.96	2.96
9005111300	2.96	2.95	2.95	2.94	2.94	2.94	2.94	2.93	2.93	2.92	2.92	2.92
9005120100	2.92	2.91	2.91	2.91	2.91	2.90	2.90	2.90	2.90	2.90	2.90	2.91
9005121300	2.92	2.93	2.94	2.94	2.94	2.94	2.94	2.95	2.95	2.96	2.96	2.97
9005130100	2.99	3.05	3.16	3.37	3.47	3.59	3.65	3.72	3.87	4.05	4.17	4.21
9005131300	4.21	4.20	4.18	4.13	4.08	4.03	3.97	3.91	3.86	3.81	3.76	3.72
9005140100	3.67	3.63	3.59	3.56	3.52	3.50	3.47	3.45	3.43	3.42	3.41	3.39
9005141300	3.37	3.36	3.34	3.33	3.32	3.31	3.30	3.28	3.27	3.27	3.26	3.25
9005150100	3.24	3.24	3.23	3.22	3.22	3.21	3.21	3.20	3.20	3.19	3.19	3.18
9005151300	3.17	3.17	3.17	3.16	3.16	3.15	3.15	3.15	3.15	3.15	3.15	3.23
9005160100	3.37	3.42	3.55	3.68	3.80	3.96	4.66	5.22	5.67	6.01	6.19	6.31
9005161300	6.41	6.48	6.49	6.44	6.33	6.09	5.79	5.50	5.21	4.98	4.79	4.63
9005170100	4.50	4.39	4.30	4.21	4.15	4.09	4.04	4.00	3.97	3.95	3.93	3.92
9005171300	3.90	3.88	3.87	3.87	3.88	3.87	3.86	3.83	3.79	3.75	3.71	3.67
9005180100	3.62	3.59	3.55	3.52	3.49	3.46	3.44	3.42	3.40	3.38	3.37	3.35
9005181300	3.34	3.32	3.31	3.29	3.28	3.27	3.25	3.24	3.23	3.22	3.21	3.20
9005190100	3.19	3.19	3.18	3.17	3.17	3.16	3.16	3.15	3.15	3.14	3.14	3.14
9005191300	3.13	3.13	3.12	3.12	3.11	3.11	3.11	3.10	3.10	3.10	3.10	3.09
9005200100	3.09	3.09	3.09	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
9005201300	3.08	3.07	3.07	3.06	3.11	3.19	3.31	3.45	3.69	4.20	4.57	4.80
9005210100	4.86	4.80	4.68	4.53	4.39	4.26	4.15	4.04	3.96	3.88	3.81	3.75
9005211300	3.70	3.65	3.60	3.56	3.52	3.49	3.46	3.43	3.41	3.39	3.37	3.35
9005220100	3.33	3.32	3.31	3.29	3.28	3.27	3.26	3.25	3.24	3.24	3.23	3.21
9005221300	3.21	3.20	3.19	3.18	3.18	3.17	3.16	3.16	3.15	3.14	3.13	3.13
9005230100	3.12	3.11	3.11	3.10	3.10	3.10	3.09	3.09	3.09	3.09	3.09	3.08
9005231300	3.08	3.07	3.07	3.07	3.06	3.06	3.05	3.05	3.04	3.04	3.03	3.02
9005240100	3.02	3.02	3.01	3.01	3.01	3.01	3.01	3.01	3.01	3.00	3.00	3.00
9005241300	3.00	3.00	2.99	2.99	2.99	2.98	2.98	2.98	2.97	2.97	2.97	2.97
9005250100	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.95	2.95	2.95	2.95	2.95
9005251300	2.95	2.95	2.95	2.94	2.94	2.94	2.95	2.95	2.96	2.97	3.00	3.03
9005260100	3.06	3.08	3.09	3.12	3.13	3.13	3.14	3.15	3.15	3.17	3.18	3.19
9005261300	3.19	3.19	3.19	3.19	3.18	3.17	3.17	3.16	3.15	3.14	3.13	3.13
9005270100	3.12	3.11	3.11	3.10	3.09	3.09	3.08	3.08	3.07	3.07	3.07	3.06
9005271300	3.06	3.05	3.05	3.04	3.03	3.03	3.03	3.02	3.01	3.01	3.00	3.00

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9005280100	2.99	2.99	2.99	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.97
9005281300	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.95	2.95	2.95	2.95	2.95
9005290100	2.95	2.95	2.95	2.96	2.97	2.98	2.97	2.97	2.98	2.98	2.99	2.99
9005291300	2.99	3.00	3.00	2.99	2.99	2.99	2.99	2.99	2.99	2.98	2.98	2.98
9005300100	2.98	2.98	2.97	2.97	2.97	2.96	2.96	2.96	2.96	2.95	2.95	2.95
9005301300	2.94	2.94	2.94	2.93	2.93	2.92	2.92	2.92	2.91	2.91	2.91	2.90
9005310100	2.89	2.89	2.89	2.89	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
9005311300	2.88	2.88	2.87	2.87	2.87	2.86	2.86	2.86	2.86	2.85	2.85	2.85
9006010100	2.84	2.84	2.85	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
9006011300	2.84	2.84	2.84	2.83	2.83	2.83	2.82	2.82	2.82	2.82	2.82	2.81
9006020100	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81
9006021300	2.81	2.81	2.81	2.81	2.82	2.82	2.83	2.84	2.85	2.84	2.84	2.84
9006030100	2.84	2.85	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
9006031300	2.85	2.85	2.84	2.84	2.83	2.82	2.81	2.82	2.83	2.84	2.84	2.85
9006040100	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
9006041300	2.83	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.82	2.81
9006050100	2.82	2.81	2.82	2.82	2.81	2.81	2.81	2.81	2.82	2.81	2.81	2.81
9006051300	2.81	2.81	2.81	2.81	2.80	2.80	2.80	2.80	2.80	2.79	2.79	2.79
9006060100	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.78	2.78	2.78	2.78
9006061300	2.79	2.79	2.78	2.79	2.79	2.79	2.78	2.79	2.79	2.78	2.78	2.78
9006070100	2.78	2.78	2.78	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77
9006071300	2.77	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.76	2.76	2.75	2.75
9006080100	2.75	2.75	2.74	2.74	2.74	2.76	2.77	2.79	2.83	2.85	2.86	2.90
9006081300	2.92	3.00	2.99	3.03	3.04	3.05	3.05	3.06	3.06	3.10	3.12	3.12
9006090100	3.13	3.12	3.13	3.16	3.16	3.15	3.14	3.13	3.12	3.11	3.09	3.08
9006091300	3.06	3.05	3.04	3.03	3.01	3.00	2.99	2.98	2.97	2.96	2.95	2.94
9006100100	2.93	2.92	2.91	2.91	2.90	2.89	2.89	2.88	2.88	2.87	2.87	2.87
9006101300	2.87	2.86	2.86	2.86	2.85	2.85	2.84	2.84	2.83	2.83	2.82	2.82
9006110100	2.82	2.81	2.81	2.81	2.81	2.80	2.80	2.80	2.80	2.80	2.80	2.80
9006111300	2.80	2.79	2.79	2.78	2.78	2.78	2.78	2.78	2.77	2.77	2.77	2.76
9006120100	2.76	2.76	2.76	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
9006121300	2.75	2.75	2.75	2.75	2.74	2.73	2.74	2.74	2.74	2.74	2.74	2.73
9006130100	2.74	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.74	2.74	2.74
9006131300	2.74	2.73	2.73	2.73	2.73	2.72	2.72	2.72	2.72	2.71	2.71	2.71
9006140100	2.71	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.75	2.74	2.74
9006141300	2.75	2.76	2.76	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.73
9006150100	2.73	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.71
9006151300	2.71	2.71	2.71	2.70	2.70	2.70	2.69	2.69	2.69	2.69	2.68	2.68
9006160100	2.68	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.66	2.66	2.66	2.67
9006161300	2.67	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.65	2.65	2.65	2.65
9006170100	2.65	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
9006171300	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.62
9006180100	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.61
9006181300	2.61	2.61	2.61	2.60	2.60	2.59	2.59	2.59	2.58	2.59	2.59	2.59
9006190100	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.58	2.58
9006191300	2.58	2.58	2.58	2.58	2.58	2.57	2.57	2.58	2.58	2.58	2.58	2.58
9006200100	2.58	2.59	2.58	2.58	2.59	2.58	2.59	2.59	2.59	2.59	2.59	2.59
9006201300	2.59	2.59	2.60	2.60	2.60	2.60	2.61	2.61	2.62	2.62	2.63	2.63
9006210100	2.63	2.63	2.63	2.63	2.63	2.63	2.64	2.64	2.64	2.65	2.65	2.64
9006211300	2.64	2.64	2.63	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
9006220100	2.62	2.62	2.63	2.63	2.64	2.66	2.65	2.65	2.64	2.63	2.63	2.63
9006221300	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
9006230100	2.62	2.62	2.63	2.63	2.63	2.63	2.63	2.63	2.62	2.63	2.63	2.63

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9006231300	2.63	2.63	2.63	2.64	2.64	2.64	2.64	2.64	2.65	2.65	2.65	2.65
9006240100	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
9006241300	2.66	2.66	2.66	2.67	2.67	2.67	2.67	2.67	2.67	2.66	2.66	2.66
9006250100	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.65	2.65
9006251300	2.65	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63
9006260100	2.63	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.61	2.61	2.61	2.60
9006261300	2.60	2.60	2.59	2.59	2.58	2.58	2.58	2.57	2.57	2.57	2.57	2.57
9006270100	2.57	2.57	2.57	2.57	2.57	2.58	2.58	2.58	2.58	2.58	2.57	2.57
9006271300	2.57	2.57	2.57	2.57	2.56	2.56	2.56	2.55	2.55	2.55	2.54	2.54
9006280100	2.54	2.54	2.54	2.54	2.55	2.55	2.55	2.55	2.56	2.56	2.56	2.57
9006281300	2.59	2.60	2.60	2.61	2.63	2.64	2.66	2.67	2.66	2.66	2.65	2.65
9006290100	2.65	2.65	2.66	2.66	2.66	2.66	2.66	2.68	2.68	2.67	2.67	2.67
9006291300	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.64	2.64	2.64	2.63	2.63
9006300100	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.62
9006301300	2.62	2.61	2.61	2.61	2.60	2.59	2.59	2.59	2.59	2.59	2.59	2.58
9007010100	2.59	2.59	2.59	2.60	2.61	2.61	2.61	2.61	2.61	2.61	2.60	2.60
9007011300	2.59	2.59	2.59	2.58	2.58	2.57	2.57	2.56	2.56	2.55	2.55	2.55
9007020100	2.55	2.55	2.55	2.55	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.56
9007021300	2.56	2.56	2.56	2.56	2.55	2.55	2.54	2.54	2.54	2.53	2.53	2.52
9007030100	2.52	2.51	2.51	2.51	2.51	2.51	2.51	2.51	2.52	2.52	2.52	2.52
9007031300	2.52	2.52	2.52	2.52	2.51	2.51	2.50	2.50	2.50	2.49	2.49	2.48
9007040100	2.47	2.47	2.47	2.46	2.46	2.46	2.46	2.46	2.45	2.46	2.46	2.46
9007041300	2.46	2.45	2.46	2.46	2.46	2.46	2.45	2.45	2.45	2.45	2.44	2.44
9007050100	2.43	2.43	2.43	2.42	2.42	2.42	2.41	2.41	2.40	2.40	2.40	2.39
9007051300	2.39	2.39	2.39	2.38	2.38	2.38	2.38	2.38	2.38	2.37	2.37	2.37
9007060100	2.37	2.37	2.37	2.36	2.37	2.36	2.36	2.36	2.36	2.36	2.36	2.36
9007061300	2.35	2.36	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
9007070100	2.34	2.35	2.34	2.34	2.34	2.34	2.34	2.33	2.33	2.34	2.34	2.33
9007071300	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
9007080100	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
9007081300	2.33	2.33	2.32	2.32	2.32	2.33	2.32	2.33	2.32	2.33	2.32	2.33
9007090100	2.32	2.32	2.33	2.32	2.33	2.32	2.32	2.32	2.33	2.33	2.33	2.33
9007091300	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.32	2.32	2.32	2.32
9007100100	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32
9007101300	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.31	2.31	2.31
9007110100	2.31	2.31	2.31	2.32	2.32	2.32	2.32	2.32	2.33	2.34	2.34	2.35
9007111300	2.35	2.35	2.35	2.35	2.35	2.35	2.34	2.34	2.34	2.54	2.63	2.63
9007120100	2.63	2.62	2.61	2.61	2.60	2.60	2.59	2.60	2.66	2.70	2.70	2.71
9007121300	2.73	2.73	2.73	2.74	2.71	2.71	2.72	2.72	2.71	2.71	2.70	2.70
9007130100	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.70	2.72	2.72	2.72
9007131300	2.71	2.71	2.70	2.70	2.70	2.69	2.69	2.69	2.69	2.70	2.70	2.70
9007140100	2.71	2.71	2.72	2.73	2.80	2.93	3.04	3.21	3.36	3.49	3.59	3.68
9007141300	4.04	4.53	4.86	5.02	5.12	5.18	5.14	5.05	4.91	4.74	4.54	4.38
9007150100	4.24	4.11	4.00	3.92	3.83	3.77	3.71	3.65	3.59	3.55	3.51	3.47
9007151300	3.43	3.40	3.37	3.35	3.32	3.30	3.27	3.25	3.23	3.20	3.18	3.16
9007160100	3.15	3.13	3.11	3.10	3.08	3.07	3.06	3.05	3.04	3.02	3.01	3.00
9007161300	2.99	2.98	2.97	2.96	2.95	2.94	2.93	2.92	2.92	2.91	2.90	2.89
9007170100	2.88	2.87	2.86	2.86	2.85	2.85	2.84	2.83	2.83	2.83	2.82	2.82
9007171300	2.81	2.81	2.80	2.80	2.79	2.78	2.78	2.78	2.77	2.76	2.76	2.76
9007180100	2.75	2.74	2.74	2.74	2.74	2.73	2.73	2.73	2.73	2.72	2.72	2.72
9007181300	2.71	2.71	2.70	2.70	2.70	2.70	2.69	2.69	2.69	2.68	2.68	2.68
9007190100	2.68	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.66	2.65	2.65
9007191300	2.65	2.65	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.62

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9007200100	2.63	2.63	2.63	2.63	2.63	2.63	2.62	2.62	2.62	2.62	2.63	2.63
9007201300	2.64	2.64	2.64	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	2.65
9007210100	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
9007211300	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.64	2.64	2.64	2.64	2.64
9007220100	2.64	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.69	2.80	2.89
9007221300	3.09	3.26	3.47	3.55	3.60	3.61	3.64	3.68	3.74	3.79	3.82	3.85
9007230100	3.89	3.91	3.88	3.85	3.82	3.78	3.73	3.69	3.64	3.60	3.56	3.51
9007231300	3.47	3.44	3.41	3.38	3.35	3.33	3.31	3.29	3.26	3.24	3.22	3.20
9007240100	3.18	3.16	3.14	3.12	3.11	3.09	3.08	3.07	3.06	3.05	3.04	3.03
9007241300	3.02	3.01	2.99	2.98	2.97	2.96	2.95	2.94	2.93	2.92	2.91	2.90
9007250100	2.90	2.89	2.88	2.88	2.87	2.87	2.86	2.86	2.85	2.85	2.84	2.84
9007251300	2.84	2.83	2.82	2.82	2.82	2.80	2.80	2.79	2.79	2.78	2.77	2.77
9007260100	2.76	2.76	2.76	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.73	2.73
9007261300	2.73	2.72	2.72	2.72	2.72	2.71	2.71	2.71	2.71	2.70	2.70	2.69
9007270100	2.69	2.69	2.68	2.68	2.68	2.68	2.68	2.67	2.67	2.68	2.67	2.67
9007271300	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.65
9007280100	2.65	2.65	2.64	2.64	2.64	2.64	2.64	2.64	2.63	2.63	2.63	2.63
9007281300	2.63	2.63	2.62	2.62	2.62	2.61	2.61	2.61	2.61	2.61	2.61	2.61
9007290100	2.61	2.61	2.61	2.61	2.61	2.60	2.60	2.60	2.60	2.60	2.59	2.59
9007291300	2.59	2.59	2.58	2.58	2.57	2.57	2.57	2.56	2.56	2.56	2.56	2.56
9007300100	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.55
9007301300	2.55	2.55	2.55	2.54	2.54	2.54	2.53	2.53	2.54	2.54	2.54	2.54
9007310100	2.54	2.55	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.56	2.55	2.55
9007311300	2.54	2.54	2.54	2.53	2.53	2.52	2.52	2.52	2.52	2.51	2.51	2.51
9008010100	2.51	2.50	2.50	2.51	2.51	2.52	2.52	2.52	2.53	2.53	2.53	2.53
9008011300	2.53	2.52	2.52	2.51	2.51	2.50	2.50	2.49	2.49	2.49	2.48	2.48
9008020100	2.47	2.47	2.46	2.46	2.46	2.46	2.46	2.47	2.47	2.48	2.48	2.48
9008021300	2.49	2.48	2.48	2.48	2.48	2.48	2.47	2.47	2.46	2.46	2.45	2.45
9008030100	2.45	2.44	2.43	2.43	2.43	2.42	2.42	2.42	2.42	2.41	2.41	2.41
9008031300	2.42	2.42	2.42	2.43	2.43	2.43	2.43	2.42	2.42	2.42	2.42	2.41
9008040100	2.41	2.41	2.40	2.40	2.40	2.39	2.39	2.39	2.39	2.38	2.38	2.38
9008041300	2.38	2.38	2.38	2.39	2.39	2.47	2.78	2.69	2.96	2.86	2.89	2.93
9008050100	2.92	2.89	2.86	3.27	3.36	3.38	3.37	3.34	3.30	3.27	3.24	3.21
9008051300	3.18	3.15	3.12	3.09	3.07	3.04	3.02	3.00	2.98	2.96	2.94	2.93
9008060100	2.91	2.90	2.89	2.88	2.87	2.86	2.85	2.84	2.83	2.83	2.84	2.85
9008061300	2.84	2.84	2.85	2.84	2.83	2.83	2.82	2.81	2.81	2.80	2.80	2.80
9008070100	2.79	2.79	2.79	2.78	2.78	2.78	2.77	2.77	2.77	2.77	2.78	2.79
9008071300	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.78	2.78	2.77	2.77	2.76
9008080100	2.75	2.74	2.74	2.74	2.73	2.72	2.72	2.72	2.71	2.71	2.71	2.70
9008081300	2.70	2.69	2.69	2.68	2.67	2.66	2.66	2.68	2.68	2.67	2.67	2.66
9008090100	2.66	2.65	2.65	2.64	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.63
9008091300	2.62	2.62	2.61	2.60	2.60	2.60	2.59	2.59	2.59	2.59	2.59	2.59
9008100100	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.57	2.57	2.57	2.57
9008101300	2.57	2.56	2.56	2.56	2.55	2.55	2.54	2.54	2.53	2.53	2.53	2.54
9008110100	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.53	2.53
9008111300	2.53	2.52	2.52	2.52	2.51	2.51	2.51	2.50	2.50	2.50	2.50	2.50
9008120100	2.50	2.49	2.49	2.49	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
9008121300	2.50	2.49	2.49	2.48	2.48	2.47	2.47	2.46	2.46	2.46	2.45	2.45
9008130100	2.45	2.47	2.50	2.63	2.76	2.76	2.88	2.96	3.01	3.11	3.15	3.15
9008131300	3.14	3.12	3.28	3.53	3.71	3.81	3.88	3.87	3.83	3.78	3.71	3.64
9008140100	3.57	3.49	3.43	3.37	3.33	3.28	3.24	3.21	3.18	3.15	3.12	3.10
9008141300	3.08	3.06	3.04	3.01	2.98	2.95	2.94	2.97	2.97	2.95	2.92	2.91
9008150100	2.89	2.88	2.87	2.86	2.85	2.84	2.83	2.83	2.82	2.82	2.81	2.80

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9008151300	2.79	2.79	2.78	2.78	2.77	2.76	2.76	2.75	2.75	2.74	2.74	2.73
9008160100	2.72	2.72	2.71	2.71	2.71	2.71	2.70	2.70	2.70	2.70	2.69	2.69
9008161300	2.68	2.68	2.68	2.67	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.66
9008170100	2.66	2.65	2.65	2.64	2.64	2.64	2.63	2.64	2.64	2.64	2.63	2.63
9008171300	2.63	2.62	2.62	2.62	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61
9008180100	2.61	2.61	2.60	2.60	2.60	2.60	2.60	2.60	2.59	2.59	2.59	2.59
9008181300	2.59	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.57	2.58	2.58
9008190100	2.57	2.57	2.57	2.57	2.63	2.63	2.72	2.68	2.69	2.74	2.73	2.72
9008191300	2.71	2.73	2.74	2.75	2.75	2.74	2.73	2.73	2.73	2.74	2.74	2.73
9008200100	2.73	2.72	2.71	2.71	2.71	2.70	2.70	2.70	2.70	2.69	2.69	2.69
9008201300	2.68	2.68	2.68	2.68	2.67	2.67	2.66	2.66	2.66	2.66	2.66	2.66
9008210100	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.64	2.64	2.64
9008211300	2.64	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.64	2.64
9008220100	2.64	2.64	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.62	2.62
9008221300	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
9008230100	2.62	2.62	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.60	2.60
9008231300	2.61	2.60	2.60	2.60	2.60	2.60	2.59	2.59	2.59	2.59	2.59	2.59
9008240100	2.60	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.58	2.58
9008241300	2.58	2.58	2.58	2.58	2.58	2.57	2.57	2.57	2.57	2.57	2.57	2.57
9008250100	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.56	2.56	2.56
9008251300	2.56	2.56	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.55	2.55	2.55
9008260100	2.55	2.55	2.55	2.56	2.56	2.56	2.56	2.56	2.55	2.55	2.55	2.55
9008261300	2.54	2.54	2.54	2.53	2.53	2.53	2.53	2.52	2.52	2.52	2.52	2.52
9008270100	2.52	2.52	2.52	2.53	2.53	2.53	2.53	2.54	2.54	2.53	2.53	2.53
9008271300	2.53	2.53	2.52	2.52	2.52	2.52	2.51	2.51	2.50	2.50	2.50	2.49
9008280100	2.49	2.49	2.48	2.48	2.49	2.49	2.49	2.50	2.50	2.50	2.50	2.50
9008281300	2.50	2.50	2.50	2.50	2.49	2.49	2.48	2.48	2.47	2.47	2.46	2.46
9008290100	2.45	2.45	2.45	2.44	2.44	2.44	2.43	2.43	2.43	2.43	2.43	2.42
9008291300	2.43	2.43	2.43	2.43	2.44	2.44	2.44	2.44	2.44	2.43	2.43	2.43
9008300100	2.42	2.41	2.41	2.40	2.40	2.40	2.39	2.39	2.39	2.39	2.38	2.38
9008301300	2.38	2.38	2.38	2.37	2.37	2.37	2.37	2.36	2.36	2.36	2.35	2.35
9008310100	2.35	2.35	2.34	2.34	2.34	2.34	2.34	2.33	2.33	2.33	2.33	2.33
9008311300	2.33	2.33	2.33	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.31
9009010100	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.30	2.30	2.30
9009011300	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
9009020100	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.30
9009021300	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.29
9009030100	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
9009031300	2.29	2.28	2.28	2.29	2.28	2.29	2.28	2.28	2.28	2.28	2.28	2.28
9009040100	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
9009041300	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
9009050100	2.28	2.28	2.27	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
9009051300	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
9009060100	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28
9009061300	2.28	2.28	2.28	2.28	2.28	2.28	2.29	2.29	2.29	2.28	2.28	2.28
9009070100	2.28	2.28	2.44	2.58	2.53	2.50	2.61	2.75	2.76	2.76	2.74	2.73
9009071300	2.72	2.71	2.69	2.67	2.66	2.65	2.63	2.63	2.62	2.61	2.60	2.59
9009080100	2.58	2.57	2.57	2.57	2.56	2.56	2.56	2.55	2.55	2.55	2.54	2.54
9009081300	2.54	2.55	2.55	2.56	2.56	2.56	2.55	2.55	2.54	2.54	2.54	2.54
9009090100	2.54	2.55	2.76	3.00	4.26	5.28	6.38	7.53	8.37	9.26	10.30	10.55
9009091300	10.60	10.45	10.12	9.75	9.36	9.01	8.58	7.88	7.07	6.50	5.95	5.39
9009100100	4.95	4.67	4.49	4.37	4.25	4.17	4.09	4.01	3.94	3.88	3.82	3.77
9009101300	3.73	3.68	3.64	3.60	3.57	3.53	3.50	3.48	3.45	3.42	3.40	3.37

Appendix B. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9009110100	3.35	3.33	3.31	3.29	3.27	3.25	3.24	3.22	3.21	3.19	3.18	3.17
9009111300	3.16	3.15	3.14	3.13	3.11	3.11	3.10	3.08	3.07	3.06	3.05	3.04
9009120100	3.03	3.03	3.02	3.01	3.01	3.00	3.00	2.99	2.99	2.98	2.98	2.98
9009121300	2.97	2.97	2.97	2.96	2.96	2.95	2.95	2.95	2.94	2.93	2.93	2.92
9009130100	2.92	2.91	2.91	2.90	2.90	2.90	2.89	2.89	2.89	2.88	2.88	2.88
9009131300	2.88	2.88	2.87	2.87	2.87	2.87	2.87	2.87	2.86	2.86	2.85	2.85
9009140100	2.84	2.84	2.84	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.82	2.82
9009141300	2.82	2.82	2.81	3.05	3.30	3.64	3.76	3.89	3.97	4.13	4.35	4.39
9009150100	4.48	4.61	4.65	4.61	4.49	4.39	4.29	4.19	4.10	4.01	3.93	3.85
9009151300	3.79	3.72	3.67	3.62	3.57	3.53	3.50	3.46	3.43	3.41	3.38	3.35
9009160100	3.33	3.31	3.29	3.28	3.26	3.25	3.25	3.24	3.24	3.23	3.26	3.34
9009161300	3.43	3.55	3.66	3.83	4.09	4.44	4.53	4.57	4.53	4.46	4.41	4.34
9009170100	4.26	4.17	4.08	3.99	3.90	3.83	3.76	3.71	3.66	3.61	3.58	3.54
9009171300	3.51	3.47	3.45	3.41	3.39	3.36	3.34	3.31	3.29	3.27	3.25	3.24
9009180100	3.22	3.21	3.20	3.19	3.18	3.17	3.16	3.15	3.14	3.13	3.13	3.12
9009181300	3.11	3.11	3.10	3.10	3.09	3.08	3.07	3.07	3.06	3.05	3.05	3.04
9009190100	3.04	3.03	3.03	3.03	3.05	3.05	3.06	3.07	3.07	3.07	3.08	3.08
9009191300	3.09	3.09	3.09	3.10	3.09	3.09	3.09	3.09	3.09	3.08	3.08	3.07
9009200100	3.07	3.07	3.06	3.06	3.06	3.05	3.05	3.05	3.05	3.05	3.05	3.04
9009201300	3.04	3.04	3.03	3.02	3.02	3.02	3.02	3.01	3.00	2.99	2.99	2.98
9009210100	2.97	2.97	2.96	2.96	2.96	2.95	2.95	2.95	2.94	2.94	2.94	2.94
9009211300	2.94	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.94	2.94	2.94
9009220100	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.95	2.95	2.95	2.95
9009221300	2.94	2.94	2.94	2.94	2.94	2.93	2.93	2.92	2.92	2.92	2.92	2.92
9009230100	2.92	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.91	2.90	2.91
9009231300	2.90	2.90	2.90	2.90	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.89
9009240100	2.88	2.88	2.88	2.88	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.86
9009241300	2.86	2.86	2.86	2.86	2.85	2.85	2.85	2.85	2.84	2.84	2.84	2.84
9009250100	2.84	2.83	2.83	2.82	2.82	2.82	2.82	2.82	2.82	2.81	2.81	2.81
9009251300	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.80	2.80
9009260100	2.80	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.78	2.79	2.78	2.78
9009261300	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.77	2.77	2.77
9009270100	2.77	2.77	2.77	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76
9009271300	2.76	2.76	2.76	2.75	2.75	2.76	2.76	2.75	2.75	2.75	2.75	2.75
9009280100	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.75
9009281300	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
9009290100	2.75	2.75	2.75	2.76	2.76	2.76	2.77	2.77	2.78	2.80	2.82	2.82
9009291300	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.84	2.84	2.86	2.86
9009300100	2.87	2.87	2.87	2.88	2.92	2.91	2.91	2.92	2.92	2.92	2.93	2.93
9009301300	2.93	2.93	2.93	2.93	2.94	2.94	2.94	2.92	2.92	2.92	2.92	2.93
9010010100	2.93	2.93	2.93	2.93	2.93	2.93						

Appendix C. Hourly stages of the Old Woman Creek Wetland at the U.S. Hwy 6 sampling station (USGS gaging station 04199165) reported by the U.S. Geological Survey. Stage shown plus 570.00 feet equals elevation above mean sea level.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8710010100	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39
8710011300	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.40	5.40	5.40	5.40
8710020100	5.40	5.41	5.41	5.41	5.41	5.41	5.41	5.40	5.39	5.39	5.39	5.39
8710021300	5.39	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38
8710030100	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38
8710031300	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38
8710040100	5.38	5.38	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39
8710041300	5.39	5.39	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40
8710050100	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.41
8710051300	5.41	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
8710060100	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42	5.42
8710061300	5.42	5.42	5.42	5.42	5.42	5.42	5.41	5.41	5.41	5.41	5.41	5.41
8710070100	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41
8710071300	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41
8710080100	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41
8710081300	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41
8710090100	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41	5.41
8710091300	5.42	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43
8710100100	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43
8710101300	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43
8710110100	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43
8710111300	5.43	5.43	5.44	5.44	5.44	5.44	5.44	5.44	5.44	5.44	5.44	5.44
8710120100	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.46
8710121300	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46
8710130100	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46
8710131300	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.47	5.47	5.47	5.47	5.47
8710140100	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47
8710141300	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
8710150100	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
8710151300	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
8710160100	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
8710161300	5.48	5.48	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710170100	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710171300	5.49	5.49	5.49	5.49	5.49	5.50	5.50	5.50	5.50	5.50	5.50	5.50
8710180100	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
8710181300	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
8710190100	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.49	5.49
8710191300	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710200100	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710201300	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710210100	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710211300	5.49	5.49	5.49	5.49	5.49	5.49	5.48	5.48	5.48	5.48	5.48	5.48
8710220100	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.47	5.47	5.47
8710221300	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.48	5.48	5.48	5.48

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8710230100	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.47	5.47	5.47
8710231300	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47
8710240100	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47	5.47
8710241300	5.47	5.47	5.47	5.47	5.47	5.47	5.48	5.48	5.48	5.48	5.48	5.48
8710250100	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
8710251300	5.48	5.48	5.48	5.48	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49
8710260100	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.50	5.50
8710261300	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
8710270100	5.50	5.50	5.51	5.51	5.52	5.53	5.53	5.53	5.53	5.53	5.54	5.54
8710271300	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.55	5.55	5.55	5.55	5.55
8710280100	5.55	5.55	5.55	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56
8710281300	5.56	5.56	5.57	5.57	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.58
8710290100	5.58	5.58	5.58	5.58	5.59	5.59	5.59	5.59	5.59	5.59	5.59	5.60
8710291300	5.60	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61
8710300100	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.62	5.62
8710301300	5.62	5.63	5.63	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
8710310100	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
8710311300	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
8711010100	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64
8711011300	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.64	5.65
8711020100	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65	5.65
8711021300	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
8711030100	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.67	5.67	5.67	5.67
8711031300	5.67	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711040100	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711041300	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69
8711050100	5.69	5.69	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711051300	5.68	5.68	5.68	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.66
8711060100	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
8711061300	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
8711070100	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
8711071300	5.66	5.66	5.66	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67
8711080100	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67
8711081300	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.67	5.68
8711090100	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711091300	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711100100	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711101300	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711110100	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
8711111300	5.68	5.68	5.68	5.68	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69
8711120100	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.69	5.70
8711121300	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
8711130100	5.70	5.70	5.70	5.70	5.70	5.70	5.71	5.71	5.71	5.71	5.71	5.71
8711131300	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71
8711140100	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71
8711141300	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71
8711150100	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71	5.71

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8711151300	5.71	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72
8711160100	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.73
8711161300	5.73	5.73	5.73	5.73	5.73	5.73	5.73	5.73	5.73	5.73	5.73	5.73
8711170100	5.73	5.73	5.74	5.74	5.75	5.75	5.75	5.73	5.73	5.73	5.74	5.74
8711171300	5.74	5.74	5.74	5.74	5.74	5.72	5.72	5.71	5.70	5.70	5.69	5.67
8711180100	5.67	5.62	5.57	5.51	5.36	5.05	4.55	3.93	3.27	2.62	1.89	1.46
8711181300	1.78	2.22	2.21	2.29	2.19	2.43	2.69	2.85	2.80	2.60	2.78	2.93
8711190100	2.59	2.56	2.51	2.22	1.93	2.16	2.07	2.05	2.06	2.15	2.29	2.20
8711191300	2.17	2.20	2.28	2.34	2.09	2.00	2.06	1.96	1.82	2.18	2.03	2.18
8711200100	1.99	2.15	2.37	2.59	2.77	2.91	3.14	3.11	3.40	3.29	3.14	3.14
8711201300	3.02	2.76	2.85	2.83	2.92	3.00	2.99	3.19	3.26	3.38	3.45	3.42
8711210100	3.28	3.28	3.33	3.29	3.38	3.45	3.39	3.20	3.28	3.29	3.24	3.09
8711211300	2.84	2.67	2.60	2.67	2.66	2.69	2.63	2.69	2.79	2.91	3.05	3.04
8711220100	3.13	3.34	3.59	3.67	3.67	3.61	3.58	3.56	3.65	2.89	2.55	2.45
8711221300	2.33	2.43	2.36	2.38	2.49	2.51	2.51	2.53	2.45	2.46	2.42	2.40
8711230100	2.49	2.43	2.40	2.43	2.39	2.39	2.46	2.49	2.30	2.39	2.28	2.03
8711231300	2.19	2.11	2.06	2.19	2.26	2.21	2.33	2.49	2.49	2.59	2.50	2.36
8711240100	2.34	2.30	2.27	1.99	1.83	1.84	1.95	2.06	2.20	2.47	2.59	2.69
8711241300	2.93	2.99	2.98	2.88	2.80	2.74	2.72	2.69	2.68	2.71	2.79	2.86
8711250100	3.03	3.22	3.34	3.49	3.57	3.68	3.64	3.62	3.59	3.44	3.29	3.19
8711251300	2.98	2.82	2.70	2.56	2.46	2.44	2.58	2.76	2.86	2.94	2.99	3.07
8711260100	3.04	3.05	3.00	2.98	2.89	2.94	3.06	3.14	3.25	3.36	3.44	3.49
8711261300	3.62	3.61	3.55	3.50	3.45	3.42	3.45	3.46	3.53	3.52	3.66	3.80
8711270100	3.86	3.92	3.97	3.93	3.89	3.96	3.94	3.85	3.84	3.80	3.76	3.74
8711271300	3.68	3.65	3.61	3.60	3.56	3.55	3.53	3.55	3.57	3.58	3.59	3.53
8711280100	3.52	3.46	3.43	3.41	3.34	3.30	3.27	3.24	3.28	3.33	3.31	3.34
8711281300	3.39	3.40	3.44	3.44	3.37	3.35	3.36	3.35	3.34	3.29	3.25	3.25
8711290100	3.23	3.20	3.17	3.13	3.08	3.06	3.03	3.00	2.97	2.94	2.93	2.95
8711291300	2.98	2.98	2.96	2.95	2.95	2.95	2.92	2.86	2.83	2.78	2.72	2.68
8711300100	2.63	2.57	2.51	2.46	2.43	2.41	2.35	2.32	2.28	2.24	2.21	2.23
8711301300	2.19	2.21	2.23	2.26	2.20	2.20	2.28	2.29	2.30	2.31	2.32	2.35
8712010100	2.39	2.40	2.46	2.51	2.56	2.62	2.68	2.73	2.75	2.76	2.79	2.83
8712011300	2.86	2.88	2.92	3.01	3.10	3.21	3.28	3.35	3.38	3.40	3.36	3.32
8712020100	3.27	3.20	3.13	3.07	3.01	2.95	2.90	2.85	2.79	2.75	2.71	2.68
8712021300	2.67	2.65	2.62	2.59	2.54	2.47	2.42	2.38	2.33	2.30	2.29	2.31
8712030100	2.37	2.43	2.48	2.57	2.64	2.69	2.72	2.72	2.70	2.69	2.70	2.69
8712031300	2.73	2.73	2.76	2.82	2.88	2.92	2.98	3.02	3.01	3.01	3.03	3.11
8712040100	3.23	3.34	3.50	3.64	3.81	3.94	4.04	4.14	4.10	4.08	4.00	3.91
8712041300	3.83	3.74	3.65	3.56	3.49	3.43	3.37	3.32	3.28	3.26	3.23	3.20
8712050100	3.15	3.12	3.08	3.05	3.01	2.97	2.94	2.93	2.92	2.94	2.98	3.02
8712051300	3.00	3.04	3.05	3.05	3.07	3.06	3.05	3.04	3.03	3.00	2.98	2.95
8712060100	2.91	2.89	2.87	2.85	2.86	2.88	2.89	2.93	2.94	2.94	2.92	2.89
8712061300	2.86	2.85	2.83	2.82	2.82	2.83	2.85	2.89	2.92	2.93	2.93	2.91
8712070100	2.90	2.88	2.87	2.85	2.86	2.88	2.91	2.95	2.98	2.99	3.01	3.00
8712071300	2.98	2.96	2.95	2.94	2.94	2.92	2.96	3.02	3.06	3.12	3.14	3.12
8712080100	3.09	3.06	3.03	3.00	2.96	2.93	2.94	2.98	2.99	3.03	3.03	3.02
8712081300	2.99	2.97	2.94	2.91	2.86	2.83	2.85	2.90	2.93	2.96	3.01	3.05

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8712090100	3.08	3.10	3.07	3.03	3.02	2.96	2.94	2.91	2.88	2.84	2.80	2.80
8712091300	2.85	2.82	2.79	2.75	2.72	2.68	2.61	2.57	2.53	2.48	2.43	2.39
8712100100	2.44	2.50	2.60	2.61	2.58	2.70	2.77	2.75	2.72	2.74	2.71	2.67
8712101300	2.66	2.72	2.76	2.79	2.83	2.90	2.97	3.01	2.99	2.99	2.99	2.96
8712110100	2.91	2.86	2.82	2.78	2.74	2.70	2.73	2.77	2.75	2.74	2.80	2.82
8712111300	2.81	2.80	2.79	2.77	2.76	2.79	2.85	2.84	2.84	2.81	2.80	2.83
8712120100	2.79	2.73	2.68	2.61	2.56	2.52	2.47	2.42	2.38	2.48	2.62	2.71
8712121300	2.68	2.62	2.59	2.53	2.48	2.43	2.38	2.35	2.30	2.25	2.29	2.26
8712130100	2.21	2.22	2.32	2.32	2.30	2.28	2.36	2.36	2.32	2.30	2.34	2.34
8712131300	2.30	2.31	2.40	2.45	2.49	2.48	2.46	2.55	2.62	2.65	2.66	2.69
8712140100	2.69	2.69	2.68	2.69	2.73	2.70	2.70	2.70	2.75	2.77	2.77	2.80
8712141300	2.85	2.89	2.92	2.94	2.97	2.98	2.95	2.93	2.94	2.96	2.96	3.02
8712150100	3.06	3.14	3.27	3.36	3.46	3.57	3.73	3.88	3.95	4.11	4.14	4.15
8712151300	4.06	4.00	3.80	3.61	3.16	2.58	1.35	0.63	0.39	0.18	0.13	0.72
8712160100	0.37	0.04	-0.04	0.29	0.49	0.54	0.83	1.16	1.49	1.85	2.60	2.96
8712161300	2.99	2.77	2.93	2.86	2.88	2.67	2.70	2.59	2.31	2.54	2.73	2.87
8712170100	3.01	3.15	3.28	3.30	3.38	3.33	3.24	3.08	2.96	2.84	2.82	2.78
8712171300	2.75	2.80	2.83	2.87	2.90	2.99	3.02	3.05	3.00	3.01	2.96	2.93
8712180100	2.93	2.93	2.95	2.95	2.98	3.02	3.02	3.01	2.98	2.94	2.88	2.82
8712181300	2.77	2.79	2.71	2.68	2.74	2.75	2.70	2.70	2.70	2.70	2.67	2.60
8712190100	2.53	2.55	2.43	2.24	2.28	2.27	2.17	2.25	2.39	2.45	2.59	2.80
8712191300	2.97	3.12	3.13	3.09	3.13	3.11	2.97	2.82	2.75	2.65	2.67	2.70
8712200100	2.80	2.94	2.99	2.97	2.91	3.09	3.11	2.88	2.75	2.58	2.39	1.98
8712201300	1.45	1.47	1.58	1.55	1.71	1.39	1.83	2.24	2.60	2.72	2.63	2.60
8712210100	2.67	2.66	2.48	2.25	1.99	1.87	1.86	2.17	2.06	2.09	2.25	2.45
8712211300	2.58	2.75	2.85	2.78	2.72	2.56	2.35	2.33	2.29	2.12	2.15	2.31
8712220100	2.49	2.57	2.54	2.70	2.90	3.03	2.97	2.96	2.87	2.86	2.75	2.69
8712221300	2.76	2.82	2.84	2.81	2.79	2.88	2.90	2.91	2.99	2.96	2.79	2.70
8712230100	2.75	2.64	2.54	2.27	2.24	2.49	2.55	2.59	2.69	2.80	2.90	2.98
8712231300	3.06	3.04	3.02	3.02	2.90	2.83	2.89	2.81	2.86	2.89	3.01	3.13
8712240100	3.17	3.22	3.31	3.31	3.22	3.22	3.12	3.02	2.97	2.91	2.94	3.09
8712241300	2.98	2.90	2.95	2.97	2.85	2.93	2.86	2.87	2.91	3.00	2.95	2.98
8712250100	3.07	2.95	3.02	3.01	2.96	2.88	2.96	2.92	2.92	2.82	2.90	2.87
8712251300	2.98	3.08	3.09	3.17	3.18	3.18	3.15	3.21	3.15	3.13	3.11	3.19
8712260100	3.26	3.31	3.34	3.32	3.27	3.29	3.39	3.44	3.45	3.47	3.40	3.38
8712261300	3.43	3.35	3.28	3.26	3.23	3.19	3.18	3.15	3.14	3.12	3.09	3.09
8712270100	3.11	3.13	3.13	3.13	3.07	3.07	3.07	2.99	2.92	2.90	2.89	2.90
8712271300	2.94	3.00	3.03	3.07	3.12	3.15	3.15	3.11	3.11	3.07	3.06	3.07
8712280100	3.09	3.13	3.18	3.24	3.29	3.35	3.40	3.47	3.51	3.58	3.67	3.71
8712281300	3.74	3.82	3.89	3.92	3.95	3.98	4.00	4.00	4.02	4.04	4.04	4.07
8712290100	4.09	4.11	4.14	4.16	4.17	4.20	4.23	4.24	4.27	4.28	4.31	4.33
8712291300	4.35	4.36	4.37	4.39	4.41	4.43	4.44	4.45	4.47	4.48	4.49	4.50
8712300100	4.51	4.52	4.53	4.53	4.54	4.54	4.55	4.55	4.56	4.56	4.57	4.58
8712301300	4.58	4.59	4.60	4.62	4.63	4.64	4.65	4.66	4.67	4.68	4.69	4.69
8712310100	4.71	4.72	4.72	4.73	4.74	4.74	4.75	4.76	4.76	4.77	4.78	4.79
8712311300	4.80	4.80	4.81	4.82	4.83	4.84	4.85	4.86	4.87	4.88	4.89	4.90
8801010100	4.91	4.93	4.94	4.96	4.98	4.99	5.01	5.02	5.03	5.04	5.05	5.07

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8801011300	5.08	5.10	5.12	5.13	5.14	5.15	5.16	5.17	5.18	5.19	5.19	5.20
8801020100	5.21	5.21	5.22	5.22	5.22	5.23	5.23	5.24	5.24	5.25	5.25	5.26
8801021300	5.26	5.26	5.26	5.26	4.97	4.50	3.93	3.42	3.04	2.71	2.44	2.30
8801030100	2.37	2.44	2.49	2.55	2.71	2.76	2.83	2.96	2.99	2.92	2.93	2.90
8801031300	2.78	2.81	2.77	2.76	2.76	2.87	2.92	2.90	2.90	2.88	2.84	2.76
8801040100	2.78	2.66	2.51	2.37	2.33	2.33	2.31	2.31	2.30	2.10	2.08	1.98
8801041300	1.81	1.86	1.61	1.39	1.27	1.14	1.06	1.19	1.48	1.43	1.61	1.77
8801050100	2.01	2.00	2.11	1.90	1.90	1.98	1.71	1.80	1.73	1.55	1.57	1.74
8801051300	1.98	2.21	2.36	2.40	2.21	2.21	2.17	2.16	1.98	1.91	1.93	2.00
8801060100	2.10	2.27	2.40	2.40	2.41	2.49	2.57	2.54	2.52	2.53	2.43	2.35
8801061300	2.40	2.47	2.50	2.55	2.56	2.60	2.70	2.80	2.83	2.89	2.88	2.83
8801070100	2.81	2.79	2.80	2.80	2.78	2.79	2.85	2.87	2.90	2.93	2.99	3.00
8801071300	2.98	3.04	3.06	3.01	3.04	3.03	3.02	3.12	3.08	3.12	3.11	3.03
8801080100	2.98	2.92	2.85	2.85	2.74	2.77	2.76	2.86	2.89	2.88	2.96	3.03
8801081300	2.96	2.96	2.92	2.84	2.77	2.74	2.76	2.71	2.70	2.69	2.67	2.70
8801090100	2.66	2.62	2.60	2.56	2.53	2.54	2.51	2.55	2.62	2.54	2.60	2.67
8801091300	2.67	2.69	2.66	2.73	2.73	2.69	2.80	2.75	2.75	2.79	2.82	2.88
8801100100	2.86	2.85	2.89	2.84	2.84	2.86	2.84	2.85	2.83	2.81	2.78	2.82
8801101300	2.77	2.74	2.74	2.73	2.73	2.71	2.68	2.67	2.70	2.73	2.70	2.69
8801110100	2.66	2.60	2.56	2.42	2.35	2.25	2.26	2.17	2.22	2.30	2.15	2.28
8801111300	2.25	2.18	2.30	2.44	2.49	2.60	2.60	2.59	2.72	2.72	2.73	2.66
8801120100	2.63	2.51	2.47	2.45	2.47	2.56	2.51	2.42	2.47	2.55	2.67	2.53
8801121300	2.56	2.45	2.56	2.48	2.43	2.42	2.35	2.25	2.30	2.30	2.41	2.40
8801130100	2.39	2.41	2.31	2.37	2.01	1.71	1.32	1.31	1.70	1.99	1.88	1.98
8801131300	2.40	2.70	2.84	2.91	2.95	2.97	2.98	3.10	3.89	3.82	3.74	3.62
8801140100	3.56	3.60	3.60	3.70	3.77	3.80	3.80	3.74	3.71	3.68	3.62	3.51
8801141300	3.36	3.28	3.40	3.50	3.52	3.48	3.49	3.46	3.43	3.41	3.37	3.23
8801150100	3.13	2.97	2.94	2.99	2.85	2.81	2.93	2.92	3.00	3.11	3.12	2.63
8801151300	2.45	2.49	2.43	2.50	2.50	2.50	2.50	2.61	2.62	2.66	2.71	2.79
8801160100	2.72	2.72	2.72	2.62	2.60	2.49	2.56	2.51	2.52	2.56	2.57	2.57
8801161300	2.57	2.60	2.61	2.54	2.56	2.78	2.68	2.52	2.60	2.46	2.43	2.44
8801170100	2.50	2.50	2.60	2.61	2.70	2.76	2.81	2.82	2.81	2.82	2.84	2.79
8801171300	2.70	2.71	2.79	2.87	2.84	2.75	2.80	2.88	2.93	2.89	2.81	2.78
8801180100	2.77	2.65	2.70	2.71	2.69	2.66	2.66	2.72	2.77	2.71	2.54	2.48
8801181300	2.42	2.33	2.31	2.27	2.32	2.46	2.60	2.80	2.96	3.00	3.07	3.07
8801190100	3.08	3.01	2.86	2.74	2.63	2.64	2.68	2.71	2.85	2.90	2.98	3.05
8801191300	3.10	3.18	3.21	3.24	3.28	3.30	3.30	3.38	3.40	3.42	3.44	3.44
8801200100	3.45	3.46	3.47	3.48	3.48	3.49	3.49	3.49	3.49	3.40	3.11	2.84
8801201300	2.92	2.97	2.91	2.91	2.91	2.74	2.81	2.59	2.60	2.55	2.43	2.33
8801210100	2.32	2.30	2.28	2.17	2.30	2.61	2.60	2.60	2.54	2.59	2.63	2.80
8801211300	2.73	2.83	2.89	2.82	2.97	3.10	3.12	3.02	3.02	2.92	3.00	2.98
8801220100	2.93	2.93	2.91	2.92	2.90	2.95	2.98	2.83	2.83	2.81	2.80	2.82
8801221300	2.74	2.62	2.64	2.64	2.60	2.60	2.60	2.63	2.59	2.60	2.69	2.69
8801230100	2.65	2.57	2.57	2.57	2.52	2.48	2.50	2.45	2.49	2.50	2.58	2.53
8801231300	2.54	2.54	2.41	2.38	2.41	2.47	2.48	2.53	2.62	2.70	2.79	2.85
8801240100	2.86	2.84	2.86	2.70	2.51	2.45	2.53	2.45	2.41	2.32	2.39	2.40

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8801251300	2.86	2.93	2.88	2.85	3.06	3.19	3.22	3.21	3.20	3.09	2.99	2.83
8801260100	2.60	2.43	2.11	1.70	1.61	1.68	1.44	1.42	1.39	1.41	1.60	1.80
8801261300	2.20	2.30	2.40	2.51	2.50	2.59	2.68	2.54	2.51	2.52	2.56	2.65
8801270100	2.68	2.70	2.74	2.80	2.82	2.87	2.85	2.77	2.63	2.54	2.47	2.46
8801271300	2.49	2.47	2.49	2.50	2.50	2.51	2.51	2.36	2.28	2.21	2.18	2.14
8801280100	2.06	2.16	2.25	2.33	2.49	2.56	2.58	2.68	2.72	2.74	2.78	2.63
8801281300	2.60	2.58	2.60	2.63	2.61	2.64	2.65	2.70	2.80	2.85	2.86	2.87
8801290100	2.85	2.86	2.84	2.86	2.86	2.82	2.74	2.80	2.76	2.77	2.80	2.77
8801291300	2.78	2.76	2.80	2.77	2.76	2.67	2.63	2.60	2.58	2.60	2.53	2.51
8801300100	2.51	2.50	2.51	2.51	2.51	2.52	2.45	2.41	2.37	2.30	2.31	2.31
8801301300	2.33	2.38	2.45	2.57	2.61	2.64	2.68	2.72	2.75	2.75	2.63	2.58
8801310100	2.51	2.55	2.44	2.46	2.41	2.47	2.48	2.52	2.50	2.41	2.36	2.36
8801311300	2.47	2.48	2.50	2.56	2.63	2.64	2.63	2.65	2.70	2.67	2.69	2.75
8802010100	2.75	2.76	2.72	2.80	2.92	2.90	2.88	2.87	2.80	2.88	2.87	2.86
8802011300	2.89	2.88	2.86	2.96	2.90	3.10	3.02	3.04	3.09	3.04	3.20	3.24
8802020100	3.17	3.10	3.17	3.28	3.48	3.55	3.58	3.61	3.60	3.60	3.60	3.54
8802021300	3.50	3.45	3.39	3.35	3.32	3.31	3.28	3.27	3.25	3.25	3.25	3.25
8802030100	3.24	3.23	3.20	3.20	3.20	3.20	3.20	3.20	3.21	3.21	3.15	3.09
8802031300	3.08	3.08	3.03	3.01	3.01	3.01	3.01	3.06	3.11	3.18	3.26	3.34
8802040100	3.39	3.42	3.47	3.47	3.45	3.45	3.44	3.43	3.42	3.41	3.40	3.38
8802041300	3.35	3.31	3.27	3.22	3.18	3.14	3.10	3.07	3.05	3.05	3.05	3.10
8802050100	3.38	3.35	3.37	3.01	3.20	2.80	3.11	3.11	2.94	2.82	2.81	2.66
8802051300	2.57	2.45	2.36	2.23	2.11	2.14	2.20	2.31	2.24	2.11	2.11	2.20
8802060100	2.14	2.07	2.02	1.89	1.82	1.81	1.93	1.91	1.85	1.84	1.94	1.98
8802061300	2.00	2.03	2.10	2.11	2.14	2.20	2.31	2.45	2.51	2.53	2.51	2.54
8802070100	2.54	2.54	2.51	2.40	2.40	2.33	2.41	2.44	2.44	2.46	2.41	2.24
8802071300	2.24	2.21	2.04	2.10	2.11	2.11	2.11	2.11	2.11	2.11	1.97	1.99
8802080100	2.00	2.11	2.51	2.63	2.63	2.67	2.67	2.70	2.76	2.87	2.98	3.00
8802081300	2.97	2.95	2.94	2.88	2.81	2.81	2.73	2.75	2.80	2.86	2.92	2.95
8802090100	2.97	3.00	3.00	3.00	2.89	2.86	2.80	2.74	2.76	2.71	2.64	2.70
8802091300	2.71	2.68	2.70	2.66	2.63	2.64	2.68	2.66	2.64	2.65	2.68	2.70
8802100100	2.73	2.73	2.78	2.80	2.80	2.80	2.81	2.88	2.89	2.96	2.96	2.93
8802101300	2.92	2.90	2.85	2.83	2.81	2.82	2.87	2.91	2.94	3.00	3.08	3.10
8802110100	3.10	3.10	3.10	3.11	3.28	3.32	3.37	3.40	3.39	3.36	3.34	3.34
8802111300	3.34	3.32	3.26	3.23	3.20	3.16	3.13	3.09	3.03	2.98	2.94	2.90
8802120100	2.85	2.80	2.70	2.74	2.74	2.78	2.63	2.55	2.50	2.48	2.40	2.20
8802121300	2.21	2.23	2.25	2.31	2.40	2.36	2.45	2.44	2.41	2.34	2.30	2.31
8802130100	2.30	2.10	1.95	1.91	1.81	1.80	1.80	1.80	1.80	1.91	1.94	2.00
8802131300	2.07	2.10	2.11	2.11	2.14	2.14	2.20	2.21	2.21	2.20	2.23	2.29
8802140100	2.30	2.30	2.30	2.40	2.49	2.61	2.68	2.72	2.75	2.77	2.80	2.81
8802141300	2.81	2.78	2.78	2.69	2.69	2.69	2.60	2.57	2.51	2.56	2.57	2.61
8802150100	2.51	2.41	2.41	2.45	2.37	2.42	2.62	2.43	2.23	2.12	2.04	2.02
8802151300	2.09	2.10	2.22	2.31	2.38	2.44	2.60	2.80	2.88	2.97	3.02	3.06
8802160100	3.08	3.10	3.07	3.07	3.01	3.01	3.01	3.01	3.01	2.81	2.77	2.77
8802161300	2.77	2.79	2.79	2.71	2.70	2.70	2.66	2.69	2.70	2.70	2.70	2.70
8802170100	2.70	2.70	2.70	2.70	2.70	2.67	2.67	2.68	2.69	2.69	2.70	2.70

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8802171300	2.77	2.78	2.76	2.75	2.76	2.76	2.76	2.77	2.78	2.81	2.82	2.82
8802180100	2.82	2.82	2.82	2.82	2.83	2.86	2.87	2.91	2.92	2.94	2.94	2.88
8802181300	2.88	2.85	2.85	2.85	2.85	2.85	2.85	2.88	2.90	2.91	2.91	2.94
8802190100	2.93	2.93	2.93	2.93	2.93	2.93	2.94	2.98	2.99	3.03	3.05	3.05
8802191300	3.05	2.99	2.99	2.94	2.94	2.93	2.93	2.96	2.98	3.01	3.07	3.14
8802200100	3.18	3.20	3.20	3.11	3.03	2.91	2.84	2.77	2.79	2.80	2.83	2.90
8802201300	2.81	2.72	2.65	2.50	2.42	2.21	2.18	2.18	2.10	2.04	2.50	2.60
8802210100	2.80	3.00	3.10	3.13	3.15	3.15	3.15	3.14	3.07	3.00	2.94	2.82
8802211300	2.76	2.71	2.66	2.61	2.54	2.52	2.40	2.30	2.18	2.13	2.16	2.11
8802220100	2.05	2.08	2.11	2.12	2.11	2.11	2.11	1.97	1.92	1.90	1.91	1.92
8802221300	1.92	1.93	1.97	2.20	2.10	2.30	2.41	2.57	2.67	2.70	2.76	2.70
8802230100	2.61	2.79	2.70	2.67	2.79	2.68	2.66	2.75	2.78	2.82	2.86	2.86
8802231300	2.74	2.74	2.68	2.63	2.70	2.65	2.54	2.42	2.40	2.27	2.27	2.34
8802240100	2.30	2.40	2.52	2.59	2.66	2.80	2.93	2.89	2.75	2.67	2.54	2.44
8802241300	2.43	2.28	2.21	2.17	2.23	2.30	2.33	2.50	2.56	2.52	2.58	2.63
8802250100	2.63	2.61	2.60	2.61	2.64	2.68	2.70	2.80	2.86	2.95	2.95	2.93
8802251300	2.94	2.94	2.84	2.80	2.75	2.71	2.65	2.68	2.67	2.70	2.72	2.78
8802260100	2.81	2.86	2.86	2.86	2.78	2.72	2.72	2.59	2.59	2.48	2.39	2.35
8802261300	2.41	2.51	2.41	2.53	2.60	2.76	2.70	2.70	2.71	2.70	2.76	2.76
8802270100	2.78	2.80	2.83	2.84	2.92	2.98	3.05	3.20	3.33	3.30	3.31	3.38
8802271300	3.43	3.51	3.46	3.49	3.49	3.44	3.36	3.30	3.31	3.23	3.13	3.06
8802280100	2.99	2.99	2.95	2.93	2.93	2.95	2.96	2.97	2.96	2.86	2.86	2.81
8802281300	2.75	2.75	2.75	2.72	2.71	2.77	2.81	2.86	2.90	2.90	2.86	2.83
8802290100	2.79	2.78	2.71	2.60	2.53	2.45	2.45	2.56	2.66	2.75	2.86	2.94
8802291300	2.89	2.92	2.93	2.93	2.92	2.90	2.83	2.79	2.80	2.82	2.86	2.92
8803010100	3.00	3.08	3.15	3.30	3.35	3.35	3.30	3.27	3.27	3.16	3.10	3.03
8803011300	3.00	2.93	2.92	2.94	2.96	2.98	3.01	3.05	3.08	3.10	3.10	3.07
8803020100	3.04	3.00	2.96	2.87	2.81	2.77	2.70	2.63	2.60	2.66	2.65	2.68
8803021300	2.70	2.72	2.70	2.70	2.70	2.68	2.70	2.76	2.80	2.85	2.89	2.95
8803030100	3.02	3.06	3.11	3.20	3.28	3.27	3.24	3.25	3.24	3.23	3.22	3.23
8803031300	3.24	3.26	3.30	3.32	3.36	3.40	3.44	3.49	3.51	3.55	3.57	3.58
8803040100	3.59	3.60	3.60	3.60	3.61	3.62	3.62	3.63	3.64	3.65	3.66	3.67
8803041300	3.68	3.68	3.70	3.70	3.71	3.72	3.73	3.74	3.75	3.76	3.77	3.77
8803050100	3.78	3.78	3.79	3.79	3.79	3.80	3.80	3.80	3.80	3.80	3.80	3.80
8803051300	3.81	3.82	3.85	3.86	3.87	3.88	3.90	3.91	3.91	3.92	3.92	3.92
8803060100	3.79	3.68	3.52	3.38	3.24	3.21	3.06	3.00	2.86	2.86	2.86	2.86
8803061300	2.85	2.85	2.83	2.81	2.76	2.73	2.73	2.71	2.73	2.73	2.73	2.72
8803070100	2.73	2.66	2.62	2.58	2.53	2.52	2.52	2.51	2.59	2.68	2.76	2.81
8803071300	2.93	3.00	3.02	3.02	2.95	2.95	2.86	2.81	2.81	2.79	2.82	2.88
8803080100	2.93	2.99	3.02	3.03	3.05	3.01	2.97	2.94	2.92	2.88	2.89	2.88
8803081300	2.88	2.90	2.93	2.92	2.90	2.92	2.94	2.94	2.94	2.91	2.91	2.88
8803090100	2.83	2.79	2.76	2.71	2.72	2.78	2.76	2.72	2.74	2.74	2.74	2.76
8803091300	2.78	2.78	2.80	2.87	2.83	2.80	2.76	2.75	2.73	2.75	2.80	2.87
8803100100	2.96	2.96	3.05	3.11	3.14	3.16	3.17	3.19	3.19	3.18	3.14	3.13
8803101300	3.15	3.12	3.11	3.12	3.08	3.03	3.01	2.94	2.89	2.85	2.85	2.81
8803110100	2.81	2.85	2.89	2.94	2.98	2.98	2.97	2.94	2.92	2.90	2.88	2.84

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8803111300	2.82	2.82	2.85	2.87	2.92	2.97	3.01	3.06	3.10	3.14	3.16	3.19
8803120100	3.21	3.22	3.23	3.17	3.17	3.20	3.26	3.27	3.30	3.30	3.27	3.32
8803121300	3.28	3.21	3.13	3.08	3.00	2.91	2.86	2.83	2.85	2.89	2.95	2.98
8803130100	2.94	2.89	2.82	2.77	2.74	2.73	2.61	2.61	2.61	2.61	2.61	2.61
8803131300	2.61	2.51	2.46	2.42	2.42	2.32	2.24	2.24	2.23	2.26	2.30	2.40
8803140100	2.48	2.53	2.56	2.60	2.64	2.66	2.66	2.57	2.53	2.48	2.50	2.53
8803141300	2.57	2.60	2.67	2.76	2.80	2.89	2.97	2.99	2.99	2.99	2.99	2.99
8803150100	2.99	2.99	2.95	2.96	2.99	3.03	3.06	3.08	3.08	3.10	3.10	3.10
8803151300	3.10	3.06	3.05	3.04	3.04	3.04	3.04	3.06	3.06	3.07	3.08	3.08
8803160100	3.08	3.09	3.10	3.10	3.10	3.11	3.11	3.12	3.13	3.13	3.14	3.15
8803161300	3.15	3.16	3.17	3.18	3.18	3.19	3.20	3.21	3.22	3.23	3.24	3.25
8803170100	3.26	3.26	3.27	3.28	3.29	3.30	3.30	3.31	3.32	3.33	3.34	3.35
8803171300	3.36	3.36	3.37	3.38	3.39	3.40	3.40	3.40	3.43	3.44	3.45	3.46
8803180100	3.47	3.48	3.49	3.50	3.52	3.54	3.55	3.57	3.59	3.61	3.63	3.64
8803181300	3.65	3.67	3.68	3.70	3.71	3.72	3.74	3.75	3.76	3.77	3.77	3.78
8803190100	3.78	3.78	3.78	3.78	3.78	3.78	3.77	3.76	3.76	3.76	3.73	3.73
8803191300	3.73	3.68	3.68	3.62	3.62	3.62	3.58	3.55	3.55	3.50	3.50	3.50
8803200100	3.50	3.50	3.50	3.46	3.47	3.57	3.67	3.74	3.81	3.85	3.84	3.77
8803201300	3.69	3.58	3.45	3.31	3.20	3.07	3.03	3.08	3.10	3.10	3.10	3.12
8803210100	3.07	3.04	3.04	2.93	2.93	2.93	2.99	3.07	3.14	3.25	3.30	3.40
8803211300	3.41	3.41	3.38	3.32	3.25	3.17	3.12	3.06	3.03	3.00	3.00	3.06
8803220100	3.10	3.18	3.20	3.20	3.22	3.15	3.12	3.12	3.02	3.02	2.96	2.99
8803221300	3.00	3.07	3.14	3.20	3.27	3.30	3.34	3.39	3.40	3.44	3.46	3.49
8803230100	3.50	3.49	3.50	3.48	3.46	3.38	3.32	3.26	3.18	3.13	3.08	3.01
8803231300	2.93	2.88	2.85	2.77	2.71	2.71	2.68	2.68	2.70	2.78	2.85	2.87
8803240100	2.90	2.96	2.99	2.98	2.97	2.93	2.92	2.98	3.01	3.00	3.04	3.03
8803241300	3.10	3.08	3.07	3.06	3.04	3.04	3.07	3.09	3.13	3.12	3.20	3.30
8803250100	3.36	3.41	3.38	3.34	3.28	3.21	3.18	3.10	3.01	2.96	2.96	2.93
8803251300	2.96	3.02	3.03	3.10	3.19	3.24	3.31	3.40	3.48	3.52	3.55	3.56
8803260100	3.59	3.58	3.53	3.44	3.34	3.27	3.21	3.18	3.11	3.03	3.03	3.03
8803261300	3.05	3.08	3.10	3.06	2.96	2.97	3.07	3.09	2.96	2.89	2.95	2.90
8803270100	2.88	2.98	2.85	2.75	2.87	2.99	3.03	2.95	2.94	2.86	2.85	2.78
8803271300	2.71	2.71	2.61	2.52	2.49	2.51	2.61	2.74	2.78	2.94	3.08	3.21
8803280100	3.35	3.42	3.36	3.30	3.21	3.11	3.01	2.95	2.87	2.86	2.93	3.04
8803281300	3.18	3.30	3.38	3.46	3.52	3.42	3.42	3.42	3.32	3.23	3.21	3.21
8803290100	3.28	3.27	3.37	3.41	3.44	3.48	3.39	3.34	3.26	3.15	3.11	3.04
8803291300	2.96	2.97	3.00	3.04	3.11	3.16	3.21	3.26	3.25	3.20	3.20	3.12
8803300100	3.06	3.04	3.00	3.01	3.08	3.07	3.09	3.07	2.98	2.89	2.73	2.58
8803301300	2.44	2.34	2.23	2.24	2.54	2.80	3.11	3.41	3.56	3.61	3.63	3.48
8803310100	3.30	3.10	2.93	2.79	2.71	2.85	3.00	3.16	3.32	3.50	3.68	3.84
8803311300	3.83	3.78	3.72	3.60	3.48	3.38	3.30	3.22	3.20	3.21	3.30	3.40
8804010100	3.42	3.39	3.42	3.46	3.38	3.34	3.25	3.17	3.10	3.03	3.02	3.08
8804011300	3.08	3.07	3.10	3.17	3.23	3.21	3.24	3.21	3.21	3.18	3.13	3.11
8804020100	3.07	3.01	3.00	3.10	3.18	3.20	3.28	3.37	3.37	3.37	3.35	3.34
8804021300	3.31	3.25	3.18	3.20	3.24	3.22	3.27	3.28	3.37	3.42	3.39	3.37
8804030100	3.32	3.27	3.21	3.14	3.09	3.05	3.04	3.03	3.09	3.11	3.14	3.13

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8804031300	3.10	3.13	3.16	3.20	3.19	3.19	3.29	3.34	3.46	3.54	3.54	3.54
8804040100	3.53	3.48	3.40	3.33	3.25	3.16	3.18	3.11	3.13	3.15	3.20	3.19
8804041300	3.16	3.05	3.03	2.98	2.88	2.81	2.84	2.92	2.99	3.15	3.28	3.35
8804050100	3.39	3.35	3.34	3.39	3.28	3.14	3.06	3.02	3.04	3.10	3.11	3.20
8804051300	3.29	3.33	3.40	3.39	3.41	3.33	3.27	3.31	3.28	3.24	3.22	3.22
8804060100	3.25	3.29	3.29	3.30	3.31	3.26	3.23	3.29	3.27	3.30	3.22	3.19
8804061300	3.21	3.24	3.17	3.13	3.11	3.21	3.28	3.20	3.20	3.24	3.16	3.09
8804070100	3.30	3.54	3.60	3.65	3.57	3.74	3.79	3.76	3.69	3.75	3.80	3.80
8804071300	3.88	4.01	4.20	4.21	4.30	4.37	4.48	4.47	4.45	4.44	4.35	4.31
8804080100	4.26	4.20	4.13	4.01	3.92	3.87	3.90	3.89	3.92	3.93	3.93	3.91
8804081300	3.86	3.78	3.73	3.63	3.52	3.46	3.41	3.38	3.38	3.47	3.60	3.74
8804090100	3.85	3.85	3.84	3.83	3.77	3.72	3.67	3.58	3.51	3.43	3.39	3.37
8804091300	3.37	3.37	3.38	3.39	3.42	3.41	3.40	3.36	3.31	3.29	3.26	3.26
8804100100	3.26	3.28	3.33	3.39	3.46	3.50	3.52	3.51	3.49	3.46	3.44	3.41
8804101300	3.38	3.35	3.32	3.32	3.33	3.35	3.36	3.37	3.38	3.38	3.39	3.39
8804110100	3.37	3.36	3.38	3.42	3.45	3.48	3.52	3.53	3.55	3.57	3.59	3.60
8804111300	3.61	3.61	3.63	3.64	3.66	3.66	3.66	3.67	3.68	3.69	3.70	3.70
8804120100	3.70	3.70	3.70	3.70	3.72	3.73	3.74	3.76	3.76	3.76	3.76	3.76
8804121300	3.76	3.76	3.76	3.76	3.74	3.73	3.71	3.69	3.66	3.65	3.61	3.59
8804130100	3.57	3.55	3.52	3.50	3.47	3.46	3.43	3.41	3.39	3.39	3.37	3.35
8804131300	3.32	3.31	3.31	3.31	3.34	3.36	3.37	3.37	3.38	3.39	3.39	3.39
8804140100	3.36	3.35	3.32	3.31	3.29	3.28	3.26	3.26	3.25	3.27	3.26	3.26
8804141300	3.24	3.23	3.23	3.30	3.32	3.30	3.31	3.30	3.30	3.31	3.37	3.41
8804150100	3.46	3.51	3.53	3.51	3.47	3.47	3.44	3.40	3.35	3.36	3.36	3.36
8804151300	3.38	3.40	3.41	3.46	3.44	3.46	3.45	3.44	3.43	3.43	3.45	3.45
8804160100	3.46	3.46	3.46	3.43	3.41	3.36	3.37	3.37	3.35	3.35	3.34	3.34
8804161300	3.34	3.34	3.34	3.34	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.36
8804170100	3.36	3.36	3.36	3.36	3.36	3.35	3.34	3.33	3.32	3.31	3.30	3.29
8804171300	3.29	3.27	3.26	3.24	3.23	3.22	3.19	3.17	3.17	3.17	3.17	3.16
8804180100	3.15	3.16	3.16	3.17	3.17	3.18	3.20	3.24	3.25	3.25	3.27	3.28
8804181300	3.29	3.30	3.31	3.32	3.33	3.34	3.34	3.36	3.36	3.37	3.37	3.37
8804190100	3.37	3.40	3.40	3.40	3.41	3.41	3.41	3.42	3.43	3.43	3.43	3.43
8804191300	3.43	3.43	3.44	3.44	3.44	3.45	3.46	3.47	3.48	3.48	3.49	3.49
8804200100	3.49	3.50	3.50	3.50	3.50	3.50	3.52	3.53	3.54	3.55	3.55	3.56
8804201300	3.57	3.58	3.60	3.59	3.60	3.61	3.61	3.61	3.61	3.61	3.61	3.61
8804210100	3.61	3.61	3.61	3.61	3.64	3.66	3.66	3.67	3.67	3.68	3.69	3.69
8804211300	3.79	3.80	3.80	3.80	3.81	3.82	3.82	3.83	3.83	3.83	3.84	3.84
8804220100	3.84	3.84	3.85	3.85	3.85	3.86	3.86	3.86	3.87	3.87	3.87	3.88
8804221300	3.88	3.88	3.89	3.89	3.90	3.90	3.91	3.91	3.92	3.92	3.92	3.92
8804230100	3.93	3.94	3.94	3.95	3.95	3.95	3.97	3.97	3.98	3.99	4.02	4.04
8804231300	4.04	4.05	4.05	4.04	4.06	4.03	4.04	4.05	4.05	4.05	4.05	4.05
8804240100	4.05	4.05	4.05	4.05	4.05	4.05	4.06	4.06	4.06	4.06	4.07	4.07
8804241300	4.07	4.07	4.07	4.07	4.08	4.08	4.08	4.09	4.09	4.09	4.10	4.10
8804250100	4.10	4.10	4.10	4.11	4.11	4.11	4.12	4.12	4.12	4.12	4.12	4.13
8804251300	4.13	4.14	4.14	4.14	4.14	4.15	4.15	4.15	4.16	4.16	4.16	4.16
8804260100	4.16	4.17	4.17	4.17	4.17	4.17	4.17	4.18	4.18	4.18	4.19	4.19

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8804261300	4.19	4.19	4.19	4.19	4.20	4.20	4.20	4.20	4.20	4.20	4.21	4.21
8804270100	4.21	4.21	4.21	4.21	4.22	4.22	4.23	4.25	4.25	4.25	4.26	4.26
8804271300	4.26	4.26	4.26	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27
8804280100	4.27	4.27	4.28	4.28	4.28	4.28	4.29	4.30	4.30	4.30	4.32	4.32
8804281300	4.32	4.34	4.35	4.35	4.36	4.36	4.36	4.37	4.38	4.40	4.40	4.40
8804290100	4.42	4.43	4.44	4.45	4.46	4.47	4.48	4.48	4.49	4.49	4.50	4.50
8804291300	4.50	4.50	4.50	4.54	4.54	4.55	4.56	4.57	4.57	4.58	4.58	4.59
8804300100	4.59	4.60	4.60	4.60	4.62	4.62	4.63	4.63	4.64	4.64	4.65	4.65
8804301300	4.66	4.67	4.67	4.68	4.68	4.69	4.69	4.70	4.70	4.70	4.70	4.70
8805010100	4.70	4.71	4.72	4.72	4.72	4.72	4.72	4.73	4.73	4.74	4.74	4.74
8805011300	4.75	4.75	4.76	4.76	4.77	4.77	4.78	4.78	4.78	4.78	4.78	4.79
8805020100	4.79	4.79	4.79	4.79	4.79	4.79	4.80	4.80	4.80	4.80	4.80	4.81
8805021300	4.82	4.82	4.82	4.82	4.83	4.83	4.83	4.83	4.84	4.84	4.84	4.84
8805030100	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.84	4.82	4.82	4.82
8805031300	4.82	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
8805040100	4.78	4.78	4.78	4.79	4.79	4.79	4.79	4.79	4.80	4.80	4.80	4.80
8805041300	4.80	4.80	4.80	4.81	4.81	4.80	4.80	4.80	4.80	4.80	4.80	4.83
8805050100	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.84	4.84	4.84	4.84	4.85
8805051300	4.85	4.85	4.85	4.85	4.86	4.86	4.86	4.86	4.87	4.87	4.87	4.87
8805060100	4.87	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.89	4.89	4.89	4.89
8805061300	4.89	4.89	4.90	4.90	4.90	4.91	4.91	4.91	4.92	4.92	4.92	4.92
8805070100	4.92	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93
8805071300	4.93	4.93	4.93	4.93	4.94	4.94	4.94	4.94	4.94	4.94	4.94	4.94
8805080100	4.94	4.94	4.95	4.95	4.95	4.95	4.95	4.95	4.96	4.96	4.97	4.98
8805081300	4.98	4.99	4.99	4.99	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
8805090100	5.00	5.00	5.03	5.01	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.02
8805091300	5.02	5.04	5.02	4.86	4.49	4.10	3.75	3.51	3.35	3.14	3.18	3.18
8805100100	3.00	2.99	3.12	3.18	3.21	3.15	3.16	3.18	3.25	3.11	3.09	3.10
8805101300	3.04	3.03	3.11	3.20	3.27	3.17	3.27	3.36	3.37	3.31	3.23	3.31
8805110100	3.45	3.43	3.34	3.39	3.48	3.44	3.50	3.57	3.60	3.55	3.48	3.46
8805111300	3.43	3.37	3.34	3.29	3.21	3.18	3.17	3.16	3.18	3.19	3.19	3.21
8805120100	3.26	3.28	3.29	3.27	3.28	3.28	3.25	3.21	3.17	3.11	3.06	3.06
8805121300	3.10	3.14	3.16	3.19	3.29	3.34	3.36	3.37	3.39	3.33	3.27	3.21
8805130100	3.13	3.05	3.01	2.94	2.90	2.84	2.82	2.84	2.87	2.84	2.89	2.96
8805131300	3.03	3.07	3.09	3.13	3.21	3.31	3.40	3.47	3.45	3.43	3.38	3.33
8805140100	3.31	3.27	3.20	3.17	3.16	3.21	3.27	3.33	3.38	3.44	3.51	3.56
8805141300	3.59	3.59	3.56	3.57	3.57	3.56	3.56	3.56	3.57	3.57	3.57	3.57
8805150100	3.57	3.58	3.58	3.58	3.58	3.58	3.58	3.59	3.60	3.60	3.60	3.61
8805151300	3.61	3.62	3.62	3.62	3.62	3.62	3.62	3.63	3.57	3.63	3.63	3.63
8805160100	3.63	3.65	3.65	3.65	3.65	3.65	3.65	3.66	3.66	3.66	3.66	3.67
8805161300	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.69
8805170100	3.69	3.70	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.70	3.70
8805171300	3.70	3.70	3.70	3.70	3.70	3.70	3.71	3.71	3.71	3.71	3.72	3.72
8805180100	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72
8805181300	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.74	3.74	3.74	3.74	3.74
8805190100	3.74	3.74	3.74	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.76

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8805191300	3.76	3.76	3.76	3.76	3.76	3.77	3.77	3.77	3.77	3.77	3.78	3.78
8805200100	3.78	3.78	3.78	3.78	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.80
8805201300	3.80	3.80	3.80	3.80	3.80	3.81	3.81	3.81	3.81	3.81	3.81	3.81
8805210100	3.81	3.81	3.81	3.81	3.81	3.81	3.82	3.82	3.82	3.82	3.83	3.83
8805211300	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.84	3.84	3.84
8805220100	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.85	3.85	3.85
8805221300	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
8805230100	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.86	3.86	3.86	3.86	3.86
8805231300	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86
8805240100	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86
8805241300	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.87	3.98
8805250100	4.00	4.06	4.08	4.12	4.13	4.12	4.12	4.13	4.12	4.14	4.14	4.14
8805251300	4.14	4.14	4.14	4.14	4.14	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8805260100	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8805261300	4.15	4.15	4.15	4.15	4.15	4.16	4.16	4.16	4.16	4.16	4.16	4.16
8805270100	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
8805271300	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
8805280100	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.15
8805281300	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8805290100	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8805291300	4.15	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
8805300100	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
8805301300	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
8805310100	4.16	4.16	4.16	4.16	4.16	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8805311300	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14
8806010100	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.12
8806011300	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12
8806020100	4.11	4.12	4.11	4.11	4.12	4.13	4.14	4.14	4.14	4.14	4.15	4.15
8806021300	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8806030100	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
8806031300	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.14
8806040100	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13
8806041300	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13
8806050100	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13
8806051300	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.13
8806060100	4.13	4.13	4.13	4.13	4.13	4.13	4.13	4.12	4.12	4.12	4.12	4.12
8806061300	4.12	4.12	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11
8806070100	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11
8806071300	4.11	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
8806080100	4.08	4.08	4.08	4.08	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806081300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806090100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806091300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806100100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806101300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806110100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8806111300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806120100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806121300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806130100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806131300	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07
8806140100	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	3.97
8806141300	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.96
8806150100	3.96	3.96	3.94	3.94	3.94	3.94	3.93	3.93	3.92	3.93	3.93	3.94
8806151300	3.95	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94
8806160100	3.94	3.94	3.94	3.94	3.93	3.92	3.90	3.90	3.90	3.90	3.91	3.91
8806161300	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91
8806170100	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.89	3.89	3.89	3.89	3.89
8806171300	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89
8806180100	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89
8806181300	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89
8806190100	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89
8806191300	3.89	3.89	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87
8806200100	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87	3.87
8806201300	3.86	3.86	3.86	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
8806210100	3.85	3.85	3.85	3.85	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84
8806211300	3.84	3.83	3.83	3.83	3.83	3.83	3.82	3.81	3.81	3.81	3.81	3.81
8806220100	3.81	3.81	3.81	3.81	3.81	3.80	3.80	3.80	3.81	3.81	3.81	3.81
8806221300	3.81	3.81	3.81	3.83	3.82	3.81	3.81	3.81	3.81	3.81	3.79	3.80
8806230100	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79
8806231300	3.74	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77
8806240100	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77
8806241300	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.76	3.76	3.76
8806250100	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76
8806251300	3.76	3.76	3.76	3.74	3.74	3.74	3.74	3.74	3.74	3.72	3.72	3.72
8806260100	3.72	3.72	3.72	3.72	3.72	3.72	3.71	3.71	3.71	3.71	3.71	3.71
8806261300	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.70	3.69	3.69
8806270100	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.67	3.67	3.67	3.68
8806271300	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
8806280100	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68
8806281300	3.67	3.67	3.67	3.67	3.67	3.66	3.66	3.66	3.66	3.66	3.66	3.66
8806290100	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.64	3.64	3.64	3.64	3.64
8806291300	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64
8806300100	3.64	3.64	3.64	3.65	3.65	3.65	3.65	3.64	3.64	3.64	3.64	3.64
8806301300	3.64	3.64	3.64	3.64	3.63	3.63	3.63	3.63	3.63	3.63	3.62	3.62
8807010100	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.62	3.61	3.61	3.61	3.61
8807011300	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
8807020100	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.60	3.60	3.60
8807021300	3.60	3.60	3.60	3.60	3.60	3.60	3.59	3.59	3.59	3.59	3.59	3.59
8807030100	3.59	3.59	3.59	3.59	3.59	3.50	3.56	3.56	3.55	3.56	3.56	3.56
8807031300	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56
8807040100	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.54	3.54	3.54	3.54	3.54

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8807041300	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
8807050100	3.54	3.54	3.54	3.54	3.54	3.54	3.53	3.53	3.53	3.53	3.53	3.53
8807051300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8807060100	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8807061300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8807070100	3.51	3.51	3.51	3.51	3.51	3.48	3.49	3.49	3.49	3.49	3.49	3.49
8807071300	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49
8807080100	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.48	3.48
8807081300	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
8807090100	3.48	3.48	3.48	3.47	3.47	3.45	3.45	3.45	3.45	3.45	3.45	3.45
8807091300	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
8807100100	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.44	3.44
8807101300	3.44	3.44	3.44	3.44	3.43	3.44	3.52	3.45	3.45	3.46	3.49	3.49
8807110100	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49
8807111300	3.49	3.49	3.49	3.49	3.49	3.48	3.48	3.48	3.48	3.48	3.48	3.48
8807120100	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.46	3.46	3.46	3.46	3.46
8807121300	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
8807130100	3.46	3.46	3.46	3.46	3.46	3.45	3.45	3.45	3.45	3.46	3.46	3.46
8807131300	3.46	3.46	3.46	3.46	3.46	3.44	3.45	3.45	3.45	3.45	3.45	3.45
8807140100	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.41	3.43	3.44	3.45	3.45
8807141300	3.45	3.45	3.45	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8807150100	3.44	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43
8807151300	3.43	3.42	3.42	3.42	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
8807160100	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
8807161300	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.36
8807170100	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
8807171300	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.37	3.37	3.37
8807180100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8807181300	3.37	3.37	3.37	3.37	3.37	3.38	3.38	3.38	3.38	3.38	3.38	3.38
8807190100	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38
8807191300	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38
8807200100	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.37
8807201300	3.37	3.35	3.35	3.35	3.35	3.35	3.35	3.37	3.37	3.37	3.38	3.38
8807210100	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.37	3.37	3.37	3.37
8807211300	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8807220100	3.37	3.37	3.37	3.37	3.37	3.38	3.38	3.38	3.38	3.38	3.38	3.38
8807221300	3.36	3.36	3.36	3.36	3.36	3.37	3.38	3.38	3.37	3.37	3.37	3.37
8807230100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8807231300	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8807240100	3.37	3.37	3.37	3.37	3.37	3.37	3.34	3.34	3.34	3.34	3.34	3.35
8807241300	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
8807250100	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.33	3.33	3.33	3.33	3.33
8807251300	3.33	3.33	3.33	3.33	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
8807260100	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
8807261300	3.35	3.35	3.34	3.34	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8807270100	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8807271300	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8807280100	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8807281300	3.33	3.33	3.33	3.33	3.33	3.31	3.31	3.31	3.31	3.31	3.31	3.31
8807290100	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31
8807291300	3.31	3.31	3.31	3.31	3.31	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8807300100	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8807301300	3.30	3.30	3.30	3.36	3.36	3.36	3.36	3.36	3.34	3.36	3.37	3.37
8807310100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8807311300	3.37	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36
8808010100	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36
8808011300	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.35
8808020100	3.35	3.35	3.35	3.35	3.35	3.35	3.31	3.32	3.33	3.33	3.33	3.33
8808021300	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8808030100	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8808031300	3.33	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32
8808040100	3.32	3.32	3.32	3.32	3.32	3.29	3.30	3.30	3.30	3.30	3.30	3.30
8808041300	3.30	3.30	3.30	3.30	3.30	3.31	3.31	3.31	3.31	3.31	3.31	3.31
8808050100	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31
8808051300	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.29	3.28	3.28	3.28	3.28
8808060100	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28
8808061300	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28	3.28
8808070100	3.28	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27
8808071300	3.27	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808080100	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808081300	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
8808090100	3.24	3.24	3.24	3.24	3.24	3.24	3.22	3.22	3.22	3.22	3.22	3.22
8808091300	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22
8808100100	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.21
8808101300	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
8808110100	3.21	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
8808111300	3.19	3.19	3.19	3.19	3.19	3.23	3.23	3.23	3.23	3.23	3.23	3.23
8808120100	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23
8808121300	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23
8808130100	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23
8808131300	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.21	3.21
8808140100	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
8808141300	3.21	3.21	3.21	3.21	3.24	3.27	3.27	3.27	3.27	3.27	3.27	3.27
8808150100	3.26	3.25	3.26	3.27	3.27	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808151300	3.26	3.26	3.26	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
8808160100	3.25	3.25	3.25	3.25	3.25	3.25	3.23	3.23	3.23	3.23	3.23	3.23
8808161300	3.23	3.23	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23
8808170100	3.23	3.23	3.23	3.23	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22
8808171300	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22
8808180100	3.22	3.22	3.22	3.22	3.21	3.21	3.21	3.22	3.22	3.22	3.22	3.22
8808181300	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.26
8808190100	3.27	3.28	3.28	3.28	3.28	3.28	3.27	3.27	3.27	3.27	3.27	3.27

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8808191300	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.26	3.26
8808200100	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808201300	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808210100	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808211300	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8808220100	3.26	3.26	3.26	3.26	3.26	3.26	3.22	3.23	3.23	3.23	3.23	3.24
8808221300	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
8808230100	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.25
8808231300	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
8808240100	3.23	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
8808241300	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.23	3.23	3.23
8808250100	3.23	3.23	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.23	3.24
8808251300	3.25	3.25	3.25	3.25	3.25	3.24	3.23	3.22	3.22	3.22	3.22	3.22
8808260100	3.22	3.22	3.22	3.22	3.22	3.22	3.20	3.20	3.20	3.20	3.20	3.20
8808261300	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.19
8808270100	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
8808271300	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.18	3.18	3.18
8808280100	3.18	3.18	3.18	3.18	3.18	3.18	3.22	3.25	3.28	3.31	3.33	3.35
8808281300	3.36	3.37	3.39	3.41	3.42	3.43	3.43	3.44	3.44	3.45	3.45	3.45
8808290100	3.46	3.46	3.46	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8808291300	3.47	3.47	3.47	3.47	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
8808300100	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
8808301300	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
8808310100	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.47	3.47
8808311300	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8809010100	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8809011300	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8809020100	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8809021300	3.47	3.47	3.47	3.47	3.47	3.46	3.46	3.46	3.46	3.46	3.46	3.46
8809030100	3.46	3.45	3.46	3.46	3.46	3.46	3.45	3.45	3.45	3.45	3.46	3.46
8809031300	3.47	3.48	3.49	3.49	3.49	3.49	3.49	3.49	3.50	3.50	3.50	3.50
8809040100	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.51	3.51	3.51	3.51	3.51
8809041300	3.51	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52
8809050100	3.52	3.52	3.52	3.52	3.52	3.52	3.50	3.51	3.51	3.51	3.51	3.51
8809051300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.52	3.52	3.52	3.52	3.52
8809060100	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.51	3.51
8809061300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8809070100	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8809071300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8809080100	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8809081300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8809090100	3.51	3.51	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
8809091300	3.50	3.50	3.50	3.50	3.50	3.49	3.49	3.49	3.49	3.49	3.49	3.47
8809100100	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
8809101300	3.47	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
8809110100	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8809111300	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
8809120100	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.41	3.44	3.44	3.44	3.45
8809121300	3.45	3.45	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
8809130100	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.45	3.45	3.45
8809131300	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
8809140100	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
8809141300	3.45	3.45	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8809150100	3.44	3.44	3.44	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43
8809151300	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43
8809160100	3.43	3.43	3.43	3.43	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42
8809161300	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42
8809170100	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42
8809171300	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42	3.42
8809180100	3.42	3.42	3.42	3.42	3.42	3.41	3.40	3.40	3.40	3.39	3.40	3.40
8809181300	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
8809190100	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
8809191300	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.41	3.41
8809200100	3.41	3.39	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.39	3.40	3.39
8809201300	3.39	3.39	3.39	3.39	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38
8809210100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
8809211300	3.37	3.37	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36
8809220100	3.36	3.36	3.36	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.34	3.34
8809221300	3.34	3.34	3.34	3.35	3.35	3.36	3.36	3.36	3.36	3.36	3.36	3.36
8809230100	3.37	3.37	3.36	3.34	3.34	3.34	3.34	3.34	3.33	3.33	3.33	3.33
8809231300	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8809240100	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8809241300	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33
8809250100	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.33	3.32	3.30
8809251300	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8809260100	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8809261300	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8809270100	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8809271300	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
8809280100	3.30	3.29	3.26	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27
8809281300	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27
8809290100	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.23	3.26	3.26	3.26	3.26
8809291300	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8809300100	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26	3.26
8809301300	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27	3.27
8810010100	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.28	3.27
8810011300	3.29	3.29	3.29	3.29	3.30	3.29	3.29	3.29	3.29	3.28	3.29	3.29
8810020100	3.29	3.29	3.29	3.30	3.30	3.30	3.30	3.29	3.29	3.26	3.27	3.27
8810021300	3.28	3.28	3.28	3.28	3.28	3.29	3.29	3.29	3.28	3.28	3.28	3.28
8810030100	3.29	3.27	3.27	3.28	3.28	3.27	3.27	3.27	3.27	3.27	3.26	3.25
8810031300	3.26	3.25	3.26	3.26	3.26	3.25	3.26	3.26	3.26	3.27	3.26	3.26
8810040100	3.26	3.26	3.25	3.26	3.26	3.26	3.25	3.26	3.25	3.26	3.25	3.25

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8810041300	3.23	3.23	3.24	3.23	3.24	3.24	3.23	3.24	3.24	3.24	3.24	3.24
8810050100	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.24	3.24	3.23	3.23	3.23
8810051300	3.22	3.22	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.20	3.21
8810060100	3.21	3.21	3.21	3.21	3.21	3.22	3.22	3.22	3.21	3.21	3.20	3.20
8810061300	3.20	3.20	3.20	3.20	3.20	3.20	3.21	3.21	3.21	3.21	3.20	3.21
8810070100	3.21	3.21	3.21	3.21	3.21	3.20	3.22	3.21	3.21	3.20	3.20	3.19
8810071300	3.19	3.20	3.18	3.18	3.18	3.19	3.19	3.20	3.21	3.20	3.20	3.20
8810080100	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.19	3.19
8810081300	3.19	3.19	3.19	3.18	3.18	3.19	3.19	3.19	3.19	3.19	3.18	3.19
8810090100	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.18	3.18
8810091300	3.18	3.17	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18
8810100100	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.20	3.20	3.21	3.20
8810101300	3.20	3.19	3.19	3.18	3.18	3.17	3.14	3.16	3.16	3.17	3.17	3.17
8810110100	3.18	3.17	3.17	3.17	3.18	3.17	3.18	3.18	3.17	3.17	3.16	3.16
8810111300	3.16	3.15	3.16	3.16	3.15	3.13	3.15	3.15	3.15	3.14	3.14	3.15
8810120100	3.15	3.14	3.15	3.15	3.16	3.16	3.16	3.16	3.16	3.16	3.14	3.14
8810121300	3.13	3.13	3.13	3.14	3.13	3.14	3.14	3.14	3.13	3.13	3.13	3.12
8810130100	3.13	3.12	3.13	3.13	3.13	3.13	3.14	3.14	3.14	3.14	3.13	3.13
8810131300	3.14	3.13	3.12	3.12	3.13	3.13	3.13	3.14	3.13	3.13	3.13	3.14
8810140100	3.14	3.13	3.14	3.13	3.14	3.14	3.14	3.14	3.13	3.14	3.14	3.14
8810141300	3.14	3.14	3.14	3.14	3.13	3.13	3.13	3.13	3.14	3.14	3.14	3.14
8810150100	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.13	3.13	3.13	3.13
8810151300	3.12	3.12	3.13	3.12	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
8810160100	3.13	3.13	3.13	3.14	3.13	3.14	3.13	3.13	3.13	3.13	3.13	3.14
8810161300	3.14	3.14	3.14	3.15	3.14	3.15	3.14	3.14	3.14	3.15	3.14	3.14
8810170100	3.13	3.15	3.14	3.13	3.13	3.13	3.13	3.13	3.13	3.14	3.14	3.14
8810171300	3.14	3.14	3.13	3.13	3.14	3.14	3.15	3.15	3.15	3.16	3.18	3.21
8810180100	3.27	3.30	3.37	3.35	3.36	3.37	3.36	3.36	3.36	3.37	3.36	3.35
8810181300	3.34	3.35	3.36	3.35	3.36	3.35	3.37	3.37	3.37	3.37	3.37	3.38
8810190100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.36	3.37	3.37	3.37
8810191300	3.36	3.35	3.36	3.35	3.36	3.35	3.37	3.37	3.37	3.36	3.37	3.37
8810200100	3.36	3.36	3.36	3.37	3.37	3.37	3.37	3.37	3.36	3.37	3.36	3.36
8810201300	3.35	3.36	3.35	3.35	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36
8810210100	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.37	3.36	3.36
8810211300	3.36	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.38	3.38	3.37	3.37
8810220100	3.37	3.38	3.38	3.38	3.39	3.38	3.36	3.36	3.36	3.36	3.37	3.37
8810221300	3.37	3.37	3.38	3.38	3.38	3.38	3.39	3.38	3.38	3.38	3.38	3.38
8810230100	3.38	3.38	3.38	3.39	3.38	3.38	3.38	3.38	3.38	3.38	3.39	3.39
8810231300	3.39	3.38	3.40	3.40	3.40	3.41	3.41	3.41	3.40	3.40	3.40	3.40
8810240100	3.40	3.40	3.40	3.40	3.40	3.41	3.40	3.41	3.40	3.41	3.41	3.41
8810241300	3.41	3.41	3.41	3.40	3.42	3.40	3.40	3.41	3.41	3.41	3.40	3.40
8810250100	3.40	3.40	3.40	3.40	3.40	3.40	3.39	3.39	3.39	3.39	3.39	3.39
8810251300	3.39	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.39
8810260100	3.38	3.38	3.38	3.38	3.38	3.38	3.39	3.38	3.38	3.38	3.38	3.37
8810261300	3.38	3.38	3.38	3.38	3.37	3.38	3.37	3.37	3.37	3.37	3.38	3.37
8810270100	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.38	3.37	3.37	3.37

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8810271300	3.39	3.37	3.38	3.38	3.38	3.37	3.37	3.37	3.38	3.39	3.38	3.40
8810280100	3.40	3.38	3.40	3.39	3.38	3.37	3.37	3.40	3.38	3.38	3.37	3.38
8810281300	3.37	3.37	3.37	3.36	3.37	3.37	3.37	3.36	3.37	3.36	3.37	3.37
8810290100	3.37	3.36	3.37	3.36	3.37	3.37	3.37	3.37	3.36	3.36	3.36	3.36
8810291300	3.35	3.35	3.35	3.35	3.35	3.35	3.36	3.37	3.35	3.36	3.36	3.36
8810300100	3.35	3.35	3.35	3.35	3.35	3.34	3.35	3.35	3.34	3.35	3.35	3.34
8810301300	3.34	3.34	3.34	3.34	3.34	3.35	3.34	3.35	3.35	3.35	3.35	3.35
8810310100	3.34	3.35	3.35	3.35	3.35	3.35	3.35	3.34	3.35	3.34	3.34	3.35
8810311300	3.35	3.35	3.35	3.34	3.34	3.33	3.34	3.34	3.34	3.34	3.34	3.34
8811010100	3.35	3.35	3.35	3.35	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.33
8811011300	3.34	3.33	3.33	3.34	3.33	3.34	3.33	3.33	3.33	3.33	3.33	3.33
8811020100	3.33	3.32	3.31	3.32	3.32	3.31	3.30	3.31	3.30	3.31	3.31	3.31
8811021300	3.31	3.31	3.31	3.31	3.32	3.32	3.32	3.32	3.33	3.33	3.32	3.32
8811030100	3.32	3.32	3.32	3.33	3.32	3.32	3.32	3.32	3.32	3.33	3.33	3.33
8811031300	3.32	3.32	3.33	3.32	3.32	3.31	3.33	3.34	3.35	3.34	3.34	3.33
8811040100	3.34	3.34	3.34	3.34	3.35	3.34	3.35	3.34	3.35	3.35	3.36	3.35
8811041300	3.35	3.35	3.34	3.35	3.34	3.35	3.34	3.35	3.35	3.35	3.35	3.35
8811050100	3.35	3.36	3.35	3.35	3.36	3.36	3.35	3.35	3.37	3.38	3.39	3.41
8811051300	3.43	3.45	3.46	3.47	3.46	3.47	3.47	3.48	3.48	3.48	3.49	3.49
8811060100	3.51	3.50	3.50	3.52	3.51	3.52	3.52	3.52	3.52	3.51	3.52	3.51
8811061300	3.52	3.51	3.52	3.52	3.51	3.52	3.51	3.52	3.51	3.52	3.51	3.51
8811070100	3.51	3.52	3.53	3.52	3.52	3.51	3.52	3.51	3.51	3.52	3.51	3.52
8811071300	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51	3.51
8811080100	3.51	3.51	3.51	3.51	3.51	3.52	3.53	3.53	3.54	3.54	3.53	3.53
8811081300	3.53	3.52	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
8811090100	3.53	3.53	3.54	3.53	3.53	3.53	3.53	3.53	3.54	3.54	3.54	3.54
8811091300	3.54	3.54	3.54	3.53	3.53	3.53	3.54	3.54	3.55	3.54	3.55	3.54
8811100100	3.54	3.56	3.56	3.58	3.58	3.58	3.59	3.62	3.63	3.63	3.62	3.62
8811101300	3.62	3.63	3.63	3.64	3.64	3.65	3.64	3.65	3.65	3.65	3.65	3.66
8811110100	3.66	3.66	3.66	3.67	3.67	3.66	3.66	3.67	3.66	3.67	3.67	3.67
8811111300	3.67	3.67	3.68	3.68	3.68	3.68	3.69	3.69	3.69	3.69	3.69	3.69
8811120100	3.69	3.69	3.70	3.69	3.70	3.70	3.70	3.70	3.69	3.71	3.70	3.71
8811121300	3.70	3.71	3.71	3.71	3.71	3.71	3.72	3.72	3.72	3.73	3.72	3.73
8811130100	3.72	3.73	3.72	3.74	3.75	3.76	3.77	3.76	3.76	3.75	3.76	3.76
8811131300	3.75	3.76	3.77	3.77	3.77	3.76	3.76	3.77	3.77	3.78	3.78	3.78
8811140100	3.79	3.78	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79	3.79
8811141300	3.79	3.78	3.78	3.78	3.79	3.79	3.79	3.79	3.80	3.79	3.80	3.80
8811150100	3.79	3.80	3.80	3.80	3.80	3.80	3.80	3.81	3.80	3.81	3.81	3.80
8811151300	3.80	3.81	3.81	3.81	3.81	3.81	3.81	3.83	3.83	3.83	3.83	3.82
8811160100	3.83	3.83	3.84	3.84	3.84	3.84	3.86	3.87	3.88	3.89	3.90	3.90
8811161300	3.89	3.90	3.88	3.86	3.86	3.86	3.86	3.86	3.85	3.86	3.85	3.86
8811170100	3.85	3.85	3.85	3.85	3.85	3.86	3.85	3.86	3.87	3.86	3.86	3.84
8811171300	3.85	3.83	3.85	3.85	3.86	3.85	3.85	3.85	3.84	3.84	3.83	3.84
8811180100	3.83	3.84	3.84	3.84	3.84	3.83	3.83	3.83	3.84	3.83	3.84	3.83
8811181300	3.83	3.82	3.82	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
8811190100	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.84	3.85	3.84

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8811191300	3.84	3.84	3.85	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.83	3.83
8811200100	3.84	3.85	3.85	3.85	3.87	3.88	3.87	3.88	3.88	3.88	3.88	3.89
8811201300	3.92	3.92	3.94	3.94	3.95	3.94	3.95	3.97	4.00	4.01	4.03	4.03
8811210100	4.04	4.05	4.06	4.08	4.09	4.09	4.11	4.13	4.15	4.16	4.17	4.18
8811211300	4.20	4.21	4.23	4.24	4.26	4.27	4.28	4.29	4.29	4.30	4.30	4.31
8811220100	4.32	4.33	4.33	4.33	4.34	4.34	4.36	4.35	4.36	4.37	4.37	4.37
8811221300	4.37	4.38	4.38	4.38	4.39	4.39	4.39	4.40	4.40	4.40	4.41	4.40
8811230100	4.40	4.41	4.41	4.42	4.42	4.42	4.42	4.42	4.43	4.43	4.43	4.44
8811231300	4.43	4.43	4.43	4.43	4.43	4.44	4.44	4.44	4.45	4.44	4.45	4.45
8811240100	4.45	4.45	4.46	4.46	4.46	4.45	4.46	4.46	4.46	4.46	4.46	4.46
8811241300	4.46	4.46	4.47	4.47	4.46	4.47	4.47	4.48	4.47	4.47	4.47	4.48
8811250100	4.48	4.48	4.48	4.48	4.48	4.48	4.47	4.48	4.48	4.48	4.48	4.48
8811251300	4.48	4.48	4.49	4.49	4.49	4.48	4.48	4.49	4.48	4.48	4.49	4.48
8811260100	4.49	4.49	4.49	4.50	4.49	4.49	4.50	4.50	4.50	4.50	4.49	4.49
8811261300	4.49	4.50	4.50	4.50	4.50	4.50	4.50	4.52	4.52	4.52	4.51	4.50
8811270100	4.53	4.52	4.53	4.52	4.52	4.53	4.53	4.53	4.53	4.53	4.53	4.53
8811271300	4.52	4.51	4.52	4.51	4.51	4.52	4.51	4.51	4.52	4.51	4.52	4.52
8811280100	4.52	4.51	4.52	4.52	4.52	4.52	4.52	4.51	4.52	4.52	4.51	4.53
8811281300	4.52	4.52	4.52	4.52	4.52	4.52	4.51	4.53	4.52	4.51	4.52	4.52
8811290100	4.52	4.53	4.52	4.52	4.52	4.52	4.51	4.51	4.52	4.53	4.52	4.52
8811291300	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.53	4.52	4.53	4.52	4.53
8811300100	4.53	4.53	4.53	4.53	4.53	4.52	4.52	4.51	4.52	4.51	4.51	4.51
8811301300	4.52	4.51	4.51	4.51	4.51	4.52	4.51	4.51	4.51	4.52	4.52	4.51
8812010100	4.51	4.52	4.51	4.52	4.52	4.51	4.51	4.51	4.51	4.51	4.51	4.51
8812011300	4.51	4.50	4.51	4.51	4.51	4.51	4.51	4.51	4.50	4.50	4.51	4.51
8812020100	4.51	4.51	4.51	4.51	4.51	4.51	4.52	4.52	4.52	4.52	4.51	4.52
8812021300	4.52	4.52	4.51	4.51	4.52	4.52	4.53	4.52	4.52	4.51	4.52	4.52
8812030100	4.51	4.52	4.51	4.51	4.52	4.51	4.52	4.52	4.52	4.53	4.52	4.52
8812031300	4.52	4.51	4.51	4.50	4.50	4.50	4.49	4.49	4.49	4.49	4.48	4.48
8812040100	4.47	4.48	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.50	4.49
8812041300	4.50	4.50	4.50	4.51	4.51	4.50	4.50	4.50	4.50	4.50	4.50	4.50
8812050100	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.49
8812051300	4.50	4.49	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
8812060100	4.50	4.50	4.50	4.50	4.51	4.50	4.50	4.51	4.50	4.50	4.50	4.50
8812061300	4.50	4.51	4.51	4.51	4.50	4.50	4.51	4.51	4.50	4.51	4.51	4.50
8812070100	4.51	4.50	4.50	4.50	4.51	4.50	4.50	4.50	4.49	4.50	4.49	4.49
8812071300	4.49	4.49	4.49	4.49	4.49	4.50	4.49	4.50	4.50	4.49	4.49	4.49
8812080100	4.50	4.49	4.49	4.49	4.50	4.49	4.48	4.48	4.48	4.48	4.48	4.48
8812081300	4.49	4.48	4.49	4.47	4.49	4.49	4.49	4.50	4.49	4.49	4.49	4.49
8812090100	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.50	4.49	4.49	4.49
8812091300	4.49	4.49	4.49	4.49	4.48	4.49	4.48	4.49	4.49	4.48	4.49	4.49
8812100100	4.49	4.48	4.48	4.48	4.49	4.48	4.48	4.48	4.48	4.48	4.48	4.49
8812101300	4.48	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49
8812110100	4.49	4.49	4.49	4.49	4.49	4.49	4.48	4.50	4.49	4.49	4.50	4.48
8812111300	4.49	4.48	4.49	4.48	4.49	4.49	4.49	4.48	4.49	4.49	4.49	4.49
8812120100	4.49	4.48	4.49	4.48	4.50	4.48	4.49	4.49	4.48	4.48	4.48	4.48

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8812121300	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.49
8812130100	4.48	4.48	4.47	4.48	4.49	4.49	4.49	4.49	4.49	4.49	4.48	4.49
8812131300	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49
8812140100	4.49	4.49	4.49	4.48	4.49	4.48	4.48	4.48	4.49	4.48	4.49	4.48
8812141300	4.48	4.49	4.49	4.49	4.50	4.49	4.49	4.49	4.49	4.50	4.49	4.50
8812150100	4.49	4.49	4.49	4.49	4.50	4.49	4.49	4.49	4.49	4.49	4.48	4.49
8812151300	4.48	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49	4.49
8812160100	4.49	4.49	4.49	4.49	4.49	4.49	4.48	4.49	4.49	4.49	4.49	4.50
8812161300	4.50	4.49	4.50	4.49	4.49	4.50	4.49	4.50	4.49	4.50	4.50	4.50
8812170100	4.50	4.49	4.50	4.50	4.50	4.50	4.49	4.50	4.50	4.50	4.50	4.50
8812171300	4.50	4.50	4.50	4.50	4.50	4.50	4.51	4.50	4.50	4.50	4.51	4.50
8812180100	4.50	4.50	4.50	4.50	4.50	4.50	4.49	4.50	4.49	4.50	4.49	4.50
8812181300	4.49	4.50	4.50	4.50	4.49	4.50	4.50	4.50	4.50	4.50	4.50	4.50
8812190100	4.50	4.50	4.50	4.50	4.50	4.50	4.49	4.50	4.49	4.50	4.50	4.50
8812191300	4.49	4.49	4.50	4.50	4.50	4.49	4.50	4.50	4.51	4.50	4.51	4.50
8812200100	4.50	4.50	4.51	4.50	4.50	4.50	4.51	4.50	4.52	4.51	4.52	4.52
8812201300	4.51	4.52	4.52	4.51	4.51	4.51	4.51	4.52	4.51	4.50	4.51	4.50
8812210100	4.51	4.50	4.50	4.51	4.51	4.51	4.51	4.50	4.51	4.51	4.51	4.50
8812211300	4.51	4.50	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51
8812220100	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51
8812221300	4.51	4.51	4.51	4.51	4.51	4.51	4.52	4.53	4.52	4.53	4.53	4.53
8812230100	4.55	4.55	4.57	4.58	4.57	4.57	4.57	4.57	4.58	4.58	4.58	4.59
8812231300	4.57	4.58	4.58	4.58	4.58	4.57	4.58	4.57	4.57	4.57	4.57	4.57
8812240100	4.57	4.58	4.58	4.58	4.58	4.58	4.58	4.59	4.59	4.59	4.59	4.59
8812241300	4.60	4.59	4.59	4.59	4.60	4.60	4.61	4.61	4.61	4.62	4.62	4.62
8812250100	4.62	4.62	4.63	4.63	4.63	4.63	4.62	4.63	4.62	4.63	4.63	4.63
8812251300	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.64	4.63	4.64
8812260100	4.64	4.64	4.64	4.64	4.64	4.65	4.64	4.64	4.64	4.64	4.64	4.64
8812261300	4.64	4.65	4.64	4.64	4.64	4.65	4.64	4.65	4.64	4.65	4.65	4.65
8812270100	4.66	4.66	4.66	4.66	4.66	4.66	4.67	4.67	4.67	4.68	4.67	4.67
8812271300	4.67	4.67	4.67	4.68	4.67	4.67	4.67	4.68	4.69	4.68	4.69	4.70
8812280100	4.70	4.71	4.73	4.75	4.77	4.78	4.80	4.82	4.85	4.88	4.90	4.94
8812281300	4.97	5.01	5.05	5.08	5.12	5.16	5.19	5.23	5.25	5.28	5.30	5.33
8812290100	5.37	5.38	5.39	5.41	5.42	5.42	5.43	5.44	5.45	5.46	5.47	5.48
8812291300	5.48	5.52	5.51	5.53	5.55	5.56	5.57	5.59	5.60	5.60	5.61	5.62
8812300100	5.62	5.63	5.63	5.64	5.64	5.65	5.65	5.65	5.66	5.66	5.66	5.67
8812301300	5.67	5.67	5.68	5.69	5.69	5.69	5.69	5.69	5.69	5.73	5.73	5.74
8812310100	5.74	5.75	5.75	5.63	4.29	3.40	2.52	2.09	2.03	2.05	2.09	2.00
8812311300	2.07	1.96	1.85	1.80	1.86	1.86	1.85	1.91	1.97	2.04	2.19	2.18
8901010100	2.21	2.29	2.29	2.37	2.30	2.26	2.30	2.27	2.18	2.16	2.05	2.09
8901011300	2.09	2.09	2.01	1.94	1.80	1.87	1.70	1.49	1.39	1.32	1.19	1.19
8901020700	1.09	1.09	1.16	0.97	1.05	1.04	1.06	1.28	1.59	1.40	1.14	1.09
8901021900	1.09	1.04	1.03	0.96	0.89	0.97	1.09	1.50	1.89	1.97	2.06	2.19
8901030700	2.20	2.30	2.09	2.07	1.93	1.69	1.55	1.65	1.77	1.95	1.95	1.89
8901031900	2.10	2.19	2.05	2.18	2.09	1.75	1.39	1.56	1.84	1.77	1.77	1.80
8901040700	1.79	1.85	1.83	1.82	1.79	1.77	1.75	1.71	1.67	1.63	1.59	1.53

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8901041900	1.49	1.45	1.42	1.38	1.32	1.35	1.37	1.33	1.38	1.35	1.31	1.26
8901050700	1.23	1.26	1.30	1.27	1.22	1.26	1.25	1.31	1.35	1.37	1.33	1.38
8901051900	1.34	1.42	1.48	1.44	1.38	1.43	1.44	1.49	1.51	1.45	1.45	1.52
8901060700	1.51	1.56	1.65	1.64	1.67	1.73	1.74	1.73	1.72	1.69	1.61	1.59
8901061900	1.49	1.46	1.49	1.42	1.30	1.43	1.43	1.49	1.47	1.49	1.53	1.56
8901070700	1.56	1.50	1.48	1.48	1.42	1.43	1.47	1.45	1.44	1.47	1.45	1.50
8901071900	1.54	1.46	1.30	1.25	1.19	1.19	1.61	1.87	1.74	1.93	1.60	1.40
8901080700	1.45	1.00	0.85	0.78	0.67	0.59	0.52	0.51	0.44	0.32	0.27	0.21
8901081900	0.22	0.30	0.30	0.49	0.80	0.96	1.19	1.36	1.39	1.34	1.34	1.17
8901090700	1.02	0.89	0.73	0.80	0.80	1.00	1.14	1.34	1.69	1.89	1.89	2.08
8901091900	2.06	2.09	1.94	1.84	1.70	1.65	1.59	1.40	1.38	1.48	1.45	1.54
8901100700	1.60	1.65	1.79	1.74	1.18	1.16	1.21	1.62	1.57	1.68	1.70	1.61
8901101900	1.61	1.62	1.62	1.56	1.52	1.45	1.45	1.48	1.59	1.93	2.03	2.09
8901110700	2.12	2.26	2.43	2.44	2.41	2.25	2.15	2.16	2.18	2.21	2.10	2.09
8901111900	2.07	2.21	2.28	2.32	2.35	2.35	2.35	2.18	1.75	1.52	1.46	1.44
8901120700	1.43	1.50	1.58	1.76	1.90	1.91	1.93	2.04	1.93	1.87	1.76	1.60
8901121900	1.52	1.50	1.52	1.50	1.50	1.56	1.54	1.56	1.41	1.54	1.50	1.45
8901130700	1.56	1.60	1.55	1.69	1.59	1.63	1.59	1.70	1.75	1.80	1.84	1.89
8901131900	1.85	1.92	1.95	1.81	1.72	1.65	1.65	1.56	1.60	1.55	1.58	1.65
8901140700	1.67	1.78	1.94	1.96	1.87	2.04	1.96	1.90	1.93	1.92	1.72	1.67
8901141900	1.72	1.58	1.63	1.79	1.58	1.50	1.65	1.47	1.49	1.39	1.25	1.23
8901150700	1.15	1.13	1.27	1.41	1.44	1.43	1.60	1.63	1.64	1.74	1.78	1.65
8901151900	1.55	1.64	1.73	1.92	1.65	1.62	1.79	1.77	1.60	1.60	1.54	1.40
8901160700	1.16	1.18	1.18	1.17	1.16	1.20	1.20	1.32	1.42	1.46	1.53	1.53
8901161900	1.53	1.56	1.60	1.59	1.41	1.41	1.26	1.18	1.13	0.96	0.92	0.79
8901170700	0.40	0.56	0.82	0.94	1.03	1.08	1.11	1.27	1.41	1.67	2.15	2.30
8901171900	2.20	2.12	2.14	2.15	1.91	1.70	1.55	1.50	1.45	1.57	1.62	1.74
8901180700	1.76	1.79	1.87	1.92	1.78	1.69	1.58	1.44	1.43	1.40	1.45	1.52
8901181900	1.65	1.69	1.79	1.88	1.92	1.72	1.54	1.54	1.50	1.43	1.51	1.52
8901190700	1.53	1.54	1.65	1.74	1.70	1.75	1.77	1.71	1.64	1.61	1.61	1.55
8901191900	1.53	1.45	1.39	1.52	1.45	1.43	1.41	1.35	1.52	1.55	1.63	1.58
8901200700	1.69	1.53	1.73	1.78	1.75	1.94	1.71	1.86	1.94	2.01	1.73	2.09
8901201900	2.05	2.23	2.32	2.15	2.20	2.17	2.14	2.18	2.11	2.01	1.94	1.91
8901210700	1.90	2.01	1.93	1.81	1.83	1.88	1.90	1.82	1.83	1.80	1.77	1.65
8901211900	1.58	1.65	1.50	1.42	1.28	1.28	1.23	1.12	1.20	1.33	1.26	1.30
8901220700	1.29	1.43	1.62	1.58	1.55	1.64	1.58	1.52	1.63	1.63	1.58	1.73
8901221900	1.76	1.75	1.81	1.85	1.81	1.77	1.73	1.66	1.67	1.65	1.64	1.72
8901230700	1.66	1.65	1.70	1.76	1.81	1.79	1.72	1.74	1.71	1.67	1.67	1.75
8901231900	1.76	1.75	1.74	1.82	1.88	1.87	1.84	1.81	1.81	1.80	1.76	1.77
8901240700	1.79	1.74	1.81	1.84	1.84	1.92	1.90	1.87	1.85	1.82	1.84	1.89
8901241900	1.86	1.88	1.83	1.99	2.06	2.30	2.37	2.39	2.51	2.56	2.58	2.69
8901250700	2.75	2.82	2.85	2.90	2.93	3.02	3.03	3.05	3.07	3.08	3.09	3.09
8901251900	3.09	3.12	3.13	3.13	3.14	3.15	3.16	3.16	3.16	3.16	3.17	3.17
8901260700	3.18	3.18	3.20	3.22	3.23	3.27	3.28	3.31	3.36	3.39	3.39	3.27
8901261900	3.03	2.79	2.54	2.26	2.03	1.86	1.72	1.62	1.54	1.52	1.45	1.36
8901270700	1.28	1.22	1.16	1.24	1.22	1.20	1.59	1.80	2.04	2.22	2.26	2.30

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8901271900	2.44	2.26	2.06	2.01	1.82	1.64	1.65	1.69	1.65	1.70	1.77	1.82
8901280700	1.92	2.00	1.76	1.74	1.60	1.47	1.49	1.34	1.37	1.42	1.43	1.60
8901281900	1.71	1.74	1.75	1.91	1.90	1.89	1.78	1.76	1.62	1.65	1.68	1.62
8901290700	1.73	1.77	1.77	1.98	2.00	2.05	2.14	2.01	1.97	1.95	1.77	1.74
8901291900	1.71	1.71	1.71	1.68	1.76	1.76	1.79	1.86	1.82	1.77	1.76	1.69
8901300700	1.71	1.70	1.77	1.70	1.69	1.65	1.53	1.47	1.76	1.80	1.58	1.75
8901301900	1.78	1.81	2.00	1.84	1.91	1.97	1.84	1.68	1.82	1.76	1.62	1.61
8901310700	1.51	1.44	1.52	1.43	1.37	1.53	1.43	1.39	1.38	1.44	1.44	1.37
8901311900	1.41	1.42	1.31	1.32	1.53	1.65	1.66	1.66	1.66	1.69	1.82	1.81
8902010700	1.84	1.91	1.80	1.82	1.88	1.97	2.16	2.17	2.31	2.46	2.61	2.74
8902011900	2.75	2.84	2.85	2.89	2.94	2.92	2.89	2.94	2.96	2.92	2.93	2.98
8902020700	2.94	2.99	2.99	2.99	3.04	3.02	3.04	3.05	3.08	3.08	3.09	3.09
8902021900	3.10	3.10	3.11	3.11	3.12	3.13	3.14	3.15	3.16	3.16	3.17	3.17
8902030700	3.17	3.17	3.18	3.20	3.19	3.19	3.20	3.20	3.21	3.22	3.22	3.23
8902031900	3.24	3.24	3.24	3.24	3.24	3.24	3.25	3.25	3.25	3.25	3.26	3.26
8902040700	3.26	3.26	3.27	3.27	3.27	3.27	3.27	3.28	3.29	3.29	3.30	3.30
8902041900	3.30	3.31	3.31	3.32	3.32	3.33	3.33	3.34	3.33	3.34	3.34	3.35
8902050700	3.35	3.36	3.35	3.35	3.35	3.36	3.36	3.36	3.37	3.38	3.38	3.38
8902051900	3.39	3.40	3.39	3.40	3.39	3.40	3.40	3.40	3.38	3.37	3.35	3.30
8902060700	3.23	3.13	2.95	2.69	2.31	1.66	1.20	1.03	1.08	1.81	1.99	1.97
8902061900	1.78	1.90	2.21	1.85	1.59	1.51	1.27	0.99	1.10	1.42	1.47	1.45
8902070700	1.46	1.44	1.62	1.58	1.53	1.34	1.23	1.04	0.94	1.04	1.06	1.06
8902071900	1.02	1.00	1.11	1.10	1.19	1.15	1.04	1.00	0.89	0.87	0.85	0.90
8902080700	0.80	0.85	0.89	0.70	0.71	0.60	0.75	0.54	0.49	0.46	0.40	0.42
8902081900	0.41	0.54	0.77	0.90	0.89	0.89	1.00	1.00	0.95	1.51	1.51	1.37
8902090700	1.29	1.34	1.38	1.39	1.37	1.45	1.47	1.37	1.25	1.16	1.02	0.76
8902091900	0.65	0.49	0.46	0.40	0.48	0.57	0.81	0.70	0.58	0.82	0.92	0.94
8902100700	1.30	1.32	1.62	1.72	1.74	1.78	1.71	1.49	1.40	1.32	1.21	1.10
8902101900	1.03	1.06	1.06	1.08	1.08	4.16	3.50	2.86	1.38	2.40	2.30	1.51
8902110700	1.51	1.48	1.48	1.52	1.54	1.66	1.65	1.50	1.46	1.42	1.32	1.23
8902111900	1.18	1.11	1.12	1.10	1.11	1.20	1.13	1.18	1.19	1.16	1.33	1.57
8902120700	1.45	1.55	1.50	1.57	1.61	1.56	1.51	1.43	1.43	1.39	1.38	1.46
8902121900	1.54	1.52	1.55	1.52	1.54	1.84	1.82	1.80	1.72	1.69	1.64	1.64
8902130700	1.68	1.70	1.70	1.74	1.73	1.65	1.67	1.68	1.67	1.56	1.40	1.49
8902131900	1.44	1.41	1.48	1.52	1.74	1.84	1.94	1.95	1.96	2.03	1.99	1.92
8902140700	1.78	1.66	1.61	1.56	1.57	1.67	1.75	1.70	1.82	1.90	1.94	1.98
8902141900	2.00	1.93	1.91	1.81	1.83	1.78	1.84	1.83	1.95	1.91	2.01	2.22
8902150700	2.09	2.19	2.18	2.04	2.04	1.87	1.78	1.76	1.68	1.68	1.60	1.60
8902151900	1.73	1.75	1.82	1.81	1.98	1.94	1.89	1.88	1.87	1.97	2.00	1.98
8902160700	1.88	1.95	2.17	2.18	2.20	2.20	1.98	1.96	1.85	1.82	1.86	1.72
8902161900	1.71	1.70	1.77	1.83	1.86	1.92	1.92	1.92	1.98	2.02	2.01	1.93
8902170700	1.85	1.77	1.79	1.73	1.74	1.70	1.68	1.70	1.72	1.77	1.87	1.81
8902171900	1.86	1.88	1.91	2.02	2.03	1.96	1.93	1.94	1.98	1.97	1.98	1.98
8902180700	1.87	1.91	1.92	1.91	1.87	1.88	1.80	1.84	1.88	1.89	1.91	1.87
8902181900	1.90	1.89	1.85	1.86	1.79	1.77	1.70	1.64	1.74	1.69	1.71	1.72
8902190700	1.77	1.79	1.79	1.81	1.81	1.80	1.71	0.94	1.70	1.65	1.68	1.72

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8902191900	1.75	1.77	1.80	1.77	1.83	1.82	1.77	1.69	1.67	1.71	1.72	1.70
8902200700	1.75	1.81	1.83	1.86	1.87	1.88	1.89	1.93	1.92	1.88	1.90	1.89
8902201900	1.87	1.16	1.98	1.99	1.98	2.01	2.06	2.13	2.11	2.14	2.08	2.10
8902210700	2.16	2.05	2.04	1.98	1.85	1.73	1.68	1.65	1.65	1.63	1.76	1.75
8902211900	1.85	1.91	1.93	2.06	1.98	2.00	1.92	1.84	1.84	1.74	1.72	1.76
8902220700	1.79	1.87	1.83	1.94	2.00	2.01	2.04	2.04	2.01	1.99	1.98	2.10
8902221900	2.20	2.26	2.37	2.38	2.45	2.49	2.51	2.41	2.42	2.35	2.32	2.26
8902230700	2.19	2.33	2.32	2.39	2.48	2.56	2.60	2.62	2.59	2.54	2.49	2.43
8902231900	2.40	2.38	2.33	2.27	2.29	2.23	2.22	2.19	2.16	2.13	2.13	2.10
8902240700	2.01	1.98	1.96	1.92	1.92	1.92	1.87	1.91	1.89	1.87	1.89	1.86
8902241900	1.91	1.90	1.87	1.86	1.86	1.82	1.78	1.77	1.76	1.75	1.74	1.76
8902250700	1.73	1.75	1.76	1.75	1.72	1.74	1.81	1.78	1.83	1.80	1.86	1.85
8902251900	1.90	1.95	1.95	1.96	1.94	1.90	1.90	1.77	1.72	1.74	1.69	1.66
8902260700	1.68	1.73	1.79	1.83	1.89	2.04	1.99	1.85	1.79	1.68	1.68	1.62
8902261900	1.54	1.43	1.36	1.44	1.44	1.48	1.61	1.49	1.48	1.47	1.47	1.64
8902270700	1.72	1.72	1.70	1.71	1.78	1.90	1.96	1.86	1.78	1.71	1.65	1.69
8902271900	1.72	1.70	1.73	1.74	1.79	1.92	2.03	2.02	1.99	1.97	1.93	1.89
8902280700	1.89	1.76	1.74	1.74	1.68	1.75	1.82	1.79	1.77	1.78	1.75	1.78
8902281900	1.77	1.71	1.57	1.60	1.81	1.45	1.24	1.24	1.11	0.98	0.89	1.14
8903010700	1.31	1.48	1.52	1.57	1.68	1.66	1.71	1.64	1.50	1.43	1.38	1.18
8903011900	1.25	1.32	1.34	1.29	1.43	1.70	1.77	1.82	1.85	1.83	1.84	1.83
8903020700	1.80	1.80	1.78	1.77	1.74	1.75	1.77	1.75	1.77	1.77	1.83	1.89
8903021900	1.87	1.89	1.91	1.94	1.93	1.93	1.95	1.96	1.97	2.01	2.11	2.19
8903030700	2.27	2.37	2.53	2.63	2.64	2.66	2.69	2.82	2.85	2.85	2.89	2.86
8903031900	2.81	2.86	2.87	2.81	2.84	2.81	2.82	2.81	2.73	2.64	2.56	2.47
8903040700	2.32	2.12	1.92	1.80	1.75	1.83	1.87	1.78	1.84	2.03	2.03	1.96
8903041900	1.92	1.83	1.75	1.77	1.73	1.69	1.74	1.81	1.80	1.92	2.02	1.98
8903050700	2.17	2.23	2.26	2.30	2.28	2.21	2.14	2.34	2.42	2.42	2.45	2.49
8903051900	2.43	2.51	2.60	2.52	2.56	2.57	2.50	2.55	2.61	2.70	2.79	2.84
8903060700	2.88	2.95	3.02	3.11	3.20	3.24	3.27	3.28	3.29	3.22	3.12	3.00
8903061900	2.87	2.79	2.74	2.70	2.62	2.61	2.63	2.68	2.68	2.76	2.81	2.86
8903070700	2.91	2.89	2.79	2.71	2.69	2.62	2.58	2.62	2.59	2.47	2.43	2.38
8903071900	2.41	2.39	2.37	2.35	2.33	2.35	2.31	2.25	2.19	2.16	2.11	1.99
8903080700	1.91	1.83	1.80	1.71	1.68	1.67	1.74	1.70	1.78	1.81	1.86	1.87
8903081900	1.92	1.90	1.86	1.81	1.75	1.66	1.63	1.62	1.64	1.66	1.69	1.73
8903090700	1.74	1.76	1.80	1.81	1.74	1.70	1.68	1.66	1.64	1.65	1.61	1.64
8903091900	1.68	1.71	1.72	1.78	1.78	1.78	1.78	1.65	1.69	1.66	1.65	1.65
8903100700	1.67	1.70	1.67	1.73	1.77	1.79	1.82	1.80	1.77	1.76	1.79	1.75
8903101900	1.72	1.74	1.72	1.76	1.72	1.82	1.75	1.71	1.73	1.74	1.73	1.71
8903110700	1.74	1.65	1.78	1.75	1.73	1.73	1.72	1.73	1.75	1.64	1.79	1.76
8903111900	1.75	1.82	1.83	1.89	1.94	1.78	1.76	1.77	1.78	1.83	1.87	1.77
8903120700	1.84	1.78	1.78	1.88	1.86	1.95	1.89	1.87	1.83	1.86	1.79	1.79
8903121900	1.86	1.85	1.85	1.93	1.96	1.94	2.03	1.95	1.98	1.96	1.93	1.88
8903130700	1.87	1.86	1.80	1.81	1.90	1.95	1.94	2.01	1.91	2.05	2.05	1.99
8903131900	2.02	2.09	2.04	2.06	2.08	2.09	2.00	1.99	2.07	2.01	1.99	1.99
8903140700	1.96	2.02	1.95	1.96	1.96	2.00	2.06	1.99	2.01	2.09	2.05	2.04

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8903141900	2.03	2.01	1.82	1.50	1.57	1.67	1.69	1.48	1.35	1.29	1.51	1.44
8903150700	1.06	1.48	1.14	0.88	0.83	0.94	0.79	0.88	0.89	1.55	2.09	2.23
8903151900	1.98	1.85	2.11	2.32	2.31	2.08	1.82	1.74	1.52	1.45	1.63	1.51
8903160700	1.45	1.57	1.78	2.00	2.16	2.00	1.85	1.99	1.73	1.69	1.68	1.59
8903161900	1.50	1.59	1.53	1.68	1.80	1.84	1.86	1.99	2.12	2.13	2.15	2.21
8903170700	2.19	2.12	2.08	2.15	2.25	2.24	2.24	2.22	2.27	2.37	2.47	2.42
8903171900	2.42	2.44	2.43	2.61	2.53	2.61	2.78	2.71	2.62	2.62	2.58	2.46
8903180700	2.39	2.06	1.85	2.04	1.90	1.91	2.02	2.21	2.27	2.40	2.35	2.59
8903181900	2.45	2.39	2.17	1.94	1.99	1.79	1.80	2.02	1.99	2.19	2.20	2.22
8903190700	2.31	2.32	2.19	2.13	2.09	1.86	1.87	1.86	1.80	1.92	1.92	2.03
8903191900	2.07	2.18	2.22	2.07	2.21	2.12	2.01	2.09	1.93	2.00	2.03	1.95
8903200700	2.06	2.07	2.13	2.22	2.22	2.11	2.19	2.16	2.10	2.26	2.20	2.18
8903201900	2.25	2.30	2.39	2.30	2.31	2.20	2.28	2.37	2.18	2.22	2.35	2.17
8903210700	2.21	2.22	2.11	2.05	2.15	2.07	1.98	2.08	2.01	2.06	2.17	2.03
8903211900	2.11	2.10	2.00	2.18	2.15	2.14	2.14	2.16	2.15	2.09	2.13	2.11
8903220700	2.02	2.04	2.02	2.06	2.12	2.11	2.13	2.22	2.21	2.22	2.27	2.21
8903221900	2.18	2.19	2.13	2.15	2.17	2.12	2.07	2.12	2.13	2.13	2.17	2.21
8903230700	2.20	2.23	2.27	2.27	2.29	2.32	2.34	2.38	2.48	2.48	2.50	2.50
8903231900	2.49	2.51	2.46	2.33	2.18	2.12	2.00	2.02	2.04	2.05	2.13	2.17
8903240700	2.24	2.31	2.36	2.28	2.24	2.20	2.21	2.14	2.15	2.18	2.17	2.22
8903241900	2.24	2.25	2.25	2.22	2.14	2.07	2.11	2.10	2.00	2.05	1.99	2.04
8903250700	2.11	2.07	2.15	2.15	2.10	2.13	2.11	2.03	2.11	2.16	2.11	2.13
8903251900	2.24	2.25	2.24	2.31	2.30	2.25	2.28	2.25	2.25	2.33	2.24	2.27
8903260700	2.27	2.33	2.38	2.28	2.19	2.24	2.20	2.15	2.23	2.27	2.21	2.23
8903261900	2.25	2.30	2.34	2.32	2.20	2.24	2.18	2.10	2.05	2.01	2.03	1.99
8903270700	2.05	2.08	2.11	2.16	2.14	2.07	2.10	2.05	2.03	2.02	2.11	2.13
8903271900	1.88	1.92	2.09	2.05	1.94	2.09	2.07	1.91	2.29	2.23	2.13	2.09
8903280700	2.02	2.00	2.05	1.98	1.84	1.81	1.94	1.94	1.94	1.90	1.96	1.92
8903281900	1.86	1.91	1.99	2.08	2.11	2.06	2.28	2.43	2.36	2.37	2.32	2.33
8903290700	2.31	2.20	2.22	2.21	2.20	2.06	2.08	2.33	2.30	2.28	2.36	2.38
8903291900	2.54	2.61	2.66	2.73	2.76	2.71	2.69	2.75	2.78	2.82	2.74	2.70
8903300700	2.66	2.63	2.65	2.61	2.53	2.45	2.41	2.41	2.42	2.43	2.45	2.46
8903301900	2.59	2.60	2.62	2.64	2.65	2.64	2.67	2.76	2.82	2.81	2.80	2.83
8903310700	2.84	2.86	2.85	2.84	2.79	2.73	2.63	2.57	2.48	2.37	2.31	2.24
8903311900	2.22	2.29	2.41	2.51	2.56	2.56	2.59	2.58	2.56	2.48	2.43	2.35
8904010700	2.27	2.21	2.19	2.22	2.31	2.34	2.36	2.37	2.37	2.31	2.28	2.24
8904011900	2.23	2.23	2.23	2.24	2.39	2.41	2.38	2.40	2.44	2.39	2.30	2.21
8904020700	2.17	2.12	2.03	2.10	2.20	2.21	2.29	2.35	2.36	2.43	2.43	2.37
8904021900	2.47	2.46	2.43	2.37	2.36	2.35	2.42	2.50	2.56	2.58	2.69	2.79
8904030700	2.75	2.76	2.78	2.80	2.81	2.79	2.76	2.73	2.71	2.68	2.71	2.88
8904031900	2.93	2.90	2.91	2.86	2.90	2.81	2.75	2.75	2.82	2.81	2.88	2.88
8904040700	2.91	2.95	2.93	2.90	2.69	3.12	3.08	3.00	2.91	2.81	2.62	2.36
8904050100	2.23	2.12	1.96	1.99	2.32	2.50	2.37	2.55	2.47	2.68	2.86	2.76
8904051300	2.51	2.40	2.39	2.32	2.39	2.37	2.30	2.28	2.38	2.58	2.72	2.69
8904060100	2.59	2.62	2.58	2.55	2.52	2.45	2.30	2.31	2.34	2.39	2.51	2.51
8904061300	2.45	2.63	2.64	2.72	2.68	2.61	2.56	2.55	2.46	2.44	2.37	2.36

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8904070100	2.40	2.51	2.52	2.62	2.70	2.71	2.65	2.70	2.68	2.57	2.54	2.39
8904071300	2.40	2.45	2.45	2.48	2.58	2.68	2.70	2.72	2.72	2.69	2.59	2.58
8904080100	2.50	2.52	2.53	2.50	2.56	2.62	2.65	2.73	2.77	2.85	2.86	2.87
8904081300	2.91	2.91	2.89	2.84	2.84	2.83	2.79	2.73	2.65	2.61	2.59	2.64
8904090100	2.53	2.56	2.46	2.40	2.33	2.31	2.38	2.27	2.27	2.33	2.37	2.43
8904091300	2.32	2.25	2.22	2.12	2.15	2.51	2.27	2.16	2.45	2.54	2.29	2.49
8904100100	2.73	2.29	2.00	2.55	2.32	2.05	1.63	1.81	2.18	2.18	2.00	2.36
8904101300	2.47	2.37	2.39	2.61	2.85	2.73	2.55	2.47	2.41	2.46	2.45	2.33
8904110100	2.44	2.42	2.44	2.58	2.65	2.62	2.52	2.51	2.56	2.56	2.53	2.45
8904111300	2.31	2.44	2.46	2.44	2.58	2.62	2.59	2.62	2.67	2.70	2.67	2.54
8904120100	2.40	2.33	2.28	2.19	2.17	2.14	2.16	2.14	2.21	2.37	2.41	2.46
8904121300	2.30	2.15	2.43	2.44	2.32	2.16	2.21	2.27	2.30	2.50	2.68	2.77
8904130100	2.85	2.73	2.65	2.71	2.60	2.53	2.35	2.29	2.26	2.27	2.27	2.28
8904131300	2.33	2.42	2.47	2.47	2.47	2.54	2.65	2.66	2.60	2.55	2.52	2.48
8904140100	2.51	2.57	2.49	2.53	2.47	2.42	2.49	2.47	2.37	2.38	2.41	2.44
8904141300	2.52	2.60	2.54	2.51	2.58	2.48	2.61	2.58	2.65	2.52	2.48	2.50
8904150100	2.46	2.41	2.48	2.55	2.49	2.56	2.65	2.60	2.52	2.57	2.66	2.59
8904151300	2.67	2.66	2.57	2.56	2.56	2.63	2.66	2.58	2.50	2.59	2.57	2.61
8904160100	2.64	2.64	2.61	2.59	2.65	2.69	2.69	2.60	2.53	2.50	2.54	2.53
8904161300	2.57	2.54	2.56	2.61	2.65	2.68	2.71	2.69	2.61	2.57	2.58	2.57
8904170100	2.49	2.45	2.43	2.46	2.53	2.56	2.54	2.52	2.54	2.55	2.52	2.59
8904171300	2.53	2.44	2.45	2.46	2.53	2.67	2.71	2.81	2.71	2.63	2.79	2.81
8904180100	2.85	2.77	2.66	2.89	2.88	2.87	2.88	2.95	2.94	2.87	2.85	2.92
8904181300	2.86	2.81	2.73	2.73	2.72	2.63	2.69	2.69	2.67	2.69	2.64	2.68
8904190100	2.70	2.63	2.59	2.59	2.62	2.60	2.54	2.56	2.61	2.56	2.50	2.57
8904191300	2.55	2.47	2.48	2.53	2.54	2.57	2.50	2.61	2.69	2.76	2.70	2.71
8904200100	2.74	2.68	2.68	2.64	2.61	2.63	2.56	2.58	2.62	2.59	2.54	2.56
8904201300	2.57	2.61	2.62	2.61	2.57	2.59	2.59	2.63	2.66	2.72	2.70	2.69
8904210100	2.76	2.72	2.69	2.69	2.67	2.71	2.73	2.69	2.76	2.73	2.68	2.71
8904211300	2.71	2.65	2.60	2.58	2.54	2.63	2.63	2.62	2.66	2.73	2.72	2.73
8904220100	2.82	2.82	2.77	2.77	2.76	2.74	2.73	2.71	2.66	2.64	2.59	2.60
8904221300	2.61	2.56	2.61	2.64	2.72	2.73	2.76	2.81	2.87	2.94	2.97	2.92
8904230100	2.92	2.91	2.93	2.94	3.00	3.01	2.99	3.00	2.99	2.94	2.88	2.83
8904231300	2.79	2.72	2.67	2.67	2.61	2.60	2.63	2.68	2.75	2.74	2.74	2.72
8904240100	2.72	2.69	2.67	2.62	2.64	2.63	2.62	2.67	2.69	2.70	2.73	2.71
8904241300	2.71	2.73	2.66	2.60	2.58	2.60	2.61	2.67	2.65	2.67	2.69	2.75
8904250100	2.74	2.71	2.70	2.63	2.63	2.61	2.53	2.60	2.65	2.70	2.65	2.67
8904251300	2.84	2.92	2.85	2.85	2.85	2.72	2.78	2.74	2.64	2.67	2.58	2.61
8904260100	2.71	2.82	2.76	2.82	2.81	2.87	2.94	2.87	2.84	2.82	2.82	2.77
8904261300	2.75	2.84	2.76	2.67	2.73	2.66	2.72	2.71	2.66	2.67	2.68	2.71
8904270100	2.71	2.72	2.70	2.68	2.67	2.67	2.68	2.70	2.60	2.61	2.67	2.73
8904271300	2.77	2.77	2.77	2.78	2.73	2.68	2.76	2.75	2.69	2.65	2.73	2.69
8904280100	2.74	2.79	2.81	2.85	2.89	2.89	2.94	3.01	2.98	3.01	3.03	3.04
8904281300	3.04	3.04	2.99	3.02	2.99	2.99	2.98	2.98	3.01	2.97	2.95	2.97
8904290100	3.03	3.04	3.02	3.04	3.00	3.02	3.02	2.99	2.96	2.91	2.86	2.83
8904291300	2.87	2.88	2.89	2.86	2.84	2.86	2.88	2.86	2.83	2.82	2.80	2.80

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8904300100	2.80	2.81	2.79	2.76	2.77	2.78	2.78	2.73	2.69	2.67	2.64	2.63
8904301300	2.62	2.60	2.62	2.63	2.67	2.71	2.70	2.70	2.69	2.69	2.71	2.71
8905010100	2.68	2.71	2.76	2.79	2.84	2.88	2.90	2.91	2.89	2.93	2.96	2.97
8905011300	3.03	3.06	3.08	3.12	3.14	3.11	3.08	3.05	3.00	2.96	2.91	2.87
8905020100	2.85	2.83	2.83	2.85	2.87	2.88	2.90	2.91	2.88	2.85	2.83	2.78
8905021300	2.76	2.73	2.70	2.69	2.72	2.73	2.71	2.68	2.66	2.63	2.61	2.61
8905030100	2.60	2.61	2.62	2.64	2.68	2.71	2.72	2.69	2.65	2.65	2.63	2.61
8905031300	2.60	2.59	2.59	2.59	2.61	2.63	2.66	2.66	2.64	2.62	2.62	2.61
8905040100	2.58	2.56	2.54	2.53	2.54	2.55	2.57	2.57	2.58	2.59	2.60	2.61
8905041300	2.60	2.59	2.61	2.65	2.69	2.70	2.75	2.78	2.80	2.82	2.79	2.79
8905050100	2.76	2.73	2.69	2.65	2.62	2.59	2.57	2.56	2.58	2.63	2.63	2.61
8905051300	2.58	2.55	2.55	2.57	2.53	2.54	2.54	2.54	2.56	2.61	2.65	2.69
8905060100	2.70	2.70	2.67	2.66	2.69	2.71	2.77	2.81	2.84	2.91	2.98	3.03
8905061300	3.01	3.00	2.98	2.96	2.93	2.88	2.85	2.83	2.80	2.80	2.81	2.82
8905070100	2.82	2.84	2.88	2.94	2.97	2.99	2.96	2.94	2.95	2.94	2.93	2.91
8905071300	2.89	2.86	2.82	2.77	2.69	2.63	2.57	2.57	2.59	2.72	2.77	2.84
8905080100	2.95	2.97	2.91	2.86	2.79	2.72	2.64	2.56	2.52	2.53	2.54	2.56
8905081300	2.65	2.72	2.72	2.70	2.67	2.63	2.60	2.56	2.56	2.62	2.67	2.73
8905090100	2.80	2.88	2.90	2.91	2.88	2.82	2.76	2.70	2.66	2.64	2.63	2.65
8905091300	2.71	2.78	2.87	2.96	3.03	3.08	3.07	3.06	3.02	2.99	3.00	3.00
8905100100	3.01	3.06	3.12	3.13	3.16	3.22	3.30	3.35	3.34	3.36	3.35	3.32
8905101300	3.29	3.26	3.23	3.24	3.27	3.28	3.35	3.41	3.46	3.47	3.45	3.42
8905110100	3.39	3.34	3.30	3.27	3.27	3.25	3.32	3.45	3.51	3.57	3.64	3.64
8905111300	3.62	3.60	3.56	3.53	3.50	3.48	3.47	3.48	3.50	3.53	3.48	3.48
8905120100	3.47	3.45	3.42	3.38	3.34	3.29	3.25	3.20	3.18	3.16	3.16	3.18
8905121300	3.19	3.21	3.21	3.20	3.20	3.19	3.19	3.19	3.17	3.16	3.16	3.16
8905130100	3.17	3.20	3.22	3.23	3.24	3.24	3.23	3.22	3.20	3.18	3.16	3.14
8905131300	3.15	3.19	3.23	3.29	3.34	3.37	3.37	3.35	3.33	3.30	3.28	3.25
8905140100	3.23	3.22	3.20	3.18	3.18	3.16	3.16	3.13	3.11	3.08	3.04	3.01
8905141300	2.98	2.95	2.94	2.91	2.91	2.93	2.95	2.97	2.97	2.98	2.96	2.94
8905150100	2.92	2.90	2.89	2.86	2.86	2.86	2.87	2.88	2.91	2.93	2.94	2.96
8905151300	2.95	2.93	2.93	2.91	2.89	2.88	2.86	2.85	2.84	2.84	2.82	2.80
8905160100	2.83	2.84	2.87	2.90	2.94	2.97	2.96	2.94	2.94	2.92	2.90	2.89
8905161300	2.86	2.85	2.85	2.85	2.86	2.90	2.92	2.93	2.94	2.92	2.90	2.86
8905170100	2.83	2.82	2.79	2.81	2.81	2.84	2.88	2.91	2.91	2.91	2.89	2.88
8905171300	2.85	2.82	2.80	2.77	2.79	2.80	2.86	2.87	2.88	2.93	2.94	2.92
8905180100	2.89	2.87	2.86	2.84	2.83	2.82	2.83	2.84	2.84	2.86	2.88	2.88
8905181300	2.86	2.87	2.89	2.89	2.90	2.90	2.93	2.95	2.96	2.93	2.92	2.90
8905190100	2.89	2.88	2.88	2.87	2.88	2.88	2.90	2.90	2.89	2.88	2.87	2.83
8905191300	2.80	2.78	2.77	2.74	2.76	2.78	2.82	2.88	2.91	2.95	3.00	3.02
8905200100	2.99	2.95	2.91	2.90	2.86	2.83	2.80	2.78	2.77	2.79	2.82	2.86
8905201300	2.87	2.83	2.86	2.88	2.87	2.85	2.82	2.82	2.83	2.85	2.92	2.97
8905210100	2.96	2.94	2.90	2.86	2.81	2.77	2.73	2.71	2.68	2.74	2.83	2.85
8905211300	2.82	2.78	2.80	2.84	2.79	2.76	2.74	2.73	2.72	2.72	2.82	2.90
8905220100	2.90	2.89	2.93	2.98	2.95	2.90	2.86	2.81	2.78	2.77	2.79	2.83
8905221300	2.84	2.86	2.88	2.92	2.96	2.95	2.94	2.95	2.96	2.94	2.92	2.91

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8905230100	2.89	2.87	2.87	2.87	2.89	2.90	2.94	3.01	3.09	3.18	3.30	3.38
8905231300	3.49	3.59	3.69	3.86	3.90	3.95	3.96	3.97	3.96	3.91	3.84	3.79
8905240100	3.72	3.65	3.58	3.48	3.42	3.33	3.24	3.21	3.23	3.19	3.13	3.09
8905241300	3.12	3.08	3.02	2.96	2.96	2.88	2.88	2.92	2.97	3.02	2.96	2.99
8905250100	3.08	3.03	3.03	2.93	2.86	2.79	2.68	2.99	2.87	2.75	2.68	2.72
8905251300	2.89	2.95	2.98	2.97	2.91	3.04	2.93	3.02	3.03	3.12	2.97	2.91
8905260100	3.19	3.12	3.09	2.99	3.06	3.21	3.29	3.33	3.47	3.51	3.52	3.61
8905261300	3.69	3.77	3.71	3.62	3.49	3.48	3.34	3.21	3.11	3.19	3.17	3.07
8905270100	3.24	3.30	3.16	3.07	3.11	3.11	3.11	2.90	2.91	2.96	2.93	2.85
8905271300	2.95	3.08	3.09	3.14	3.11	3.06	3.11	3.06	3.02	3.07	3.03	3.00
8905280100	3.06	3.18	3.15	3.14	3.08	3.08	3.06	3.07	3.03	2.97	2.98	2.99
8905281300	3.04	3.05	3.04	3.03	3.07	3.10	3.15	3.11	3.07	3.05	3.12	3.06
8905290100	3.11	3.15	3.11	3.04	3.04	3.03	3.01	3.05	2.99	3.00	3.05	3.08
8905291300	3.11	3.15	3.14	3.13	3.11	3.12	3.05	3.07	2.95	2.94	3.05	2.96
8905300100	3.00	2.95	2.94	2.97	2.92	2.94	2.83	2.71	2.50	2.68	2.80	2.59
8905301300	2.92	2.91	3.05	3.29	3.37	3.42	3.43	3.25	3.22	3.12	3.05	3.29
8905310100	2.90	2.69	2.88	2.79	2.94	3.12	3.04	3.18	3.29	3.37	3.49	3.44
8905311300	3.28	3.21	3.27	3.29	3.15	3.12	3.11	3.06	3.17	3.19	3.36	3.18
8906010100	2.83	3.12	3.27	2.92	3.16	3.30	3.03	3.40	3.33	3.17	3.22	3.42
8906011300	3.24	3.16	3.11	3.21	3.17	3.14	3.10	3.26	3.33	3.16	3.33	3.38
8906020100	3.26	3.21	3.11	3.15	3.22	3.14	3.02	3.17	3.12	3.06	3.07	3.12
8906021300	3.01	3.08	3.18	3.24	3.29	3.26	3.17	3.25	3.37	3.28	3.23	3.16
8906030100	3.13	3.11	3.11	3.22	3.23	3.18	3.17	3.27	3.29	3.30	3.28	3.16
8906031300	3.18	3.13	3.19	3.31	3.66	3.47	3.33	3.35	3.51	3.42	3.42	3.65
8906040100	3.48	3.55	3.61	3.53	3.51	3.41	3.42	3.45	3.39	3.47	3.44	3.45
8906041300	3.45	3.51	3.41	3.30	3.32	3.37	3.31	3.34	3.33	3.33	3.37	3.45
8906050100	3.44	3.46	3.43	3.47	3.46	3.42	3.33	3.38	3.41	3.40	3.41	3.49
8906051300	3.40	3.45	3.56	3.57	3.50	3.65	3.48	3.50	3.54	3.44	3.44	3.49
8906060100	3.42	3.41	3.39	3.43	3.38	3.35	3.41	3.37	3.37	3.36	3.28	3.37
8906061300	3.30	3.29	3.30	3.30	3.33	3.37	3.35	3.44	3.47	3.43	3.47	3.46
8906070100	3.45	3.35	3.33	3.29	3.26	3.29	3.30	3.29	3.37	3.39	3.40	3.45
8906071300	3.53	3.46	3.41	3.40	3.36	3.32	3.34	3.31	3.39	3.43	3.42	3.50
8906080100	3.50	3.48	3.46	3.47	3.40	3.33	3.33	3.29	3.33	3.31	3.36	3.39
8906081300	3.45	3.40	3.52	3.54	3.46	3.47	3.47	3.43	3.42	3.51	3.42	3.46
8906090100	3.45	3.45	3.54	3.57	3.53	3.45	3.37	3.35	3.36	3.30	3.31	3.27
8906091300	3.33	3.32	3.35	3.39	3.38	3.51	3.47	3.51	3.54	3.61	3.49	3.54
8906100100	3.46	3.28	3.16	3.05	2.99	3.03	3.22	3.19	3.20	3.36	3.54	3.65
8906101300	3.58	3.47	3.30	3.26	3.26	3.26	3.29	3.25	3.20	3.31	3.50	3.66
8906110100	3.74	3.66	3.60	3.58	3.49	3.39	3.27	3.19	3.09	3.16	3.22	3.32
8906111300	3.40	3.50	3.59	3.68	3.71	3.62	3.52	3.44	3.33	3.27	3.27	3.22
8906120100	3.25	3.29	3.41	3.49	3.53	3.55	3.50	3.47	3.41	3.37	3.33	3.30
8906121300	3.26	3.30	3.38	3.51	3.61	3.65	3.74	3.88	3.88	3.73	3.59	3.50
8906130100	3.40	3.33	3.28	3.23	3.25	3.30	3.32	3.40	3.52	3.53	3.53	3.60
8906131300	3.63	3.63	3.61	3.62	3.59	3.57	3.51	3.51	3.48	3.48	3.48	3.54
8906140100	3.62	3.60	3.58	3.55	3.54	3.56	3.55	3.54	3.51	3.54	3.60	3.59
8906141300	3.60	3.58	3.59	3.57	3.57	3.59	3.57	3.55	3.54	3.49	3.48	3.48

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8906150100	3.48	3.50	3.53	3.58	3.60	3.63	3.66	3.64	3.61	3.59	3.54	3.50
8906151300	3.52	3.54	3.54	3.54	3.56	3.58	3.62	3.64	3.63	3.63	3.63	3.63
8906160100	3.63	3.64	3.64	3.63	3.62	3.61	3.61	3.59	3.57	3.54	3.50	3.45
8906161300	3.40	3.35	3.30	3.26	3.29	3.32	3.38	3.46	3.53	3.60	3.66	3.66
8906170100	3.62	3.58	3.51	3.42	3.35	3.27	3.20	3.14	3.08	3.06	3.05	3.10
8906171300	3.13	3.17	3.23	3.29	3.26	3.18	3.24	3.23	3.19	3.14	3.14	3.14
8906180100	3.24	3.23	3.19	3.20	3.24	3.23	3.22	3.23	3.29	3.35	3.39	3.34
8906181300	3.24	3.23	3.25	3.21	3.27	3.31	3.36	3.38	3.46	3.58	3.62	3.58
8906190100	3.52	3.47	3.49	3.40	3.36	3.34	3.33	3.33	3.43	3.51	3.57	3.58
8906191300	3.56	3.55	3.54	3.48	3.41	3.41	3.43	3.53	3.54	3.47	3.49	3.52
8906200100	3.44	3.51	3.55	3.48	3.47	3.52	3.50	3.51	3.48	3.46	3.52	3.53
8906201300	3.48	3.51	3.49	3.47	3.45	3.51	3.57	3.61	3.62	3.64	3.66	3.65
8906210100	3.63	3.57	3.60	3.55	3.49	3.46	3.48	3.54	3.56	3.55	3.62	3.64
8906211300	3.66	3.60	3.62	3.64	3.61	3.58	3.62	3.65	3.58	3.56	3.58	3.72
8906220100	3.71	3.67	3.61	3.56	3.53	3.51	3.47	3.44	3.43	3.44	3.52	3.55
8906221300	3.60	3.61	3.58	3.55	3.61	3.60	3.59	3.59	3.56	3.53	3.58	3.62
8906230100	3.60	3.58	3.59	3.60	3.61	3.57	3.55	3.53	3.49	3.51	3.55	3.57
8906231300	3.60	3.60	3.61	3.62	3.64	3.61	3.61	3.60	3.57	3.54	3.58	3.56
8906240100	3.60	3.59	3.52	3.52	3.56	3.56	3.56	3.54	3.56	3.55	3.55	3.58
8906241300	3.58	3.57	3.54	3.52	3.53	3.53	3.51	3.50	3.51	3.52	3.57	3.63
8906250100	3.61	3.63	3.63	3.63	3.67	3.65	3.65	3.62	3.61	3.61	3.62	3.63
8906251300	3.63	3.64	3.63	3.62	3.62	3.62	3.64	3.65	3.64	3.65	3.65	3.65
8906260100	3.64	3.64	3.65	3.65	3.65	3.66	3.67	3.67	3.71	3.71	3.71	3.70
8906261300	3.70	3.71	3.72	3.72	3.73	3.73	3.74	3.74	3.74	3.74	3.91	3.85
8906270100	3.69	3.64	3.76	3.59	3.59	3.67	3.48	3.61	3.60	3.51	3.48	3.59
8906271300	3.55	3.55	3.61	3.66	3.58	3.48	3.53	3.56	3.66	3.53	3.49	3.58
8906280100	3.47	3.49	3.57	3.53	3.58	3.59	3.59	3.71	3.72	3.65	3.59	3.57
8906281300	3.61	3.62	3.65	3.64	3.67	3.81	3.85	3.97	4.07	4.16	4.23	4.31
8906290100	4.36	4.49	4.52	4.49	4.43	4.36	4.31	4.25	4.19	4.12	4.05	3.97
8906291300	3.90	3.86	3.88	3.87	3.87	3.90	3.91	3.92	3.92	3.92	3.92	3.91
8906300100	3.88	3.84	3.81	3.78	3.76	3.75	3.78	3.78	3.78	3.78	3.75	3.73
8906301300	3.70	3.68	3.66	3.64	3.64	3.66	3.67	3.69	3.71	3.77	3.79	3.79
8907010100	3.80	3.79	3.79	3.79	3.79	3.77	3.77	3.76	3.75	3.75	3.73	3.71
8907011300	3.70	3.71	3.70	3.69	3.69	3.71	3.71	3.71	3.71	3.72	3.72	3.73
8907020100	3.73	3.73	3.73	3.75	3.75	3.75	3.75	3.76	3.76	3.75	3.74	3.74
8907021300	3.74	3.73	3.73	3.73	3.74	3.74	3.74	3.75	3.75	3.75	3.75	3.75
8907030100	3.75	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.77	3.77
8907031300	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.78	3.78	3.79	3.79	3.79
8907040100	3.79	3.79	3.79	3.79	3.80	3.80	3.81	3.81	3.80	3.80	3.80	3.80
8907041300	3.79	3.79	3.80	3.80	3.80	3.80	3.81	3.80	3.80	3.81	3.81	3.82
8907050100	3.82	3.82	3.81	3.82	3.82	3.82	3.82	3.82	3.81	3.82	3.81	3.81
8907051300	3.81	3.81	3.81	3.81	3.82	3.82	3.82	3.82	3.82	3.83	3.82	3.83
8907060100	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.82	3.83	3.83	3.83	3.82
8907061300	3.82	3.82	3.82	3.82	3.82	3.83	3.83	3.84	3.84	3.85	3.85	3.85
8907070100	3.85	3.85	3.85	3.84	3.84	3.84	3.83	3.83	3.83	3.83	3.82	3.82
8907071300	3.82	3.83	3.82	3.83	3.83	3.83	3.85	3.85	3.85	3.84	3.84	3.83

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8907080100	3.83	3.83	3.83	3.83	3.83	3.83	3.82	3.83	3.82	3.82	3.82	3.81
8907081300	3.81	3.80	3.81	3.81	3.81	3.82	3.82	3.83	3.83	3.83	3.83	3.83
8907090100	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.82	3.81	3.82	3.82	3.82
8907091300	3.82	3.82	3.82	3.82	3.83	3.83	3.83	3.84	3.85	3.85	3.85	3.85
8907100100	3.86	3.85	3.85	3.85	3.85	3.84	3.84	3.84	3.84	3.84	3.84	3.83
8907101300	3.84	3.85	3.85	3.85	3.86	3.85	3.86	3.87	3.87	3.87	3.87	3.86
8907110100	3.87	3.86	3.86	3.85	3.85	3.83	3.82	3.82	3.82	3.82	3.81	3.81
8907111300	3.82	3.83	3.83	3.84	3.84	3.84	3.84	3.84	3.83	3.84	3.84	3.83
8907120100	3.83	3.82	3.81	3.81	3.81	3.81	3.80	3.80	3.80	3.80	3.80	3.79
8907121300	3.79	3.81	3.81	3.80	3.80	3.80	3.79	3.79	3.79	3.80	3.80	3.79
8907130100	3.79	3.78	3.79	3.79	3.80	3.80	3.80	3.81	3.82	3.82	3.80	3.78
8907131300	3.76	3.77	3.77	3.78	3.77	3.77	3.77	3.77	3.77	3.78	3.77	3.77
8907140100	3.77	3.78	3.78	3.79	3.82	3.82	3.83	3.81	3.83	3.83	3.83	3.81
8907141300	3.79	3.77	3.79	3.79	3.79	3.80	3.80	3.80	3.80	3.80	3.80	3.80
8907150100	3.79	3.80	3.80	3.80	3.80	3.81	3.80	3.81	3.80	3.80	3.80	3.79
8907151300	3.78	3.78	3.77	3.77	3.78	3.78	3.78	3.78	3.77	3.77	3.77	3.78
8907160100	3.78	3.78	3.78	3.78	3.79	3.78	3.79	3.80	3.79	3.79	3.80	3.78
8907161300	3.77	3.77	3.77	3.76	3.75	3.76	3.76	3.77	3.78	3.78	3.77	3.78
8907170100	3.76	3.77	3.77	3.78	3.77	3.77	3.77	3.77	3.77	3.77	3.76	3.76
8907171300	3.76	3.75	3.75	3.74	3.73	3.74	3.74	3.75	3.75	3.74	3.74	3.74
8907180100	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.73	3.73
8907181300	3.73	3.72	3.72	3.72	3.72	3.72	3.74	3.74	3.73	3.74	3.73	3.73
8907190100	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.72	3.72	3.72	3.72	3.72
8907191300	3.72	3.75	3.77	3.78	3.78	3.77	3.77	3.78	3.77	3.77	3.77	3.77
8907200100	3.78	3.78	3.78	3.78	3.79	3.78	3.78	3.78	3.78	3.78	3.78	3.78
8907201300	3.78	3.78	3.79	3.79	3.79	3.79	3.80	3.82	3.86	3.87	3.88	3.89
8907210100	3.90	3.90	3.90	3.91	3.91	3.92	3.93	3.93	3.93	3.93	3.93	3.94
8907211300	3.94	3.94	3.94	3.95	3.94	3.95	3.95	3.95	3.96	3.95	3.95	3.96
8907220100	3.96	3.97	3.96	3.96	3.96	3.96	3.96	3.97	3.97	3.97	3.96	3.97
8907221300	3.96	3.97	3.97	3.96	3.97	3.97	3.97	3.98	3.97	3.98	3.98	3.98
8907230100	3.98	3.98	3.98	3.98	3.98	3.98	3.98	3.97	3.97	3.97	3.97	3.97
8907231300	3.97	3.97	3.97	3.96	3.97	3.97	3.97	3.98	3.97	3.98	3.99	3.99
8907240100	3.99	4.00	3.99	3.99	3.99	3.98	3.99	3.99	3.98	3.98	3.98	3.98
8907241300	3.98	3.98	3.98	3.98	4.00	4.00	4.01	4.10	4.11	4.10	4.10	4.10
8907250100	4.09	4.09	4.09	4.08	4.08	4.08	4.07	4.07	4.06	4.06	4.06	4.05
8907251300	4.05	4.06	4.06	4.06	4.06	4.06	4.06	4.07	4.07	4.11	4.09	4.08
8907260100	4.08	4.07	4.06	4.07	4.07	4.06	4.05	4.05	4.05	4.04	4.04	4.04
8907261300	4.04	4.05	4.05	4.05	4.05	4.07	4.07	4.07	4.08	4.09	4.08	4.08
8907270100	4.09	4.08	4.07	4.07	4.07	4.06	4.06	4.06	4.07	4.10	4.10	4.10
8907271300	4.10	4.11	4.15	4.17	4.18	4.18	4.21	4.23	4.24	4.26	4.28	4.27
8907280100	4.37	4.39	4.42	4.48	4.55	4.61	4.68	4.72	4.76	4.81	4.85	4.87
8907281300	4.91	4.94	4.96	4.99	5.00	5.01	5.03	5.04	5.06	5.07	5.08	5.09
8907290100	5.09	5.10	5.11	5.13	5.13	5.14	5.15	5.15	5.15	5.16	5.16	5.16
8907291300	5.17	5.18	5.18	5.18	5.18	5.18	5.19	5.19	5.20	5.20	5.20	5.20
8907300100	5.20	5.21	5.21	5.21	5.21	5.21	5.21	5.21	5.21	5.23	5.23	5.24
8907301300	5.25	5.25	5.26	5.26	5.26	5.26	5.27	5.27	5.27	5.28	5.28	5.28

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8907310100	5.29	5.29	5.29	5.31	5.32	5.31	5.31	5.32	5.32	5.32	5.32	5.32
8907311300	5.32	5.32	5.33	5.33	5.33	5.33	5.33	5.34	5.34	5.34	5.34	5.35
8908010100	5.35	5.35	5.35	5.35	5.36	5.35	5.36	5.37	5.36	5.36	5.36	5.36
8908011300	5.36	5.36	5.36	5.37	5.36	5.36	5.37	5.37	5.37	5.37	5.37	5.37
8908020100	5.36	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.37	5.36
8908021300	5.37	5.37	5.36	5.37	5.36	5.36	5.36	5.35	5.36	5.36	5.36	5.36
8908030100	5.36	5.35	5.36	5.35	5.36	5.36	5.36	5.36	5.36	5.36	5.35	5.35
8908031300	5.36	5.36	5.36	5.37	5.37	5.36	5.36	5.36	5.37	5.36	5.36	5.36
8908040100	5.36	5.36	5.37	5.40	5.40	5.39	5.39	5.40	5.40	5.39	5.40	5.38
8908041300	5.39	5.40	5.42	5.43	5.43	5.43	5.43	5.42	5.44	5.44	5.44	5.42
8908050100	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.45	5.46	5.47	5.46	5.46
8908051300	5.47	5.47	5.47	5.46	5.45	5.46	5.46	5.46	5.46	5.46	5.46	5.46
8908060100	5.47	5.48	5.48	5.48	5.48	5.47	5.47	5.47	5.47	5.47	5.46	5.45
8908061300	5.45	5.45	5.45	5.45	5.46	5.46	5.47	5.46	5.46	5.46	5.46	5.46
8908070100	5.45	5.45	5.45	5.44	5.44	5.44	5.44	5.43	5.43	5.43	5.43	5.43
8908071300	5.43	5.42	5.42	5.41	5.41	5.41	5.41	5.42	5.41	5.41	5.42	5.41
8908080100	5.41	5.42	5.42	5.41	5.42	5.41	5.40	5.42	5.40	5.41	5.39	5.39
8908081300	5.39	5.38	5.39	5.38	5.38	5.38	5.34	5.33	5.32	5.32	5.32	5.33
8908090100	5.32	5.32	5.31	5.31	5.31	5.31	5.29	5.30	5.29	5.29	5.28	5.27
8908091300	5.27	5.27	5.27	5.27	5.27	5.27	5.26	5.27	5.27	5.27	5.27	5.27
8908100100	5.27	5.27	5.28	5.28	5.28	5.28	5.28	5.28	5.29	5.28	5.27	5.27
8908101300	5.27	5.27	5.27	5.26	5.26	5.26	5.26	5.26	5.26	5.27	5.26	5.26
8908110100	5.27	5.27	5.26	5.27	5.26	5.26	5.27	5.26	5.26	5.26	5.25	5.25
8908111300	5.26	5.26	5.26	5.26	5.26	5.25	5.25	5.25	5.24	5.24	5.22	5.22
8908120100	5.23	5.24	5.23	5.24	5.25	5.24	5.23	5.23	5.24	5.24	5.23	5.22
8908121300	5.22	5.22	5.21	5.21	5.21	5.22	5.21	5.22	5.22	5.22	5.23	5.23
8908130100	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.22	5.23	5.22	5.23	5.22
8908131300	5.22	5.21	5.22	5.21	5.21	5.21	5.21	5.21	5.21	5.22	5.22	5.23
8908140100	5.23	5.23	5.23	5.23	5.23	5.22	5.22	5.22	5.21	5.21	5.21	5.20
8908141300	5.20	5.20	5.20	5.20	5.20	5.19	5.20	5.20	5.20	5.20	5.19	5.20
8908150100	5.20	5.21	5.22	5.23	5.23	5.22	5.22	5.21	5.21	5.21	5.21	5.20
8908151300	5.20	5.21	5.22	5.21	5.22	5.22	5.21	5.21	5.22	5.22	5.21	5.21
8908160100	5.20	5.20	5.20	5.20	5.20	5.20	5.19	5.19	5.18	5.19	5.19	5.20
8908161300	5.19	5.19	5.18	5.18	5.18	5.18	5.17	5.17	5.17	5.17	5.18	5.18
8908170100	5.18	5.19	5.18	5.17	5.17	5.17	5.17	5.17	5.16	5.16	5.15	5.15
8908171300	5.16	5.15	5.15	5.15	5.14	5.14	5.14	5.15	5.15	5.15	5.14	5.14
8908180100	5.14	5.14	5.13	5.14	5.13	5.12	5.12	5.12	5.11	5.11	5.11	5.11
8908181300	5.11	5.10	5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.12	5.11	5.11
8908190100	5.11	5.11	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10
8908191300	5.10	5.10	5.10	5.09	5.10	5.09	5.10	5.10	5.10	5.11	5.10	5.11
8908200100	5.10	5.10	5.10	5.10	5.10	5.09	5.09	5.09	5.09	5.11	5.13	5.13
8908201300	5.13	5.13	5.12	5.12	5.12	5.13	5.13	5.13	5.13	5.12	5.13	5.13
8908210100	5.13	5.13	5.12	5.13	5.13	5.12	5.13	5.12	5.13	5.12	5.11	5.11
8908211300	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.11	5.11
8908220100	5.11	5.11	5.12	5.12	5.14	5.13	5.12	5.12	5.11	5.11	5.12	5.12
8908221300	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.15	5.14

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8908230100	5.14	5.13	5.13	5.12	5.11	5.11	5.10	5.10	5.09	5.11	5.10	5.10
8908231300	5.10	5.10	5.10	5.10	5.11	5.09	5.08	5.09	5.09	5.08	5.09	5.09
8908240100	5.08	5.07	5.07	5.07	5.07	5.06	5.06	5.05	5.05	5.06	5.04	5.04
8908241300	5.04	5.04	5.05	5.05	5.05	5.05	5.04	5.05	5.05	5.04	5.05	5.04
8908250100	5.03	5.03	5.04	5.03	5.03	5.03	5.02	5.02	5.01	5.01	5.00	5.00
8908251300	5.00	5.01	5.01	5.01	5.02	5.02	5.01	5.02	5.02	5.03	5.03	5.01
8908260100	5.02	5.02	5.00	5.00	5.00	5.00	5.00	5.00	4.99	4.99	4.98	4.99
8908261300	4.99	4.99	4.99	4.99	5.00	5.00	5.00	5.00	4.99	4.99	4.99	4.99
8908270100	4.99	4.98	4.98	4.98	4.98	4.98	4.98	4.97	4.96	4.96	4.96	4.96
8908271300	4.97	4.96	4.96	4.95	4.96	4.96	4.96	4.96	4.97	4.96	4.96	4.96
8908280100	4.96	4.97	4.98	4.98	4.99	4.99	4.99	4.99	4.98	4.97	4.95	4.98
8908281300	4.98	4.98	4.99	4.99	4.97	4.97	4.96	4.96	4.98	4.98	4.97	4.97
8908290100	4.97	4.97	4.97	4.97	4.98	4.98	4.99	4.98	4.99	4.98	4.97	4.97
8908291300	4.95	4.95	4.95	4.93	4.93	4.94	4.95	4.96	4.94	4.96	4.96	4.97
8908300100	4.97	4.96	4.96	4.95	4.96	4.96	4.95	4.95	4.95	4.95	4.94	4.94
8908301300	4.94	4.92	4.93	4.93	4.92	4.93	4.93	4.94	4.93	4.93	4.93	4.95
8908310100	4.93	4.93	4.93	4.92	4.92	4.92	4.91	4.92	4.92	4.92	4.92	4.92
8908311300	4.92	4.92	4.92	4.92	4.92	4.92	4.91	4.92	4.92	4.94	4.94	4.94
8909010100	4.93	4.94	4.93	4.93	4.92	4.92	4.92	4.94	4.96	4.96	4.99	4.98
8909011300	4.97	4.95	4.95	4.95	4.96	4.96	4.95	4.97	4.98	4.97	4.98	4.98
8909020100	4.97	4.97	4.96	4.96	4.97	4.97	4.97	4.96	4.95	4.95	4.95	4.94
8909021300	4.95	4.95	4.95	4.94	4.94	4.94	4.94	4.95	4.95	4.95	4.95	4.95
8909030100	4.96	4.96	4.95	4.95	4.94	4.93	4.93	4.93	4.93	4.92	4.93	4.92
8909031300	4.92	4.93	4.93	4.94	4.94	4.94	4.94	4.93	4.93	4.93	4.93	4.92
8909040100	4.93	4.92	4.91	4.91	4.91	4.90	4.90	4.89	4.88	4.89	4.88	4.88
8909041300	4.88	4.88	4.89	4.89	4.90	4.90	4.90	4.91	4.90	4.90	4.90	4.89
8909050100	4.89	4.90	4.90	4.90	4.89	4.88	4.87	4.87	4.86	4.87	4.87	4.86
8909051300	4.87	4.86	4.87	4.87	4.88	4.87	4.87	4.87	4.87	4.88	4.88	4.89
8909060100	4.88	4.89	4.89	4.89	4.88	4.89	4.89	4.89	4.89	4.89	4.89	4.89
8909061300	4.89	4.90	4.89	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88
8909070100	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.89	4.90	4.91	4.90
8909071300	4.90	4.91	4.92	4.92	4.92	4.92	4.95	5.00	5.00	4.98	4.99	4.98
8909080100	4.98	4.97	4.97	4.99	4.99	5.00	5.00	4.99	4.98	4.98	4.97	4.97
8909081300	4.97	5.01	5.00	4.98	4.99	4.99	5.00	4.99	4.98	5.03	5.01	5.01
8909090100	5.01	5.03	5.01	5.01	5.00	4.99	5.03	5.04	5.02	5.02	5.01	5.03
8909091300	5.04	5.11	5.10	5.11	5.14	5.13	5.13	5.13	5.12	5.13	5.13	5.13
8909100100	5.12	5.12	5.11	5.10	5.10	5.10	5.09	5.09	5.08	5.08	5.07	5.07
8909101300	5.06	5.05	5.05	5.05	5.04	5.04	5.05	5.05	5.04	5.03	5.06	5.06
8909110100	5.06	5.04	5.04	5.04	5.04	5.03	5.03	5.02	5.02	5.02	5.01	5.01
8909111300	5.03	5.03	5.04	5.03	5.04	5.04	5.03	5.04	5.01	5.02	5.02	5.02
8909120100	5.01	5.02	5.01	5.01	5.01	5.01	5.03	5.04	5.01	5.01	5.00	5.00
8909121300	5.00	4.99	4.99	4.99	4.99	5.01	5.00	5.00	5.00	5.00	5.00	4.98
8909130100	4.98	4.97	4.97	4.97	4.98	5.03	5.01	5.03	5.04	5.04	5.04	5.04
8909131300	5.04	5.04	5.04	5.03	5.04	5.04	5.04	5.04	5.04	5.03	5.03	5.03
8909140100	5.03	5.03	5.03	5.01	5.02	5.01	5.01	5.02	5.02	5.02	5.01	5.01
8909141300	5.02	5.02	4.96	4.97	4.97	4.95	4.96	4.97	4.95	4.96	4.96	4.96

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8909150100	4.95	4.95	4.95	4.94	4.93	4.93	4.92	4.91	4.91	4.91	4.91	4.92
8909151300	4.91	4.92	4.93	4.95	4.96	4.96	4.95	4.95	4.95	4.95	4.96	4.95
8909160100	4.95	4.94	4.94	4.94	4.94	4.93	4.94	4.94	4.93	4.95	4.95	4.95
8909161300	4.96	4.96	4.96	4.95	4.96	4.97	4.99	4.99	4.99	4.99	4.99	4.98
8909170100	4.99	4.98	4.98	4.98	4.98	4.99	4.99	4.99	5.00	5.00	4.99	4.99
8909171300	4.99	4.99	4.99	4.99	4.99	4.99	5.00	5.01	5.00	5.00	5.01	5.01
8909180100	5.03	5.02	5.02	5.02	5.02	5.02	5.02	5.01	5.00	5.00	4.99	4.98
8909181300	4.98	4.98	4.98	4.99	5.00	5.02	5.03	5.03	5.03	5.02	5.01	5.01
8909190100	5.01	5.01	5.01	5.01	5.02	5.02	5.02	5.02	5.02	5.01	5.01	5.01
8909191300	5.00	5.01	5.01	5.00	5.01	5.01	5.02	5.04	5.03	5.03	5.03	5.03
8909200100	5.04	5.03	5.03	5.03	5.04	5.03	5.04	5.02	5.02	5.03	5.02	5.01
8909201300	5.02	5.01	5.00	5.01	5.02	5.01	5.03	5.04	5.03	5.03	5.03	5.03
8909210100	5.04	5.04	5.04	5.04	5.04	5.04	5.03	5.03	5.01	5.03	5.02	5.02
8909211300	5.02	5.02	5.04	5.04	5.04	5.04	5.04	5.05	5.04	5.05	5.05	5.05
8909220100	5.05	5.06	5.04	5.07	5.07	5.07	5.08	5.08	5.08	5.08	5.08	5.07
8909221300	5.07	5.07	5.09	5.08	5.10	5.09	5.10	5.10	5.11	5.11	5.11	5.10
8909230100	5.11	5.10	5.09	5.10	5.09	5.09	5.07	5.06	5.04	5.03	5.01	5.01
8909231300	5.00	4.99	5.03	5.03	5.02	5.01	5.00	4.99	4.97	4.98	4.96	4.96
8909240100	4.96	4.97	4.98	4.99	4.99	4.99	5.00	5.00	5.00	4.99	4.98	4.98
8909241300	4.98	4.97	5.00	4.98	4.99	4.99	5.00	5.01	5.01	5.01	4.98	4.98
8909250100	4.98	4.98	4.98	4.98	4.99	5.00	5.00	4.98	4.97	4.97	4.96	4.98
8909251300	4.97	4.98	4.97	4.96	4.96	4.98	4.98	4.98	4.97	4.98	4.97	4.97
8909260100	4.95	4.95	4.96	4.96	4.97	4.95	4.96	4.96	4.95	4.95	4.94	4.94
8909261300	4.91	4.89	4.91	4.92	4.93	4.93	4.93	4.95	4.95	4.96	4.97	4.97
8909270100	4.96	4.96	4.95	4.97	4.97	4.97	4.98	4.97	4.98	4.99	4.98	4.98
8909271300	4.97	4.96	4.95	4.94	4.95	4.95	4.95	4.96	4.97	4.97	4.98	4.97
8909280100	4.96	4.97	4.98	4.98	4.99	4.98	4.98	4.98	4.98	4.98	4.97	4.98
8909281300	4.97	4.95	4.95	4.95	4.95	4.95	4.95	4.96	4.95	4.95	4.96	4.93
8909290100	4.93	4.94	4.94	4.94	4.95	4.94	4.96	4.96	4.96	4.96	4.96	4.95
8909291300	4.94	4.95	4.95	4.95	4.94	4.93	4.94	4.93	4.92	4.90	4.94	4.95
8909300100	4.94	4.94	4.94	4.94	4.94	4.93	4.94	4.93	4.93	4.93	4.92	4.92
8909301300	4.92	4.91	4.91	4.90	4.89	4.90	4.90	4.91	4.92	4.93	4.93	4.92
8910010100	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
8910011300	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
8910020100	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.91
8910021300	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.90	4.90	4.90	4.90	4.90
8910030100	4.90	4.90	4.90	4.90	4.90	4.90	4.89	4.89	4.89	4.89	4.89	4.88
8910031300	4.88	4.88	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87	4.87
8910040100	4.87	4.87	4.87	4.87	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86
8910041300	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86
8910050100	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.86	4.85	4.85
8910051300	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85
8910060100	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.84	4.84	4.83	4.83
8910061300	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.82	4.82
8910070100	4.82	4.82	4.82	4.82	4.82	4.82	4.81	4.81	4.81	4.81	4.81	4.81
8910071300	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.80

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8910080100	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
8910081300	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79
8910090100	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.79	4.78
8910091300	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
8910100100	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.79	4.80	4.81	4.82
8910101300	4.82	4.82	4.83	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
8910110100	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
8910111300	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
8910120100	4.82	4.82	4.82	4.82	4.82	4.83	4.83	4.83	4.82	4.82	4.82	4.82
8910121300	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
8910130100	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
8910131300	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
8910140100	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
8910141300	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
8910150100	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
8910151300	4.80	4.80	4.80	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
8910160100	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
8910161300	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.82	4.83	4.83	4.83	4.85
8910170100	4.85	4.86	4.87	4.89	4.90	4.91	4.92	4.92	4.93	4.94	4.94	4.94
8910171300	4.95	4.95	4.95	4.95	4.95	4.95	4.96	4.96	4.96	4.97	4.97	4.97
8910180100	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
8910181300	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
8910190100	4.97	4.99	5.04	5.07	5.08	5.12	5.17	5.20	5.28	5.30	5.33	5.36
8910191300	5.38	5.42	5.44	5.47	5.50	5.54	5.56	5.59	5.61	5.64	5.66	5.68
8910200100	5.69	5.71	5.73	5.75	5.76	5.77	5.78	5.79	5.80	5.82	5.83	5.84
8910201300	5.85	5.86	5.86	5.87	5.87	5.88	5.88	5.89	5.89	5.90	5.90	5.91
8910210100	5.91	5.91	5.92	5.93	5.93	5.93	5.94	5.94	5.94	5.95	5.95	5.96
8910211300	5.96	5.96	5.97	5.97	5.97	5.97	5.98	5.98	5.98	5.99	5.99	5.99
8910220100	5.99	6.00	6.00	6.00	6.00	6.01	6.01	6.01	6.01	6.02	6.02	6.02
8910221300	6.03	6.03	6.03	6.03	6.03	6.04	6.04	6.04	6.04	6.04	6.05	6.05
8910230100	6.05	6.05	6.05	6.06	6.06	6.06	6.06	6.06	6.06	6.07	6.07	6.07
8910231300	6.07	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.09	6.09	6.09
8910240100	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.10	6.10
8910241300	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10
8910250100	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.10	6.11
8910251300	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910260100	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910261300	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910270100	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910271300	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910280100	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11
8910281300	6.11	5.49	4.46	3.64	3.05	2.68	2.41	2.37	2.29	2.27	2.25	2.22
8910290100	2.19	2.21	2.21	2.19	2.19	2.23	2.24	2.26	2.28	2.28	2.24	2.25
8910291300	2.24	2.24	2.24	2.24	2.19	2.25	2.27	2.27	2.28	2.26	2.23	2.23
8910300100	2.23	2.23	2.14	2.14	2.14	2.15	2.18	2.19	2.22	2.28	2.28	2.27
8910301300	2.25	2.25	2.22	2.13	2.19	2.19	2.23	2.22	2.24	2.26	2.22	2.20

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8910310100	2.23	2.18	2.19	2.17	2.12	2.13	2.15	2.17	2.25	2.29	2.18	2.14
8910311300	1.98	2.00	1.93	1.68	1.59	1.51	1.35	1.37	1.46	1.34	1.42	1.42
8911010100	1.00	1.19	1.62	1.87	1.66	1.61	1.61	1.61	1.75	1.59	1.65	1.65
8911011300	1.57	1.58	1.74	1.79	1.99	1.85	2.06	2.23	2.26	2.37	2.25	2.19
8911020100	2.19	2.19	1.77	1.77	1.64	1.55	1.61	1.76	1.87	2.09	2.24	2.38
8911021300	2.35	2.35	2.35	2.34	2.12	2.12	2.12	2.12	2.12	2.12	2.16	2.31
8911030100	2.44	2.46	2.49	2.49	2.49	2.49	2.10	2.10	2.10	2.10	1.89	1.92
8911031300	2.06	2.20	2.21	2.26	2.32	2.35	2.35	2.35	2.35	2.29	1.99	2.00
8911040100	1.96	1.96	1.96	1.96	1.96	1.98	2.07	2.12	2.12	2.06	1.90	1.90
8911041300	1.90	1.90	1.90	1.90	1.88	1.88	1.95	1.95	1.95	1.94	1.71	1.69
8911050100	1.69	1.56	1.61	1.50	1.40	1.49	1.66	1.78	1.86	1.86	1.83	1.89
8911051300	1.96	1.96	1.83	1.82	1.80	1.80	1.71	1.70	1.73	1.77	1.77	1.43
8911060100	1.61	1.69	1.83	1.83	1.83	1.83	1.83	1.83	1.90	1.73	2.19	1.94
8911061300	1.44	1.77	1.95	2.10	1.87	1.85	2.08	1.77	1.92	2.21	2.36	2.36
8911070100	2.03	1.96	2.25	2.16	2.03	2.11	2.00	2.00	2.12	2.18	2.30	2.30
8911071300	2.35	2.58	2.77	3.03	2.97	2.93	2.78	2.74	2.74	2.74	2.73	2.73
8911080100	2.73	2.73	2.73	2.73	2.73	2.73	2.43	2.54	2.57	2.45	2.38	2.44
8911081300	2.21	2.21	2.26	2.28	2.26	2.26	2.33	2.25	2.33	2.36	2.30	2.11
8911090100	2.06	1.89	1.78	1.78	1.48	1.39	1.44	1.44	1.44	1.01	1.23	1.13
8911091300	1.17	0.79	0.79	1.17	1.26	1.20	1.15	1.24	1.28	1.64	1.84	1.27
8911100100	1.15	1.41	1.79	2.09	1.66	1.44	1.79	2.47	1.63	1.78	1.77	1.79
8911101300	1.90	1.90	1.36	1.95	1.72	1.60	1.77	1.95	1.69	1.63	1.77	1.76
8911110100	1.60	1.20	1.40	1.29	1.29	1.16	1.24	1.24	0.77	0.87	1.07	0.83
8911111300	0.85	0.74	0.79	0.81	0.92	1.26	1.52	1.46	1.64	1.72	1.94	1.98
8911120100	1.94	1.94	1.65	1.93	2.21	1.90	1.96	1.78	1.89	2.10	1.89	1.89
8911121300	1.87	1.82	1.95	1.93	2.14	2.16	2.01	2.05	2.16	2.23	2.14	2.14
8911130100	1.95	1.96	2.00	2.14	2.19	2.20	2.06	1.90	1.78	1.76	1.68	1.69
8911131300	1.65	1.47	1.48	1.57	1.64	1.79	1.79	1.82	1.92	1.95	1.95	1.73
8911140100	1.64	1.52	1.54	1.56	1.55	1.55	1.66	1.74	1.87	1.96	2.03	2.03
8911141300	2.03	2.03	1.97	1.94	1.93	1.93	1.93	1.93	1.88	1.94	1.98	1.95
8911150100	1.79	2.05	2.02	1.96	2.02	1.89	1.91	1.95	2.00	2.00	1.90	1.97
8911151300	1.94	1.94	1.95	2.19	2.10	1.84	1.93	2.26	2.11	2.14	2.17	2.25
8911160100	2.41	2.48	2.59	2.39	2.30	2.13	1.92	1.84	1.80	1.62	1.44	1.30
8911161300	1.28	1.28	1.34	1.27	1.10	1.10	1.10	1.10	1.10	0.85	0.85	0.96
8911170100	1.12	1.32	1.41	1.23	0.92	0.89	1.00	0.95	0.85	0.75	0.67	0.74
8911171300	0.92	0.89	1.14	1.11	1.30	1.50	1.47	1.29	1.39	1.19	1.03	0.79
8911180100	0.79	0.79	0.79	0.79	0.80	0.80	1.12	1.29	1.51	1.52	1.40	2.28
8911181300	2.63	2.55	2.55	2.01	1.26	1.04	0.93	0.96	1.18	0.89	1.42	1.69
8911190100	1.79	1.93	1.87	1.89	2.08	1.89	1.80	1.81	1.81	1.81	1.81	1.81
8911191300	1.25	1.40	1.24	1.19	1.44	1.39	1.25	1.22	0.77	0.79	0.64	0.80
8911200100	0.88	0.74	0.78	0.89	0.89	1.01	1.07	1.27	1.14	1.12	1.22	1.23
8911201300	1.13	1.17	1.16	1.30	1.53	2.10	1.72	1.59	2.22	1.52	2.02	2.12
8911210100	2.05	2.26	2.40	2.30	2.28	2.68	2.58	2.64	2.52	2.34	2.36	2.48
8911211300	2.07	2.13	2.21	1.78	2.01	2.22	2.02	1.94	2.11	1.94	2.06	2.30
8911220100	2.19	2.14	2.10	2.12	2.06	2.16	1.96	1.82	1.96	1.88	1.86	2.10
8911221300	2.04	2.05	2.15	2.29	2.29	2.36	2.39	2.39	2.39	2.39	2.39	2.39

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8911230100	2.39	2.39	2.49	2.59	2.64	2.64	2.64	2.64	2.64	2.12	2.04	1.95
8911231300	1.89	1.89	1.76	1.84	1.74	1.71	1.60	1.48	1.49	1.46	1.41	1.27
8911240100	1.20	1.25	1.09	1.12	1.34	1.35	1.35	1.39	1.67	1.69	1.86	1.89
8911241300	1.79	1.99	1.83	1.77	1.62	1.67	1.45	1.27	1.27	1.01	0.98	1.06
8911250100	1.06	1.09	1.39	1.27	1.16	1.24	1.29	1.27	1.40	1.26	1.20	1.29
8911251300	1.20	1.24	1.29	1.30	1.28	1.30	1.39	1.53	1.69	1.80	1.79	1.82
8911260100	1.53	1.56	1.64	1.74	1.76	1.78	1.69	1.84	1.96	1.95	1.99	1.85
8911261300	1.79	1.73	1.79	1.67	1.76	1.75	1.63	1.70	1.85	1.76	1.89	1.90
8911270100	1.84	1.91	2.03	2.08	2.03	2.03	2.00	2.00	2.02	1.90	1.90	2.12
8911271300	2.07	2.09	2.11	2.07	1.98	1.95	1.86	1.64	1.34	1.14	1.06	1.54
8911280100	1.26	1.31	1.52	1.30	1.03	1.49	1.52	1.19	1.95	1.80	1.20	1.50
8911281300	1.70	2.22	1.97	1.90	1.96	2.01	2.23	2.12	1.82	1.98	2.14	2.14
8911290100	2.14	2.14	2.14	2.13	2.13	2.15	2.16	2.19	2.23	2.12	1.95	1.78
8911291300	1.69	1.63	1.45	1.41	1.29	1.23	1.23	1.22	0.87	0.87	0.87	0.87
8911300100	0.91	0.91	0.82	0.82	0.82	0.82	0.90	1.20	1.50	1.49	1.49	1.50
8911301300	1.43	1.30	1.24	1.30	1.37	1.40	1.70	1.78	1.98	2.09	2.09	2.10
8912010100	2.14	1.87	1.80	1.70	1.55	1.69	1.78	1.79	1.90	2.04	2.09	2.19
8912011300	2.26	2.12	2.19	2.14	2.02	1.98	1.85	1.81	1.80	1.89	1.89	1.90
8912020100	1.99	1.93	1.94	2.01	1.67	1.58	1.59	1.59	1.59	1.55	1.48	1.47
8912021300	0.73	0.74	0.74	0.74	0.74	1.49	1.24	1.39	1.51	1.45	1.89	1.99
8912030100	1.77	1.69	1.93	1.87	1.89	2.39	2.49	2.69	2.77	2.51	2.49	2.44
8912031300	2.27	1.97	1.97	1.72	1.59	1.66	1.76	1.79	1.89	2.02	2.07	2.10
8912040100	2.27	2.29	2.29	2.29	2.29	1.54	1.47	1.47	1.55	1.55	1.59	1.70
8912041300	1.83	1.89	1.93	1.98	1.87	1.87	1.87	1.60	1.60	1.74	1.68	1.68
8912050100	1.69	1.69	1.89	1.93	1.95	1.95	1.90	1.77	1.76	1.70	1.60	1.54
8912051300	1.51	1.59	1.63	1.69	1.57	1.68	1.71	1.75	1.79	1.79	1.83	1.85
8912060100	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.86	1.92	1.99	1.88	1.90
8912061300	1.91	1.78	1.80	1.58	1.50	1.70	1.89	2.09	2.04	2.00	2.09	2.29
8912070100	2.28	2.15	2.19	1.92	1.86	1.86	1.76	1.79	1.79	1.79	1.79	1.80
8912071300	1.97	1.99	1.99	1.99	1.99	1.89	1.91	1.79	1.73	1.70	1.68	1.78
8912080100	1.90	1.91	1.89	1.89	1.89	1.93	1.95	1.97	1.97	1.98	1.75	1.77
8912081300	1.88	1.89	1.90	2.04	2.05	2.08	2.09	2.09	2.09	1.96	1.96	1.84
8912090100	1.82	1.84	1.83	1.85	1.91	1.95	1.98	1.99	1.97	1.97	2.05	2.05
8912091300	2.05	2.05	2.02	1.96	1.96	1.98	1.90	1.82	1.78	1.79	1.69	1.69
8912100100	1.69	1.60	1.53	1.45	1.46	1.42	1.31	1.33	1.29	1.23	1.29	1.29
8912101300	1.32	1.39	1.48	1.49	1.67	1.73	1.78	1.80	1.81	1.85	1.87	1.88
8912110100	1.88	1.75	1.90	1.93	1.97	2.10	2.12	2.12	2.21	2.21	2.21	2.21
8912111300	2.21	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.84	1.89	1.93	1.93
8912120100	1.93	1.93	1.93	1.93	1.73	1.75	1.72	1.69	1.69	1.69	1.69	1.69
8912121300	1.69	1.66	1.66	1.76	1.77	1.78	1.79	1.87	1.89	1.89	1.89	1.89
8912130100	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.89	1.95	1.96	1.96	1.96
8912131300	1.96	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.87	1.89	1.86	1.87
8912140100	1.82	1.75	1.79	1.78	1.75	1.75	1.78	1.79	1.82	1.82	1.75	1.57
8912141300	1.40	1.22	1.15	1.11	1.09	1.08	1.07	1.06	1.05	1.06	1.12	1.23
8912150100	1.29	1.29	1.30	1.55	1.60	1.70	1.90	1.90	1.87	1.86	1.89	1.89
8912151300	1.92	2.06	2.09	2.09	2.09	2.09	2.03	1.90	1.69	1.50	1.35	1.25

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
8912160100	1.18	1.14	1.11	1.09	1.08	1.24	1.40	1.49	1.60	1.69	1.70	1.74
8912161300	1.71	1.54	1.44	1.31	1.24	1.20	1.16	1.14	1.12	1.13	1.17	1.17
8912170100	1.27	1.29	1.29	1.31	1.34	1.34	1.34	1.34	1.36	1.38	1.39	1.39
8912171300	1.39	1.39	1.39	1.39	1.40	1.47	1.47	1.47	1.47	1.47	1.42	1.42
8912180100	1.42	1.42	1.29	1.27	1.34	1.34	1.35	1.38	1.43	1.48	1.48	1.48
8912181300	1.48	1.48	1.33	1.24	1.24	1.16	1.16	1.16	1.18	1.19	1.29	1.49
8912190100	1.65	1.69	1.70	1.70	1.73	1.74	1.76	1.63	1.52	1.53	1.54	1.59
8912191300	1.67	1.69	1.79	1.84	1.87	1.87	1.80	1.80	1.80	1.61	1.59	1.48
8912200100	1.41	1.35	1.35	1.35	1.31	1.27	1.24	1.20	1.17	1.14	1.10	1.10
8912201300	1.10	1.14	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
8912210100	1.19	1.17	1.18	1.18	1.18	1.20	1.32	1.45	1.49	1.49	1.35	1.35
8912211300	1.29	1.26	1.26	1.26	1.16	1.16	1.16	1.16	1.16	1.19	1.19	1.19
8912220100	1.19	1.19	1.19	1.19	1.02	1.02	1.02	1.04	1.05	1.05	1.06	1.13
8912221300	1.20	1.30	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39
8912230100	1.39	1.39	1.39	1.47	1.50	1.55	1.59	1.59	1.59	1.59	1.46	1.46
8912231300	1.46	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39
8912240100	1.39	1.39	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.33	1.24	1.24
8912241300	1.15	1.15	1.15	1.08	1.09	1.06	1.06	1.04	1.04	1.04	1.06	1.07
8912250100	1.07	1.07	1.07	1.07	1.07	0.97	0.96	0.96	0.96	0.96	0.96	0.96
8912251300	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
8912260100	0.96	0.96	0.96	1.09	1.42	1.59	1.67	1.71	1.64	1.64	1.64	1.64
8912261300	1.64	1.64	1.09	1.06	1.09	1.18	1.30	1.38	1.42	1.53	1.55	1.55
8912270100	1.45	1.41	1.35	1.35	1.35	1.35	1.35	1.30	1.35	1.39	1.44	1.49
8912271300	1.45	1.45	1.49	1.49	1.42	1.42	1.42	1.42	1.40	1.25	1.21	1.21
8912280100	1.21	1.21	1.24	1.29	1.33	1.34	1.45	1.48	1.55	1.55	1.48	1.47
8912281300	1.40	1.35	1.35	1.35	1.35	1.27	1.27	1.37	1.47	1.49	1.49	1.54
8912290100	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.57	1.57	1.59
8912291300	1.59	1.65	1.73	1.73	1.76	1.77	1.79	1.86	1.94	2.04	2.06	2.06
8912300100	2.06	2.09	2.12	2.11	1.94	1.94	1.81	1.81	1.81	1.81	1.81	1.81
8912301300	1.81	1.81	1.86	1.86	1.86	1.80	1.67	1.79	1.83	1.85	1.70	1.77
8912310100	1.77	1.77	1.65	1.58	1.59	1.57	1.56	1.62	1.69	1.77	1.83	1.90
8912311300	2.05	2.17	2.27	2.36	2.41	2.46	2.53	2.60	2.66	2.69	2.70	2.70
9001010100	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.71	2.51	2.48
9001011300	2.48	2.48	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47
9001020100	2.47	1.81	1.81	1.81	1.81	1.81	1.62	1.62	1.62	1.62	1.62	1.62
9001021300	1.62	1.62	1.62	1.66	1.61	1.55	1.54	1.54	1.50	1.50	1.50	1.49
9001030100	1.49	1.49	1.49	1.54	1.57	1.55	1.55	1.55	1.55	1.52	1.48	1.47
9001031300	1.48	1.47	1.47	1.47	1.47	1.47	1.44	1.43	1.46	1.48	1.44	1.43
9001040100	1.49	1.54	1.54	1.54	1.57	1.57	1.65	1.67	1.73	1.78	1.79	1.79
9001041300	1.80	1.85	1.89	1.92	1.99	2.04	2.06	2.06	2.09	2.07	2.07	2.03
9001050100	2.07	2.18	2.17	2.15	2.02	1.96	1.72	1.72	1.65	1.60	1.59	1.59
9001051300	1.68	1.75	1.75	1.65	1.65	1.66	1.60	1.60	1.54	1.44	1.49	1.49
9001060100	1.49	1.50	1.59	1.59	1.59	1.59	1.55	1.47	1.40	1.35	1.36	1.36
9001061300	1.36	1.36	1.36	1.36	1.39	1.45	1.49	1.56	1.66	1.70	1.74	1.74
9001070100	1.74	1.74	1.74	1.28	1.35	1.36	1.36	1.36	1.30	1.17	1.23	1.26
9001071300	1.29	1.20	1.23	1.29	1.31	1.30	1.29	1.23	1.19	1.30	1.40	1.45

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9001080100	1.52	1.56	1.57	1.60	1.59	1.57	1.59	1.58	1.58	1.58	1.58	1.58
9001081300	1.58	1.47	1.48	1.46	1.50	1.50	1.58	1.50	1.44	1.39	1.29	1.37
9001090100	1.23	1.23	1.22	1.30	1.29	1.38	1.45	1.51	1.50	1.52	1.57	1.59
9001091300	1.47	1.50	1.49	1.43	1.58	1.42	1.56	1.54	1.56	1.48	1.49	1.45
9001100100	1.37	1.31	1.27	1.28	1.23	1.16	1.10	1.10	1.10	1.07	1.22	1.30
9001101300	1.32	1.29	1.36	1.39	1.53	1.50	1.44	1.51	1.50	1.38	1.30	1.42
9001110100	1.23	1.24	1.24	1.17	1.24	1.37	1.32	1.29	1.48	1.27	1.19	1.18
9001111300	1.12	1.06	0.93	0.89	0.79	0.85	0.83	0.73	0.70	0.79	0.79	0.83
9001120100	0.71	0.69	1.15	1.29	1.08	1.19	1.20	1.12	1.19	1.03	1.19	1.06
9001121300	0.89	1.10	1.04	1.00	1.05	1.30	1.39	1.56	1.67	1.89	1.93	1.73
9001130100	1.73	1.59	1.60	1.59	1.42	1.40	1.40	1.38	1.41	1.50	1.64	1.69
9001131300	1.53	1.56	1.56	1.36	1.30	1.23	1.16	1.18	1.12	1.19	1.19	1.24
9001140100	1.32	1.44	1.56	1.60	1.60	1.67	1.64	1.72	1.69	1.62	1.60	1.50
9001141300	1.49	1.52	1.53	1.59	1.54	1.55	1.65	1.65	1.69	1.66	1.56	1.51
9001150100	1.54	1.41	1.41	1.46	1.45	1.36	1.39	1.49	1.55	1.52	1.57	1.51
9001151300	1.59	1.40	1.40	1.38	1.38	1.40	1.38	1.45	1.55	1.62	1.70	1.63
9001160100	1.72	1.77	1.68	1.61	1.58	1.57	1.49	1.45	1.51	1.54	1.66	1.61
9001161300	1.66	1.70	1.70	1.62	1.59	1.55	1.58	1.50	1.54	1.54	1.24	1.60
9001170100	1.67	1.61	1.69	1.65	1.52	1.60	1.60	1.60	1.49	1.40	1.56	1.50
9001171300	1.50	1.53	1.56	1.51	1.56	1.65	1.45	1.35	1.59	1.34	1.37	1.45
9001180100	1.42	1.70	1.68	1.67	1.85	1.80	1.73	1.64	1.65	1.48	1.78	1.59
9001181300	1.66	1.60	1.51	1.69	1.65	1.60	1.53	1.55	1.40	1.37	1.44	1.50
9001190100	1.49	1.52	1.49	1.69	1.88	1.91	1.97	2.05	2.05	2.05	2.05	1.85
9001191300	1.69	1.61	1.51	1.49	1.69	1.67	1.58	1.76	1.88	1.89	2.03	2.10
9001200100	2.07	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.00	1.87	2.10
9001201300	2.24	2.26	2.26	2.37	2.37	2.43	2.35	2.26	2.28	2.09	2.25	2.29
9001210100	2.06	2.34	2.35	2.07	2.13	2.10	1.82	1.88	1.75	1.66	1.67	1.53
9001211300	1.53	1.52	1.45	1.54	1.53	1.46	1.52	1.46	1.57	1.66	1.68	1.68
9001220100	1.65	1.54	1.49	1.41	1.39	1.20	1.13	1.13	1.20	1.21	1.19	1.33
9001221300	1.39	1.69	1.71	1.81	2.06	1.71	1.69	1.75	1.71	1.48	1.30	1.38
9001230100	1.46	1.52	1.59	1.69	1.88	1.85	1.89	2.00	2.00	2.00	2.00	2.00
9001231300	1.65	1.75	1.69	1.64	1.75	1.77	1.90	2.02	2.06	2.00	2.00	1.82
9001240100	1.67	1.48	1.37	1.20	1.10	0.97	0.84	0.90	0.86	0.83	1.20	1.30
9001241300	1.31	1.65	1.65	1.79	1.95	2.04	1.98	2.11	2.01	2.00	1.85	1.79
9001250100	1.79	1.82	1.75	1.93	1.90	2.09	2.09	2.24	2.39	2.46	2.30	2.21
9001251300	2.11	1.94	1.56	1.42	1.44	0.91	0.83	0.86	0.77	0.70	0.70	0.70
9001260100	0.71	0.72	0.73	0.73	0.82	1.14	1.43	1.61	1.62	1.85	1.83	1.55
9001261300	1.27	1.17	1.10	1.10	1.09	1.21	1.29	1.48	1.50	1.77	1.94	2.04
9001270100	1.98	1.98	1.98	1.98	1.98	1.74	1.74	1.74	1.74	1.74	1.55	1.67
9001271300	1.68	1.66	1.52	1.50	1.54	1.66	1.50	1.43	1.21	1.18	1.20	1.49
9001280100	1.30	1.03	1.28	1.39	1.39	1.27	1.48	1.53	1.76	2.04	1.96	1.96
9001281300	2.15	2.03	2.11	1.84	1.86	1.80	1.58	1.62	1.77	1.83	1.83	1.84
9001290100	1.98	2.12	2.07	2.04	2.08	1.96	2.02	2.04	2.04	2.09	2.13	2.08
9001291300	2.22	2.32	2.43	2.48	2.51	2.51	2.46	2.47	2.39	2.22	2.11	1.96
9001300100	1.81	1.73	1.67	1.65	1.65	1.69	1.81	1.99	2.00	1.97	1.97	1.99
9001301300	1.99	1.99	1.69	1.65	1.56	1.59	1.70	1.87	1.83	1.97	1.93	1.93

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9001310100	2.04	1.87	1.75	1.71	1.61	1.49	1.57	1.69	1.67	1.80	1.88	1.93
9001311300	2.04	2.11	2.11	2.05	2.00	1.98	1.98	1.98	1.98	1.83	1.84	1.84
9002010100	2.05	2.03	2.03	2.05	1.96	1.89	1.94	1.84	1.66	1.66	1.53	1.55
9002011300	1.50	1.53	1.51	1.56	1.58	1.62	1.81	1.86	1.92	1.92	1.92	2.02
9002020100	2.19	2.23	2.44	2.44	2.47	2.59	2.76	2.87	2.93	2.99	3.03	3.19
9002021300	3.35	3.35	3.35	3.35	3.06	3.06	2.88	2.91	2.74	2.66	2.66	2.49
9002030100	2.56	2.56	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
9002031300	2.55	2.42	2.44	2.49	2.44	2.39	2.39	2.32	2.25	2.34	2.25	2.37
9002040100	2.39	2.45	2.35	2.34	2.41	2.50	2.43	2.60	2.76	2.83	2.83	2.76
9002041300	2.81	2.81	2.69	2.60	2.49	2.32	2.17	2.10	2.12	2.12	2.12	2.12
9002050100	2.13	2.27	2.29	2.36	2.20	2.20	2.03	1.78	1.73	1.63	1.46	1.46
9002051300	1.37	1.41	1.62	1.71	1.75	1.71	1.90	1.70	1.59	1.68	1.51	1.38
9002060100	1.43	1.43	1.33	1.53	1.55	1.64	1.65	1.74	1.88	1.85	1.99	1.90
9002061300	1.98	2.08	2.02	2.05	2.14	2.12	2.15	2.14	2.19	2.12	2.05	2.06
9002070100	1.99	2.05	2.07	2.11	2.18	2.19	2.24	2.21	2.21	2.10	2.14	2.05
9002071300	2.01	1.90	2.01	2.01	2.04	1.96	2.12	2.14	2.03	2.08	2.15	2.03
9002080100	2.10	2.11	2.03	2.03	2.07	2.07	2.07	2.07	2.04	2.04	2.02	2.02
9002081300	1.93	1.90	1.97	1.99	1.98	2.02	2.07	2.06	2.10	1.94	1.93	1.95
9002090100	1.84	1.79	1.77	1.82	1.72	1.72	1.78	1.88	1.83	1.99	1.94	2.00
9002091300	2.09	2.08	2.03	2.07	2.12	2.11	2.14	2.18	2.18	2.20	2.16	2.13
9002100100	2.12	2.06	2.09	2.18	2.24	2.34	2.23	2.01	1.87	1.83	1.79	1.78
9002101300	1.68	1.71	1.87	1.94	1.91	2.04	2.07	2.01	2.11	2.04	2.08	2.03
9002110100	2.05	2.05	1.96	1.93	2.00	2.14	2.19	2.26	2.33	2.37	2.41	2.40
9002111300	2.42	2.41	2.34	2.23	2.19	2.12	2.10	2.13	2.08	2.11	2.16	2.17
9002120100	2.23	2.26	2.22	2.26	2.15	2.08	2.17	2.11	2.10	2.07	2.06	2.04
9002121300	2.01	2.02	1.97	2.04	2.07	2.00	2.12	2.20	2.10	2.15	1.98	2.09
9002130100	2.03	1.86	1.78	1.66	1.55	1.61	1.47	1.45	1.57	1.63	1.69	1.71
9002131300	1.97	1.97	2.01	2.09	2.16	2.19	2.12	2.56	2.49	2.36	2.52	2.40
9002140100	2.51	2.64	2.68	2.63	2.71	2.78	2.86	2.89	2.96	2.98	2.97	2.96
9002141300	2.84	2.82	2.89	2.87	2.93	2.98	3.06	3.18	3.23	3.36	3.40	3.47
9002150100	3.42	3.53	3.56	3.65	3.69	3.78	3.81	3.82	3.98	4.00	3.83	3.71
9002151300	3.55	3.48	3.40	3.32	3.19	3.12	3.07	3.09	3.19	3.28	3.36	3.45
9002160100	3.44	3.45	3.37	3.31	3.19	3.08	2.98	2.87	2.78	2.77	2.77	2.85
9002161300	2.90	2.84	2.86	2.68	2.50	2.28	2.11	1.98	1.84	1.72	1.66	1.58
9002170100	1.54	1.65	1.52	1.46	1.85	1.99	2.01	2.35	2.66	2.52	2.69	2.90
9002171300	2.75	2.58	2.69	2.50	2.38	2.47	2.22	2.25	2.31	2.27	2.48	2.61
9003091300	2.74	2.75	2.76	2.74	2.69	2.69	2.69	2.70	2.74	2.74	2.74	2.73
9003100100	2.73	2.73	2.73	2.73	2.73	2.77	2.78	2.79	2.79	2.79	2.79	2.82
9003101300	2.82	2.82	2.82	2.82	2.81	2.81	2.81	2.82	2.82	2.82	2.82	2.82
9003110100	2.82	2.81	2.79	2.77	2.76	2.79	2.85	2.87	2.86	2.89	2.93	2.80
9003111300	2.82	2.89	2.94	2.93	2.93	2.92	2.94	2.96	2.96	2.96	2.97	2.97
9003120100	2.95	2.95	2.95	2.95	2.95	2.95	2.65	2.74	2.75	2.79	2.83	2.83
9003121300	2.80	2.72	2.72	2.69	2.57	2.47	2.57	2.59	2.70	2.72	2.77	2.80
9003130100	2.84	2.79	2.79	2.79	2.57	2.57	2.49	2.55	2.55	2.61	2.67	2.75
9003131300	2.80	2.76	2.83	2.84	2.84	2.84	2.81	2.82	2.82	2.82	2.82	2.82
9003140100	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.78	2.79	2.79	2.73

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9003141300	2.76	2.68	2.70	2.71	2.74	2.78	2.79	2.85	2.83	2.86	2.90	2.93
9003150100	2.87	2.84	2.77	2.75	2.78	2.76	2.77	2.75	2.72	2.84	2.83	2.80
9003151300	2.73	2.74	2.74	2.74	2.79	2.83	2.80	2.74	2.80	2.85	2.86	2.87
9003160100	2.78	2.75	2.74	2.76	2.80	2.77	2.78	2.78	2.82	2.86	2.77	2.81
9003161300	2.84	2.84	2.78	2.80	2.73	2.75	2.69	2.74	2.79	2.90	2.80	2.86
9003170100	2.89	2.90	2.90	2.90	2.84	2.78	2.78	2.78	2.78	2.78	2.78	2.71
9003171300	2.56	2.50	2.46	2.43	2.34	2.35	2.21	2.20	2.45	2.46	2.59	2.63
9003180100	2.63	2.63	2.70	2.63	2.63	2.65	2.38	2.14	2.33	2.31	2.09	2.35
9003181300	2.64	2.36	2.39	2.65	2.80	2.81	2.60	2.59	2.70	2.67	2.82	2.89
9003190100	2.90	2.84	2.79	2.77	2.93	3.04	3.05	3.05	3.05	3.17	3.30	3.30
9003191300	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
9003200100	3.08	3.13	3.09	3.12	3.18	3.20	3.10	3.00	2.93	2.94	2.95	2.93
9003201300	2.84	2.84	2.76	2.77	2.83	2.81	2.78	2.75	2.73	2.74	2.78	2.78
9003210100	2.78	2.65	2.65	2.65	2.65	2.63	2.59	2.59	2.61	2.66	2.72	2.78
9003211300	2.79	2.79	2.77	2.79	2.81	2.79	2.75	2.75	2.79	2.82	2.88	2.87
9003220100	2.85	2.87	2.92	2.87	2.81	2.77	2.70	2.64	2.63	2.55	2.61	2.57
9003221300	2.51	2.63	2.68	2.70	2.69	2.70	2.59	2.52	2.47	2.43	2.42	2.48
9003230100	2.44	2.41	2.47	2.61	2.59	2.69	2.81	2.89	3.02	3.02	3.02	2.86
9003231300	2.73	2.82	2.89	2.93	2.91	2.83	2.89	2.94	2.94	2.94	2.89	2.80
9003240100	2.78	2.84	2.90	3.01	3.04	3.07	3.12	3.11	3.11	3.06	2.98	2.92
9003241300	2.86	2.84	2.84	2.79	2.79	2.79	2.79	2.83	2.86	2.84	2.79	2.79
9003250100	2.71	2.71	2.68	2.64	2.62	2.57	2.58	2.62	2.63	2.60	2.59	2.59
9003251300	2.56	2.52	2.51	2.43	2.46	2.46	2.46	2.48	2.55	2.59	2.63	2.64
9003260100	2.64	2.64	2.64	2.47	2.38	2.35	2.28	2.32	2.36	2.53	2.73	2.84
9003261300	2.93	3.07	3.19	3.28	3.25	3.18	3.09	3.00	2.90	2.80	2.76	2.76
9003270100	2.64	2.69	2.79	2.87	2.89	2.98	3.00	2.95	2.89	2.80	2.72	2.63
9003271300	2.56	2.52	2.57	2.66	2.69	2.81	2.88	2.95	2.98	2.97	2.90	2.84
9003280100	2.76	2.67	2.61	2.53	2.49	2.52	2.59	2.66	2.69	2.79	2.86	2.88
9003281300	2.91	2.89	2.84	2.80	2.76	2.76	2.76	2.73	2.78	2.83	2.88	2.90
9003290100	2.98	3.00	3.00	3.00	3.00	2.87	2.87	2.87	2.89	2.95	2.99	3.08
9003291300	3.15	3.24	3.34	3.40	3.41	3.46	3.46	3.44	3.46	3.44	3.43	3.40
9003300100	3.38	3.37	3.35	3.34	3.32	3.30	3.27	3.23	3.21	3.16	3.13	3.09
9003301300	3.06	3.03	3.00	2.97	2.94	2.93	2.93	2.95	2.95	2.96	2.96	2.96
9003310100	2.96	2.96	2.95	2.95	2.95	2.94	2.93	2.94	2.96	2.97	2.99	3.00
9003311300	3.01	3.02	3.01	3.00	2.98	2.97	2.95	2.93	2.91	2.90	2.89	2.90
9004010100	2.91	2.91	2.91	2.94	2.94	2.93	2.92	2.90	2.88	2.87	2.85	2.85
9004011300	2.84	2.84	2.85	2.88	2.89	2.90	2.90	2.90	2.90	2.89	2.88	2.88
9004020100	2.86	2.86	2.85	2.85	2.87	2.87	2.87	2.91	2.93	2.92	2.91	2.89
9004021300	2.89	2.89	2.89	2.89	2.89	2.89	2.89	2.71	2.73	2.78	2.82	2.89
9004030100	2.94	3.00	3.01	3.03	3.05	3.05	3.05	3.05	3.05	2.98	2.98	2.98
9004031300	3.03	3.07	3.08	3.10	3.16	3.14	3.14	3.14	3.11	3.11	3.10	3.10
9004040100	3.14	3.12	3.12	3.11	3.16	3.18	3.18	3.19	3.19	3.19	3.13	3.10
9004041300	3.06	3.02	2.99	2.98	2.97	2.95	2.95	2.95	2.93	2.96	2.97	2.96
9004050100	2.97	2.98	2.98	2.96	2.94	2.94	2.94	2.88	2.88	2.84	2.84	2.86
9004051300	2.89	2.89	2.95	2.96	2.99	2.99	3.01	3.01	3.01	2.98	2.99	2.99
9004060100	2.98	2.97	2.97	2.98	3.02	3.06	3.06	3.06	3.06	3.06	3.06	3.06

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9004061300	3.03	3.01	3.01	3.01	2.99	3.02	3.03	3.05	3.06	3.08	3.08	3.09
9004070100	3.09	3.09	3.11	3.11	3.11	3.12	3.13	3.12	3.15	3.15	3.15	3.17
9004071300	3.18	3.19	3.19	3.21	3.22	3.22	3.22	3.23	3.24	3.25	3.25	3.26
9004080100	3.27	3.27	3.28	3.29	3.29	3.30	3.31	3.31	3.32	3.33	3.34	3.34
9004081300	3.36	3.37	3.37	3.38	3.38	3.38	3.39	3.39	3.39	3.41	3.41	3.42
9004090100	3.43	3.44	3.44	3.45	3.45	3.46	3.46	3.47	3.48	3.49	3.50	3.53
9004091300	3.53	3.52	3.52	3.53	3.53	3.53	3.54	3.54	3.54	3.54	3.54	3.60
9004100100	3.56	3.56	3.57	3.58	3.59	3.61	3.61	3.62	3.64	3.63	3.61	3.59
9004101300	3.57	3.53	3.51	3.49	3.48	3.51	3.67	3.89	4.05	4.19	4.38	4.48
9004110100	4.53	4.43	4.19	4.01	3.84	3.75	3.75	3.55	3.54	3.44	3.35	3.31
9004111300	3.19	3.07	2.98	2.90	2.90	2.86	2.81	2.89	3.28	3.35	3.24	3.43
9004120100	3.45	3.46	3.28	3.29	3.20	3.02	3.03	2.94	2.87	2.93	2.84	2.84
9004121300	2.90	2.99	3.01	2.95	2.96	2.92	2.85	2.85	2.79	2.80	2.79	2.78
9004130100	2.87	2.92	2.85	2.88	2.92	2.91	2.91	2.91	2.79	2.77	2.73	2.70
9004131300	2.77	2.83	2.84	2.85	2.95	3.04	3.09	3.19	3.15	3.12	3.07	3.01
9004140100	2.98	2.99	2.95	2.88	2.84	2.87	2.94	3.01	3.00	3.07	3.08	2.99
9004141300	2.95	2.93	2.79	2.70	2.83	2.70	2.57	2.65	2.68	2.79	2.82	2.87
9004150100	2.91	2.92	2.89	2.87	2.91	2.92	2.89	2.89	2.89	2.80	2.84	2.82
9004151300	2.85	2.84	2.82	2.83	2.80	2.73	2.70	2.78	2.76	2.83	2.89	2.90
9004160100	2.98	3.00	2.97	3.05	3.11	3.12	2.98	2.89	3.01	3.01	2.95	2.98
9004161300	3.00	3.00	2.99	2.97	3.03	3.03	2.93	2.92	2.94	3.02	3.01	2.93
9004170100	2.94	2.80	2.82	3.06	3.18	3.01	2.99	3.00	2.80	3.05	2.96	2.97
9004171300	3.06	3.06	2.88	3.11	3.08	2.98	2.96	2.95	2.99	3.16	3.18	3.18
9004180100	3.15	3.16	3.08	3.09	3.13	3.02	2.94	2.97	2.92	2.97	2.95	2.92
9004181300	2.90	2.92	2.84	2.86	2.84	2.77	2.72	2.67	2.69	2.79	2.82	2.88
9004190100	2.95	3.03	3.05	3.05	3.08	3.02	2.93	2.88	2.85	2.82	2.88	2.85
9004191300	2.89	3.02	3.08	3.06	3.07	3.03	2.97	2.98	2.94	2.88	2.88	2.82
9004200100	2.83	2.85	2.88	2.89	2.98	3.03	3.02	3.01	2.97	2.90	2.84	2.85
9004201300	2.77	2.74	2.80	2.87	2.86	2.89	2.93	3.01	3.06	3.06	3.06	3.06
9004210100	3.01	2.97	2.95	2.97	3.00	3.13	3.14	3.19	3.25	3.20	3.16	3.17
9004211300	3.13	3.11	3.10	3.04	3.03	3.09	3.12	3.09	3.09	3.12	3.12	3.10
9004220100	3.11	3.06	3.00	2.98	3.01	3.04	3.05	3.05	3.04	3.03	3.03	3.03
9004221300	3.03	3.01	2.99	2.95	3.00	3.03	3.06	3.02	3.06	3.07	3.07	3.08
9004230100	3.05	3.02	2.99	2.98	3.02	3.06	3.04	3.03	3.06	3.07	3.05	3.08
9004231300	3.08	3.03	3.04	3.05	3.05	3.07	3.10	3.10	3.12	3.12	3.11	3.09
9004240100	3.09	3.05	3.02	3.03	3.01	3.03	3.05	3.04	3.05	3.05	3.07	3.02
9004241300	2.99	2.99	2.99	3.02	3.03	3.02	3.07	3.13	3.15	3.15	3.13	3.06
9004250100	2.98	2.92	2.91	2.89	2.83	2.87	2.88	2.93	2.99	2.99	3.04	3.04
9004251300	2.98	2.94	2.94	2.93	2.93	2.92	2.96	3.02	3.06	3.08	3.12	3.10
9004260100	3.05	2.99	2.94	2.94	2.90	2.87	2.82	2.89	2.97	3.00	3.04	3.10
9004261300	3.08	3.04	3.07	3.02	2.99	2.96	2.97	3.00	3.03	3.07	3.10	3.09
9004270100	3.11	3.09	3.06	3.02	2.96	2.92	2.90	2.91	2.95	2.99	3.00	3.04
9004271300	3.06	3.08	3.07	3.05	3.09	3.08	3.07	3.12	3.14	3.16	3.15	3.17
9004280100	3.20	3.13	3.15	3.09	3.06	3.02	2.98	2.94	2.97	2.96	2.97	3.05
9004281300	3.08	3.09	3.07	3.00	2.97	2.94	2.91	2.97	2.99	3.01	2.97	2.96
9004290100	3.01	3.01	2.92	2.98	3.04	2.99	3.02	2.93	2.92	3.00	3.05	2.97

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9004291300	3.02	3.09	3.06	3.08	3.07	3.06	3.03	2.97	2.97	2.98	3.03	3.00
9004300100	3.03	3.03	3.10	3.06	3.00	3.04	3.05	2.98	2.94	3.01	3.02	2.97
9004301300	3.01	3.01	3.07	3.07	3.00	3.00	3.07	3.04	3.01	3.02	3.05	3.16
9005010100	3.12	3.10	3.12	3.11	3.01	2.91	2.88	2.82	2.77	2.78	2.87	2.98
9005011300	3.05	3.11	3.18	3.15	3.02	2.97	2.93	2.83	2.80	2.73	2.77	2.83
9005020100	2.92	3.01	3.04	3.09	3.15	3.19	3.20	3.20	3.11	3.00	2.96	2.92
9005021300	2.88	2.86	2.83	2.86	2.89	2.96	3.04	3.07	3.07	3.07	3.11	3.10
9005030100	3.07	3.07	3.02	2.94	2.94	2.94	2.97	2.99	3.01	3.03	3.08	3.15
9005031300	3.18	3.22	3.22	3.22	3.21	3.20	3.20	3.22	3.20	3.20	3.12	3.15
9005040100	3.14	3.16	3.11	3.08	3.08	3.08	3.08	3.14	3.17	3.25	3.30	3.32
9005041300	3.42	3.43	3.45	3.69	3.85	3.83	4.06	4.07	3.95	3.88	3.86	3.74
9005050100	3.56	3.47	3.36	3.25	3.24	3.30	3.38	3.48	3.49	3.69	3.89	3.95
9005051300	3.78	3.66	3.52	3.39	3.37	3.25	3.16	3.08	3.04	3.02	3.09	3.10
9005060100	3.09	3.10	3.10	3.20	3.21	3.21	3.14	3.04	3.00	2.96	2.98	2.97
9005061300	2.93	2.93	3.00	3.06	3.10	3.14	3.09	3.05	3.09	3.11	3.08	3.03
9005070100	3.00	3.01	2.98	2.97	2.98	2.91	2.88	2.89	2.87	2.82	2.80	2.74
9005071300	2.69	2.67	2.61	2.61	2.57	2.66	2.75	2.85	2.91	2.90	2.93	2.98
9005080100	3.02	2.95	2.95	2.93	2.87	2.78	2.73	2.75	2.74	2.68	2.74	2.79
9005081300	2.82	2.83	2.86	2.92	2.92	2.97	2.94	2.96	2.99	2.97	2.92	2.82
9005090100	2.87	2.83	2.78	2.84	2.91	2.96	2.99	3.01	3.03	3.04	3.01	2.96
9005091300	2.93	2.88	2.79	2.82	2.88	2.93	2.93	2.94	3.05	3.13	3.18	3.16
9005100100	3.05	2.96	2.86	2.80	2.77	2.77	2.76	2.89	2.83	2.70	2.53	2.39
9005101300	2.20	1.97	1.82	1.63	1.53	1.59	1.65	2.09	2.29	2.25	2.04	1.90
9005110100	1.97	2.06	2.02	1.96	1.83	1.79	1.98	2.16	2.25	2.35	2.43	2.58
9005111300	2.70	2.80	2.90	3.01	3.02	3.03	3.03	3.01	2.97	2.92	2.84	2.88
9005120100	2.91	2.98	2.94	2.96	2.98	3.00	3.05	3.02	3.00	3.00	2.90	2.91
9005121300	2.94	2.90	2.87	2.87	2.94	3.01	3.12	3.16	3.27	3.30	3.29	3.27
9005130100	3.17	3.09	2.99	2.92	2.89	2.95	3.02	3.15	3.29	3.59	3.87	4.03
9005131300	4.09	3.96	3.89	3.70	3.55	3.40	3.27	3.14	3.04	3.01	3.08	3.15
9005140100	3.28	3.33	3.39	3.43	3.39	3.36	3.25	3.15	3.05	2.98	2.97	2.97
9005141300	2.99	3.05	3.10	3.26	3.38	3.43	3.44	3.39	3.34	3.28	3.21	3.19
9005150100	3.14	3.06	2.99	3.01	3.02	3.04	3.00	3.07	3.14	3.16	3.18	3.16
9005151300	3.14	3.09	3.08	3.03	3.02	3.00	2.98	3.02	3.07	3.10	3.18	3.19
9005160100	3.22	3.25	3.20	3.19	3.20	3.15	3.12	3.09	3.19	3.28	3.27	3.22
9005161300	3.39	3.35	3.37	3.35	3.28	3.23	3.19	3.15	3.10	3.05	3.09	3.29
9005170100	3.42	3.44	3.47	3.48	3.44	3.35	3.24	3.14	2.95	3.05	2.98	2.88
9005171300	2.83	2.73	2.62	2.59	2.69	2.62	2.68	2.89	2.84	2.88	2.80	2.78
9005180100	2.88	2.94	3.02	3.12	3.05	2.93	2.89	2.98	2.92	2.84	2.85	2.85
9005181300	2.89	2.98	3.05	3.06	3.02	3.03	3.09	3.21	3.25	3.22	3.23	3.25
9005190100	3.26	3.27	3.24	3.18	3.18	3.11	3.11	3.14	3.14	3.14	3.19	3.25
9005191300	3.30	3.37	3.43	3.43	3.45	3.45	3.45	3.48	3.49	3.51	3.58	3.67
9005200100	3.77	3.80	3.89	3.90	3.87	3.77	3.69	3.61	3.51	3.43	3.34	3.32
9005201300	3.31	3.35	3.37	3.40	3.45	3.50	3.57	3.57	3.60	3.59	3.57	3.59
9005210100	3.59	3.65	3.69	3.76	3.79	3.88	3.93	3.95	3.89	3.92	3.87	3.82
9005211300	3.79	3.76	3.72	3.71	3.68	3.69	3.71	3.72	3.76	3.79	3.85	3.87
9005220100	3.90	3.93	3.93	3.94	3.97	4.01	4.02	4.02	4.01	4.05	4.05	4.05

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9005221300	4.05	4.04	4.04	4.03	4.00	3.97	3.93	3.88	3.85	3.75	3.67	3.61
9005230100	3.56	3.50	3.47	3.41	3.37	3.34	3.32	3.30	3.30	3.30	3.30	3.30
9005231300	3.30	3.26	3.22	3.22	3.22	3.23	3.25	3.28	3.30	3.33	3.33	3.32
9005240100	3.29	3.28	3.26	3.24	3.22	3.21	3.20	3.23	3.25	3.28	3.30	3.31
9005241300	3.31	3.31	3.32	3.33	3.33	3.33	3.33	3.33	3.33	3.35	3.36	3.36
9005250100	3.36	3.35	3.35	3.35	3.30	3.30	3.28	3.27	3.27	3.30	3.32	3.35
9005251300	3.36	3.37	3.37	3.37	3.37	3.36	3.36	3.38	3.39	3.39	3.40	3.41
9005260100	3.42	3.42	3.42	3.42	3.44	3.46	3.49	3.51	3.52	3.53	3.55	3.55
9005261300	3.55	3.54	3.54	3.52	3.51	3.51	3.50	3.49	3.49	3.50	3.51	3.51
9005270100	3.51	3.51	3.49	3.48	3.46	3.44	3.40	3.39	3.36	3.35	3.37	3.37
9005271300	3.38	3.40	3.40	3.39	3.39	3.37	3.35	3.33	3.31	3.30	3.31	3.32
9005280100	3.34	3.36	3.37	3.38	3.39	3.37	3.36	3.36	3.33	3.32	3.32	3.34
9005281300	3.37	3.41	3.47	3.51	3.54	3.58	3.61	3.64	3.63	3.64	3.64	3.64
9005290100	3.64	3.63	3.63	3.63	3.65	3.67	3.69	3.73	3.78	3.82	3.86	3.88
9005291300	3.90	3.90	3.90	3.92	3.93	3.93	3.93	3.94	3.95	3.95	3.96	3.97
9005300100	3.97	3.98	3.98	3.99	3.99	4.00	4.00	4.00	4.01	4.01	4.02	4.02
9005301300	4.02	4.03	4.04	4.04	4.04	4.04	4.04	4.05	4.05	4.05	4.06	4.06
9005310100	4.06	4.06	4.07	4.07	4.07	4.07	4.07	4.07	4.08	4.08	4.09	4.09
9005311300	4.09	4.09	4.09	4.09	4.09	4.09	4.10	4.10	4.10	4.11	4.11	4.11
9006010100	4.11	4.11	4.11	4.11	4.11	4.12	4.12	4.12	4.12	4.13	4.14	4.14
9006011300	4.14	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
9006020100	4.15	4.16	4.16	4.16	4.16	4.16	4.17	4.17	4.17	4.17	4.18	4.18
9006021300	4.19	4.19	4.19	4.20	4.19	4.19	4.20	4.20	4.20	4.21	4.22	4.22
9006030100	4.20	4.22	4.23	4.23	4.23	4.23	4.23	4.23	4.23	4.25	4.25	4.25
9006031300	4.26	4.27	4.26	4.27	4.28	4.26	4.24	4.26	4.26	4.24	4.25	4.25
9006040100	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
9006041300	4.25	4.25	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.26	4.27	4.27
9006050100	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.28	4.28	4.28	4.29
9006051300	4.29	4.29	4.29	4.29	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
9006060100	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.31	4.31	4.31	4.31	4.31
9006061300	4.32	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
9006070100	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
9006071300	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
9006080100	4.33	4.33	4.34	4.34	4.34	4.36	4.36	4.36	4.37	4.37	4.37	4.37
9006081300	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.41	4.42	4.42	4.42	4.43
9006090100	4.43	4.44	4.44	4.44	4.45	4.45	4.46	4.47	4.47	4.48	4.48	4.49
9006091300	4.50	4.51	4.51	4.51	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006100100	4.52	4.53	4.53	4.53	4.53	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006101300	4.54	4.54	4.54	4.54	4.54	4.54	4.55	4.55	4.55	4.55	4.55	4.55
9006110100	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.56	4.56	4.56
9006111300	4.56	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57
9006120100	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.58	4.58	4.57
9006121300	4.57	4.58	4.58	4.58	4.58	4.59	4.59	4.59	4.59	4.59	4.59	4.59
9006130100	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59
9006131300	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59
9006140100	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.60	4.60

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9006141300	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
9006150100	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
9006151300	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.61
9006160100	4.61	4.61	4.61	4.61	4.61	4.61	4.61	4.60	4.60	4.60	4.60	4.60
9006161300	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60
9006170100	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.61	4.61	4.61	4.61
9006171300	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62	4.62
9006180100	4.62	4.62	4.62	4.62	4.62	4.61	4.61	4.60	4.60	4.60	4.60	4.60
9006181300	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.58	4.58	4.58	4.58	4.58
9006190100	4.58	4.58	4.57	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9006191300	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9006200100	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9006201300	4.56	4.56	4.56	4.56	4.56	4.56	4.57	4.57	4.57	4.57	4.57	4.57
9006210100	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.56	4.56	4.56	4.56
9006211300	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9006220100	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9006221300	4.56	4.56	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.57	4.56
9006230100	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.55	4.55	4.56	4.55	4.55
9006231300	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.55	4.54	4.54	4.54	4.54
9006240100	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006241300	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006250100	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006251300	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006260100	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54
9006261300	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.53	4.53	4.53	4.53
9006270100	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.52
9006271300	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006280100	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006281300	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006290100	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006291300	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006300100	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52
9006301300	4.52	4.52	4.52	4.51	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53
9007010100	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.52	4.52	4.52
9007011300	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.51	4.51	4.51	4.51	4.51
9007020100	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51	4.51
9007021300	4.51	4.51	4.51	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
9007030100	4.50	4.50	4.50	4.50	4.50	4.49	4.49	4.49	4.49	4.49	4.49	4.49
9007031300	4.49	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48	4.48
9007040100	4.48	4.48	4.48	4.48	4.48	4.48	4.47	4.47	4.47	4.47	4.47	4.47
9007041300	4.47	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.45
9007050100	4.45	4.45	4.45	4.45	4.44	4.44	4.43	4.40	4.42	4.42	4.42	4.42
9007051300	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.42
9007060100	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40
9007061300	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40
9007070100	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.39	4.39	4.39	4.39

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9007071300	4.38	4.38	4.38	4.38	4.38	4.38	4.37	4.37	4.37	4.37	4.37	4.37
9007080100	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.37	4.35	4.36	4.36	4.36
9007081300	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.36	4.36
9007090100	4.36	4.36	4.36	4.36	4.36	4.35	4.35	4.35	4.35	4.34	4.35	4.35
9007091300	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
9007100100	4.35	4.35	4.35	4.35	4.35	4.34	4.34	4.34	4.34	4.34	4.34	4.34
9007101300	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.32
9007110100	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
9007111300	4.32	4.32	4.33	4.33	4.32	4.32	4.33	4.33	4.33	4.33	4.33	4.33
9007120100	4.33	4.33	4.33	4.33	4.33	4.32	4.32	4.32	4.33	4.35	4.35	4.35
9007121300	4.35	4.38	4.40	4.44	4.48	4.49	4.50	4.53	4.53	4.53	4.54	4.53
9007130100	4.53	4.54	4.54	4.54	4.54	4.55	4.55	4.55	4.55	4.55	4.55	4.55
9007131300	4.55	4.55	4.55	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
9007140100	4.56	4.56	4.56	4.56	4.56	4.59	4.63	4.65	4.68	4.69	4.71	4.73
9007141300	4.75	4.77	4.79	4.82	4.86	4.89	4.95	5.00	5.05	5.10	5.14	5.18
9007150100	5.21	5.25	5.27	5.29	5.31	5.33	5.35	5.36	5.38	5.39	5.41	5.42
9007151300	5.43	5.44	5.45	5.46	5.46	5.47	5.47	5.48	5.48	5.49	5.49	5.50
9007160100	5.50	5.51	5.51	5.51	5.51	5.52	5.52	5.52	5.52	5.53	5.53	5.54
9007161300	5.54	5.54	5.54	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55
9007170100	5.55	5.55	5.56	5.56	5.56	5.56	5.56	5.57	5.57	5.57	5.57	5.57
9007171300	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57
9007180100	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.56	5.56	5.56	5.56	5.56
9007181300	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.55	5.55	5.55
9007190100	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.54	5.54	5.54
9007191300	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
9007200100	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.52	5.52	5.52	5.52
9007201300	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52
9007210100	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.51	5.51	5.51	5.51	5.51
9007211300	5.51	5.51	5.51	5.51	5.51	5.51	5.50	5.50	5.50	5.50	5.50	5.50
9007220100	5.50	5.50	5.50	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.50	5.52
9007221300	5.55	5.56	5.58	5.59	5.60	5.62	5.64	5.65	5.67	5.69	5.70	5.71
9007230100	5.73	5.75	5.77	5.78	5.80	5.81	5.83	5.85	5.86	5.88	5.89	5.90
9007231300	5.91	5.92	5.93	5.94	5.95	5.95	5.96	5.97	5.97	5.98	5.98	5.99
9007240100	5.99	6.00	6.00	6.00	6.01	6.01	6.01	6.01	6.02	6.02	6.02	6.02
9007241300	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.04	6.04	6.04	6.04	6.04
9007250100	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04
9007251300	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04
9007260100	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.04
9007261300	6.04	6.04	6.04	6.04	6.04	6.04	6.04	6.03	6.03	6.03	6.03	6.03
9007270100	6.03	6.03	6.03	6.03	6.03	6.02	6.02	6.02	6.02	6.02	6.02	6.00
9007271300	5.63	4.81	4.20	3.79	3.54	3.40	3.33	3.31	3.29	3.22	3.18	3.13
9007280100	3.13	3.14	3.17	3.11	3.14	3.16	3.16	3.21	3.21	3.19	3.21	3.24
9007281300	3.23	3.23	3.21	3.17	3.16	3.16	3.16	3.15	3.18	3.18	3.21	3.24
9007290100	3.23	3.18	3.18	3.10	3.08	3.05	3.06	3.01	3.02	3.07	3.10	3.16
9007291300	3.19	3.21	3.22	3.23	3.21	3.16	3.16	3.10	3.07	3.05	3.08	3.14
9007300100	3.12	3.13	3.18	3.13	3.11	3.10	3.01	2.96	2.96	2.93	2.93	2.97

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9007301300	3.03	3.06	3.12	3.08	3.14	3.46	3.50	3.49	3.44	3.54	3.58	3.67
9007310100	3.75	3.69	3.64	3.62	3.57	3.54	3.50	3.44	3.42	3.39	3.34	3.32
9007311300	3.33	3.30	3.24	3.24	3.24	3.25	3.23	3.21	3.19	3.23	3.25	3.27
9008010100	3.35	3.41	3.46	3.48	3.47	3.43	3.36	3.33	3.28	3.26	3.22	3.18
9008011300	3.12	3.14	3.16	3.19	3.21	3.22	3.25	3.24	3.21	3.17	3.12	3.05
9008020100	2.99	2.98	2.97	2.99	3.03	3.07	3.14	3.17	3.18	3.17	3.14	3.09
9008021300	3.06	3.04	3.04	3.05	3.07	3.09	3.14	3.19	3.23	3.23	3.20	3.18
9008030100	3.13	3.08	3.03	3.00	2.96	2.93	2.95	3.00	3.02	3.05	3.08	3.12
9008031300	3.13	3.12	3.09	3.09	3.08	3.08	3.07	3.06	3.05	3.05	3.07	3.05
9008040100	3.05	3.06	3.04	3.02	3.02	3.01	2.99	2.95	2.92	2.93	2.93	2.91
9008041300	2.91	2.93	2.95	2.97	2.98	2.96	3.02	3.08	3.10	3.10	3.10	3.07
9008050100	3.04	3.01	3.03	3.01	2.93	2.90	2.91	2.98	3.04	3.08	3.11	3.15
9008051300	3.16	3.19	3.19	3.21	3.20	3.17	3.17	3.16	3.14	3.13	3.17	3.23
9008060100	3.31	3.40	3.50	3.59	3.65	3.64	3.58	3.53	3.46	3.41	3.38	3.36
9008061300	3.32	3.27	3.22	3.21	3.19	3.17	3.16	3.19	3.21	3.21	3.25	3.31
9008070100	3.36	3.42	3.49	3.57	3.59	3.61	3.57	3.55	3.49	3.42	3.35	3.29
9008071300	3.23	3.17	3.13	3.10	3.08	3.07	3.08	3.11	3.12	3.14	3.12	3.08
9008080100	3.03	3.00	2.96	2.94	2.93	2.93	2.94	2.97	3.00	3.04	3.06	3.07
9008081300	3.03	3.01	2.98	2.96	2.94	2.94	2.94	2.97	3.02	3.07	3.11	3.15
9008090100	3.15	3.12	3.09	3.05	3.00	2.98	2.94	2.93	2.93	2.97	3.01	3.04
9008091300	3.09	3.13	3.15	3.16	3.14	3.14	3.13	3.11	3.10	3.10	3.11	3.13
9008100100	3.14	3.15	3.15	3.13	3.10	3.07	3.03	3.00	2.97	2.95	2.95	2.96
9008101300	2.98	3.01	3.03	3.05	3.06	3.07	3.06	3.04	3.03	3.01	3.00	2.99
9008110100	2.99	2.98	2.98	2.98	2.98	2.98	2.98	2.97	2.96	2.96	2.95	2.95
9008111300	2.96	2.96	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.98	2.98
9008120100	2.99	3.00	3.00	3.01	3.01	2.99	2.98	2.97	2.97	2.96	2.95	2.94
9008121300	2.95	2.96	2.97	2.98	2.98	3.07	3.06	3.10	3.12	3.13	3.12	3.13
9008130100	3.15	3.14	3.17	3.22	3.26	3.38	3.45	3.45	3.43	3.39	3.40	3.38
9008131300	3.36	3.31	3.27	3.28	3.25	3.23	3.23	3.26	3.27	3.31	3.37	3.46
9008140100	3.50	3.50	3.52	3.52	3.50	3.47	3.42	3.39	3.35	3.29	3.27	3.26
9008141300	3.24	3.22	3.23	3.26	3.28	3.29	3.30	3.29	3.26	3.22	3.19	3.16
9008150100	3.13	3.11	3.09	3.07	3.06	3.06	3.06	3.05	3.04	3.03	3.02	3.00
9008151300	2.99	2.97	2.96	2.95	2.94	2.94	2.94	2.95	2.96	2.97	2.99	3.00
9008160100	3.01	3.01	3.01	3.00	2.99	2.98	2.97	2.96	2.95	2.94	2.94	2.95
9008161300	2.97	2.99	3.01	3.03	3.05	3.05	3.05	3.03	3.02	3.01	3.00	2.99
9008170100	2.98	2.99	3.01	3.03	3.06	3.07	3.08	3.07	3.06	3.04	3.02	3.00
9008171300	2.99	2.97	2.98	3.00	3.02	3.04	3.07	3.09	3.11	3.11	3.10	3.07
9008180100	3.05	3.03	3.01	3.00	2.99	2.98	2.99	3.00	3.02	3.04	3.04	3.02
9008181300	3.00	2.99	2.98	2.96	2.95	2.95	2.95	2.97	2.99	3.01	3.05	3.07
9008190100	3.08	3.09	3.14	3.16	3.14	3.15	3.14	3.21	3.24	3.27	3.32	3.36
9008191300	3.45	3.56	3.68	3.77	3.89	3.99	4.16	4.31	4.37	4.43	4.36	4.26
9008200100	4.17	4.08	4.02	3.92	3.84	3.76	3.69	3.65	3.62	3.60	3.58	3.57
9008201300	3.55	3.54	3.55	3.51	3.48	3.48	3.52	3.52	3.54	3.53	3.56	3.55
9008210100	3.55	3.55	3.50	3.46	3.44	3.41	3.41	3.41	3.40	3.40	3.42	3.45
9008211300	3.47	3.46	3.46	3.48	3.53	3.56	3.60	3.62	3.63	3.65	3.67	3.68
9008220100	3.66	3.63	3.60	3.57	3.55	3.52	3.51	3.48	3.47	3.48	3.49	3.52

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9008221300	3.54	3.54	3.56	3.57	3.58	3.59	3.58	3.58	3.56	3.55	3.55	3.55
9008230100	3.55	3.55	3.55	3.55	3.54	3.54	3.53	3.53	3.53	3.53	3.53	3.53
9008231300	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.54	3.54	3.54	3.54
9008240100	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008241300	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008250100	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008251300	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008260100	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008261300	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008270100	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54
9008271300	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
9008280100	3.53	3.53	3.52	3.52	3.52	3.53	3.53	3.53	3.53	3.53	3.53	3.53
9008281300	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.52
9008290100	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.51	3.51	3.51	3.51	3.51
9008291300	3.51	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
9008300100	3.48	3.49	3.49	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
9008301300	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48	3.48
9008310100	3.48	3.48	3.48	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
9008311300	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
9009010100	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
9009011300	3.47	3.47	3.47	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
9009020100	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.45
9009021300	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.44	3.44	3.44
9009030100	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.45	3.45	3.45	3.45	3.45
9009031300	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
9009040100	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
9009041300	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45
9009050100	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.44
9009051300	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
9009060100	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
9009061300	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.42	3.43	3.43	3.43
9009070100	3.42	3.42	3.44	3.49	3.51	3.52	3.52	3.52	3.52	3.52	3.52	3.52
9009071300	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.53	3.53	3.54
9009080100	3.54	3.54	3.55	3.55	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56
9009081300	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56
9009090100	3.56	3.56	3.56	3.56	3.62	3.68	3.75	3.80	3.89	4.00	4.15	4.34
9009091300	4.50	4.70	4.99	5.32	5.64	5.82	4.96	4.29	3.94	3.67	3.51	3.39
9009100100	3.21	3.23	3.19	3.12	3.18	2.96	2.98	2.86	2.89	2.83	2.88	2.97
9009101300	2.96	2.94	2.95	3.09	3.09	3.06	3.02	3.06	3.06	3.10	2.98	2.99
9009110100	3.02	3.15	3.07	3.05	3.30	3.24	3.32	3.29	3.41	3.44	3.54	3.49
9009111300	3.37	3.34	3.30	3.20	3.13	3.13	3.04	3.04	3.06	3.15	3.17	3.22
9009120100	3.27	3.25	3.29	3.26	3.20	3.14	3.01	3.03	2.96	3.01	3.04	3.03
9009121300	3.19	3.19	3.25	3.32	3.32	3.34	3.29	3.18	3.15	3.06	3.01	2.96

Appendix C. Continued.

Datetime	+0 hr	+1 hr	+2 hr	+3 hr	+4 hr	+5 hr	+6 hr	+7 hr	+8 hr	+9 hr	+10 hr	+11 hr
9009130100	3.07	3.07	3.03	3.14	3.14	3.16	3.21	3.19	3.19	3.11	3.13	3.05
9009131300	3.04	3.08	3.09	3.09	3.21	3.15	3.28	3.26	3.20	3.17	3.13	3.05
9009140100	3.05	2.96	2.93	2.89	2.88	2.84	2.89	2.85	2.81	2.77	2.75	2.67
9009141300	2.65	2.62	2.73	2.65	2.70	3.19	2.69	3.06	3.28	2.93	2.94	3.19
9009150100	2.82	3.03	3.32	3.01	2.77	2.80	2.84	3.18	3.19	3.02	3.27	3.04
9009151300	3.09	3.15	3.11	3.06	2.91	2.88	3.09	3.03	3.07	3.05	3.05	3.19
9009160100	3.18	3.29	3.29	3.16	3.11	3.29	3.09	3.12	3.10	3.04	3.39	3.79
9009161300	4.09	4.21	4.36	4.29	4.21	4.15	4.05	3.84	3.53	3.38	3.36	3.33
9009170100	3.39	3.42	3.52	3.63	3.75	3.85	3.89	3.75	3.58	3.40	3.20	3.13
9009171300	2.99	2.96	2.96	2.99	3.14	3.27	3.37	3.47	3.49	3.40	3.33	3.24
9009180100	3.13	3.04	3.01	3.00	3.08	3.05	3.12	3.16	3.23	3.27	3.27	3.25
9009181300	3.12	3.02	3.01	2.98	2.96	2.97	2.97	3.02	3.08	3.12	3.14	3.08
9009190100	3.06	3.04	2.97	2.93	2.88	2.86	2.80	2.73	2.84	2.95	3.03	3.09
9009191300	3.16	3.23	3.05	3.05	2.94	2.94	2.99	2.90	2.99	3.08	3.09	3.22
9009200100	3.26	3.33	3.37	3.33	3.29	3.19	3.16	3.07	3.03	3.05	3.07	3.08
9009201300	3.13	3.14	3.18	3.16	3.14	3.06	3.06	2.96	2.90	2.89	2.87	2.88
9009210100	2.92	2.95	3.01	3.06	3.02	3.03	3.00	2.96	2.89	2.91	2.92	2.81
9009211300	2.80	2.80	2.84	2.93	3.01	3.01	3.09	3.12	3.10	3.13	3.11	3.01
9009220100	2.89	2.82	2.80	2.75	2.81	2.84	2.81	2.85	2.84	2.84	2.93	2.94
9009221300	2.80	2.85	2.71	2.56	2.50	2.45	2.40	2.36	2.25	2.34	2.59	2.69
9009230100	2.64	2.69	2.81	2.80	2.98	3.01	2.95	2.88	2.85	2.79	2.79	2.77
9009231300	2.71	2.67	2.71	2.73	2.79	2.82	2.85	2.90	2.93	3.00	2.99	2.96
9009240100	2.96	2.92	2.88	2.80	2.77	2.73	2.70	2.70	2.70	2.72	2.72	2.64
9009241300	2.59	2.51	2.41	2.31	2.22	2.10	1.99	1.94	1.96	2.14	2.22	2.34
9009250100	2.38	2.38	2.36	2.28	2.21	2.21	2.08	1.98	1.92	1.98	2.07	2.09
9009251300	2.10	2.14	2.19	2.25	2.31	2.40	2.40	2.37	2.45	2.35	2.40	2.44
9009260100	2.39	2.42	2.49	2.48	2.55	2.59	2.63	2.72	2.78	2.82	2.91	2.93
9009261300	2.93	2.93	2.90	2.85	2.81	2.77	2.73	2.72	2.77	2.81	2.87	2.91
9009270100	2.92	2.92	2.97	2.96	2.94	2.93	2.85	2.82	2.78	2.75	2.79	2.79
9009271300	2.79	2.83	2.85	2.89	2.94	2.97	2.97	2.94	2.92	2.90	2.85	2.82
9009280100	2.78	2.75	2.73	2.73	2.72	2.73	2.74	2.74	2.74	2.76	2.79	2.81
9009281300	2.80	2.83	2.84	2.86	2.88	2.88	2.90	2.90	2.88	2.87	2.86	2.84
9009290100	2.81	2.79	2.79	2.82	2.84	2.87	2.87	2.91	2.96	2.98	3.00	2.98
9009291300	2.95	2.95	2.96	2.97	2.96	2.97	2.96	2.97	3.02	3.05	3.06	3.09
9009300100	3.14	3.17	3.16	3.17	3.13	3.09	3.06	3.04	3.00	2.98	2.96	2.94
9009301300	2.91	2.92	2.90	2.87	2.85	2.84	2.83	2.84	2.85	2.86	2.87	2.89

Appendix D. Conductivity and concentrations of nutrients and suspended solids in all samples analyzed from Old Woman Creek at the Berlin Road sampling station during this study.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8711111200	42.50	0.032	0.000	31.9	0.21	0.011	0.34	745	7.70	72.1
8711161615	47.68	0.019	0.001	5.2	0.18	0.015	0.39	794	5.10	74.1
8711181655	49.71	0.032	0.001	50.8	0.11	-0.023	0.33	692	5.33	73.1
8711241745	54.71	0.023	0.001	60.8	0.23	0.001	0.30	790	5.25	74.6
8712071530	68.65	0.044	-0.009	4.2	4.72	-0.022	0.47	665	9.03	61.7
8712151030	76.44	0.380	0.040	226.4	3.37	0.024	1.92	584	5.92	67.4
8712221600	83.67	0.075		7.6	0.52	0.034	0.73	623		12.6
8712311220	92.51			6.9			0.51	664		
8803151040	167.44	0.170	0.004	6.2	3.61	0.020	0.44	631	5.79	54.8
8803221140	174.49	0.005	-0.014	5.0	3.80	-0.050	0.42	627	9.76	62.7
8803291200	181.50	0.056	0.011	13.4	4.67	0.030	0.50	570	4.41	46.8
8803291455	181.62	0.057	0.000	15.0	5.15	0.010	0.63	581	7.06	47.3
8803301200	182.50	0.034	0.010	9.9	4.16	0.040	0.50	593	4.11	48.4
8803311200	183.50	0.029	0.010	6.7	3.96	0.040	0.49	601	3.51	48.5
8804011200	184.50	0.029	0.010	7.9	3.81	0.040	0.46	606	3.91	49.6
8804021200	185.50	0.110	0.028	49.3	3.11	0.060	0.67	579	3.45	49.7
8804022000	185.83	0.670	0.018	491.9	3.34	0.030	2.58	334	5.75	23.4
8804030400	186.17	0.461	0.037	226.3	4.23	0.040	2.17	345	7.13	25.2
8804031200	186.50	0.294	0.034	107.8	5.14	0.060	1.73	397	7.86	28.8
8804032000	186.83	0.186	0.030	68.2	5.30	0.030	1.17	442	7.98	32.0
8804040400	187.17	0.138	0.022	50.8	5.31	0.040	0.97	483	7.74	35.0
8804041545	187.65	0.088	0.027	23.2	5.15	0.030	0.84	523	7.66	38.8
8804071210	190.51	0.221	0.026	172.7	2.95	0.060	1.28	561	6.14	68.1
8804081207	191.50	0.191	0.025	62.0	5.41	0.030	1.11	392	7.68	27.1
8804091250	192.53	0.089	0.025	35.0	5.57	0.050	0.73	503	7.82	36.3
8804121200	195.50	0.032	0.006	7.6	4.44	0.020	0.51	580	7.45	50.5
8804131200	196.50	0.029	0.005	9.4	4.03	0.020	0.49	590	6.63	51.2
8804141200	197.50	0.034	0.005	10.9	3.68	0.010	0.49	599	4.69	53.4
8804151200	198.50	0.026	0.007	7.8	3.35	0.010	0.51	604	5.02	54.1
8804161200	199.50	0.019	0.006	3.7	3.29	0.020	0.45	605	5.30	54.3
8804171200	200.50	0.016	0.007	4.8	3.19	0.020	0.43	608	4.45	55.8
8804181200	201.50	0.021	0.004	7.7	2.94	0.020	0.42	605	3.88	58.8
8804190400	202.17	0.033	0.008	18.2	2.63	0.010	0.50	568	3.80	57.6
8804191200	202.50	0.043	0.007	7.2	2.62	0.030	0.43	596	3.59	49.1
8804201200	203.50	0.032	0.007	4.4	2.47	0.020	0.44	601	2.74	49.6
8804211200	204.50	0.029	0.008	6.6	2.37	0.030	0.42	600	3.31	49.7
8804221200	205.50	0.028	0.007	5.1	2.27	0.010	0.39	604	2.63	51.8
8804231200	206.50	0.031	0.002	6.4	2.05	0.030	0.44	603	2.18	52.2
8804241200	207.50	0.046	0.005	10.7	1.81	0.020	0.50	600	3.13	50.5
8804251200	208.50	0.030	0.009	5.7	1.68	0.010	0.44	605	2.52	53.3
8804260400	209.17	0.038	0.009	11.9	1.40	0.010	0.50	582	2.57	55.6
8804261200	209.50	0.026	0.003	6.0	1.44	0.480	0.57	612	4.12	59.7
8804271200	210.50	0.033	0.002	14.4	1.24	0.380	0.52	604	4.27	57.5
8804281200	211.50	0.043	0.003	9.8	1.28	0.510	0.57	610	5.56	57.7
8804291200	212.50	0.023	0.030	5.1	1.73	0.360	0.51	564	5.47	50.7
8804301200	213.50	0.021	0.001	7.7	1.73	0.310	0.48	569	4.75	49.1
8805011200	214.50	0.027	0.002	8.8	1.42	0.390	0.49	584	4.32	48.9
8805021200	215.50	0.026	0.001	7.5	1.25	0.350	0.59	580	4.75	50.7

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8805030400	216.17	0.035	0.003	13.5	0.96	0.370	0.58	545	3.80	52.6
8805031200	216.50	0.018	0.004	8.7	0.98	0.030	0.51	582	3.35	55.8
8805041200	217.50	0.026	0.003	10.8	0.91	0.030	0.51	584	4.17	56.8
8805051200	218.50	0.047	0.003	11.9	0.86	0.060	0.79	585	3.95	57.3
8805061200	219.50	0.027	0.003	10.7	0.85	0.030	0.56	597	2.94	59.2
8805071200	220.50	0.034	0.002	12.6	0.61	0.040	0.50	588	4.41	60.7
8805081200	221.50	0.038	0.004	14.5	0.51	0.040	0.55	597	4.90	62.7
8805091200	222.50	0.050	0.003	17.3	0.44	0.070	0.53	605	4.56	61.9
8805100400	223.17	0.081	0.003	33.8	0.74	0.060	0.85	632	4.29	71.4
8805101200	223.50	0.059	0.000	19.9	0.69	0.000	0.68	646	4.62	70.4
8805111200	224.50	0.057	0.001	19.5	0.61	0.000	0.61	658	4.71	66.9
8805121200	225.50	0.051	0.002	15.7	0.42	0.000	0.57	637	3.91	65.2
8805131200	226.50	0.062	0.002	24.8	0.47	0.000	0.69	631	5.27	61.7
8805141200	227.50	0.052	0.000	13.9	0.47	-0.010	0.65	628	4.06	61.6
8805151200	228.50	0.052	-0.001	14.2	0.43	0.000	0.61	633	3.58	62.1
8805161200	229.50	0.071	-0.001	21.7	0.43	0.000	0.73	640	5.60	64.9
8805170400	230.17	0.075	0.001	26.5	0.38	0.000	0.78	637	3.56	63.9
8805171200	230.50	0.051	0.000	23.7	0.53	0.050	0.78	650	3.79	69.0
8805181200	231.50	0.041	0.001	15.9	0.61	0.030	0.62	649	4.75	71.1
8805191200	232.50	0.049	0.000	20.9	0.58	0.080	0.63	629	4.20	67.4
8805201200	233.50	0.047	0.001	18.7	0.69	0.060	0.62	663	5.07	70.8
8805211200	234.50	0.047	0.000	20.5	0.58	0.060	0.64	641	4.01	69.6
8805221200	235.50	0.058	-0.002	27.0	0.46	0.090	0.75	639	5.11	67.4
8805231200	236.50	0.063	-0.001	26.4	0.39	0.110	0.72	648	5.07	69.9
8805240400	237.17	0.074	0.002	35.1	0.35	0.110	0.75	661	5.40	71.4
8805242000	237.83	0.035	0.011	18.4	0.42	0.150	0.76	647	3.40	75.9
8805252000	238.83	0.026	0.012	11.6	0.36	0.110	0.69	646	3.24	76.5
8805262000	239.83	0.014	0.012	9.3	0.34	0.070	0.64	656	2.90	74.0
8805272000	240.83	0.019	0.012	11.1	0.34	0.090	0.05	664	3.52	79.9
8805282000	241.83	0.029	0.013	12.3	0.33	0.080	0.72	673	3.38	81.2
8805292000	242.83	0.031	0.013	13.8	0.29	0.140	0.78	681	3.58	83.5
8805302000	243.83	0.034	0.012	13.3	0.27	0.150	0.79	691	3.47	87.8
8805311200	244.50	0.043	0.013	17.7	0.26	0.170	0.78	700	3.68	86.9
8805312000	244.83	0.052	0.014	11.8	0.17	0.240	0.74	687	5.67	85.1
8806012000	245.83	0.051	0.014	11.1	0.19	0.240	0.82	697	4.95	86.1
8806022000	246.83	0.088	0.016	15.3	0.22	0.250	0.97	695	5.30	86.2
8806032000	247.83	0.055	0.017	10.2	0.17	0.220	0.76	696	5.03	87.1
8806042000	248.83	0.038	0.013	8.6	0.13	0.160	0.70	713	5.75	93.5
8806052000	249.83	0.031	0.012	7.1	0.12	0.110	0.61	719	4.30	95.7
8806070400	251.17	0.060	0.013	19.7	0.13	0.160	0.68	731	5.03	97.5
8806071200	251.50	0.066	0.008	16.9	0.25	0.160	0.71	741	6.20	96.6
8806081200	252.50	0.068	0.015	16.6	0.24	0.140	0.89	748	6.63	97.0
8806091200	253.50	0.078	0.011	20.9	0.26	0.120	0.75	751	6.85	97.2
8806101200	254.50	0.091	0.007	24.1	0.26	0.100	0.80	756	6.38	96.8
8806111200	255.50	0.098	0.002	22.7	0.24	0.110	0.86	761	6.30	98.3
8806121200	256.50	0.099	0.007	21.4	0.24	0.100	0.76	764	6.38	99.6
8806131200	257.50	0.093	0.005	23.7	0.22	0.080	1.01	768	5.48	100.5
8806140400	258.17	0.088	0.005	31.4	0.27	0.080	0.97	770	6.11	100.8
8806141200	258.50	0.067	0.001	25.8	0.27	0.120	1.25	772	5.05	100.6
8806151200	259.50	0.086	0.001	28.1	0.24	0.170	1.14	780	5.80	103.2
8806161200	260.50	0.104	0.000	40.7	0.28	0.120	1.21	777	5.60	98.4

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8806171200	261.50	0.101	0.003	35.8	0.30	0.120	1.16	788	5.95	102.1
8806181200	262.50	0.091	0.000	30.2	0.27	0.100	0.97	790	6.17	103.3
8806191200	263.50	0.115	0.004	30.5	0.27	0.090	1.03	795	6.78	97.2
8806201200	264.50	0.123	0.005	32.2	0.26	0.100	1.12	807	6.30	105.0
8806210400	265.17	0.077	0.002	27.1	0.28	0.090	1.23	809	6.33	106.9
8806211200	265.50	0.156	-0.001	33.6	0.30	0.110	1.26	823	7.97	104.2
8806221200	266.50	0.202	-0.001	42.5	0.26	0.100	1.32	833	8.81	104.5
8806231200	267.50	0.153	-0.002	36.8	0.31	0.000	1.18	829	7.69	105.2
8806241200	268.50	0.147	-0.001	43.8	0.36	0.070	1.24	832	8.73	104.1
8806251200	269.50	0.184	-0.001	42.0	0.30	0.060	1.34	843	8.68	104.5
8806280950	272.41	0.166	-0.001	41.8	0.19	0.040	1.10	862	9.65	104.7
8807051020	279.43	0.151	0.008	32.7	0.08	-0.030	1.22	876	8.45	108.8
8807120930	286.40	0.271	0.006	38.3	0.31	0.010	2.01	741	9.69	93.3
8807181200	292.50	0.229	0.015	62.8	0.42	0.070	1.99	728	12.12	90.6
8807182000	292.83	0.166	0.015	41.1	0.36	0.100	1.46	727	13.23	90.4
8807191200	293.50	0.223	0.005	27.9	0.11	0.240	1.37	776	12.78	87.5
8807211200	295.50	0.166	0.005	32.7	0.33	0.130	1.12	742	13.21	82.6
8807231200	297.50	0.134	0.004	28.3	0.31	0.120	0.89	749	12.89	83.4
8807251200	299.50	0.093	0.003	21.5	0.31	0.050	0.80	759	12.86	85.5
8807261200	300.50	2.710	0.006	25.5	0.48	0.000	0.87	741	13.32	91.4
8807271200	301.50	2.600	0.005	22.9	0.24	-0.010	0.90	752	11.32	89.8
8807302000	304.83	2.540	0.004	27.7	0.23	0.000	0.83	700	11.22	82.6
8807311200	305.50	2.510	0.005	21.5	0.25	0.000	0.84	1005	8.44	144.5
8808011200	306.50	2.360	0.004	12.7	0.20	0.000	0.69	1135	10.93	161.7
8808020400	307.17	2.270	0.005	18.4	0.20	0.000	0.74	1136	9.51	155.3
8808022000	307.83	0.033	0.005	9.1	0.18	0.010	0.88	1132	9.05	159.3
8808042000	309.83	0.051	0.004	15.8	0.16	0.030	0.84	1100	8.43	151.8
8808062000	311.83	0.075	0.003	12.7	0.08	0.000	0.84	1105	11.59	15.3
8808082000	313.83	0.053	0.003	12.4	0.30	0.000	0.79	1096	10.85	151.8
8808091200	314.50	0.208	0.008	29.9	0.53	0.070	1.29	1116	13.75	151.3
8808111200	316.50	0.168	0.008	46.5	65.00	0.060	1.09	970	12.57	130.4
8808131200	318.50	0.230	0.008	25.1	0.63	0.070	1.28	950	13.01	128.4
8808151200	320.50	0.265	0.007	35.0	0.62	0.050	1.23	858	11.07	116.5
8808160400	321.17	0.166	0.008	23.3	0.64	0.110	1.07	885	12.94	120.0
8808162000	321.83	0.067	0.002	9.2	0.08	0.070	0.87	888	9.48	124.5
8808172000	322.83	0.070	0.002	8.7	0.11	0.080	0.83	910	10.07	126.2
8808182000	323.83	0.070	0.001	12.8	0.14	0.050	0.81	874	9.25	119.8
8808192000	324.83	0.105	0.001	19.1	0.21	0.120	1.02	903	9.07	121.7
8808202000	325.83	0.080	0.001	9.6	0.17	0.070	0.89	948	9.36	128.8
8808212000	326.83	0.063	0.001	9.7	0.10	0.020	0.79	965	9.49	129.7
8808222000	327.83	0.082	0.002	13.6	0.09	0.040	1.01	976	8.61	130.8
8808231200	328.50	0.095	0.009	25.7	0.23	0.130	1.21	912	10.70	123.4
8808241200	329.50	0.131	0.007	23.5	0.20	0.150	1.48	933	9.53	125.1
8808251200	330.50	0.121	0.006	23.6	0.18	0.110	1.34	951	9.62	126.7
8808261200	331.50	0.118	0.006	25.0	0.17	0.100	1.30	964	11.21	126.4
8808271200	332.50	0.067	0.006	20.5	0.17	0.090	0.97	969	10.36	128.5
8808281200	333.50	0.624	0.250	135.6	1.32	0.070	1.29	827	9.21	109.5
8808282000	333.83	0.322	0.037	89.7	1.14	0.100	1.43	740	7.83	105.3
8808290400	334.17	0.239	0.036	63.3	1.77	0.020	1.10	766	10.22	106.4
8808291200	334.50	0.178	0.012	43.4	1.60	0.060	1.10	836	9.93	116.2
8808300400	335.17	0.123	0.025	22.2	1.20	0.060	0.93	907	9.12	125.2

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8808301200	335.50	0.230	0.024	16.2	1.06	0.030	0.89	922	9.84	126.8
8808311200	336.50	0.204	0.008	18.0	0.79	0.030	0.82	984	9.81	134.4
8809011200	337.50	0.193	0.004	19.9	0.65	0.040	0.93	997	9.57	134.5
8809021200	338.50	0.186	0.017	20.0	0.64	0.100	0.82	1006	10.20	136.3
8809031200	339.50	0.184	0.003	19.3	0.54	0.050	0.85	965	8.56	130.2
8809041200	340.50	0.172	0.006	16.8	0.31	0.010	0.76	1018	7.85	139.6
8809051200	341.50	0.170	0.009	13.1	0.32	0.050	0.71	1039	9.18	139.9
8809060400	342.17	0.159	0.007	15.6	0.27	0.060	0.66	1079	9.40	144.5
8809061200	342.50	0.060	0.015	13.9	0.28	0.090	0.63	1109	9.39	151.0
8809071200	343.50	0.066	0.008	16.4	0.24	0.050	0.69	1128	9.58	149.4
8809081200	344.50	0.061	0.010	16.7	0.22	0.060	0.65	1145	8.62	150.2
8809091200	345.50	0.057	0.010	14.1	0.21	0.050	0.67	1142	9.23	151.0
8809101200	346.50	0.054	0.011	16.3	0.19	0.070	0.63	1151	8.98	151.4
8809111200	347.50	0.052	0.009	17.9	0.19	0.070	0.67	1159	8.21	152.4
8809121200	348.50	0.053	0.010	16.9	0.19	0.050	1.65	1147	8.06	150.5
8809130400	349.17	0.051	0.007	18.4	0.19	0.050	0.59	1132	6.11	148.7
8809131200	349.50	0.052	0.002	14.4	0.29	0.030	0.69	1140	7.69	150.8
8809141200	350.50	0.059	0.003	20.2	0.27	0.060	0.76	1157	8.59	153.4
8809151200	351.50	0.048	0.002	15.1	0.34	0.060	0.86	1156	7.83	151.5
8809161200	352.50	0.041	0.002	14.9	0.32	0.040	0.64	1161	7.30	153.8
8809171200	353.50	0.042	0.001	14.2	0.28	0.050	0.64	1150	6.72	152.2
8809181200	354.50	0.042	0.002	13.9	0.28	0.020	0.64	1153	7.02	152.5
8809191200	355.50	0.049	0.000	18.6	0.27	0.040	0.70	1151	7.54	152.7
8809200400	356.17	0.040	0.000	15.7	0.27	0.020	0.67	1155	7.53	152.5
8809201200	356.50	0.067	0.004	30.1	0.15	0.100	0.81	1164	6.40	156.9
8809211200	357.50	0.070	0.001	21.3	0.14	0.070	0.76	1172	7.41	153.1
8809221200	358.50	0.069	0.000	21.9	0.16	0.080	0.71	1174	7.24	152.7
8809231200	359.50	0.064	-0.001	19.0	0.15	0.060	0.68	1174	7.27	152.0
8810201200	386.50	0.296	0.142	13.0	0.20	0.120	1.07	973	7.07	118.6
8810211200	387.50	0.196	0.074	10.0	0.39	0.080	0.90	1000	8.41	124.1
8810221200	388.50	0.159	0.047	8.0	0.16	0.100	0.88	991	6.79	122.4
8810231200	389.50	0.101	0.019	4.0	0.05	0.010	0.54	1122	7.93	143.0
8810250400	391.17	0.054	0.014	6.0	0.07	0.010	0.48	1152	8.07	146.6
8810251200	391.50	0.051	0.014	1.0	0.03	0.010	0.49	1194	6.58	148.3
8810261200	392.50	0.037	0.011	2.0	0.03	0.010	0.43	1197	6.64	159.0
8810271200	393.50	0.033	0.009	2.0	0.02	0.000	0.43	1200	6.57	157.6
8810281200	394.50	0.038	0.008	3.0	0.02	-0.010	0.44	1203	6.67	155.9
8810291200	395.50	0.039	0.013	2.0	0.01	0.000	0.43	1209	6.70	159.1
8810301200	396.50	0.041	0.012	2.0	0.02	0.000	0.42	1220	6.62	156.3
8810311200	397.50	0.065	0.011	15.0	0.02	0.000	0.55	1229	6.81	161.4
8811010400	398.17	0.048	0.010	3.0	0.02	0.000	0.44	1233	6.92	160.2
8811011200	398.50	0.051	0.014	2.0	0.05	0.010	0.45	1238	8.53	174.9
8811021200	399.50	0.052	0.010	3.0	0.04	0.000	0.38	1241	8.65	116.5
8811031200	400.50	0.056	0.011	3.0	0.04	0.080	0.44	1246	8.83	184.1
8811041200	401.50	0.061	0.014	4.0	0.04	0.010	0.47	1220	8.66	172.2
8811051200	402.50	0.129	0.039	21.0	0.23	0.010	0.67	1123	9.30	156.9
8811060400	403.17	0.075	0.015	8.0	0.30	-0.010	0.72	1141	7.67	193.6
8811062000	403.83	0.091	0.023	5.0	0.16	0.010	0.78	1081	8.81	168.6
8811071200	404.50	0.071	0.022	3.0	0.13	0.030	0.57	1107	9.00	165.3
8811080400	405.17	0.056	0.024	3.0	0.12	0.010	0.52	1156	8.65	171.5
8811081200	405.50	0.057	0.009	3.0	0.09	0.000	0.55	1224	8.25	166.7

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8811091200	406.50	0.049	0.006	2.0	0.04	-0.010	0.57	1276	8.06	170.6
8811101200	407.50	0.055	0.008	13.0	0.11	0.010	0.42	1238	6.87	161.8
8811111200	408.50	0.065	0.013	6.0	0.78	0.000	0.63	1142	8.65	153.4
8811121200	409.50	0.066	0.009	7.0	0.59	0.000	0.74	1156	9.23	142.4
8811131200	410.50	0.043	0.006	4.0	0.86	-0.010	0.44	1140	8.47	135.4
8811141200	411.50	0.039	0.007	3.0	1.00	-0.010	0.48	1184	8.89	141.9
8811150400	412.17	0.032	0.004	4.0	0.72	0.000	0.45	1186	8.26	139.2
8811151200	412.50	0.026	0.007	3.0	0.90	0.010	0.43	1108	8.21	125.6
8811161200	413.50	0.029	0.007	5.0	1.65	0.020	0.51	1120	8.45	115.0
8811171200	414.50	0.026	0.006	4.0	2.06	0.020	0.57	1138	8.46	113.5
8811181200	415.50	0.016	0.007	2.0	2.08	0.010	0.55	1154	7.95	118.9
8811191200	416.50	0.012	0.009	2.0	1.88	0.010	0.52	1159	7.54	122.4
8811201200	417.50	0.030	0.010	6.0	1.54	0.020	0.51	1098	6.80	113.5
8811202000	417.83	0.098	0.027	22.0	1.79	0.010	0.71	1022	7.75	124.6
8811211200	418.50	0.100	0.018	23.0	8.05	0.010	0.91	775	8.30	64.3
8811220400	419.17	0.091	0.021	14.0	12.35	0.010	1.01	743	8.21	59.6
8811221200	419.50	0.072	0.005	5.0	14.44	0.050	1.07	777	7.66	67.0
8811231200	420.50	0.039	0.013	4.0	14.55	0.100	0.78	847	7.88	75.9
8811241200	421.50	0.030	0.013	4.0	12.06	0.110	0.76	891	7.64	80.8
8811251200	422.50	0.022	0.012	3.0	10.67	0.070	0.72	924	7.38	85.2
8811261200	423.50	0.019	0.014	2.0	9.70	0.080	0.71	952	7.16	89.8
8811271200	424.50	0.019	0.007	2.0	8.25	0.070	0.64	970	7.10	93.4
8811281200	425.50	0.019	0.014	3.0	6.63	0.070	0.65	993	6.87	96.5
8811290400	426.17	0.020	0.009	2.0	6.24	0.080	0.63	1000	6.71	99.0
8811291200	426.50	0.019	0.002	1.0	5.57	0.010	0.47	1035	7.04	95.7
8811301200	427.50	0.017	0.002	2.0	5.11	0.010	0.45	1052	6.94	98.6
8812011200	428.50	0.014	0.002	1.0	4.53	0.010	0.47	1040	6.82	100.2
8812022000	429.83	0.016	0.000	1.0	3.98	0.010	0.45	1060	6.53	99.8
8812031200	430.50	0.014	0.001	1.0	3.92	0.000	0.39	1067	6.59	103.1
8812041200	431.50	0.016	0.004	2.0	3.65	0.000	0.42	1070	6.44	102.0
8812051200	432.50	0.015	0.003	2.0	3.34	-0.010	0.39	1085	6.29	104.9
8812060400	433.17	0.016	0.002	2.0	3.20	0.010	0.38	1088	6.18	107.2
8812061200	433.50	0.019	0.008	7.0	2.95	0.020	0.46	1056	6.82	107.5
8812071200	434.50	0.018	0.011	5.0	2.62	0.020	0.44	1054	7.80	107.0
8812081200	435.50	0.019	0.015	2.0	2.30	0.020	0.46	1088	6.62	109.0
8812211200	448.50	0.017	0.004	2.0	1.16	0.011	0.31	1100	4.82	119.3
8812221200	449.50	0.014	0.005	1.0	0.99	0.019	0.30	1076	4.87	115.6
8812231200	450.50	0.028	0.012	4.0	1.07	0.026	0.36	1090	4.81	120.5
8812241200	451.50	0.025	0.016	3.0	1.04	0.016	0.39	1230	4.40	176.7
8812251200	452.50	0.020	0.009	2.0	1.20	-0.009	0.37	1145	4.85	126.3
8812261200	453.50	0.018	0.013	2.0	1.89	0.009	0.48	1154	5.67	124.8
8812280400	455.17	0.017	0.011	2.0	2.59	0.029	0.42	1085	5.46	115.2
8812282000	455.83	0.096	0.034	7.0	3.01	0.027	0.49	1083	5.52	126.0
8812291200	456.50	0.143	0.020	33.0	18.41	0.057	1.14	738	7.90	64.0
8812292000	456.83	0.120	0.025	24.0	15.86	0.091	1.33	737	7.58	73.2
8812300400	457.17	0.098	0.026	18.0	19.66	0.045	1.12	783	7.06	67.4
8812301200	457.50	0.081	0.019	15.0	18.87	0.057	0.80	847	8.19	77.2
8812311200	458.50	0.053	0.013	10.0	19.68	0.018	0.81	867	8.05	73.4
8901011200	459.50	0.038	0.011	4.0	18.06	0.030	0.70	924	7.94	80.1
8901021200	460.50	0.032	0.012	5.0	12.80	0.029	0.45	1001	7.49	93.5
8901031200	461.50	0.035	0.017	3.0	12.73	-0.001	0.44	1034	7.37	102.6

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8901041200	462.50	0.027	0.014	2.0	11.67	-0.011	0.70	999	7.16	94.1
8901051200	463.50	0.025	0.013	2.0	10.84	-0.016	0.56	1050	7.05	103.2
8901061200	464.50	0.045	0.020	4.0	8.20	0.019	0.51	1214	6.20	173.3
8901071200	465.50	0.124	0.031	14.0	10.86	0.162	1.15	805	6.69	86.6
8901072000	465.83	0.393	0.027	258.0	12.07	0.024	2.24	621	6.53	59.8
8901080400	466.17	0.291	0.030	154.0	13.89	-0.001	1.82	504	6.48	40.5
8901081200	466.50	0.228	0.034	86.0	15.59	-0.004	1.23	503	6.85	39.5
8901082000	466.83	0.173	0.026	41.0	16.36	-0.022	1.31	554	7.33	42.8
8901091200	467.50	0.110	0.028	15.0	14.61	-0.014	1.03	664	7.70	52.6
8901101200	468.50	0.068	0.028	8.0	16.00	-0.009	0.86	768	7.81	65.5
8901102000	468.83	0.060	0.020	7.0	15.02	0.007	0.51	727	8.64	61.3
8901112000	469.83	0.042	0.018	4.0	13.34	-0.001	0.40	787	8.02	68.7
8901122000	470.83	0.034	0.012	3.0	10.69	-0.012	0.50	0	7.33	71.1
8901132000	471.83	0.030	0.004	2.0	10.39	0.002	0.54	833	7.66	74.6
8901142000	472.83	0.037	0.019	5.0	10.72	-0.006	0.50	860	8.04	75.5
8901152000	473.83	0.031	0.011	2.0	9.81	-0.022	0.43	930	7.44	100.7
8901162000	474.83	0.028	0.007	2.0	9.68	-0.015	0.44	915	7.70	94.9
8901171200	475.50	0.032	0.004	4.0	8.86	0.007	0.38	904	7.62	92.0
8901181200	476.50	0.028	0.004	3.0	8.32	-0.009	0.14	891	7.31	85.4
8901191200	477.50	0.028	0.002	4.0	7.98	-0.002	0.38	891	6.80	86.1
8901201200	478.50	0.026	0.002	3.0	7.68	-0.002	0.44	871	6.62	81.0
8901211200	479.50	0.025	0.006	4.0	7.99	-0.002	0.41	916	6.94	85.2
8901221200	480.50	0.024	0.004	6.0	8.18	0.011	0.43	947	6.99	85.3
8901231200	481.50	0.022	0.003	2.0	8.23	-0.004	0.59	928	6.46	84.3
8901241200	482.50	0.021	0.004	2.0	7.79	-0.009	0.47	894	5.94	82.4
8901242000	482.83	0.019	0.004	2.0	7.90	0.029	0.45	895	5.00	82.5
8901252000	483.83	0.035	0.006	16.0	7.45	0.026	0.51	885	5.04	81.9
8901261200	484.50	0.131	0.019	63.0	6.04	0.021	0.83	940	5.30	115.3
8901262000	484.83	0.479	0.030	271.0	9.43	0.089	2.35	551	6.93	47.1
8901270400	485.17	0.309	0.019	124.0	13.41	0.025	1.92	536	7.85	42.5
8901271200	485.50	0.205	0.016	50.0	13.52	0.060	1.69	570	7.76	44.2
8901272000	485.83	0.145	0.019	30.0	13.80	0.069	0.95	615	8.31	48.6
8901282000	486.83	0.075	0.017	11.0	13.59	0.054	0.89	687	8.02	55.6
8901292000	487.83	0.058	0.016	9.0	12.13	0.061	0.65	747	7.50	68.9
8901302000	488.83	0.049	0.015	6.0	13.04	0.030	0.66	733	7.55	62.3
8901310400	489.17	0.044	0.014	7.0	12.86	0.014	0.76	741	7.23	61.7
8901311200	489.50	0.041	-0.001	5.0	11.80	0.012	0.57	746	7.88	62.5
8902011200	490.50	0.054	0.002	5.0	11.44	-0.017	0.66	766	7.26	63.4
8902021200	491.50	0.030	0.000	4.0	10.88	0.008	0.71	789	7.03	66.7
8902031200	492.50	0.029	-0.002	3.0	10.23	0.030	0.51	800	7.56	70.1
8902041200	493.50	0.030	-0.001	3.0	9.02	0.031	0.47	888	7.90	88.8
8902051200	494.50	0.028	-0.001	3.0	8.40	0.034	0.44	873	7.37	82.4
8902060400	495.17	0.028	-0.002	3.0	8.37	0.023	0.51	929	6.59	93.3
8902061200	495.50	0.028	0.000	3.0	8.32	0.037	0.54	907	7.18	90.7
8902071200	496.50	0.028	0.001		8.55	0.146	0.56	928	5.95	98.2
8902081200	497.50	0.023	-0.003		8.44	0.131	0.47	949	5.79	99.7
8902091200	498.50	0.027	-0.001		8.27	0.131	0.45	956	6.12	93.4
8902101200	499.50	0.026	0.001		8.02	0.150	0.46	1016	5.17	102.7
8902111200	500.50	0.026	0.001		7.63	0.244	0.46	994	4.73	97.7
8902121200	501.50	0.022	0.001		7.22	0.107	0.56	986	5.29	98.1
8902131200	502.50	0.022	0.001		6.31	0.074	0.52	961	4.88	94.4

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8902140400	503.17	0.033	0.001		5.90	0.125	0.49	968	4.67	104.4
8902141200	503.50	0.037	0.007	26.0	5.63	0.130	0.60	952	4.20	115.4
8902151200	504.50	0.061	0.009	12.0	7.80	0.050	0.90	666	5.32	62.5
8902161200	505.50	0.046	0.005		8.78	0.016	0.62	664	5.99	61.5
8902171200	506.50	0.040	0.005	6.0	8.93	0.032	0.69	754	6.44	73.7
8902181200	507.50	0.029	0.006	4.0	8.96	0.024	0.42	780	6.00	71.9
8902191200	508.50	0.019	0.005	5.0	8.45	0.029	0.37	797	4.85	71.9
8902201200	509.50	0.015	0.004	3.0	7.60	0.066	0.41	785	4.32	68.7
8902210400	510.17	0.029	0.007	4.0	6.82	0.034	0.53	791	4.34	75.9
8902211200	510.50	0.163	0.002	28.0	0.01	0.007	0.21	870	-0.02	0.0
8902212000	510.83	0.240	-0.001	132.0	5.89	0.046	0.86	640	4.60	115.4
8902220400	511.17	0.237	0.000	51.0	6.67	0.135	0.62	543	5.92	67.7
8902221200	511.50	0.129	0.007	24.0	8.19	0.218	0.63	561	6.53	51.1
8902231200	512.50	0.057	0.002	8.0	8.91	0.066	0.36	698	7.13	50.1
8902241200	513.50	0.039	0.001	5.0	9.55	0.036	0.28	777	7.48	68.1
8902251200	514.50	0.099	0.001	4.0	9.90	0.091	0.31	814	7.43	70.4
8902261200	515.50	0.029	-0.001	2.0	9.58	0.059	0.08	787	6.12	75.1
8902271200	516.50	0.018	0.001	5.0	8.45	0.033	-0.05	822	4.92	70.5
8902280400	517.17	0.017	0.000	4.0	7.59	0.033	-0.02	815	4.58	78.4
8902281200	517.50	0.023	0.001	3.0	7.74	0.015	0.35	787	4.26	80.4
8903011200	518.50	0.020	0.000	2.0	7.03	0.017	0.70	841	4.57	80.7
8903021200	519.50	0.020	0.000	2.0	6.69	0.016	0.66	866	4.08	83.8
8903031200	520.50	0.016	0.004	2.0	6.28	0.015	0.58	862	4.54	81.7
8903041200	521.50	0.023	0.000	3.0	5.48	0.009	0.67	821	3.14	78.7
8903051200	522.50	0.029	0.002	4.0	4.63	0.018	0.55	820	2.77	86.2
8903061200	523.50	0.031	0.002	5.0	5.52	0.011	0.68	887	4.15	100.6
8903070400	524.17	0.038	-0.001	6.0	7.24	0.020	0.79	815	5.18	78.6
8903071200	524.50	0.033	0.005	7.0	7.43	0.027	0.59	839	4.20	87.1
8903081200	525.50	0.025	0.002	2.0	7.53	0.003	0.60	845	3.64	80.7
8903091200	526.50	0.018	0.001	2.0	6.61	0.020	0.50	829	2.83	79.4
8903101200	527.50	0.016	0.003	4.0	5.98	0.037	0.42	821	2.35	80.7
8903111200	528.50	0.017	0.002	2.0	5.16	0.018	0.42	786	2.12	74.7
8903121200	529.50	0.017	0.000	3.0	4.62	0.010	0.40	786	1.77	76.7
8903131200	530.50	0.017	0.007	2.0	4.34	0.011	0.47	800	1.71	77.7
8903140400	531.17	0.018	0.001	3.0	4.32	0.011	0.49	803	1.67	77.2
8903141200	531.50	0.012	0.004	4.0	4.46	0.003	0.39	798	2.48	79.1
8903151200	532.50	0.015	0.006	5.0	4.32	-0.022	0.57	817	1.68	76.0
8903161200	533.50	0.013	0.004	3.0	4.75	-0.007	0.51	796	2.63	70.3
8903171200	534.50	0.014	0.009	5.0	5.21	0.012	0.49	801	2.36	70.4
8903181200	535.50	0.143	0.022	57.0	5.70	-0.021	0.99	874	4.38	114.8
8903182000	535.83	0.079	0.015	26.0	7.14	-0.026	0.96	732	4.34	74.9
8903191200	536.50	0.055	0.012	13.0	9.05	-0.002	0.86	704	4.77	64.1
8903201200	537.50	0.028	0.008	6.0	8.42	-0.028	0.63	720	4.19	65.5
8903210400	538.17	0.025	0.008	7.0	7.93	-0.033	0.44	814	4.34	92.7
8903211200	538.50	0.028	0.006	6.0	8.11	0.036	0.67	802	4.17	85.8
8903221200	539.50	0.027	0.005	6.0	9.32	0.027	0.56	729	3.89	65.7
8903231200	540.50	0.023	0.004	7.0	9.77	0.021	0.64	742	3.04	66.3
8903241200	541.50	0.019	0.004	5.0	8.77	0.032	0.52	755	2.12	67.8
8903251200	542.50	0.021	0.004	6.0	8.11	0.028	0.53	759	1.79	68.3
8903261200	543.50	0.020	0.002	6.0	7.21	0.026	0.53	766	1.83	68.3
8903270400	544.17	0.031	0.002	13.0	5.37	0.031	0.66	825	1.73	85.4

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8903271200	544.50	0.049	0.003	28.0	6.62	0.130	0.64	769	1.99	6.9
8903282000	545.83	0.043	0.003	18.0	5.26	-0.002	0.65	800	2.11	84.5
8903292000	546.83	0.040	0.003	13.0	5.08	0.004	0.68	741	1.73	63.9
8903301200	547.50	0.275	0.007	270.0	4.07	0.022	2.12	791	4.34	103.4
8903302000	547.83	0.314	0.014	217.0	9.43	0.089	2.52	519	7.65	42.6
8903310400	548.17	0.206	0.012	97.0	10.94	0.026	1.64	517	7.82	39.2
8903312000	548.83	0.116	0.015	47.0	10.05	0.006	1.19	631	8.05	65.4
8904012000	549.50	0.090	0.011	38.0	12.02	0.000	1.15	556	7.29	41.1
8904022000	550.83	0.062	0.014	21.0	11.22	0.003	0.63	586	6.93	42.8
8904031200	551.50	0.645	0.016	593.0	8.33	0.020	3.61	418	6.82	29.4
8904032000	551.83	0.400	0.024	317.0	8.64	-0.012	0.87	463	7.48	28.2
8904041300	552.54	0.570	0.030	450.0	7.64	0.068	3.39	320	6.59	19.6
8904042100	552.88	0.361	0.031	178.0	9.06	0.049	1.82	393	7.67	25.4
8904050500	553.21	0.208	0.032	122.0	10.20	0.058	2.11	452	8.24	30.9
8904051300	553.54	0.133	0.030	53.0	10.48	0.057	1.27	488	8.44	34.4
8904052100	553.88	0.102	0.028	42.0	10.55	0.056	0.82	518	8.35	38.4
8904061300	554.54	0.073	0.024	29.0	10.10	0.059	0.99	553	8.05	40.5
8904071300	555.54	0.054	0.021	19.0	9.61	0.047	0.66	581	7.14	42.3
8904081300	556.54	0.041	0.017	12.0	9.09	0.050	0.68	609	6.42	45.3
8904091300	557.54	0.046	0.018	13.0	8.07	0.065	0.68	612	6.02	47.5
8904101300	558.54	0.037	0.016	8.0	7.98	0.067	0.65	601	5.72	45.6
8904110500	559.21	0.036	0.014	12.0	8.20	0.108	0.59	619	5.83	49.1
8904111300	559.54	0.027	-0.002	6.0	8.48	0.054	0.44	617	6.59	51.1
8904121300	560.54	1.649	-0.002	6.0	8.34	0.036	0.48	656	5.88	52.6
8904131300	561.54	0.026	-0.003	8.0	7.39	0.024	0.59	665	5.37	60.6
8904141300	562.54	0.024	-0.003	7.0	6.96	0.017	0.61	637	4.86	51.5
8904151300	563.54	0.026	-0.003	10.0	6.34	0.068	0.56	644	4.03	60.1
8904161300	564.54	0.024	-0.001	7.0	6.36	0.014	0.60	641	4.32	55.9
8904171300	565.54	0.022	-0.002	6.0	5.94	-0.011	0.56	643	3.65	54.0
8904180500	566.21	0.192	-0.002	119.0	5.03	0.020	1.51	520	6.08	42.8
8904181300	566.54	0.116	0.006	49.0	6.00	0.031	1.37	484	6.35	36.2
8904191300	567.54	0.049	0.005	15.0	7.69	0.072	0.83	539	7.09	42.5
8904201300	568.54	0.027	0.006	7.0	7.78	0.022	0.70	585	4.33	46.1
8904211300	569.54	0.019	0.005	6.0	7.34	0.030	0.57	619	3.21	49.2
8904221300	570.54	0.016	0.006	4.0	6.87	0.029	0.55	633	3.13	51.6
8904231300	571.54	0.017	0.005	5.0	6.34	0.034	0.49	643	7.24	38.2
8904241300	572.54	0.017	0.004	5.0	5.85	0.026	0.50	650	2.58	54.9
8904251300	573.54	0.028	0.004	8.0	5.40	0.049	0.70	655	2.75	57.0
8904252000	573.83	0.035	0.001	16.0	4.91	-0.022	1.12	631	2.63	60.0
8904262000	574.83	0.034	-0.001	14.0	4.39	-0.020	0.59	612	2.39	50.5
8904272000	575.83	0.036	-0.002	17.0	4.07	-0.024	1.00	595	2.29	50.9
8904282000	576.83	0.032	-0.001	16.0	4.00	-0.015	1.10	622	2.43	53.8
8904292000	577.83	0.030	-0.003	12.0	3.89	-0.017	1.11	632	2.57	55.0
8904302000	578.83	0.039	-0.003	17.0	3.64	-0.021	1.03	628	2.14	56.5
8905012000	579.83	0.033	-0.002	16.0	3.45	-0.024	1.00	638	2.61	58.4
8905021200	580.50	0.021	0.005	6.0	3.51	0.017	0.48	679	2.68	59.0
8905031200	581.50	0.022	0.004	6.0	3.38	0.028	0.53	671	2.36	57.8
8905041200	582.50	0.020	0.004	5.0	3.18	0.037	0.49	678	2.51	58.7
8905051200	583.50	0.031	0.002	13.0	2.98	0.036	0.56	683	2.26	62.0
8905060400	584.17	0.103	0.003	89.0	2.62	0.053	0.88	650	2.45	51.8
8905061200	584.50	0.389	0.003	280.0	4.95	0.036	2.84	470	4.92	33.6

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8905062000	584.83	0.171	0.002	74.0	4.76	0.032	1.53	493	6.03	38.5
8905070400	585.17	0.173	0.002	71.0	4.13	0.043	1.54	519	7.25	43.1
8905071200	585.50	0.152	0.003	59.0	5.24	0.026	1.47	493	7.49	40.0
8905072000	585.83	0.173	0.004	78.0	6.36	0.016	1.61	462	8.30	35.1
8905080400	586.17	0.131	0.003	52.0	6.46	0.041	1.43	466	7.63	31.9
8905081200	586.50	0.089	0.002	27.0	6.29	0.023	1.13	490	7.56	34.4
8905082000	586.83	0.074	0.002	27.0	6.04	0.001	0.91	507	7.18	36.4
8905090400	587.17	0.062	0.002	27.0	5.90	0.009	0.88	534	5.62	37.7
8905091200	587.50	0.049	0.004	17.0	5.51	0.036	0.83	553	4.90	40.3
8905101200	588.50	0.063	0.003	23.0	5.28	0.054	1.11	531	6.38	38.6
8905110400	589.17	0.092	0.004	58.0	5.72	0.071	1.13	520	7.14	38.7
8905111200	589.50	0.142	0.006	64.0	7.31	0.073	1.62	472	7.57	34.3
8905121200	590.50	0.085	0.005	43.0	6.21	0.011	1.04	510	6.57	36.8
8905130400	591.17	0.182	0.017	96.0	6.15	0.099	1.72	442	8.13	30.3
8905131200	591.50	0.124	0.013	46.0	6.87	0.069	1.24	461	8.39	30.9
8905141200	592.50	0.084	0.012	27.0	7.22	0.029	1.20	504	8.25	34.2
8905152000	593.83	0.056	0.016	19.0	6.45	0.031	0.92	550	5.87	41.1
8905160400	594.17	0.048	0.010	20.0	6.36	0.070	0.81	576	4.64	41.1
8905161200	594.50	0.023	-0.002	14.0	6.30	-0.034	0.75	580	3.08	44.4
8905171200	595.50	0.022	-0.002	11.0	5.74	-0.032	0.74	606	2.86	45.6
8905181200	596.50	0.023	-0.002	12.0	5.23	-0.032	0.74	618	2.59	48.3
8905191200	597.50	0.027	-0.007	13.0	4.80	-0.015	0.75	624	2.71	49.8
8905201200	598.50	0.040	-0.002	19.0	4.10	0.074	0.88	631	3.07	53.8
8905211200	599.50	0.064	-0.002	34.0	4.03	-0.008	1.04	548	4.64	43.6
8905221200	600.50	0.045	-0.002	30.0	4.65	-0.031	0.95	582	3.74	45.4
8905222000	600.83	0.040	-0.002	22.0	4.52	0.039	0.83	581	3.23	46.6
8905230400	601.17	0.043	-0.002	27.0	4.46	-0.029	0.83	601	3.17	46.9
8905231200	601.50	0.151	0.000	117.0	3.22	-0.029	1.21	549	3.97	47.6
8905232000	601.83	0.469	0.018	309.0	4.58	0.038	2.67	320	6.29	17.4
8905240400	602.17	0.317	0.014	122.0	6.59	0.073	2.35	352	7.86	17.3
8905241200	602.50	0.218	0.019	72.0	7.57	0.073	1.92	411	9.00	22.0
8905242000	602.83	0.156	0.018	62.0	7.93	0.036	1.48	458	9.13	27.0
8905252000	603.83	0.082	0.013	31.0	7.01	0.009	0.97	531	8.11	35.5
8905260400	604.17	1.446	0.007	1109.0	3.06	-0.001	5.58	312	5.15	18.2
8905261200	604.50	1.055	0.006	754.0	3.16	0.046	3.40	200	5.45	7.5
8905262000	604.83	0.450	0.020	213.0	5.24	0.024	2.60	318	8.18	14.5
8905270400	605.17	0.280	0.022	114.0	5.79	0.038	2.03	390	8.74	19.4
8905271200	605.50	0.198	0.021	95.0	6.47	0.038	2.00	438	9.39	24.7
8905282000	606.83	0.075	0.017	18.0	6.51	0.013	0.70	541	8.87	35.2
8905292000	607.83	0.052	0.014	13.0	6.28	0.013	0.75	575	7.93	39.2
8905300400	608.17	0.048	0.011	13.0	6.23	0.034	0.68	592	7.13	40.7
8905301200	608.50	0.043	0.016	12.0	6.15	0.021	0.64	589	7.05	43.5
8905302000	608.83	0.044	0.020	11.0	5.80	0.007	0.78	588	7.35	43.6
8905310400	609.17	0.519	0.029	397.0	6.30	0.122	2.75	536	6.03	41.1
8905311200	609.50	0.566	0.059	432.0	4.90	0.090	2.86	338	7.17	18.0
8905312000	609.83	0.289	0.043	154.0	5.54	0.037	2.20	376	8.72	19.1
8906010400	610.17	0.180	0.035	73.0	6.10	0.047	1.49	440	9.51	25.5
8906011200	610.50	0.118	0.036	43.0	6.35	0.047	1.18	484	10.22	30.3
8906021200	611.50	0.076	0.032	26.0	6.29	0.021	0.98	551	9.26	37.6
8906031200	612.50	0.066	0.029	25.0	6.17	0.022	0.67	588	8.13	41.0
8906032000	612.83	0.948	0.052	715.0	3.62	0.120	3.82	379	6.13	27.0

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8906040400	613.17	0.837	0.049	849.0	3.16	0.098	3.94	227	5.81	9.3
8906041200	613.50	0.386	0.047	188.0	4.08	0.066	2.25	314	8.47	15.0
8906042000	613.83	0.259	0.042	87.0	4.92	-0.007	1.70	388	9.42	19.9
8906051200	614.50	0.132	0.035	36.0	5.87	0.051	1.06	477	10.01	29.3
8906060400	615.17	0.095	0.032	27.0	5.95	0.035	0.92	529	9.72	34.1
8906061200	615.50	0.076	0.012	23.0	6.23	-0.010	0.86	542	10.71	37.4
8906071200	616.50	0.068	0.015	23.0	6.06	0.018	0.74	578	9.43	41.0
8906081200	617.50	0.060	0.010	21.0	5.60	0.022	0.78	607	8.61	44.8
8906091200	618.50	0.062	0.009	20.0	5.47	-0.010	0.66	621	7.82	47.5
8906092000	618.83	0.334	0.068	107.0	5.07	0.309	4.09	597	7.93	46.9
8906100400	619.17	0.208	0.010	115.0	6.37	0.050	1.39	570	8.41	42.5
8906101200	619.50	0.089	0.011	41.0	5.44	-0.017	0.84	584	8.05	43.4
8906111200	620.50	0.067	0.010	24.0	6.48	-0.002	0.65	600	8.36	43.6
8906121200	621.50	0.066	0.010	21.0	6.02	-0.002	0.81	620	9.34	46.3
8906130400	622.17	0.079	0.009	33.0	4.82	-0.042	0.90	631	9.11	55.2
8906131200	622.50	0.070	0.019	32.0	5.61	0.025	0.81	611	8.87	47.5
8906132000	622.83	1.699	0.026	1291.0	3.91	0.062	4.70	412	6.80	29.9
8906140400	623.17	0.589	0.031	450.0	6.88	0.106	2.24	409	8.88	23.6
8906141200	623.50	0.267	0.034	136.0	7.44	0.053	1.42	451	9.79	28.1
8906151200	624.50	0.116	0.028	33.0	6.71	0.051	1.13	508	10.70	31.8
8906161200	625.50	0.120	0.022	42.0	6.50	0.011	1.08	532	10.36	36.8
8906171200	626.50	0.095	0.016	28.0	6.68	0.007	0.95	548	9.46	35.5
8906181200	627.50	0.057	0.017	17.0	6.17	0.011	0.72	586	8.68	39.8
8906191200	628.50	0.058	0.012	24.0	5.75	0.013	0.76	613	7.72	43.1
8906200400	629.17	0.059	0.016	26.0	5.50	-0.001	0.67	617	7.46	44.3
8906201200	629.50	0.069	0.018	20.0	4.91	0.049	0.54	312	7.82	46.3
8906211200	630.50	0.069	0.017	20.0	4.79	0.025	0.65	308	7.42	48.6
8906221200	631.50	0.068	0.013	19.0	4.30	0.029	0.61	314	7.09	49.3
8906231200	632.50	0.080	0.012	29.0	4.05	0.033	0.79	315	7.79	58.9
8906241200	633.50	0.074	0.012	22.0	3.62	0.056	0.64	333	7.57	57.6
8906251200	634.50	0.081	0.007	22.0	3.25	0.045	0.62	340	7.26	57.5
8906261200	635.50	0.082	0.007	22.0	2.86	0.053	0.68	371	7.24	59.1
8906271200	636.50	0.090	0.011	20.0	2.74	0.040	0.54	304	7.39	62.9
8906272000	636.83	1.010	0.008	922.0	4.11	-0.008	4.18	377	5.51	33.4
8906280400	637.17	0.224	0.020	81.0	5.34	-0.024	1.47	507	9.43	39.8
8906282000	637.83	0.115	0.013	27.0	4.83	-0.015	0.87	599	10.02	46.3
8906292000	638.83	0.086	0.008	13.0	4.32	0.010	0.68	649	9.34	49.8
8906302000	639.83	0.083	0.007	11.0	4.56	-0.034	0.51	676	8.72	53.9
8907012000	640.83	0.076	0.007	16.0	4.11	-0.023	0.61	686	8.26	57.7
8907022000	641.83	0.082	0.009	12.0	3.34	-0.028	0.55	694	7.66	60.4
8907032000	642.83	0.071	0.024	18.0	3.05	-0.049	0.74	691	7.93	65.2
8907042000	643.83	0.071	0.024	17.0	2.55	-0.058	0.65	683	7.79	68.0
8907052000	644.83	0.072	0.023	23.0	2.18	-0.069	0.57	688	7.56	69.5
8907062000	645.83	0.054	0.020	11.0	1.85	-0.068	0.81	690	7.26	72.5
8907072000	646.83	0.057	0.015	10.0	1.67	-0.043	0.54	690	7.28	72.9
8907082000	647.83	0.051	0.018	8.0	1.32	-0.023	0.58	701	7.07	75.2
8907092000	648.83	0.056	0.017	10.0	1.08	-0.062	0.50	702	6.89	77.5
8907102000	649.83	0.046	0.017	7.0	0.71	-0.067	0.54	714	6.46	80.0
8907110400	650.17	0.048	0.015	9.0	0.77	-0.027	0.70	721	6.49	78.8
8907111200	650.50	0.033	0.017	11.0	0.72	0.052	0.59	724	6.38	80.3
8907131200	652.50	0.036	0.017	32.0	0.37	0.051	0.58	730	6.20	80.8

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8907151200	654.50	0.024	0.014	7.0	0.27	0.019	0.52	739	5.74	86.0
8907171200	656.50	0.022	0.009	10.0	0.16	0.006	0.43	752	4.87	88.8
8907181200	657.50	0.024	0.007	9.0	0.12	-0.004	0.55	757	4.59	91.2
8907182000	657.83	0.039	0.001	5.0	0.06	0.002	0.49	755	7.16	59.7
8907192000	658.83	0.157	0.017	32.0	0.54	0.006	0.69	764	8.00	61.0
8907202000	659.83	0.073	0.000	26.0	0.03	-0.014	0.58	768	8.82	64.6
8907212000	660.83	0.061	0.000	20.0	2.14	0.035	0.73	597	10.21	37.6
8907222000	661.83	0.044	-0.002	11.0	2.52	0.019	0.70	614	8.84	38.6
8907232000	662.83	0.040	-0.003	8.0	1.91	0.041	0.71	604	8.32	39.5
8907242000	663.83	0.043	-0.006	7.0	1.45	-0.003	0.13	628	7.78	40.6
8907251200	664.50	0.059	0.009	9.0	1.25	0.121	0.62	640	6.65	42.1
8907261200	665.50	0.056	0.008	13.0	0.81	0.034	0.65	648	6.42	41.3
8907271200	666.50	0.153	0.033	68.0	0.49	0.078	0.88	642	8.02	46.4
8907272000	666.83	0.421	0.041	213.0	2.43	0.093	1.89	511	10.52	33.0
8907280400	667.17	0.722	0.048	1016.0	2.13	0.085	6.23	293	7.10	13.6
8907281200	667.50	0.316	0.046	283.0	4.71	0.074	2.29	392	10.80	15.2
8907282000	667.83	0.335	0.045	155.0	5.41	0.087	1.67	436	12.02	16.2
8907291200	668.50	0.189	0.041	54.0	5.39	0.016	1.34	531	14.07	21.8
8907301200	669.50	0.145	0.047	29.0	4.52	0.025	1.15	605	13.63	29.8
8907311200	670.50	0.118	0.038	14.0	3.38	0.006	0.84	648	14.32	34.3
8908010400	671.17	0.094	0.033	14.0	3.10	0.097	0.86	647	13.13	33.8
8908011200	671.50	0.077	0.004	18.0	4.71	0.049	0.65	655	18.81	55.0
8908021200	672.50	0.073	0.003	14.0	3.78	0.129	0.73	660	16.59	54.1
8908031200	673.50	0.064	0.009	12.0	3.26	0.037	0.71	659	14.89	58.1
8908041200	674.50	0.059	0.001	12.0	2.46	0.003	0.66	668	13.97	62.3
8908051200	675.50	0.131	0.017	28.0	1.80	0.005	0.75	656	13.53	62.9
8908061200	676.50	0.071	0.005	11.0	1.28	-0.029	0.65	667	14.55	66.6
8908071200	677.50	0.064	0.003	11.0	0.84	-0.031	0.63	689	13.05	66.6
8908080400	678.17	0.061	-0.001	14.0	0.72	-0.022	0.57	683	12.59	69.7
8908081200	678.50	0.056	0.002	16.0	0.60	-0.008	0.50	688	7.22	75.6
8908091200	679.50	0.043	0.002	9.0	0.40	-0.004	0.44	697	6.89	77.2
8908121200	682.50	0.037	0.002	8.0	0.09	-0.004	0.44	714	5.60	84.8
8908131200	683.50	0.038	0.003	11.0	0.08	0.006	0.55	726	5.60	84.9
8908151200	685.50	0.034	0.001	8.0	0.03	-0.027	0.42	733	4.92	86.9
8908171200	687.50	0.032	-0.003	9.0	-0.06	-0.028	0.48	735	5.02	88.4
8908191200	689.50	0.052	-0.004	12.0	-0.03	-0.024	0.71	744	5.00	91.7
8908211200	691.50	0.052	0.005	12.0	0.11	-0.026	0.42	778	5.69	106.5
8908211645	691.69	0.058	0.002	8.0	0.06	0.078	0.62	811	4.36	101.4
8908212000	691.83	0.036	0.010	8.0	0.23	0.051	0.38	782	5.94	102.1
8908232000	693.83	0.031	0.009	9.0	0.16	0.032	0.43	784	5.68	98.4
8908252000	695.83	0.034	0.007	7.0	0.14	0.026	0.47	791	5.78	99.0
8908272000	697.83	0.035	0.006	10.0	0.09	0.048	0.51	797	5.16	99.1
8908290400	699.83	0.036	0.004	12.0	0.08	0.067	0.53	807	4.76	99.7
8908291200	699.50	0.060	0.002	9.0	0.08	0.034	0.60	807	4.53	95.7
8908311200	701.50	0.075	0.004	16.0	0.02	0.086	0.69	834	4.21	102.9
8909021200	703.50	0.086	0.006	15.0	0.44	0.084	0.60	724	5.61	93.4
8909041200	705.50	0.061	0.007	10.0	0.23	0.019	0.51	761	5.54	96.1
8909050400	706.17	0.062	0.002	13.0	0.21	0.049	0.52	770	5.20	98.2
8909051200	706.50	0.048	0.018	13.0	0.24	0.044	0.50	788	6.74	107.7
8909061200	707.50	0.044	0.017	11.0	0.16	0.073	0.50	792	6.13	106.6
8909071200	708.50	0.041	0.015	11.0	0.13	0.061	0.50	806	5.94	104.7

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8909081200	709.50	0.206	0.023	82.0	2.41	1.222	5.00	688	7.06	87.9
8909082000	709.83	0.165	0.019	66.0	1.53	0.573	6.00	667	6.83	91.3
8909090400	710.17	0.120	0.015	42.0	1.29	0.399	6.00	700	6.63	94.5
8909091200	710.50	0.098	0.015	31.0	1.28	0.637	6.00	724	7.19	98.0
8909102000	711.83	0.073	0.015	17.0	4.91	4.386	6.00	813	7.56	102.2
8909111200	712.50	0.062	0.014	15.0	4.38	4.232	6.00	835	7.82	106.7
8909120400	713.17	0.049	0.014	13.0	2.64	2.813	6.00	831	7.49	109.8
8909121200	713.50	0.049	0.010	15.0	2.90	3.115	6.75	817	7.16	105.1
8909131200	714.50	0.049	0.006	17.0	2.24	2.571	4.64	829	6.86	104.9
8909141200	715.50	0.045	0.006	14.0	2.12	2.303	4.18	824	6.68	103.4
8909142000	715.83	0.159	0.022	72.0	4.58	4.102	11.15	741	5.63	90.3
8909150400	716.17	0.219	0.044	67.0	2.99	2.327	6.40	705	8.24	88.6
8909151200	716.50	0.147	0.020	45.0	3.01	2.323	5.59	733	8.71	87.1
8909152000	716.83	0.116	0.021	29.0	2.92	2.145	4.81	754	8.88	88.2
8909161200	717.50	0.093	0.025	19.0	3.01	2.779	5.14	770	8.58	91.1
8909171200	718.50	0.112	0.042	20.0	13.04	3.500	7.00	945	8.70	100.4
8909180400	719.17	0.084	0.023	19.0	3.71	4.188	8.67	937	9.59	115.8
8909181200	719.50	0.084	0.038	17.0	3.28	3.440	6.78	884	9.51	109.4
8909191200	720.50	0.066	0.031	12.0	3.40	3.897	5.86	842	8.48	98.5
8909201200	721.50	0.061	0.028	10.0	3.97	5.000	6.22	848	7.90	95.6
8909211200	722.50	0.057	0.023	9.0	4.23	5.348	6.23	865	7.38	97.5
8909221200	723.50	0.042	0.018	7.0	2.59	2.480	3.09	847	6.52	100.3
8909231200	724.50	0.074	0.034	7.0	12.75	14.578	23.00	1003	6.58	102.1
8909241200	725.50	0.077	0.036	7.0	16.89	14.311	23.00	1064	6.54	107.1
8909251200	726.50	0.053	0.025	4.0	10.05	14.309	23.09	993	6.38	110.7
8909260400	727.17	0.041	0.015	7.0	5.89	7.339	12.18	937	5.98	107.5
8909261200	727.50	0.038	0.018	4.0	6.34	6.046	10.09	933	6.32	120.9
8909271200	728.50	0.033	0.015	6.0	5.09	4.045	6.39	911	5.79	119.5
8909281200	729.50	0.032	0.014	6.0	5.28	4.052	5.39	908	5.82	120.4
8909291200	730.50	0.030	0.015	6.0	4.82	2.989	4.31	906	5.57	119.5
8909301200	731.50	0.028	0.012	7.0	4.11	1.740	2.68	892	5.51	121.2
8910011200	732.50	0.028	0.009	7.0	4.23	1.050	1.77	889	5.24	123.0
8910021200	733.50	0.027	0.007	5.0	3.89	0.619	1.23	881	5.18	121.8
8910030400	734.17	0.029	0.009	7.0	3.46	0.408	0.96	890	4.67	122.5
8910031200	734.50	0.029	0.010	17.0	3.32	0.302	0.98	885	5.02	111.3
8910041200	735.50	0.029	0.008	10.0	3.16	0.178	0.74	887	4.34	115.9
8910051200	736.50	0.026	0.007	8.0	3.22	0.091	0.67	891	4.05	111.4
8910061200	737.50	0.030	0.008	14.0	3.45	0.056	0.70	893	3.70	112.7
8910071200	738.50	0.034	0.006	10.0	3.57	0.020	0.68	901	3.47	113.3
8910081200	739.50	0.032	0.003	9.0	2.94	0.008	0.64	905	3.15	115.0
8910091200	740.50	0.033	0.004	10.0	2.72	0.004	0.64	910	2.71	120.7
8910100400	741.17	0.031	0.004	10.0	2.65	-0.001	0.55	913	2.56	115.5
8910101200	741.50	0.069	0.004	28.0	2.39	0.154	0.81	821	2.70	108.0
8910111200	742.50	0.105	0.026	8.0	6.78	7.772	5.28	971	5.32	120.6
8910121200	743.50	0.052	0.012	6.0	3.07	2.405	2.86	905	5.12	119.6
8910131200	744.50	0.044	0.006	6.0	3.21	2.014	2.43	903	4.92	118.6
8910141200	745.50	0.042	0.007	4.0	4.14	2.655	3.21	915	4.86	119.1
8910151200	746.50	0.045	0.001	4.0	4.04	2.160	2.83	919	4.69	119.1
8910161200	747.50	0.055	0.000	6.0	3.61	1.706	2.49	924	5.53	119.5
8910170400	748.17	0.340	0.143	33.0	12.29	2.200	11.59	889	4.91	101.4
8910171200	748.50	0.361	0.031	91.0	4.72	2.598	4.78	760	6.23	91.2

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8910172000	748.83	0.228	0.043	40.0	3.78	2.616	4.26	791	7.71	97.4
8910180400	749.17	0.163	0.043	22.0	3.72	2.988	3.60	830	8.43	104.7
8910181200	749.50	0.116	0.016	12.0	3.39	2.322	3.28	862	8.60	106.3
8910191200	750.50	0.337	0.042	139.0	1.91	0.696	1.82	586	7.39	57.8
8910192000	750.83	0.226	0.040	61.0	4.54	0.290	1.36	547	8.60	44.8
8910200400	751.17	0.189	0.044	30.0	6.10	0.325	1.60	546	9.01	41.4
8910201200	751.50	0.141	0.033	26.0	7.28	0.479	1.29	557	9.46	41.7
8910211200	752.50	0.084	0.015	7.0	6.92	0.573	1.66	651	9.48	51.7
8910221200	753.50	0.059	0.020	4.0	6.32	0.535	0.99	704	9.84	59.6
8910231200	754.50	0.041	0.006	4.0	5.38	0.610	1.21	752	8.70	68.7
8910240400	755.17	0.045	0.007	7.0	5.77	0.646	1.15	742	9.82	64.9
8910241200	755.50	0.036	0.004	3.0	4.50	0.581	1.21	769	8.32	72.1
8910251200	756.50	0.032	0.002	3.0	3.71	0.599	1.18	778	7.60	74.4
8910261200	757.50	0.030	0.002	2.0	3.12	0.589	1.19	791	8.31	77.0
8910271200	758.50	0.030	0.002	3.0	2.59	0.654	1.11	805	6.42	78.9
8910281200	759.50	0.030	0.003	2.0	2.25	0.677	1.21	816	6.53	81.4
8910291200	760.50	0.029	0.002	1.0	1.96	0.637	1.40	825	5.48	83.3
8910302000	761.83	0.041	0.009	5.0	1.86	0.692	1.30	819	6.52	87.1
8910312000	762.83	0.192	0.119	8.0	3.90	3.071	1.30	847	6.05	88.4
8911012000	763.83	0.042	0.016	5.0	1.64	0.701	1.30	833	6.19	90.8
8911022000	764.83	0.034	0.011	5.0	1.49	0.545	1.30	822	6.32	91.4
8911032000	765.83	0.035	0.013	5.0	1.94	1.145	1.30	839	6.18	90.2
8911042000	766.83	0.030	0.007	4.0	1.31	0.571	1.30	833	5.51	91.7
8911052000	767.83	0.025	0.007	6.0	1.30	0.521	1.30	835	5.45	92.5
8911062000	768.17	0.029	0.005	6.0	1.49	0.831	1.30	839	5.01	94.4
8911071200	769.50	0.021	0.007	5.0	1.25	0.763	1.25	829	4.55	93.4
8911081200	770.50	0.026	0.004	6.0	1.25	0.655	0.97	833	5.37	91.4
8911091200	771.50	0.031	0.004	5.0	1.44	0.544	1.03	832	7.49	90.5
8911101200	772.50	0.014	0.003	4.0	1.49	0.368	0.82	810	7.65	87.4
8911111200	773.50	0.008	0.004	4.0	1.86	0.310	0.83	808	7.10	84.3
8911121200	774.50	0.009	0.004	3.0	1.80	0.294	0.81	802	6.18	82.4
8911131200	775.50	0.009	0.004	2.0	1.90	0.458	0.94	793	5.59	82.1
8911140400	776.17	0.012	0.004	4.0	1.76	0.449	0.85	806	5.22	82.6
8911141200	776.50	0.022	0.007	2.0	1.71	0.407	0.80	786	4.91	86.1
8911151200	777.50	0.036	0.009	7.0	2.02	0.903	1.30	784	4.37	81.2
8911152000	777.83	0.638	0.036	415.0	2.04	0.494	3.14	496	6.39	48.3
8911160400	778.17	2.980	0.047	346.0	5.34	0.032	2.96	386	7.60	30.3
8911161200	778.50	0.443	0.061	139.0	7.41	0.029	2.21	412	8.46	31.8
8911162000	778.83	0.289	0.052	74.0	8.45	0.066	1.67	469	9.40	37.7
8911170400	779.17	0.221	0.035	47.0	9.01	0.063	1.38	501	9.69	39.5
8911172000	779.83	0.154	0.029	35.0	9.41	0.218	1.24	574	10.07	45.5
8911181200	780.50	0.088	0.019	15.0	8.70	0.258	0.73	624	10.19	49.0
8911201200	782.50	0.043	0.016	15.0	6.93	0.336	1.00	682	9.32	53.7
8911211200	783.50	0.035	0.018	9.0	6.37	0.278	0.83	680	8.74	52.6
8911221200	784.50	0.035	0.019	8.0	6.21	0.421	1.03	696	9.22	57.0
8911231200	785.50	0.033	0.019	7.0	5.87	0.379	0.95	715	9.16	60.7
8911242000	786.83	0.038	0.019	8.0	5.65	0.505	1.14	717	9.07	58.3
8911251200	787.50	0.028	0.018	3.0	5.27	0.494	1.22	731	8.89	63.0
8911261200	788.50	0.026	0.015	3.0	4.96	0.363	1.00	737	8.80	64.3
8911271200	789.50	0.023	0.014	3.0	4.60	0.406	0.85	747	7.48	64.7
8911280400	790.17	0.091	0.029	35.0	4.68	0.854	1.55	734	7.42	61.3

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8911281200	790.50	0.109	0.013	28.0	3.98	0.423	1.10	757	8.09	73.3
8911291200	791.50	0.038	0.012	4.0	4.25	0.427	0.91	750	8.87	63.6
8911301200	792.50	0.043	0.017	14.0	4.17	0.504	1.00	755	8.62	60.0
8912011200	793.50	0.045	0.008	11.0	4.56	0.457	0.99	750	8.66	64.7
8912021200	794.50	0.040	0.006	4.0	4.56	0.692	1.13	767	8.30	67.1
8912051200	797.50	0.029	0.014	5.0	4.91	0.589	1.02	804	7.74	78.5
8912052000	797.83	0.026	0.016	3.0	4.84	0.613	1.00	811	7.05	79.1
8912060400	798.17	0.025	0.015	2.0	4.64	0.584	1.06	789	7.40	75.8
8912121302	804.54	0.026	0.015	1.0	3.86	0.468	0.86	852	6.33	89.2
8912122000	804.83	0.034	0.004	5.0	3.89	0.366	0.96	854	6.89	90.2
8912132000	805.83	0.036	0.002	5.0	3.83	0.431	1.16	853	6.68	84.4
8912142000	806.83	0.033	0.002	2.0	3.72	0.373	0.94	864	6.62	84.3
8912152000	808.83	0.033	0.002	2.0	3.76	0.467	0.99	894	6.50	88.4
8912162000	809.83	0.034	0.004	2.0	3.64	0.384	0.83	880	6.63	86.3
8912172000	810.83	0.036	0.004	2.0	3.69	0.490	0.90	887	7.03	86.2
8912181200	811.50	0.032	0.012	3.0	3.62	0.683	1.16	896	6.83	89.8
8912192000	812.83	0.031	0.012	4.0	3.65	0.724	1.23	907	7.19	88.9
8912201200	813.50	0.032	0.014	2.0	3.48	0.648	1.12	885	7.13	86.8
8912212000	813.83	0.029	0.010	3.0	3.23	0.555	0.97	882	7.50	90.1
8912221200	814.50	0.031	0.010	3.0	3.27	0.543	0.95	876	7.74	87.6
8912232000	815.83	0.025	0.008	4.0	3.03	0.489	0.85	889	7.59	88.6
8912241200	816.50	0.034	0.011	3.0	2.97	0.583	1.00	901	7.88	89.0
8912252000	817.83	0.040	0.017	3.0	3.46	1.079	1.54	901	8.12	88.2
8912261200	818.50	0.034	0.013	2.0	3.12	0.693	1.06	882	8.21	86.7
8912272000	819.83	0.036	0.015	4.0	3.15	0.605	1.02	882	8.18	89.0
8912281200	820.50	0.037	0.019	4.0	2.94	0.505	0.91	873	8.22	90.1
8912292000	821.83	0.038	0.018	4.0	2.88	0.610	1.01	924	8.00	107.0
8912301200	822.50	0.044	0.022	2.0	3.02	0.751	1.12	1109	7.75	151.7
8912312000	823.83	0.268	0.007	100.0	6.01	0.066	1.74	494	7.14	63.2
9001011200	824.50	0.171	0.046	36.0	7.52	0.019	1.20	488	6.53	50.6
9001020400	825.17	0.105	0.066	15.0	8.37	-0.001	1.21	564	7.45	63.9
9001021200	825.50	0.090	0.024	12.0	7.42	0.257	0.64	617	7.42	57.3
9001031200	826.50	0.078	0.030	16.0	6.65	0.309	0.67	646	7.74	59.5
9001040400	827.17	0.292	0.032	197.0	6.17	0.215	2.47	546	6.65	53.1
9001041200	827.50	0.388	0.031	260.0	6.89	0.134	1.48	419	5.95	38.3
9001042000	827.83	0.245	0.037	92.0	8.22	0.141	1.21	430	6.38	38.0
9001050400	828.17	0.172	0.043	47.0	9.21	0.174	0.97	487	7.67	43.5
9001051200	828.50	0.127	0.036	26.0	9.40	0.198	0.82	546	7.55	48.8
9001061200	829.50	0.083	0.027	10.0	8.96	0.255	0.64	623	8.65	52.8
9001071200	830.50	0.061	0.025	8.0	7.88	0.298	0.45	673	7.90	58.9
9001080400	831.17	0.052	0.018	5.0	7.36	0.275	0.43	683	7.73	57.4
9001082000	831.83	0.064	-0.007	7.0	7.24	0.340	0.80	686	8.90	59.3
9001092000	832.83	0.056	-0.008	9.0	7.13	0.427	0.90	690	8.76	59.1
9001102000	833.83	0.094	-0.007	27.0	9.22	0.166	1.11	627	8.32	62.2
9001112000	834.83	0.073	-0.009	12.0	9.78	0.219	1.13	647	8.84	61.9
9001122000	835.83	0.058	-0.008	7.0	8.51	0.259	0.80	702	8.65	68.3
9001132000	836.83	0.052	-0.009	6.0	7.78	0.292	0.78	706	8.40	63.8
9001142000	837.83	0.048	-0.007	7.0	7.13	0.292	0.81	720	8.35	64.5
9001151200	838.50	0.045	-0.009	5.0	6.52	0.314	0.73	735	7.87	66.2
9001152000	838.83	0.044	0.008	5.0	6.01	0.394	0.73	727	7.77	70.0
9001162000	839.83	0.042	0.009	7.0	5.67	0.366	0.78	725	7.18	64.6

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9001172000	840.83	0.051	0.005	16.0	5.30	0.253	0.85	743	7.23	73.2
9001180400	841.17	0.068	0.006	28.0	5.69	0.187	0.89	702	7.47	70.6
9001181200	841.50	0.151	0.006	79.0	6.87	0.123	1.17	643	7.99	67.1
9001182000	841.83	0.189	0.010	71.0	7.87	0.139	1.59	586	8.26	57.3
9001192000	842.83	0.079	0.006	13.0	7.78	0.210	1.01	660	8.66	61.8
9001202000	843.83	0.101	0.006	39.0	6.05	0.171	1.08	716	8.11	83.4
9001212000	844.83	0.140	0.006	33.0	8.42	0.103	0.96	548	8.00	48.4
9001221200	845.50	0.088	0.004	16.0	8.68	0.128	0.74	597	8.43	53.0
9001222000	845.83	0.077	0.006	15.0	8.84	0.061	0.89	617	9.09	54.6
9001232000	846.83	0.062	0.006	12.0	7.77	0.111	0.71	658	8.87	56.7
9001242000	847.83	0.051	0.005	14.0	7.42	0.148	0.83	667	8.33	56.0
9001252000	848.83	0.060	0.007	24.0	6.82	0.114	0.85	679	7.79	61.2
9001262000	849.83	0.054	0.005	14.0	6.56	0.073	0.83	686	7.84	61.7
9001272000	850.83	0.051	0.005	15.0	6.30	0.196	0.82	697	7.97	62.7
9001281200	851.50	0.036	0.005	9.0	6.06	0.131	0.71	703	7.47	60.2
9001291200	852.50	0.069	0.002	34.0	5.84	0.167	0.75	710	7.07	60.2
9001301200	853.50	0.038	0.006	9.0	6.12	0.002	0.50	712	7.31	61.0
9002061145	860.48	0.109	0.007	31.0	6.93	0.057	0.91	465	6.77	41.7
9002071200	861.50	0.057	0.008	12.0	7.08	0.129	0.51	593	7.43	46.7
9002071330	861.55	0.073	0.005	17.0	7.05	0.057	0.73	536	7.38	43.1
9002080000	862.00	0.059	0.008	13.0	7.03	0.090	0.42	562	7.31	44.8
9002082000	862.83	0.056	0.000	16.0	6.95	0.148	0.72	602	7.49	46.2
9002092000	863.83	0.045	0.014	12.0	6.65	0.146	0.61	628	6.95	48.9
9002102000	864.83	0.040	0.009	8.0	6.49	0.149	0.66	633	7.40	49.0
9002112000	865.83	0.039	0.008	8.0	6.05	0.156	0.59	639	7.10	49.0
9002121200	866.50	0.032	0.005	6.0	5.95	0.164	0.54	655	6.94	50.1
9002122000	866.83	0.033	0.021	2.0	5.76	0.209	0.53	652	6.83	51.3
9002132000	867.83	0.033	0.020	7.0	5.50	0.188	0.65	662	6.01	50.5
9002150400	869.17	0.027	0.017	2.0	4.72	0.204	0.64	795	5.94	91.7
9002151200	869.50	0.293	0.029	308.0	2.99	0.096	1.47	722	5.07	117.8
9002152000	869.83	0.340	0.043	240.0	2.90	0.057	1.67	294	4.82	32.5
9002160400	870.17	0.287	0.040	168.0	3.19	0.031	1.42	249	4.98	20.4
9002161200	870.50	0.213	0.055	90.0	3.63	0.029	1.17	252	5.39	16.4
9002162000	870.83	0.221	0.059	91.0	4.11	0.035	1.26	282	6.10	18.5
9002172000	871.83	0.121	0.037	35.0	6.30	0.095	0.74	450	7.66	34.0
9002182000	872.83	0.073	0.030	16.0	6.22	0.132	0.46	537	7.67	38.3
9002191200	873.50	0.054	0.026	10.0	6.05	0.075	0.74	555	7.71	39.6
9002192000	873.83	0.054	0.003	13.0	6.48	0.013	0.68	555	8.20	42.6
9002202000	874.83	0.041	0.002	8.0	6.32	0.234	0.63	580	8.20	46.1
9002212000	875.83	0.036	0.000	8.0	6.30	0.236	0.73	604	8.21	48.9
9002222000	876.83	0.464	0.016	267.0	3.87	0.130	2.22	360	6.39	26.9
9002230400	877.17	0.335	0.012	128.0	5.09	0.092	1.80	371	6.95	25.8
9002231200	877.50	0.212	0.009	66.0	5.35	0.107	1.34	432	7.66	34.6
9002232000	877.83	0.245	0.014	62.0	5.21	0.169	1.38	399	7.15	30.0
9002242000	878.83	0.108	0.009	19.0	6.13	0.158	0.86	500	8.37	42.4
9002252000	879.83	0.071	0.005	14.0	6.14	0.183	0.56	585	8.68	55.1
9002262000	880.83	0.058	0.004	13.0	6.51	0.181	0.55	638	8.97	55.7
9002272000	881.83	0.053	0.010	25.0	5.04	0.112	0.60	647	6.65	71.7
9002282000	882.83	0.059	0.015	16.0	5.06	0.123	0.52	509	6.54	40.6
9003012000	883.83	0.047	0.015	14.0	5.21	0.135	0.46	540	6.46	42.2
9003022000	884.83	0.040	0.009	12.0	4.91	0.124	0.67	557	5.91	41.6

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9003032000	885.83	0.059	0.024	10.0	4.42	0.168	0.83	516	5.58	38.6
9003042000	886.83	0.035	0.010	5.0	4.64	0.156	0.64	567	5.69	43.0
9003051200	887.50	0.028	0.006	6.0	4.99	0.160	0.62	593	5.80	46.9
9003052000	887.83	0.034	0.007	6.0	5.45	0.103	0.41	590	7.03	49.5
9003062000	888.83	0.032	0.004	6.0	5.25	0.010	0.47	617	6.93	50.9
9003072000	889.83	0.033	0.003	7.0	5.06	0.139	0.57	619	6.34	47.9
9003082000	890.83	0.031	0.004	5.0	5.00	0.219	0.58	631	6.25	50.9
9003092000	891.83	0.037	0.002	17.0	4.65	0.065	0.47	632	5.48	60.7
9003102000	892.83	0.058	0.004	18.0	4.22	0.193	1.45	570	6.45	50.7
9003112000	893.83	0.045	0.002	12.0	4.81	0.111	0.77	575	6.38	46.9
9003120400	894.17	0.048	0.003	15.0	4.96	0.102	0.81	581	5.64	46.7
9003121200	894.50	0.040	0.002	15.0	5.27	0.211	0.83	587	5.23	50.1
9003131200	895.50	0.035	0.001	15.0	4.86	0.249	0.91	614	4.28	50.0
9003141200	896.50	0.029	0.004	11.0	4.61	0.220	0.77	626	4.04	50.1
9003151200	897.50	0.029	0.005	12.0	4.39	0.166	0.70	638	3.85	51.7
9003161200	898.50	0.033	0.005	17.0	4.11	0.151	0.72	644	3.80	52.3
9003171200	899.50	0.024	0.003	9.0	4.12	0.095	0.61	664	4.87	58.1
9003181200	900.50	0.023	0.001	8.0	4.08	0.097	0.59	660	4.51	55.3
9003191200	901.50	0.022	0.002	7.0	4.00	0.167	0.69	665	4.41	56.0
9003200400	902.17	0.021	0.002	8.0	3.79	0.110	0.61	691	4.14	67.8
9003201200	902.50	0.017	0.010	1.0	3.70	0.250	0.82	681	4.80	68.0
9003211200	903.50	0.017	0.000	5.0	3.70	0.230	0.62	662	4.80	61.0
9003221200	904.50	0.015	0.000	4.0	3.80	0.220	0.68	656	3.90	59.0
9003231200	905.50	0.017	0.000	2.0	3.70	0.130	0.56	640	3.30	59.0
9003241200	906.50	0.016	0.000	2.0	3.90	0.060	0.51	646	3.40	59.0
9003251200	907.50	0.016	0.000	1.0	4.00	0.030	0.49	652	3.40	60.0
9003261200	908.50	0.018	0.000	0.0	4.10	0.030	0.50	663	3.30	60.0
9003270400	909.17	0.020	0.000	1.0	4.20	0.030	0.46	673	3.40	61.0
9003271200	909.50	0.015	-0.002	4.0	3.22	0.245	0.67	678	4.03	57.0
9003281200	910.50	0.016	-0.002	5.0	3.27	0.241	0.76	684	3.87	58.0
9003291200	911.50	0.014	-0.002	6.0	3.17	0.226	0.64	684	3.45	58.0
9003301200	912.50	0.017	-0.002	8.0	3.09	0.240	0.66	685	3.04	57.0
9003311200	913.50	0.018	-0.001	6.0	3.06	0.217	0.70	683	3.34	57.0
9004011200	914.50	0.016	-0.002	7.0	2.79	0.160	0.59	687	4.00	60.0
9004021200	915.50	0.020	-0.004	10.0	2.48	0.136	0.61	712	4.48	70.0
9004031200	916.50	0.020	-0.003	5.0	2.59	0.139	0.44	693	5.05	66.0
9004041200	917.50	0.030	0.008	14.0	2.55	0.123	0.57	677	5.76	68.0
9004051200	918.50	0.037	0.008	10.0	4.74	0.114	0.74	582	5.41	46.0
9004061200	919.50	0.022	0.007	7.0	3.93	0.134	0.46	611	4.72	49.0
9004071200	920.50	0.019	0.008	3.0	3.56	0.170	0.43	629	3.89	50.0
9004081200	921.50	0.014	0.007	5.0	3.34	0.150	0.39	646	3.53	52.0
9004091200	922.50	0.016	0.006	6.0	3.07	0.142	0.43	655	2.60	53.0
9004100400	923.17	0.027	0.012	8.0	2.96	0.225	0.78	643	2.31	54.0
9004101200	923.50	0.915	0.005	802.0	2.40	0.074	3.95	352	5.04	26.0
9004102000	923.83	0.592	0.033	328.0	5.02	0.048	2.77	260	5.59	12.0
9004110400	924.17	0.340	0.028	186.0	6.88	0.038	1.88	348	6.78	18.0
9004111200	924.50	0.216	0.026	99.0	7.16	0.010	1.57	407	7.55	22.0
9004112000	924.83	0.152	0.021	58.0	7.77	0.015	1.24	454	7.74	30.0
9004120400	925.17	0.128	0.019	46.0	7.81	0.021	1.19	470	7.58	31.0
9004121200	925.50	0.102	0.015	35.0	6.51	0.027	1.04	487	7.66	31.0
9004131200	926.50	0.061	0.013	20.0	6.42	0.099	0.99	532	7.45	35.0

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9004141200	927.50	0.045	0.010	22.0	5.42	0.075	0.74	565	6.62	42.0
9004151200	928.50	0.046	0.012	15.0	5.40	0.096	0.92	544	6.78	37.0
9004162000	929.83	0.029	0.005	12.0	5.21	0.095	0.72	585	4.69	41.0
9004171200	930.50	0.017	0.009	7.0	5.07	0.164	0.74	581	4.58	43.0
9004181200	931.50	0.012	0.009	6.0	4.61	0.183	0.58	596	4.35	45.0
9004191200	932.50	0.009	0.005	5.0	4.27	0.189	0.57	610	3.33	47.0
9004201200	933.50	0.008	0.007	4.0	4.09	0.169	0.64	616	2.98	49.0
9004210400	934.17	0.120	0.009	114.0	3.09	0.094	1.06	573	3.85	55.0
9004211200	934.50	0.237	0.010	123.0	3.04	0.090	1.59	395	3.94	55.0
9004212000	934.83	0.200	0.015	69.0	4.13	0.082	1.41	402	6.35	26.0
9004220400	935.17	0.121	0.019	42.0	5.65	0.084	1.27	452	6.83	24.0
9004221200	935.50	0.073	0.009	20.0	5.73	0.124	0.94	494	6.99	28.0
9004231200	936.50	0.023	0.013	8.0	5.58	0.090	0.69	551	7.27	32.0
9004240400	937.17	0.022	0.010	14.0	4.30	0.135	0.75	567	2.77	41.0
9004241200	937.50	0.009	0.001	6.0	4.18	0.188	0.82	575	2.91	42.0
9004251200	938.50	0.008	0.000	8.0	3.80	0.208	0.84	584	2.70	44.0
9004261200	939.50	0.011	0.002	7.0	3.51	0.138	0.85	592	2.82	46.0
9004271200	940.50	0.014	0.002	9.0	3.38	0.161	0.88	609	3.05	48.0
9004281200	941.50	0.019	0.006	14.0	3.15	0.075	0.71	628	2.91	49.0
9004291200	942.50	0.018	0.006	12.0	3.12	0.135	0.75	639	2.95	52.0
9004301200	943.50	0.014	0.004	13.0	2.98	0.143	0.68	656	3.20	53.0
9005010400	944.17	0.020	0.004	14.0	2.69	0.108	0.78	632	2.81	54.0
9005011200	944.50	0.013	0.000	13.0	2.74	0.123	0.73	658	1.68	52.0
9005021200	945.50	0.008	0.000	7.0	2.86	0.148	0.69	664	1.56	55.0
9005031200	946.50	0.007	-0.001	7.0	2.53	0.096	0.60	661	1.33	55.0
9005041200	947.50	0.038	-0.002	10.0	2.84	0.307	0.98	673	1.60	57.0
9005042000	947.83	0.554	0.002	183.0	1.93	0.213	1.77	572	3.75	61.0
9005050400	948.17	1.287	0.000	606.0	3.11	0.051	3.44	544	3.67	40.0
9005051200	948.50	1.153	0.031	359.0	5.93	0.407	3.49	319	5.61	17.0
9005052000	948.83	0.571	0.043	104.0	7.80	0.657	3.21	404	6.84	22.0
9005060400	949.17	0.190	0.022	63.0	8.09	0.609	2.82	452	7.32	25.0
9005061200	949.50	0.129	0.020	35.0	8.56	0.520	2.16	485	7.41	29.0
9005071200	950.50	0.045	0.001	13.0	6.99	0.161	1.14	487	5.75	34.0
9005080400	951.17	0.031	0.000	17.0	5.98	0.094	0.84	572	4.30	36.0
9005081200	951.50	0.031	0.000	8.0	5.84	0.132	0.88	581	4.57	39.0
9005091200	952.50	0.033	0.003	12.0	4.51	0.122	0.76	607	3.73	42.0
9005101200	953.50	0.032	0.003	15.0	4.30	0.134	0.87	620	3.46	46.0
9005111200	954.50	0.021	0.003	6.0	4.09	0.119	0.70	642	3.78	49.0
9005121200	955.50	0.024	0.003	18.0	3.84	0.133	0.76	647	3.38	52.0
9005130400	956.17	0.321	0.119	54.0	4.19	0.851	1.94	628	3.90	53.0
9005131200	956.50	0.114	-0.002	67.0	3.26	0.182	1.05	597	4.99	59.0
9005132000	956.83	0.155	0.003	71.0	6.39	0.227	1.61	519	7.00	35.0
9005140400	957.17	0.120	0.003	43.0	9.76	0.292	1.48	524	7.89	34.0
9005141200	957.50	0.076	0.003	22.0	9.46	0.205	1.30	546	8.16	37.0
9005150400	958.17	0.054	0.003	21.0	7.90	0.108	1.00	574	6.29	40.0
9005151200	958.50	0.040	0.004	16.0	6.65	0.091	0.63	585	5.66	41.0
9005160400	959.17	0.068	0.004	36.0	6.03	0.122	0.81	564	4.51	35.0
9005161200	959.50	0.595	0.004	434.0	8.20	0.483	3.22	429	7.21	27.0
9005162000	959.83	0.530	0.004	1784.0	9.50	0.485	3.42	346	7.37	15.0
9005170400	960.17	0.256	0.004	116.0	11.17	0.387	2.32	427	8.94	21.0
9005171200	960.50	0.169	0.006	65.0	11.74	0.304	1.59	490	9.64	27.0

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9005181200	961.50	0.100	0.004	29.0	9.53	0.160	0.97	549	8.99	35.0
9005191200	962.50	0.060	0.004	17.0	6.87	0.087	0.76	589	7.40	39.0
9005201200	963.50	0.049	0.004	17.0	5.82	0.113	0.61	615	6.21	41.0
9005202000	963.83	0.163	0.009	104.0	4.85	0.152	1.00	578	5.77	43.0
9005210400	964.17	0.797	0.007	606.0	8.43	0.301	3.52	458	6.01	28.0
9005211200	964.50	0.490	0.004	318.0	7.93	0.196	2.72	422	6.98	25.0
9005212000	964.83	0.239	0.010	112.0	10.02	0.149	1.62	487	8.31	28.0
9005220400	965.17	0.174	0.020	61.0	9.24	0.146	1.26	525	8.79	32.0
9005221200	965.50	0.124	0.020	39.0	7.95	0.032	1.03	543	8.44	34.0
9005231200	966.50	0.066	0.010	18.0	6.13	0.040	0.72	584	6.50	39.0
9005241200	967.50	0.087	0.020	34.0	5.47	0.091	0.80	589	5.77	43.0
9005251200	968.50	0.061	0.010	25.0	4.94	0.080	0.64	621	4.59	46.0
9005261200	969.50	0.085	0.020	35.0	3.88	0.064	0.86	642	5.06	56.0
9005271200	970.50	0.067	0.010	26.0	3.94	0.034	0.65	628	5.02	49.0
9005281200	971.50	0.059	0.000	21.0	4.36	0.026	0.65	629	4.53	48.0
9005290400	972.17	0.070	0.010	29.0	4.34	0.097	0.74	634	4.54	47.0
9005291200	972.50	0.085	0.010	25.0	3.37	-0.007	0.76	632	4.26	53.0
9005301200	973.50	0.051	0.010	12.0	3.22	-0.007	0.63	641	5.45	53.0
9005311200	974.50	0.049	0.020	12.0	3.50	-0.007	0.63	660	5.18	55.0
9006011200	975.50	0.063	0.010	25.0	3.15	0.004	0.65	664	4.66	56.0
9006021200	976.50	0.066	0.020	20.0	3.00	-0.007	0.73	664	4.82	56.0
9006031200	977.50	0.098	0.030	34.0	2.78	-0.004	0.74	666	4.67	59.0
9006041200	978.50	0.082	0.020	25.0	2.35	-0.003	0.69	681	4.63	64.0
9006050400	979.17	0.065	0.020	17.0	2.53	-0.010	0.64	695	4.86	61.0
9006051200	979.50	0.058	0.000	8.0	2.85	0.001	0.71	681	5.30	63.0
9006061200	980.50	0.061	0.010	13.0	2.50	-0.007	0.71	690	5.00	64.0
9006071200	981.50	0.071	0.000	20.0	2.45	-0.002	0.64	688	4.60	65.0
9006081200	982.50	0.135	0.040	23.0	2.75	0.173	1.11	682	4.50	65.0
9006091200	983.50	0.113	0.000	51.0	2.79	-0.001	0.75	651	5.10	58.0
9006101200	984.50	0.081	0.000	22.0	8.71	-0.009	0.83	689	5.70	56.0
9006111200	985.50	0.075	0.010	20.0	7.85	-0.005	0.73	682	5.50	57.0
9006112000	985.83	0.053	0.010	14.0	7.22	0.109	0.73	688	4.89	58.0
9006122000	986.83	0.055	0.010	11.0	5.99	0.124	0.76	697	4.42	60.0
9006132000	987.83	0.056	0.010	16.0	4.97	0.099	0.82	702	4.04	63.0
9006142000	988.83	0.130	0.047	39.0	4.06	0.314	1.13	686	4.76	61.0
9006152000	989.83	0.079	0.017	19.0	3.07	0.151	0.89	693	4.37	66.0
9006162000	990.83	0.064	0.019	15.0	2.27	0.116	0.75	694	4.47	69.0
9006172000	991.83	0.059	0.015	14.0	1.60	0.083	0.73	704	4.45	70.0
9006181200	992.50	0.047	0.005	19.0	1.19	0.068	0.64	687	5.55	74.0
9006182000	992.83	0.065	0.009	16.0	1.21	0.063	0.74	718	4.46	70.0
9006190400	993.17	0.071	0.014	22.0	1.13	0.089	0.70	723	4.70	71.0
9006191200	993.50	0.048	0.009	19.0	0.85	0.090	0.57	718	5.76	75.0
9006201200	994.50	0.051	0.001	19.0	0.80	0.042	0.63	725	5.81	79.0
9006211200	995.50	0.051	0.007	15.0	0.85	0.063	0.59	749	5.64	83.0
9006221200	996.50	0.055	-0.001	22.0	0.75	0.064	0.58	734	5.96	81.0
9006231200	997.50	0.051	0.008	13.0	0.73	0.069	0.56	733	6.05	82.0
9006241200	998.50	0.044	0.006	11.0	1.03	0.042	0.56	756	6.23	84.0
9006250400	999.17	0.042	0.002	15.0	1.04	0.001	0.53	769	6.41	86.0
9006261200	1000.50	0.023	0.000	11.0	1.20	0.061	0.10	762	5.60	83.0
9006271200	1001.50	0.018	0.003	11.0	0.82	0.049	0.48	755	5.39	86.0
9006281200	1002.50	0.023	0.002	14.0	0.57	0.028	0.54	745	5.10	84.0

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9006291200	1003.50	0.046	0.002	20.0	0.55	0.095	0.62	728	4.95	82.0
9006301200	1004.50	0.034	0.008	14.0	0.51	0.093	0.41	744	5.11	86.0
9007011200	1005.50	0.034	0.005	13.0	0.52	0.012	0.47	744	5.44	85.0
9007021200	1006.50	0.029	0.004	12.0	0.45	0.028	0.48	738	5.15	85.0
9007030400	1007.20	0.033	0.003	16.0	0.39	0.016	0.50	743	5.10	86.0
9007102000	1014.80	0.044	0.002	19.0	0.12	0.095	0.81	784	5.67	98.0
9007112000	1015.80	0.073	0.004	24.0	0.22	0.137	0.83	785	6.02	97.0
9007122000	1016.80	0.060	0.013	17.0	0.93	0.137	0.48	787	6.91	98.0
9007132000	1017.80	0.042	0.007	12.0	0.54	0.074	0.33	786	7.06	100.0
9007141200	1018.50	0.288	0.034	170.0	1.96	0.093	1.40	659	7.05	86.0
9007142000	1018.80	0.397	0.032	268.0	22.14	0.654	2.75	556	9.17	31.0
9007150400	1019.20	0.213	0.030	91.0	27.94	0.489	1.93	569	10.29	30.0
9007152000	1019.80	0.115	0.029	38.0	28.39	0.151	1.13	656	11.95	37.0
9007162000	1020.80	0.070	0.017	18.0	22.68	0.040	0.10	688	11.28	43.0
9007170400	1021.20	0.068	0.012	21.0	21.09	0.036	0.62	689	10.89	45.0
9007171200	1021.50	0.067	0.020	14.0	16.17	0.041	0.20	698	10.20	46.0
9007181200	1022.50	0.060	0.019	12.0	12.67	0.055	0.68	700	9.33	51.0
9007191200	1023.50	0.050	0.016	7.0	11.23	0.058	0.70	715	8.22	55.0
9007201200	1024.50	0.047	0.010	8.0	10.49	0.043	0.68	706	7.61	58.0
9007211200	1025.50	0.047	0.016	7.0	8.06	0.060	0.62	703	7.12	63.0
9007221200	1026.50	0.107	0.020	43.0	5.02	0.041	0.80	667	6.28	64.0
9007222000	1026.80	0.317	0.061	144.0	6.63	0.277	1.94	626	7.96	70.0
9007230400	1027.20	0.298	0.088	92.0	9.48	0.194	1.81	623	8.57	47.0
9007231200	1027.50	0.225	0.046	61.0	10.86	0.112	1.03	568	10.16	35.0
9007240400	1028.20	0.129	0.034	28.0	13.23	0.038	1.00	620	10.70	38.0
9007241200	1028.50	0.086	0.022	24.0	17.05	0.022	0.68	649	11.24	43.0
9007251200	1029.50	0.069	0.019	20.0	14.23	0.025	0.82	683	9.19	47.0
9007261200	1030.50	0.059	0.014	16.0	11.84	0.056	0.80	678	9.00	52.0
9007271200	1031.50	0.051	0.022	12.0	10.47	0.059	0.70	702	7.88	57.0
9007281200	1032.50	0.037	0.012	7.0	8.59	0.073	0.73	696	7.32	61.0
9007291200	1033.50	0.033	0.004	6.0	6.55	0.023	0.64	695	6.62	63.0
9007301200	1034.50	0.030	0.001	5.0	4.89	0.032	0.61	703	6.00	66.0
9007310400	1035.20	0.035	0.002	9.0	4.19	0.034	0.66	704	6.16	69.0
9007311200	1035.50	0.038	-0.001	6.0	4.03	0.074	0.76	697	6.38	69.0
9008011200	1036.50	0.037	-0.003	4.0	3.31	0.071	0.74	703	6.43	69.0
9008021200	1037.50	0.043	-0.003	7.0	2.71	0.101	0.76	709	6.14	71.0
9008031200	1038.50	0.044	-0.003	8.0	2.18	0.061	0.70	716	6.01	73.0
9008041200	1039.50	0.049	-0.002	11.0	1.69	0.043	0.78	721	6.18	74.0
9008051200	1040.50	0.314	0.021	193.0	2.44	0.040	1.57	541	5.62	43.0
9008060400	1041.20	0.232	0.006	79.0	3.33	0.029	1.36	461	6.67	36.0
9008061200	1041.50	0.182	0.023	82.0	3.31	0.036	0.82	475	6.51	38.0
9008062000	1041.80	0.155	0.025	60.0	3.00	0.057	0.82	490	6.53	41.0
9008070400	1042.20	0.131	0.024	46.0	2.87	0.049	0.82	518	6.88	46.0
9008071200	1042.50	0.110	0.023	34.0	2.74	0.024	0.63	546	6.89	47.0
9008081200	1043.50	0.095	0.020	30.0	2.33	0.026	0.59	562	6.95	49.0
9008091200	1044.50	0.066	0.021	10.0	1.98	0.031	0.53	593	6.53	51.0
9008101200	1045.50	0.060	0.019	5.0	1.53	0.055	0.59	600	8.28	54.0
9008111200	1046.50	0.052	0.013	4.0	1.19	0.026	0.49	620	7.21	58.0
9008121200	1047.50	0.051	0.013	5.0	0.81	0.029	0.56	631	6.53	60.0
9008131200	1048.50	0.225	0.021	110.0	1.35	0.000	1.08	545	4.77	56.0
9008132000	1048.80	0.309	0.056	171.0	1.21	0.000	1.40	588	5.28	51.0
9008140400	1049.20	0.312	0.044	138.0	3.05	0.002	1.59	404	7.42	27.0

Appendix D. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9008141200	1049.50	0.236	0.031	77.0	3.68	0.058	1.62	409	9.10	25.0
9008142000	1049.80	0.173	0.025	47.0	3.62	0.055	1.23	446	9.32	29.0
9008150400	1050.20	0.149	0.012	44.0	3.60	0.022	1.21	477	8.34	32.0
9008151200	1050.50	0.137	0.009	51.0	3.44	0.072	1.10	508	9.20	35.0
9008161200	1051.50	0.086	0.013	22.0	2.57	0.066	0.82	544	8.72	42.0
9008171200	1052.50	0.065	0.015	15.0	1.88	0.057	0.67	582	8.20	48.0
9008181200	1053.50	0.056	0.012	11.0	1.28	0.047	0.65	593	7.76	49.0
9008191200	1054.50	0.350	0.133	52.0	4.29	0.924	1.57	620	7.81	53.0
9008201200	1055.50	0.101	0.016	24.0	0.90	0.116	0.82	668	7.80	73.0
9008210400	1056.20	0.082	0.012	20.0	0.89	0.130	0.75	675	7.34	69.0
9008211200	1056.50	0.074	0.015	19.0	0.96	0.200	0.93	666	8.35	72.0
9008221200	1057.50	0.073	0.014	24.0	0.84	0.190	0.87	688	9.21	78.0
9008231200	1058.50	0.062	0.011	14.0	0.79	0.151	0.71	723	9.12	84.0
9008241200	1059.50	0.054	0.010	10.0	0.80	0.120	0.62	728	10.42	85.0
9008251200	1060.50	0.052	0.027	10.0	0.62	0.064	0.53	723	12.68	84.0
9008261200	1061.50	0.047	0.000	9.0	0.43	0.103	0.48	722	8.39	84.0
9008271200	1062.50	0.042	0.007	8.0	0.32	0.067	0.37	719	7.91	84.0
9008280400	1063.20	0.047	-0.004	11.0	0.30	0.075	0.36	724	7.86	86.0
9008281200	1063.50	0.053	0.002	14.0	0.29	0.133	1.01	723	5.90	80.0
9008291200	1064.50	0.058	0.008	13.0	0.24	0.167	0.76	738	6.10	80.0
9008301200	1065.50	0.064	0.004	14.0	0.23	0.104	0.77	741	6.02	80.0
9008311200	1066.50	0.067	0.001	18.0	0.20	0.056	0.71	749	5.77	82.0
9009011200	1067.50	0.063	-0.001	19.0	0.19	0.029	0.71	760	5.59	84.0
9009021200	1068.50	0.055	-0.003	15.0	0.17	0.116	0.78	771	5.31	85.0
9009031200	1069.50	0.064	0.000	19.0	0.15	0.033	0.71	779	5.14	88.0
9009040400	1070.20	0.055	0.001	21.0	0.16	0.033	0.64	787	4.99	89.0
9009041200	1070.50	0.078	0.013	33.0	0.20	0.137	0.81	787	5.73	93.0
9009051200	1071.50	0.062	0.012	16.0	0.18	0.144	0.77	807	5.80	95.0
9009061200	1072.50	0.043	0.008	17.0	0.18	0.107	0.72	817	5.70	97.0
9009071200	1073.50	0.431	0.092	63.0	5.25	0.477	1.82	723	6.16	74.0
9009081200	1074.50	0.115	0.028	19.0	1.18	0.101	0.81	700	6.07	84.0
9009091200	1075.50	0.872	0.053	742.0	2.57	0.028	3.27	198	4.01	10.0
9009092000	1075.80	0.452	0.076	181.0	4.33	0.030	1.65	221	6.07	9.0
9009100400	1076.20	0.273	0.058	87.0	5.79	0.015	1.42	335	8.09	17.0
9009101200	1076.50	0.206	0.059	49.0	6.30	0.025	1.26	412	9.26	22.0
9009102000	1076.80	0.155	0.050	36.0	6.14	0.023	1.03	453	9.76	26.0
9009110400	1077.20	0.134	0.051	31.0	5.37	0.044	1.14	484	9.72	28.0
9009181200	1084.50	0.326	0.042	16.0	5.68	0.126	1.10	560	11.25	34.0
9009191200	1085.50	0.306	0.036	14.0	5.19	0.169	0.80	609	10.72	40.0
9009201200	1086.50	0.287	0.025	8.0	5.26	0.141	0.77	658	11.01	48.0
9009211200	1087.50	0.271	0.029	4.0	4.79	0.146	0.71	673	10.71	48.0
9009221200	1088.50	0.263	0.022	9.0	4.10	0.133	0.71	685	9.84	51.0
9009231200	1089.50	0.242	0.017	4.0	3.82	0.109	0.72	689	9.74	53.0
9009241200	1090.50	0.000	0.015	3.0	3.62	0.100	0.61	704	9.54	55.0
9009250400	1091.20	0.102	0.008	6.0	3.26	0.057	0.57	713	9.09	55.0
9009251200	1091.50	0.040	0.024	6.0	3.39	0.218	0.61	699	9.14	59.0
9009261200	1092.50	0.032	0.020	6.0	3.07	0.219	0.57	717	8.47	62.0
9009271200	1093.50	0.036	0.018	8.0	2.73	0.174	0.54	723	7.75	63.0
9009281200	1094.50	0.034	0.015	10.0	2.23	0.133	0.53	726	7.46	63.0
9009291200	1095.50	0.041	0.015	10.0	1.90	0.099	0.52	722	7.05	64.0
9009301200	1096.50	0.047	0.017	9.0	2.14	0.151	0.63	729	6.85	68.0
9010011200	1097.50	0.047	0.006	9.0	1.44	0.032	0.63	729	7.02	6.0

Appendix E. Conductivity and concentrations of nutrients and suspended solids in all samples analyzed from Old Woman Creek at the U.S. Hwy 6 sampling station during this study.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8711111100	42.46	0.093	0.001	31.3	0.13	0.012	1.12	508	5.84	42.2
8711111200	42.50	0.099	0.000	17.8	0.13	0.051	1.14	552	2.02	41.7
8711161330	47.56	0.080	0.001	15.0	0.14	0.011	1.20	552	5.51	41.6
8711170001	48.00	0.068	0.000	50.4	0.04	0.198	1.14	528	6.59	43.4
8711171200	48.50	0.076	-0.001	36.9	0.03	0.166	1.13	536	6.17	42.8
8711180001	49.00	0.080	0.000	37.3	0.03	0.202	1.13	535	6.92	43.3
8711181200	49.50	0.243	0.000	361.9	0.08	0.262	1.59	654	5.57	56.0
8711181500	49.63	0.157	0.000	130.4	0.06	0.249	1.35	652	5.36	54.7
8711182100	49.88	0.094	0.000	114.2	0.05	0.057	0.66	337	2.73	18.8
8711190300	50.13	0.077	-0.002	67.0	0.05	0.122	0.89	398	3.11	25.7
8711190900	50.38	0.122	0.000	90.2	0.07	0.526	1.41	615	5.40	48.6
8711191500	50.63	0.098	0.006	59.9	0.06	0.224	1.05	432	3.42	29.4
8711192100	50.88	0.124	-0.001	105.3	0.08	0.645	1.54	652	6.75	51.5
8711200300	51.13	0.076	-0.001	92.0	0.06	0.082	0.59	300	3.85	14.6
8711200900	51.38	0.103	0.000	129.7	0.06	-0.012	0.68	284	1.34	12.4
8712012000	62.83	0.115	-0.006	73.6	0.09	0.044	0.68	254	1.99	11.0
8712020400	63.17	0.064	-0.007	29.9	0.12	0.045	0.53	264	3.35	12.5
8712021200	63.50	0.070	-0.007	31.8	0.49	0.234	0.79	445	4.37	32.8
8712022000	63.83	0.077	-0.007	35.0	0.93	0.251	0.83	602	6.98	49.3
8712030400	64.17	0.066	-0.007	32.9	0.27	0.113	0.56	331	1.88	19.3
8712031200	64.50	0.071	-0.004	40.5	0.29	0.019	0.59	345	2.05	20.6
8712032000	64.83	0.049	-0.008	17.3	0.13	-0.010	0.38	271	1.43	14.0
8712040400	65.17	0.100	-0.007	114.3	0.08	-0.012	0.60	247	3.17	11.0
8712041200	65.50	0.056	-0.008	40.3	0.19	0.067	0.49	286	2.33	15.6
8712042000	65.83	0.065	-0.007	34.0	0.65	0.006	0.63	393	3.51	30.1
8712050400	66.17	0.074	-0.007	26.4	1.54	0.028	0.66	533	6.06	50.1
8712051200	66.50	0.086	-0.008	58.6	0.89	0.049	0.74	387	3.86	32.1
8712052000	66.83	0.086	-0.006	27.7	2.39	-0.011	0.70	592	7.92	67.0
8712060400	67.17	0.086	-0.004	21.6	3.14	-0.011	0.72	650	7.31	73.5
8712061200	67.50	0.099	-0.006	39.5	3.12	-0.012	0.93	653	7.41	73.0
8712062000	67.83	0.061	-0.005	26.3	1.42	0.048	0.54	421	5.05	36.2
8712070400	68.17	0.088	-0.004	28.5	3.85	0.058	0.78	642	9.89	65.8
8712071200	68.50	0.063	-0.007	29.8	1.27	0.052	0.53	386	4.46	30.1
8712072000	68.83	0.060	0.008	28.7	0.42	0.023	0.56	280	1.57	15.3
8712080400	69.17	0.056	0.009	22.6	2.02	0.090	0.74	488	4.50	41.9
8712082000	69.83	0.071	0.010	38.5	1.87	0.063	0.63	437	4.09	35.6
8712091200	70.50	0.138	0.010	97.2	3.77	0.097	1.23	654	6.85	54.0
8712100400	71.17	0.091	0.010	43.3	1.92	0.083	0.76	388	3.00	27.3
8712101200	71.50	0.127	0.011	67.7	3.88	0.091	1.22	491	5.37	38.1
8712102000	71.83	0.056	0.007	20.9	0.56	0.036	0.42	289	1.40	14.4
8712110400	72.17	0.099	0.009	54.3	3.79	0.116	1.09	493	5.34	38.5
8712112000	72.83	0.105	0.011	68.3	2.64	0.098	0.82	422	3.56	31.5
8712120400	73.17	0.108	0.008	56.7	4.02	0.171	0.91	517	5.47	42.8
8712121200	73.50	0.107	0.011	65.8	4.29	0.099	0.89	602	6.82	48.0
8712131200	74.50	0.151	0.123	103.6	4.45	0.101	1.14	644	7.87	58.3
8712132000	74.83	0.057	0.007	30.4	0.57	0.025	0.45	291	2.05	15.6
8712141200	75.50	0.035	0.007	14.3	0.21	0.015	0.31	253	0.78	11.2
8712150400	76.17	0.065	0.007	61.9	0.20	0.017	0.41	249	0.00	11.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8712151200	76.50	0.135	0.004	147.9	0.41	0.000	0.72	277	2.21	14.0
8712152000	76.83	1.090	0.005	1516.8	3.53	0.034	5.59	433	7.79	36.0
8712161200	77.50	0.146	0.004	98.1	0.41	0.000	0.68	261	1.43	12.0
8712162000	77.83	0.229	0.004	132.1	4.03	0.020	1.20	399	5.97	30.1
8712172000	78.83	0.073	0.003	42.9	0.67	-0.011	0.49	287	1.98	13.9
8712181200	79.50	0.186	0.003	110.2	3.95	0.071	1.10	456	6.91	34.4
8712182000	79.83	0.138	0.003	60.3	5.12	0.075	1.10	535	8.66	42.8
8712190400	80.17	0.104	0.003	40.8	5.65	0.078	0.77	595	9.48	48.4
8712191200	80.50	0.069	0.002	36.4	1.28	0.010	0.53	322	2.96	17.6
8712201200	81.50	0.357	0.002	327.9	3.92	0.086	1.91	558	8.10	43.2
8712210400	82.17	0.207	0.004	61.3	4.32	0.092	1.29	519	9.03	43.2
8712211200	82.50	0.192	0.002	122.9	2.52	0.063	1.00	378	5.21	26.1
8712212000	82.83	0.209	0.003	84.3	5.09	0.091	1.24	501	8.81	41.2
8712220400	83.17	0.096	0.002	44.8	0.74	0.025	0.52	281	6.59	14.5
8712221200	83.50	0.149	0.003	93.4	2.89	0.050	0.97	408	5.84	27.4
8803151050	167.44	0.022	0.004	17.0	1.52	0.030	0.43	319	2.72	23.0
8803221540	174.65	0.029	-0.016	37.0	1.35	-0.040	0.47	348	6.54	24.7
8803291140	181.48	0.254	0.000	177.4	4.84	0.050	1.32	526	8.02	41.3
8803291145	181.48	0.270	0.000	206.4	4.92	0.040	1.45	531	6.47	42.3
8803291200	181.50	0.202	0.009	205.1	4.92	0.010	1.06	525	5.45	39.9
8803292000	181.83	0.081	0.005	52.7	1.41	0.020	0.64	315	1.12	18.8
8803300400	182.17	0.233	0.007	232.2	3.80	0.060	1.48	476	3.84	35.9
8803301200	182.50	0.306	0.008	318.4	4.22	0.040	1.82	545	4.25	41.8
8803302000	182.83	0.099	0.004	94.4	1.26	0.020	0.61	302	0.93	17.7
8803310400	183.17	0.187	0.005	176.3	2.49	0.090	1.13	431	2.46	30.8
8803311200	183.50	0.080	0.002	61.6	1.36	0.020	0.59	341	0.99	18.5
8803312000	183.83	0.189	0.004	174.6	2.11	0.090	1.11	387	1.88	26.3
8804010400	184.17	0.106	0.002	89.1	1.55	0.030	0.71	338	1.26	21.2
8804012000	184.83	0.100	0.001	86.5	1.65	0.020	0.77	348	1.12	22.2
8804020400	185.17	0.073	0.001	54.9	1.60	0.010	0.73	332	0.74	20.6
8804022000	185.83	0.064	-0.004	52.4	1.29	0.020	0.67	308	0.74	18.6
8804030400	186.17	0.170	0.004	116.8	2.10	0.210	1.25	450	2.24	33.5
8804032000	186.83	0.163	0.003	152.9	2.51	0.250	1.31	520	2.94	40.4
8804040400	187.17	0.360	0.003	396.6	2.42	0.160	1.70	445	4.83	36.7
8804041200	187.50	0.502	0.004	494.2	3.68	0.080	2.14	378	6.52	29.8
8804050400	188.17	0.244	0.002	168.8	2.38	0.060	1.42	345	3.68	22.9
8804051200	188.50	0.140	0.007	109.5	1.75	0.040	1.01	327	3.01	20.3
8804061200	189.50	0.346	0.007	321.8	3.83	0.250	2.46	457	9.66	32.6
8804070400	190.17	0.130	0.006	111.5	1.18	0.020	0.80	305	2.57	17.6
8804071200	190.50	0.141	0.006	114.5	2.23	0.200	1.22	382	3.84	25.5
8804081200	191.50	0.267	0.008	158.8	3.32	0.090	1.68	365	7.23	26.3
8804091200	192.50	0.225	0.007	158.3	4.08	0.080	1.67	396	7.99	27.3
8804101200	193.50	0.209	0.007	174.8	3.83	0.100	1.64	426	7.34	29.2
8804111200	194.50	0.141	0.006	103.3	2.88	0.080	1.09	411	6.75	27.9
8804120400	195.17	0.182	0.007	147.1	3.98	0.300	1.53	495	7.14	35.2
8804122000	195.83	0.107	-0.007	79.2	4.04	0.320	1.34	507	9.54	40.5
8804132000	196.83	0.106	-0.007	71.7	3.20	0.270	1.22	472	7.70	36.3
8804140400	197.17	0.210	-0.006	183.4	3.59	0.470	1.95	506	7.35	40.6
8804142000	197.83	0.211	-0.007	167.0	3.33	0.380	1.72	523	6.47	43.7
8804150400	198.17	0.148	-0.007	103.5	2.48	0.240	1.29	429	6.32	32.5
8804152000	198.83	0.145	-0.008	97.8	2.53	0.330	1.28	472	6.28	35.6

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8804162000	199.83	0.130	-0.007	81.2	2.63	0.430	1.42	504	5.33	41.1
8804172000	200.83	0.181	-0.008	135.1	2.66	0.350	1.69	544	4.87	46.2
8804180400	201.17	0.121	-0.008	76.6	1.67	0.120	1.01	424	4.01	30.1
8804181200	201.50	0.095	-0.008	64.2	1.37	0.100	0.91	362	2.45	22.9
8804182000	201.83	0.130	-0.008	89.0	1.70	0.130	1.12	427	3.62	32.0
8804190400	202.17	0.174	-0.007	122.3	1.88	0.220	1.40	469	4.59	36.2
8804191200	202.50	0.128	0.003	91.3	1.63	0.260	1.21	492	2.78	33.8
8804201200	203.50	0.131	0.000	80.5	1.61	0.180	1.24	497	2.39	35.2
8804211200	204.50	0.116	0.000	59.8	1.65	0.210	1.23	494	3.29	38.3
8804221200	205.50	0.131	0.001	70.8	1.55	0.080	1.08	518	1.53	39.5
8804231200	206.50	0.140	0.001	78.4	1.21	0.020	1.08	472	1.43	34.9
8804241200	207.50	0.195	0.001	103.8	1.00	0.060	1.33	510	1.13	38.7
8804251200	208.50	0.189	0.003	91.7	0.82	0.010	1.30	503	1.21	39.8
8804260400	209.17	0.176	0.003	83.7	0.63	0.010	1.66	504	0.64	41.0
8804261200	209.50	0.156	0.004	78.3	0.49	0.120	1.54	502	0.60	40.7
8804271200	210.50	0.194	0.002	102.3	0.39	0.220	1.66	494	0.60	39.3
8804281200	211.50	0.223	0.002	102.4	0.37	0.230	1.73	504	0.60	42.5
8804291200	212.50	0.200	0.002	58.0	0.35	0.150	1.60	502	0.60	42.5
8804301200	213.50	0.188	0.004	51.1	0.31	0.120	1.58	505	0.64	42.3
8805011200	214.50	0.166	0.002	45.6	0.29	0.060	1.85	496	0.80	43.5
8805021200	215.50	0.179	0.001	51.4	0.28	0.070	1.96	488	1.00	43.8
8805030400	216.17	0.164	0.001	43.6	0.28	0.060	1.79	486	1.20	43.9
8805031200	216.50	0.180	0.002	53.9	0.32	0.370	1.40	503	1.88	47.3
8805041200	217.50	0.226	0.003	62.6	0.32	0.520	1.86	512	3.41	47.4
8805051200	218.50	0.217	0.004	56.3	0.32	0.520	1.89	512	3.48	48.1
8805061200	219.50	0.219	0.003	42.3	0.33	0.510	1.86	516	3.40	47.6
8805071200	220.50	0.223	0.004	67.7	0.32	0.360	1.59	517	4.46	47.6
8805081200	221.50	0.260	0.002	110.1	0.32	0.260	1.54	517	3.48	48.3
8805091200	222.50	0.337	0.003	157.9	0.32	0.220	2.14	522	2.76	48.4
8805100400	223.17	0.177	0.003	116.6	0.82	0.060	1.12	349	2.62	22.4
8805101200	223.50	0.123	0.001	103.1	1.01	-0.030	1.01	343	2.02	19.4
8805111200	224.50	0.178	-0.001	91.8	0.76	-0.030	1.15	389	1.79	23.8
8805121200	225.50	0.363	0.000	246.7	0.51	-0.030	2.22	435	3.49	32.9
8805131200	226.50	0.132	-0.001	74.4	0.78	-0.040	0.86	316	4.01	16.8
8805141200	227.50	0.105	-0.002	84.1	0.76	-0.020	0.87	296	1.76	14.4
8805151200	228.50	0.148	-0.001	89.0	0.22	-0.030	1.03	321	3.80	17.8
8805161200	229.50	0.192	-0.001	105.4	0.28	-0.030	1.14	339	1.70	21.8
8805170400	230.17	0.179	-0.002	76.8	0.27	-0.030	1.24	327	3.74	20.7
8805171200	230.50	0.266	0.001	120.3	0.21	0.180	1.64	330	2.00	22.9
8805181200	231.50	0.335	0.005	132.0	0.10	0.130	1.62	382	3.01	28.7
8805191200	232.50	0.308	0.002	98.1	0.06	0.070	1.82	386	2.05	28.6
8805201200	233.50	0.304	0.001	100.8	0.07	0.060	1.71	401	1.95	30.0
8805211200	234.50	0.284	-0.001	86.3	0.07	0.040	1.30	410	2.78	31.6
8805221200	235.50	0.315	0.001	110.4	0.07	0.020	1.50	416	2.16	31.8
8805231200	236.50	0.294	0.000	107.9	0.08	0.050	1.48	428	1.68	32.8
8805240400	237.17	0.251	-0.001	71.5	0.07	0.020	1.22	434	2.31	33.9
8805242000	237.83	0.352	0.013	129.7	0.08	0.080	1.79	445	0.74	37.1
8805252000	238.83	0.199	0.008	72.3	0.48	0.030	1.00	349	0.30	22.2
8805262000	239.83	0.275	0.007	96.5	0.15	0.010	1.46	412	0.63	30.7
8805272000	240.83	0.319	0.007	92.4	0.01	0.030	1.58	424	0.25	32.4
8805282000	241.83	0.352	0.009	88.3	0.03	0.040	1.75	425	0.01	32.7

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8805292000	242.83	0.373	0.016	79.0	0.05	0.080	1.66	440	0.10	32.7
8805302000	243.83	0.372	0.010	92.9	0.06	0.050	1.59	454	0.11	34.9
8805311200	244.50	0.336	0.015	76.4	0.04	0.050	1.53	455	0.11	35.0
8806071200	250.50	0.310	0.007	114.7	0.13	0.190	2.15	479	1.64	35.6
8806081200	251.50	0.364	0.007	134.8	0.08	0.180	1.84	490	2.18	36.3
8806091200	252.50	0.402	0.007	194.1	0.06	0.150	1.52	500	2.90	37.0
8806101200	253.50	0.341	0.007	140.5	0.05	0.100	1.53	504	2.55	37.4
8806111200	254.50	0.316	0.005	121.0	0.05	0.050	1.68	511	2.38	38.0
8806121200	255.50	0.334	0.004	39.4	0.04	0.040	1.64	513	2.16	38.7
8806131200	256.50	0.329	0.005	116.7	0.06	0.050	1.64	515	1.32	38.4
8806140400	257.17	0.306	0.005	125.3	0.05	0.020	1.73	522	2.88	38.7
8806142000	257.83	0.348	0.002	92.3	0.09	0.130	2.23	514	0.38	38.9
8806152000	258.83	0.337	0.000	100.3	0.04	0.020	1.93	523	0.10	39.2
8806162000	259.83	0.365	-0.001	105.5	0.05	0.110	1.75	522	0.31	39.2
8806172000	260.83	0.331	-0.001	81.1	0.05	0.020	1.66	531	0.19	37.5
8806182000	261.83	0.358	-0.002	96.3	0.03	0.020	1.43	527	0.11	40.1
8806192000	262.83	0.357	-0.001	93.7	0.04	0.000	1.52	530	0.21	39.2
8806202000	263.83	0.377	-0.001	89.9	0.04	-0.010	1.94	540	0.10	40.3
8806210400	264.17	0.362	0.000	84.6	0.04	0.010	2.03	544	0.13	40.5
8806211200	264.50	0.408	0.001	100.5	0.09	0.120	1.96	550	3.34	40.9
8806221200	265.50	0.414	-0.001	115.4	0.10	0.120	1.88	554	2.79	41.7
8806231200	266.50	0.464	0.000	171.4	0.10	0.140	2.88	558	1.72	41.1
8806241200	267.50	0.431	0.000	136.8	0.07	0.130	2.68	560	3.10	41.6
8806251200	268.50	0.440	-0.002	140.1	0.06	0.130	2.34	563	2.27	42.4
8806261200	269.50	0.480	-0.003	178.9	0.06	0.080	2.16	567	1.80	42.4
8806271200	270.50	0.470	-0.001	152.0	0.06	0.070	2.28	570	3.09	43.5
8806280400	271.17	0.421	-0.001	105.9	0.03	0.030	2.33	571	3.09	44.2
8806281200	272.50	0.369	0.010	107.6	-0.02	0.050	2.63	574	1.49	42.0
8806291200	273.50	0.424	0.012	141.7	0.05	0.190	2.12	577	0.96	43.0
8806301200	274.50	0.449	0.008	165.1	0.01	0.030	2.66	574	1.05	43.2
8807011200	275.50	0.459	0.008	163.1	0.00	0.000	2.43	570	1.28	43.6
8807021200	276.50	0.420	0.007	116.8	-0.01	-0.020	2.17	566	0.94	44.2
8807031200	277.50	0.479	0.009	149.7	-0.01	-0.010	2.75	570	1.03	44.8
8807041200	278.50	0.450	0.008	130.6	0.01	-0.010	2.58	571	0.82	44.1
8807050400	279.17	0.415	0.008	95.3	0.00	-0.010	2.08	574	1.08	44.6
8807120945	286.40	0.450	0.004	126.9	0.01	0.050	2.86	593	2.18	49.8
8807181200	292.50	0.579	0.013	146.1	0.13	0.010	2.64	594	1.62	51.6
8807182000	292.83	0.322	0.010	171.3	0.05	-0.010	3.43	589	2.81	51.0
8807190400	293.17	0.570	0.008	136.3	0.04	0.030	2.46	588	1.74	52.5
8807191200	293.50	0.455	0.014	102.7	-0.01	0.010	2.35	577	2.75	51.0
8807211200	295.50	0.465	0.008	155.5	-0.02	0.270	3.86	580	3.90	51.8
8807231200	297.50	0.445	0.006	122.0	-0.02	0.070	2.97	573	3.46	49.4
8807251200	299.50	0.433	0.004	122.3	0.00	0.020	2.44	575	1.49	51.1
8807261200	300.50	2.480	0.004	93.6	0.06	0.070	2.61	572	1.41	57.1
8807281200	302.50	2.320	0.004	82.2	0.02	0.250	2.48	576	3.06	54.9
8807301200	304.50	2.180	0.005	66.8	0.04	0.500	2.98	590	4.50	56.0
8808011200	306.50	2.160	0.005	117.4	0.09	0.620	2.97	579	5.74	54.8
8808020400	307.17	2.190	0.004	168.4	0.10	0.510	2.84	577	5.37	56.4
8808091200	314.50	0.408	0.010	98.0	0.40	0.160	3.09	556	4.31	58.6
8808111200	316.50	0.435	0.009	97.7	0.41	0.180	3.43	559	3.10	60.5

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8808131200	318.50	0.424	0.009	88.3	0.38	0.040	3.21	533	2.42	59.5
8808151200	320.50	0.429	0.009	83.9	0.42	0.070	3.08	524	3.85	56.6
8808161200	321.50	0.368	0.004	82.7	0.46	0.310	2.54	521	0.81	59.6
8808171200	322.50	0.418	0.003	90.0	0.43	0.180	2.68	531	0.72	57.9
8808181200	323.50	0.413	0.007	77.4	0.34	0.200	3.11	528	1.14	60.1
8808191200	324.50	0.452	0.004	91.9	0.29	0.150	3.02	518	1.11	56.5
8808201200	325.50	0.469	0.004	95.2	0.31	0.100	3.07	517	0.85	57.2
8808211200	326.50	0.479	0.002	107.5	0.31	0.010	2.95	506	0.88	56.1
8808221200	327.50	0.498	0.002	120.7	0.04	0.000	2.99	510	0.60	56.0
8808230400	328.17	0.630	0.002	156.9	-0.05	0.010	3.79	510	0.63	56.3
8808231200	328.50	0.063	0.006	122.1	0.04	0.180	2.90	489	2.62	56.3
8808241200	329.50	0.621	0.006	90.2	0.07	0.130	4.22	502	2.73	55.2
8808251200	330.50	0.634	0.008	133.7	0.03	0.040	2.95	497	1.55	55.5
8808261200	331.50	0.631	0.007	119.4	0.04	0.040	3.68	492	1.55	55.9
8808271200	332.50	0.636	0.006	119.4	0.03	0.030	3.69	490	1.32	56.0
8808281200	333.50	0.622	0.005	138.4	0.06	0.060	2.65	475	3.11	52.2
8808291200	334.50	0.614	0.007	99.9	0.06	0.100	3.51	469	2.39	50.7
8808300400	335.17	0.540	0.005	96.1	0.08	0.080	3.04	470	3.16	49.7
8808301200	335.50	0.840	0.000	95.0	0.10	0.250	2.68	467	0.66	49.9
8808311200	336.50	0.827	-0.001	102.1	0.07	0.120	3.30	470	1.66	50.0
8809011200	337.50	0.831	0.008	106.0	0.15	0.060	2.77	467	2.32	50.6
8809021200	338.50	0.877	0.001	110.2	0.08	0.040	3.26	467	1.54	49.7
8809031200	339.50	0.851	-0.001	92.1	0.06	0.030	2.76	464	1.34	49.3
8809041200	340.50	0.807	-0.001	73.3	0.08	0.050	3.09	459	1.75	48.5
8809051200	341.50	0.843	-0.002	119.4	0.03	0.030	2.36	458	2.26	48.0
8809060400	342.17	0.818	-0.003	111.4	0.08	0.080	2.70	460	1.98	47.8
8809061200	342.50	0.388	0.004	94.1	0.07	0.300	2.53	467	2.43	50.0
8809071200	343.50	0.368	0.004	79.6	0.06	0.120	2.39	467	1.81	50.2
8809081200	344.50	0.366	0.010	86.5	0.04	0.060	2.55	464	1.71	51.1
8809091200	345.50	0.402	0.006	110.7	0.07	0.040	2.46	467	0.87	49.2
8809101200	346.50	0.389	0.007	95.9	0.07	0.010	2.35	465	0.97	50.5
8809111200	347.50	0.409	0.007	114.1	0.07	0.010	1.89	470	0.95	49.9
8809121200	348.50	0.415	0.006	110.1	0.06	0.010	3.06	472	1.27	50.1
8809130400	349.17	0.396	0.000	114.6	0.06	0.010	2.66	470	0.41	50.4
8809131200	349.50	0.489	0.009	85.3	0.20	0.160	2.23	472	2.85	52.3
8809141200	350.50	0.450	0.002	89.9	0.19	0.130	2.02	479	2.51	52.2
8809151200	351.50	0.475	0.001	106.6	0.18	0.080	1.94	480	3.49	52.6
8809161200	352.50	0.506	0.001	115.1	0.16	0.040	1.91	481	3.21	51.8
8809171200	353.50	0.493	-0.001	104.0	0.15	0.030	2.10	485	3.39	49.2
8809181200	354.50	0.495	0.000	103.7	0.16	0.050	2.36	486	3.31	54.0
8809191200	355.50	0.493	0.000	90.6	0.17	0.040	2.20	491	4.06	53.5
8809200400	356.17	0.524	-0.001	138.7	0.17	0.020	2.15	495	2.73	53.9
8809201200	356.50	0.507	-0.003	112.3	0.05	0.130	2.58	490	1.77	52.9
8809211200	357.50	0.463	-0.003	87.5	0.04	0.130	3.14	502	2.11	52.8
8809221200	358.50	0.489	-0.001	132.8	0.02	0.100	3.10	505	1.78	50.8
8809231200	359.50	0.480	0.005	115.2	0.02	0.090	2.81	508	1.53	51.9
8809241200	360.50	0.457	-0.005	109.7	0.02	0.050	2.42	511	1.68	52.2
8809251200	361.50	0.446	-0.002	104.2	0.00	0.030	2.33	512	1.15	53.4
8809261200	362.50	0.435	-0.004	108.5	0.00	0.030	2.65	513	2.22	51.2
8809270400	363.17	0.457	-0.002	121.6	0.02	0.030	2.42	516	2.60	53.2
8809271200	363.50	0.484	-0.003	126.1	-0.05	0.120	2.21	512	2.63	50.9
8809291200	365.50	0.467	-0.004	107.3	-0.10	0.150	2.53	530	3.53	54.2

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8810011200	367.50	0.461	-0.004	114.0	-0.08	0.000	2.17	527	1.90	55.3
8810031200	369.50	0.500	-0.003	108.0	-0.10	0.010	2.46	531	2.89	55.6
8810041200	370.50	0.469	0.011	109.0	0.02	0.030	5.88	538	1.42	61.0
8810061200	372.50	0.429	0.010	94.0	-0.01	0.020	3.14	537	3.69	57.9
8810081200	374.50	0.394	0.014	81.0	0.00	-0.010	2.54	544	3.16	55.2
8810101200	376.50	0.387	0.011	96.0	-0.01	-0.020	2.58	558	1.79	59.8
8810102000	376.83	0.354	0.002	77.0	-0.15	0.040	2.61	551	1.51	60.0
8810122000	378.83	0.349	0.001	92.0	-0.15	0.000	2.31	564	2.21	58.5
8810142000	380.83	0.275	0.000	83.0	-0.13	0.000	2.44	575	1.40	62.0
8810162000	382.83	0.344	0.001	94.0	-0.17	0.000	2.54	583	1.84	61.6
8810180400	384.17	0.419	0.001	154.0	-0.17	-0.010	2.58	539	1.60	62.4
8810181200	384.50	0.404	0.004	186.0	0.10	0.150	2.42	521	0.18	54.1
8810191200	385.50	0.347	0.000	130.0	0.06	0.150	2.41	522	0.40	52.8
8810201200	386.50	0.293	0.000	88.0	0.05	0.100	1.81	518	1.26	51.8
8810211200	387.50	0.281	-0.020	72.0	0.03	0.020	2.26	513	0.97	51.4
8810221200	388.50	0.262	-0.004	75.0	0.03	0.010	2.04	512	0.95	50.2
8810231200	389.50	0.282	-0.004	86.0	0.17	0.040	2.32	517	1.02	50.2
8810241200	390.50	0.244	-0.004	66.0	0.08	-0.010	2.15	507	0.47	49.4
8810250400	391.17	0.215	-0.004	56.0	0.02	0.020	1.88	508	0.45	48.9
8810251200	391.50	0.213	0.001	55.0	0.01	0.080	1.93	515	0.15	54.1
8810261200	392.50	0.201	0.006	42.0	0.01	0.050	1.97	518	0.12	41.5
8810271200	393.50	0.192	0.008	40.0	0.01	0.030	2.00	519	0.10	43.8
8810281200	394.50	0.192	0.004	46.0	0.01	0.010	1.95	517	0.25	52.1
8810291200	395.50	0.185	0.005	38.0	0.01	0.010	1.89	519	0.28	50.5
8810301200	396.50	0.188	0.001	42.0	0.02	0.010	2.00	521	0.30	51.6
8810311200	397.50	0.200	-0.001	48.0	0.01	0.000	1.93	528	0.47	52.4
8811010400	398.17	0.171	0.005	35.0	0.07	0.040	1.73	525	0.44	54.4
8811011200	398.50	0.185	0.009	39.0	0.04	0.070	1.92	519	1.65	50.7
8811031200	400.50	0.190	0.009	36.0	0.04	0.050	1.73	535	2.42	51.6
8811051200	402.50	0.307	0.008	101.0	0.08	0.130	1.89	518	2.79	50.9
8811071200	404.50	0.260	0.012	58.0	0.10	0.080	2.02	513	2.92	48.7
8811080400	405.17	0.214	0.008	42.0	0.08	0.030	1.54	514	2.58	49.2
8811082000	405.83	0.210	0.005	43.0	0.07	0.180	2.38	533	2.23	48.6
8811092000	406.83	0.216	0.008	55.0	0.02	0.100	1.98	541	2.57	48.3
8811102000	407.83	0.233	0.008	58.0	0.02	0.100	2.20	534	2.48	48.1
8811112000	408.83	0.240	0.007	66.0	0.03	0.080	2.11	533	2.62	47.9
8811122000	409.83	0.261	0.007	83.0	0.01	0.010	2.26	536	2.79	46.7
8811132000	410.83	0.239	0.003	60.0	0.01	0.020	1.92	536	2.84	46.5
8811142000	411.83	0.232	0.003	475.0	0.01	0.010	2.05	540	2.66	46.6
8811151200	412.50	0.269	0.006	66.0	0.01	0.100	1.87	554	2.54	46.8
8811161200	413.50	0.442	0.006	231.0	0.01	0.130	3.01	563	2.69	46.7
8811171200	414.50	0.357	0.007	112.0	0.00	0.170	2.23	560	2.64	46.8
8811181200	415.50	0.289	0.007	58.0	0.01	0.130	2.27	562	2.67	47.0
8811191200	416.50	0.297	0.004	63.0	-0.01	0.030	2.35	573	2.80	48.7
8811201200	417.50	0.256	0.006	49.0	0.00	0.040	2.06	568	2.98	48.0
8811211200	418.50	0.254	0.007	47.0	0.02	0.040	1.98	572	3.27	48.6
8811220400	419.17	0.233	0.005	41.0	0.01	0.020	2.05	572	3.13	48.3
8811221200	419.50	0.227	0.012	37.0	0.14	0.250	2.15	566	2.96	49.0
8811231200	420.50	0.206	0.011	32.0	-0.08	0.230	1.92	570	2.45	49.0
8811241200	421.50	0.192	0.010	28.0	-0.05	0.130	1.78	575	2.91	49.6
8811251200	422.50	0.170	0.005	31.0	0.07	0.100	1.78	613	3.49	55.8
8811261200	423.50	0.195	0.004	52.0	0.47	0.130	1.91	655	4.03	61.6

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8811271200	424.50	0.216	0.005	71.0	0.29	0.100	1.82	652	3.93	61.6
8811281200	425.50	0.225	0.005	75.0	0.29	0.080	1.71	658	4.05	61.8
8811290400	426.17	0.196	0.002	53.0	0.32	0.120	1.53	670	4.14	63.5
8811291200	426.50	0.197	0.016	45.0	0.47	0.210	1.34	687	4.36	62.4
8811301200	427.50	0.176	0.014	34.0	0.51	0.170	1.40	688	4.42	62.9
8812011200	428.50	0.164	0.008	27.0	0.55	0.150	1.50	693	4.46	64.7
8812021200	429.50	0.145	0.006	21.0	0.55	0.090	1.32	691	4.55	63.7
8812031200	430.50	0.136	0.005	19.0	0.53	0.040	1.42	685	4.45	62.9
8812041200	431.50	0.135	0.008	18.0	0.60	0.020	1.50	692	4.69	64.5
8812051200	432.50	0.121	0.004	15.0	0.60	-0.010	1.44	693	4.50	65.0
8812060400	433.17	0.118	0.005	14.0	0.58	0.000	1.37	696	4.49	63.9
8812071200	434.50	0.141	0.011	13.0	0.61	0.120	1.24	703	5.01	64.1
8812081200	435.50	0.135	0.010	15.0	0.65	0.100	1.25	704	5.00	64.3
8812091200	436.50	0.135	0.011	15.0	0.61	0.080	1.33	703	4.89	63.8
8812101200	437.50	0.131	0.010	11.0	0.58	0.060	1.90	709	4.75	65.8
8812111200	438.50	0.136	0.007	11.0	0.56	0.060	1.47	715	5.25	65.9
8812121200	439.50	0.145	0.009	15.0	0.63	0.050	1.46	723	5.37	66.3
8812131200	440.50	0.129	0.012	11.0	0.59	0.020	1.49	728	5.05	67.2
8812141200	441.50	0.107	0.009	12.0	0.64	0.139	1.46	728	4.32	70.5
8812170400	444.17	0.125	0.009	13.0	0.66	0.096	1.47	757	5.67	72.8
8812200400	447.17	0.099	0.006	13.0	0.72	0.057	1.40	770	5.53	72.5
8812201200	447.50	0.100	0.013	9.0	0.71	0.376	1.54	765	4.78	70.0
8812211200	448.50	0.103	0.009	11.0	0.73	0.263	1.46	754	4.63	68.3
8812221200	449.50	0.106	0.007	11.0	0.70	0.247	1.44	755	4.82	67.5
8812231200	450.50	0.117	0.009	18.0	0.76	0.184	1.49	744	4.54	68.9
8812241200	451.50	0.114	0.009	12.0	0.76	0.201	1.52	736	4.49	66.0
8812251200	452.50	0.111	0.005	19.0	0.77	0.176	1.57	731	4.35	65.5
8812261200	453.50	0.111	0.007	16.0	0.71	0.186	1.35	732	4.29	65.2
8812271200	454.50	0.104	0.005	12.0	0.76	0.123	1.48	736	4.20	66.1
8812280400	455.17	0.100	0.007	16.0	0.80	0.078	1.35	748	4.19	73.8
8812292000	456.83	0.093	0.008	12.0	0.90	0.139	1.45	705	4.71	64.1
8812302000	457.83	0.111	0.008	11.0	0.87	0.127	1.72	725	4.69	69.7
8812310400	458.17	0.108	0.002	14.0	0.89	0.096	1.31	724	4.83	65.6
8812311200	458.50	0.349	0.005	289.0	11.94	0.120	2.43	804	7.74	76.0
8812312000	458.83	0.222	0.007	120.0	9.93	0.192	1.78	804	7.62	71.3
8901010400	459.17	0.149	0.004	60.0	9.96	0.149	1.40	799	7.30	67.8
8901011200	459.50	0.137	0.005	55.0	12.16	0.286	1.67	867	8.52	72.0
8901012000	459.83	0.131	0.008	53.0	11.66	0.324	1.62	795	8.42	70.4
8901020400	460.17	0.109	0.012	41.0	10.06	0.324	1.42	859	7.84	63.1
8901021200	460.50	0.119	0.008	60.0	12.56	0.256	1.36	877	8.51	71.7
8901022000	460.83	0.094	0.012	38.0	12.67	0.280	0.95	877	8.52	71.9
8901030400	461.17	0.076	0.004	23.0	12.40	0.257	1.03	879	8.44	72.1
8901031200	461.50	0.061	0.004	15.0	10.07	0.214	0.94	795	7.04	59.7
8901032000	461.83	0.058	0.008	18.0	10.53	0.195	0.96	841	6.73	70.9
8901042000	462.83	0.057	0.009	21.0	11.64	0.185	1.01	933	7.17	81.8
8901052000	463.83	0.048	0.011	12.0	12.13	0.251	0.90	1025	8.08	94.4
8901062000	464.83	0.055	0.009	12.0	8.96	0.294	0.94	935	6.76	87.9
8901072000	465.83	0.100	0.013	36.0	5.43	0.278	1.14	656	5.25	73.2
8901080400	466.17	0.257	0.014	175.0	10.50	0.135	1.89	566	5.96	51.5
8901081200	466.50	0.379	0.009	824.0	12.90	0.140	4.76	522	6.26	42.0
8901082000	466.83	0.386	0.015	296.0	17.11	0.060	2.48	526	6.96	41.8
8901090400	467.17	0.419	0.020	231.0	17.15	0.020	1.49	564	7.36	43.6

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8901091200	467.50	0.253	0.021	165.0	16.44	0.048	1.82	613	7.96	48.0
8901092000	467.83	0.182	0.015	85.0	14.16	0.022	1.56	625	7.87	48.4
8901100400	468.17	0.128	0.024	30.0	17.09	0.057	0.60	674	8.25	53.4
8901101200	468.50	0.111	0.020	28.0	16.94	0.051	0.61	707	8.20	56.8
8901102000	468.83	0.159	0.013	97.0	15.31	0.083	1.22	696	8.28	58.8
8901111200	469.50	0.051	0.011	21.0	4.27	0.003	0.67	406	2.86	24.3
8901112000	469.83	0.138	0.012	84.0	13.45	0.143	1.43	728	7.96	62.7
8901122000	470.83	0.200	0.010	156.0	9.25	0.407	1.92	687	6.82	55.1
8901132000	471.83	0.096	0.008	57.0	10.12	0.184	1.06	785	7.53	67.0
8901142000	472.83	0.062	0.009	27.0	9.93	0.149	0.82	825	7.47	74.3
8901152000	473.83	0.108	0.008	71.0	8.79	0.162	1.08	827	7.32	73.0
8901162000	474.83	0.104	0.010	58.0	8.48	0.170	1.16	849	7.27	79.3
8901171200	475.50	0.094	0.001	50.0	8.06	0.226	0.90	897	7.77	87.7
8901181200	476.50	0.104	0.002	36.0	6.95	0.367	1.29	864	7.14	86.0
8901191200	477.50	0.096	0.001	45.0	0.80	0.320	1.11	866	6.97	83.8
8901201200	478.50	0.099	0.001	62.0	3.92	0.204	0.96	639	4.36	50.0
8901211200	479.50	0.062	0.002	25.0	6.23	0.273	1.02	567	6.45	79.9
8901221200	480.50	0.068	0.001	25.0	6.38	0.246	0.96	885	6.29	81.2
8901240400	482.17	0.120	0.006	53.0	5.51	0.427	1.39	824	5.38	73.2
8901241200	482.50	0.086	0.010	29.0	6.02	0.443	1.14	818	5.39	77.6
8901251200	483.50	0.074	0.003	75.0	0.32	0.041	0.57	274	1.07	12.0
8901261200	484.50	0.052	0.006	33.0	0.42	0.064	0.49	329	1.24	26.0
8901270400	485.17	0.353	0.017	256.0	9.38	0.128	2.36	555	6.67	47.5
8901271200	485.50	0.376	0.013	292.0	12.26	0.125	2.68	559	7.61	45.8
8901272000	485.83	0.287	0.009	129.0	12.29	0.090	1.93	560	8.17	43.7
8901280400	486.17	0.188	0.017	55.0	12.53	0.124	1.73	604	8.30	47.3
8901281200	486.50	0.281	0.010	184.0	12.59	0.107	1.80	633	8.43	49.9
8901291200	487.50	0.180	0.008	183.0	11.54	0.165	1.21	668	8.01	52.9
8901301200	488.50	0.228	0.008	60.0	10.96	0.111	1.24	740	7.70	66.8
8901310400	489.17	0.110	0.006	28.0	11.32	0.122	1.08	732	7.42	62.9
8901311200	489.50	0.173	0.000	123.0	11.54	0.169	1.33	726	6.82	62.6
8902011200	490.50	0.135	0.001	87.0	11.60	0.085	1.07	747	6.63	63.8
8902012000	490.83	0.129	-0.002	122.0	1.63	0.001	0.91	334	0.44	17.9
8902021200	491.50	0.089	0.000	70.0	1.51	0.004	0.66	331	0.57	17.5
8902031200	492.50	0.075	-0.001	32.0	3.68	0.106	0.83	450	1.65	31.2
8902041200	493.50	0.071	-0.001	22.0	3.82	0.140	0.83	469	1.51	32.7
8902051200	494.50	0.074	-0.001	22.0	3.80	0.174	0.95	475	1.37	32.8
8902061200	495.50	0.131	-0.001	63.0	5.30	0.185	1.06	586	2.25	43.6
8902070400	496.17	0.063	-0.001	17.0	8.50	0.139	0.83	842	5.34	77.4
8902071200	496.50	0.044	0.002	8.0	8.48	0.131	0.56	909	5.70	80.8
8902081200	497.50	0.057	-0.001	23.0	8.61	0.174	0.74	993	5.62	94.5
8902091200	498.50	0.046	-0.002	11.0	8.80	0.242	0.64	1051	5.50	103.3
8902101200	499.50	0.043	-0.001	9.0	8.41	0.267	0.65	1038	4.94	100.8
8902111200	500.50	0.043	0.001	10.0	7.87	0.667	0.57	1023	4.60	99.4
8902121200	501.50	0.046	-0.002	14.0	7.68	0.225	0.57	1047	4.57	100.1
8902131200	502.50	0.040	0.002	10.0	6.96	0.185	0.54	1024	4.23	96.8
8902140400	503.17	0.037	0.001	7.0	6.14	0.342	0.63	941	3.54	92.9
8902141200	503.50	0.037	0.007	10.0	5.67	0.151	0.62	862	4.36	83.4
8902151200	504.50	0.094	0.007	58.0	5.28	0.159	0.93	805	5.26	87.5
8902161200	505.50	0.155	0.007	122.0	7.05	0.102	1.23	670	5.70	66.8
8902171200	506.50	0.091	0.008	50.0	7.95	0.103	0.98	689	5.70	65.4
8902181200	507.50	0.047	0.006	55.0	8.67	0.030	0.75	745	5.95	72.6

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8902191200	508.50	0.089	0.007	59.0	8.23	0.048	0.92	734	5.56	66.2
8902201200	509.50	0.060	0.004	27.0	7.23	0.082	0.74	733	4.59	65.5
8902210400	510.17	0.079	0.000	43.0	6.21	0.181	0.97	743	4.21	73.7
8902211200	510.50	0.123	0.000	91.0	5.40	0.340	0.73	677	4.42	57.8
8902221200	511.50	0.153	0.005	48.0	6.22	0.858	1.19	609	5.51	60.2
8902230400	512.17	0.109	0.002	34.0	7.30	0.140	0.63	545	6.19	48.5
8902231200	512.50	0.051	0.003	17.0	2.95	0.087	0.53	395	2.87	27.2
8902241200	513.50	0.066	0.004	13.0	10.23	0.217	0.59	777	7.64	75.2
8902251200	514.50	0.047	0.001	9.0	9.51	0.140	0.19	749	7.04	65.1
8902261200	515.50	0.072	-0.002	41.0	8.41	0.100	0.27	740	5.82	63.1
8902271200	516.50	0.043	-0.001	11.0	7.57	0.087	0.19	748	5.00	63.9
8902280400	517.17	0.037	-0.005	9.0	6.72	0.112	0.25	716	4.32	62.7
8902281200	517.50	0.033	0.001	10.0	7.25	0.070	0.78	781	3.67	73.5
8903011200	518.50	0.040	0.000	14.0	6.62	0.132	0.82	821	3.33	78.3
8903021200	519.50	0.039	0.001	15.0	6.07	0.096	0.90	765	3.11	71.8
8903030400	520.17	0.032	0.000	12.0	5.52	0.082	0.73	731	2.85	68.2
8903031200	520.50	0.012	0.001	3.0	1.08	0.077	0.34	330	1.15	17.6
8903041200	521.50	0.102	0.002	73.0	3.55	0.252	1.20	606	1.83	51.5
8903050400	522.17	0.069	0.004	38.0	3.39	0.208	0.90	615	1.87	52.9
8903051200	522.50	0.050	0.000	23.0	1.81	0.138	0.72	422	1.11	30.8
8903061200	523.50	0.017	0.000	6.0	1.05	0.058	0.40	306	1.06	16.0
8903071200	524.50	0.035	0.002	8.0	3.07	0.196	0.94	660	1.80	61.5
8903072000	524.83	0.059	0.007	10.0	3.61	0.229	0.80	740	1.54	77.2
8903081200	525.50	0.063	0.006	8.0	5.81	0.104	0.90	860	2.35	88.1
8903082000	525.83	0.081	0.002	28.0	4.84	0.087	0.87	701	1.89	69.7
8903092000	526.83	0.143	0.003	88.0	4.17	0.117	1.34	573	1.40	54.4
8903100400	527.17	0.078	0.002	29.0	5.02	0.081	0.87	649	1.85	60.5
8903102000	527.83	0.102	0.003	43.0	4.54	0.123	1.19	641	1.20	60.4
8903110400	528.17	0.148	0.001	97.0	4.95	0.119	1.33	644	1.33	66.3
8903111200	528.50	0.098	0.001	43.0	4.03	0.086	1.04	705	1.97	55.9
8903112000	528.83	0.073	0.000	27.0	2.88	0.028	0.60	627	0.54	44.0
8903122000	529.83	0.121	0.002	56.0	3.64	0.049	1.10	642	0.57	60.5
8903131200	530.50	0.073	0.001	29.0	3.20	0.031	0.76	603	0.58	52.9
8903132000	530.83	0.096	0.006	58.0	3.76	0.045	0.99	653	1.31	70.4
8903141200	531.50	0.090	0.004	56.0	3.35	0.074	1.00	724	1.57	71.5
8903142000	531.83	0.095	0.007	65.0	3.28	0.029	0.87	723	1.24	72.1
8903150400	532.17	0.162	-0.004	126.0	3.21	0.119	1.21	754	1.96	72.4
8903151200	532.50	0.151	0.008	118.0	3.26	0.163	1.23	781	1.92	75.2
8903152000	532.83	0.057	0.006	32.0	1.85	0.055	0.68	497	1.44	38.9
8903160400	533.17	0.096	0.005	68.0	3.15	0.123	0.98	780	1.88	75.0
8903161200	533.50	0.112	0.006	84.0	3.15	0.109	1.03	784	1.90	74.7
8903231405	540.59	0.052	0.005	30.0	7.54	0.062	0.78	685	2.66	65.4
8903241415	541.59	0.057	0.002	33.0	7.04	0.065	0.82	664	1.95	61.4
8903251000	542.42	0.069	0.003	37.0	6.74	0.129	1.01	725	1.89	68.3
8903261200	543.50	0.186	0.004	151.0	6.58	0.158	1.46	712	1.69	66.4
8903271000	544.42	0.186	0.002	150.0	5.58	0.273	1.32	733	1.57	68.6
8903281000	545.42	0.202	0.006	148.0	4.12	0.331	1.53	643	0.98	55.7
8903281520	545.63	0.210	0.005	162.0	4.59	0.459	1.93	729	1.26	63.2
8903290900	546.38	0.251	0.003	265.0	1.57	0.077	1.46	367	0.28	23.1
8903301000	547.42	0.154	0.003	112.0	2.21	0.231	1.36	504	0.73	40.6
8903311000	548.42	0.225	0.007	118.0	10.03	0.015	1.87	519	7.08	39.1
8904011800	549.75	0.148	0.015	65.0	11.03	0.031	1.37	552	7.22	41.5

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8904021545	550.64	0.221	0.013	164.0	11.60	0.004	1.61	564	6.90	39.4
8904030830	551.35	0.151	0.007	104.0	8.26	0.013	1.22	521	4.54	36.8
8904041000	552.42	0.189	0.006	263.0	8.03	0.093	2.22	449	6.63	29.1
8904041300	552.54	0.242	0.005	695.0	7.77	0.269	3.35	408	6.77	33.4
8904041900	552.79	0.296	0.008	513.0	7.63	0.214	3.65	354	0.52	22.7
8904050100	553.04	0.238	0.010	207.0	7.72	0.248	3.33	366	6.70	23.5
8904050700	553.29	0.342	0.008	330.0	9.10	0.149	3.91	427	7.63	29.4
8904051300	553.29	0.235	0.005	421.0	7.46	0.120	2.90	414	5.97	28.1
8904060100	554.04	0.079	0.008	263.0	8.52	0.125	1.47	475	6.90	33.8
8904061900	554.79	0.034	0.003	84.0	6.16	0.098	0.93	439	4.70	30.6
8904071300	555.54	0.042	0.004	108.0	8.35	0.106	1.23	534	6.43	39.6
8904081900	556.79	0.019	0.005	54.0	6.45	0.161	1.14	350	3.19	39.1
8904090100	557.04	0.048	0.003	117.0	6.25	0.209	1.48	500	3.45	37.8
8904091300	557.54	0.040	0.008	124.0	8.02	0.131	1.21	601	5.76	46.1
8904091900	557.79	0.074	0.007	186.0	7.72	0.098	1.33	600	5.67	48.1
8904100100	558.04	0.067	0.001	173.0	3.70	0.043	1.24	396	2.05	26.9
8904100700	558.29	0.184	0.003	350.0	5.78	0.069	2.07	508	4.11	39.3
8904101900	558.79	0.094	0.000	226.0	2.89	0.040	1.27	369	1.52	22.8
8904110100	559.04	0.027	0.002	104.0	6.05	0.076	1.06	537	4.06	41.6
8904111300	559.54	0.062	0.002	42.0	6.11	0.442	0.79	539	4.97	42.6
8904111900	559.79	0.105	0.001	84.0	6.40	0.083	0.78	554	5.30	46.2
8904120100	560.04	0.078	-0.002	56.0	2.82	0.072	0.77	375	2.30	24.7
8904120700	560.29	0.055	-0.001	26.0	5.48	0.194	0.94	544	3.26	49.2
8904121300	560.54	0.047	-0.001	26.0	6.39	0.110	0.88	579	4.68	49.5
8904121900	560.79	0.096	-0.001	75.0	2.22	0.030	0.83	358	1.98	21.1
8904130100	561.04	0.107	0.005	93.0	3.37	0.065	0.87	421	2.62	32.1
8904130700	561.29	0.080	0.005	75.0	1.31	0.034	0.72	314	1.52	16.7
8904131300	561.54	0.107	0.005	92.0	5.36	0.067	0.98	550	4.09	43.3
8904140100	562.04	0.179	0.005	157.0	5.83	0.173	1.20	602	4.09	51.1
8904141300	562.54	0.109	0.004	83.0	5.71	0.075	1.07	624	4.01	54.7
8904150100	563.04	0.023	0.009	213.0	5.49	0.259	1.78	622	3.62	53.8
8904150700	563.29	0.124	0.008	111.0	1.74	0.050	0.89	359	1.67	21.2
8904151900	563.79	0.103	0.004	85.0	2.91	0.118	0.93	439	2.52	32.6
8904160100	564.04	0.287	0.004	280.0	4.87	0.317	1.80	574	3.71	48.7
8904161300	564.54	0.150	0.004	118.0	4.70	0.151	1.31	605	3.29	52.7
8904161900	564.79	0.067	0.004	43.0	2.00	0.043	0.78	395	1.17	26.6
8904171300	565.54	0.075	0.005	60.0	1.62	0.056	0.70	376	1.65	25.6
8904180100	566.04	0.078	-0.002	60.0	1.19	0.053	0.67	340	1.74	19.9
8904181900	566.79	0.200	-0.001	141.0	4.28	0.063	1.67	490	4.89	40.5
8904190700	567.29	0.121	-0.001	60.0	5.11	0.096	1.15	504	5.57	38.8
8904191300	567.54	0.154	0.011	114.0	6.01	0.044	1.37	531	6.88	42.5
8904200100	568.04	0.267	-0.002	241.0	6.31	0.122	1.96	537	6.12	41.9
8904201900	568.79	0.169	-0.001	134.0	6.34	0.101	1.40	554	5.16	43.0
8904210700	569.29	0.155	-0.001	126.0	3.76	0.108	1.14	454	3.02	32.7
8904211300	569.54	0.130	0.005	106.0	2.84	0.094	0.97	412	2.33	27.0
8904211900	569.79	0.174	0.010	144.0	5.24	0.228	1.47	544	3.38	42.4
8904220100	570.04	0.108	0.001	87.0	2.81	0.085	0.84	419	2.08	28.2
8904220700	570.29	0.195	-0.001	159.0	4.98	0.357	1.69	545	3.29	43.1
8904221300	570.54	0.151	0.020	121.0	5.32	0.206	1.15	577	3.10	45.3
8904221900	570.79	0.078	0.002	68.0	1.96	0.040	0.82	379	1.39	22.3
8904230100	571.04	0.056	0.006	45.0	0.95	0.021	0.50	319	1.22	17.2
8904230700	571.29	0.071	0.006	61.0	0.84	0.022	0.59	314	1.29	16.8

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8904231300	571.54	0.161	0.008	132.0	3.52	0.284	1.49	508	2.28	39.2
8904231900	571.79	0.193	0.009	154.0	4.37	0.321	1.60	578	2.43	47.0
8904240700	572.29	0.198	0.005	167.0	3.96	0.464	1.80	574	2.45	46.8
8904241300	572.54	0.107	0.004	88.0	1.77	1.330	0.93	398	1.56	26.7
8904241900	572.79	0.180	0.001	166.0	4.18	0.235	1.44	590	2.43	46.7
8904250100	573.04	0.072	-0.008	59.0	1.11	0.020	0.63	340	1.19	18.8
8904250700	573.29	0.186	0.009	161.0	3.40	0.360	1.72	559	2.14	45.2
8904251900	573.79	0.183	0.000	139.0	2.41	0.138	1.33	493	2.01	35.7
8904260700	574.29	0.181	0.000	61.0	0.71	0.032	0.61	316	1.42	15.9
8904261300	574.54	0.151	0.001	119.0	2.24	0.280	1.32	479	2.23	35.3
8904261900	574.79	0.186	0.020	145.0	3.30	0.268	1.54	595	2.27	47.0
8904270700	575.29	0.133	0.000	108.0	1.72	0.151	1.11	441	2.06	31.0
8904271300	575.54	0.099	0.000	842.0	1.27	0.098	0.85	393	1.67	25.1
8904271900	575.79	0.137	0.000	99.0	1.92	0.184	1.20	486	2.07	37.4
8904280100	576.04	0.139	0.001	105.0	2.10	0.202	1.20	515	2.44	39.4
8904280700	576.29	0.082	-0.001	58.0	0.81	0.054	0.73	346	1.67	19.6
8904281300	576.54	0.089	-0.001	72.0	0.48	0.045	0.71	305	1.36	15.4
8904290100	577.04	0.095	0.003	81.0	0.73	0.066	0.77	353	1.81	20.0
8904291300	577.54	0.107	0.006	79.0	1.07	0.172	0.98	410	2.00	27.2
8904291900	577.79	0.134	0.003	80.0	1.93	0.479	1.60	547	2.64	42.4
8904301300	578.54	0.164	0.002	119.0	2.34	0.416	1.59	590	2.73	47.0
8905010100	579.04	0.138	0.001	90.0	1.67	0.202	1.15	516	2.25	39.3
8905010700	579.29	0.080	0.001	63.0	0.82	0.027	0.64	348	1.49	18.7
8905011900	579.79	0.058	0.001	41.0	0.53	0.027	0.51	313	1.41	15.7
8905020100	580.04	0.160	0.000	101.0	1.24	0.338	1.49	482	2.31	36.6
8905020700	580.29	0.083	-0.002	61.0	0.62	0.097	0.75	355	1.67	19.7
8905021300	580.54	0.147	0.003	93.0	1.19	0.369	1.44	459	1.73	35.2
8905030100	581.04	0.184	0.004	133.0	1.77	0.400	1.72	547	2.30	44.1
8905030700	581.29	0.111	0.002	87.0	0.98	0.074	0.86	376	1.21	21.9
8905031300	581.54	0.145	0.002	96.0	1.43	0.368	1.37	518	2.05	41.1
8905041300	582.54	0.145	0.002	93.0	1.37	0.252	1.40	516	1.73	40.0
8905041900	582.79	0.107	0.001	74.0	0.90	0.054	0.91	383	1.01	23.0
8905050100	583.04	0.174	0.001	124.0	1.00	0.174	1.43	458	1.32	33.7
8905051900	583.79	0.222	0.001	164.0	1.39	0.239	1.58	571	1.74	46.5
8905060100	584.04	0.094	0.001	67.0	0.77	0.048	0.80	351	1.07	19.7
8905061300	584.54	0.125	0.002	90.0	0.94	0.134	1.24	432	1.49	30.6
8905071300	585.54	0.171	0.000	123.0	1.84	0.245	1.73	473	2.42	38.3
8905081300	586.54	0.153	0.001	86.0	4.09	0.098	1.50	426	5.79	36.4
8905090100	587.04	0.112	0.002	89.0	1.90	0.022	0.84	368	1.67	20.6
8905091300	587.54	0.189	0.005	148.0	3.31	0.184	1.56	436	4.01	29.7
8905100100	588.04	0.226	0.004	188.0	3.74	0.258	1.64	464	4.70	32.3
8905101300	588.54	0.157	0.003	138.0	3.52	0.315	1.50	480	4.44	34.2
8905111300	589.54	0.162	0.003	111.0	3.90	0.312	1.71	507	5.20	37.2
8905121300	590.54	0.205	0.004	156.0	5.93	0.215	1.92	492	6.91	35.8
8905131300	591.54	0.203	0.003	149.0	5.06	0.166	1.89	476	7.00	33.7
8905141300	592.54	0.263	0.003	208.0	5.65	0.273	2.39	490	7.82	32.9
8905151300	593.54	0.173	0.006	122.0	6.16	0.145	1.59	523	7.86	36.2
8905160100	594.04	0.217	0.004	177.0	5.97	0.284	1.79	534	7.32	38.3
8905161200	594.50	0.193	-0.001	184.0	5.70	0.191	1.58	537	5.97	39.2
8905171200	595.50	0.180	0.000	165.0	4.59	0.179	1.61	522	3.09	36.8
8905181200	596.50	0.160	0.001	150.0	3.26	0.132	1.27	447	1.71	29.1
8905191200	597.50	0.188	-0.001	154.0	3.82	0.366	1.66	601	3.38	45.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8905192000	597.83	0.097	-0.003	71.0	2.59	0.061	1.04	381	0.98	22.4
8905201200	598.50	0.128	-0.001	96.0	2.46	0.082	1.00	394	1.06	24.5
8905202000	598.83	0.173	-0.003	117.0	2.81	0.214	1.74	540	1.83	41.9
8905210400	599.17	0.239	-0.002	164.0	2.34	0.296	1.86	537	2.18	41.8
8905211200	599.50	0.144	-0.001	128.0	2.27	0.062	1.23	388	1.15	23.7
8905212000	599.83	0.182	-0.002	144.0	2.96	0.122	1.69	588	3.23	48.1
8905220400	600.17	0.069	0.000	50.0	2.07	0.014	0.80	363	2.42	20.3
8905222000	600.83	0.090	-0.002	67.0	1.88	0.078	0.95	390	1.60	26.1
8905230400	601.17	0.218	-0.001	156.0	2.53	0.265	0.32	556	3.59	44.6
8905231200	601.50	0.105	-0.001	89.0	0.03	0.129	0.90	337	2.83	35.0
8905232000	601.83	0.188	0.003	150.0	1.90	0.252	1.88	388	2.07	25.3
8905242000	602.83	0.291	0.005	200.0	6.54	0.170	2.55	423	8.41	22.6
8905252000	603.83	0.130	0.003	96.0	2.65	0.096	1.15	364	2.54	19.6
8905260400	604.17	0.302	-0.029	247.0	4.41	0.535	2.45	435	4.25	24.2
8905261200	604.50	0.664	0.000	483.0	2.66	0.278	3.30	299	5.96	15.4
8905262000	604.83	0.767	-0.001	559.0	3.37	0.130	3.27	247	6.67	10.0
8905270400	605.17	0.564	-0.003	391.0	3.78	0.141	2.78	297	6.88	12.2
8905271200	605.50	0.442	-0.002	346.0	4.91	0.131	2.17	370	8.28	17.5
8905272000	605.83	0.360	0.001	303.0	4.45	0.264	2.43	390	6.80	19.2
8905281200	606.50	0.200	0.007	128.0	5.39	0.339	1.83	463	9.15	25.9
8905291200	607.50	0.185	0.002	120.0	3.61	0.417	1.70	420	5.99	21.8
8905300400	608.17	0.184	0.001	128.0	3.15	0.288	1.56	410	4.82	21.8
8905301200	608.50	0.300	0.026	273.0	4.21	0.411	1.95	507	6.97	31.8
8905302000	608.83	0.127	0.019	86.0	1.70	0.120	0.98	343	2.16	16.6
8905310400	609.17	0.275	0.011	242.0	2.17	0.430	1.87	398	3.94	21.2
8905311200	609.50	0.253	0.016	176.0	2.80	0.542	1.85	470	5.99	27.9
8905312000	609.83	0.489	0.017	351.0	4.21	0.346	2.97	391	7.26	20.7
8906010400	610.17	0.464	0.018	381.0	3.68	0.493	2.71	388	7.53	19.2
8906011200	610.50	0.163	0.012	110.0	2.10	0.137	1.13	330	2.89	16.6
8906020400	611.17	0.207	0.011	157.0	2.72	0.356	1.73	383	5.57	19.2
8906030400	612.17	0.119	0.007	82.0	1.93	0.199	0.93	358	3.01	18.1
8906031200	612.50	0.228	0.006	173.0	2.88	0.677	2.18	462	7.66	26.9
8906032000	612.83	0.216	0.009	157.0	2.88	0.740	2.39	480	8.21	29.5
8906040400	613.17	0.489	0.013	372.0	3.35	0.399	2.81	420	7.14	25.9
8906041200	613.50	0.868	0.023	717.0	3.19	0.281	3.80	276	6.09	11.9
8906042000	613.83	0.529	0.022	286.0	3.36	0.288	2.71	314	7.58	14.4
8906050400	614.17	0.271	0.011	174.0	2.47	0.155	1.51	349	4.11	17.1
8906051200	614.50	0.257	0.012	175.0	2.39	0.221	1.69	355	4.39	17.0
8906052000	614.83	0.282	0.012	182.0	2.93	0.337	1.69	371	6.46	18.1
8906060400	615.17	0.264	0.012	195.0	2.59	0.354	1.75	379	5.80	18.2
8906061200	615.50	0.156	0.018	129.0	2.66	0.277	1.63	407	6.16	19.2
8906062000	615.83	0.084	0.013	50.0	1.99	0.154	1.09	364	3.62	18.1
8906070400	616.17	0.188	0.012	179.0	3.85	0.577	2.24	484	9.93	27.3
8906071200	616.50	0.097	0.009	65.0	1.77	0.092	0.98	361	3.07	18.1
8906072000	616.83	0.040	0.009	86.0	2.98	0.517	1.88	465	8.72	26.7
8906081200	617.50	0.019	0.010	88.0	1.62	0.087	1.16	351	2.91	18.1
8906090400	618.17	0.016	0.009	59.0	1.36	0.073	0.85	330	2.15	17.0
8906091200	618.50	0.026	0.010	139.0	2.70	0.601	2.14	521	9.29	33.0
8906092000	618.83	0.153	0.009	100.0	1.49	0.186	1.64	378	3.92	19.9
8906100400	619.17	0.298	0.009	232.0	1.87	0.540	2.76	501	8.98	31.1
8906101200	619.50	0.146	0.009	97.0	1.32	0.023	1.15	333	2.42	17.2
8906111200	620.50	0.092	0.010	56.0	1.32	0.031	0.96	323	2.37	16.4

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8906120400	621.17	0.103	0.010	78.0	1.85	0.334	0.98	309	6.25	29.6
8906121200	621.50	0.215	0.009	136.0	1.08	0.055	1.87	462	2.19	15.6
8906122000	621.83	0.076	0.012	44.0	1.88	0.320	0.63	307	6.31	30.1
8906130400	622.17	0.177	0.010	156.0	1.97	0.540	2.20	501	7.22	34.0
8906131200	622.50	0.089	0.002	65.0	1.07	0.176	0.72	329	1.97	16.0
8906132000	622.83	0.172	0.003	103.0	1.92	0.410	1.26	454	5.37	28.3
8906140400	623.17	0.241	0.008	188.0	2.97	0.527	2.17	516	7.40	35.7
8906141200	623.50	0.265	0.010	254.0	3.93	0.320	2.21	439	7.40	29.6
8906142000	623.83	0.292	0.005	236.0	3.68	0.432	2.28	363	7.63	29.2
8906150400	624.17	0.348	0.005	280.0	4.75	0.403	2.49	442	8.41	27.3
8906151200	624.50	0.274	0.002	217.0	4.96	0.449	2.40	452	8.84	27.5
8906160400	625.17	0.230	0.003	180.0	5.08	0.384	1.95	480	9.50	29.1
8906162000	625.83	0.145	0.001	90.0	1.70	0.098	1.23	339	3.43	18.0
8906170400	626.17	0.240	0.004	173.0	3.66	0.533	2.04	472	8.56	28.2
8906171200	626.50	0.248	0.006	169.0	4.05	0.418	2.00	494	8.87	31.3
8906172000	626.83	0.144	0.004	92.0	1.84	0.145	1.18	371	4.37	20.1
8906182000	627.83	0.101	0.002	57.0	1.16	0.101	1.12	329	2.79	17.1
8906190400	628.17	0.165	0.003	108.0	1.66	0.321	1.34	396	4.97	22.2
8906191200	628.50	0.081	0.000	45.0	0.88	0.071	0.69	311	2.04	15.4
8906200400	629.17	0.139	0.001	102.0	1.15	0.189	1.15	352	3.27	18.5
8906201200	629.50	0.081	0.001	61.0	0.98	0.054	0.61	310	2.51	16.0
8906211200	630.50	0.097	0.000	80.0	0.85	0.068	0.70	308	2.06	15.2
8906221200	631.50	0.092	0.001	41.0	0.83	0.062	0.83	312	2.05	15.8
8906231200	632.50	0.100	0.000	64.0	0.75	0.047	0.79	314	1.76	16.1
8906241200	633.50	0.097	0.000	41.0	0.76	0.037	0.78	331	1.65	18.0
8906251200	634.50	0.098	-0.001	42.0	0.72	0.068	0.87	337	1.88	18.6
8906261200	635.50	0.122	-0.001	37.0	0.60	0.175	0.96	367	2.67	21.5
8906271200	636.50	0.084	-0.001	62.0	0.71	0.040	0.62	303	1.90	15.3
8906272000	636.83	0.225	0.015	126.0	0.55	0.399	1.92	454	4.48	33.5
8906281200	637.50	0.157	0.018	95.0	0.61	0.358	1.43	409	3.73	25.9
8906282000	637.83	0.079	0.008	37.0	1.01	0.057	0.66	332	2.21	16.4
8906290400	638.17	0.107	0.009	89.0	0.79	0.041	0.64	303	1.59	14.8
8906291200	638.50	0.171	0.021	99.0	1.59	0.425	1.61	471	5.59	35.1
8906292000	638.83	0.136	0.013	63.0	1.28	0.281	1.28	439	4.61	30.0
8906302000	639.83	0.108	0.014	37.0	1.13	0.471	1.38	461	5.07	32.2
8907012000	640.83	0.087	0.007	22.0	0.97	0.296	1.27	453	4.57	30.5
8907022000	641.83	0.082	0.009	15.0	0.93	0.213	1.38	468	4.85	32.6
8907031200	642.50	0.124	0.012	17.0	0.94	0.188	1.47	467	5.67	36.5
8907051200	644.50	0.172	0.018	46.0	0.61	0.170	1.42	492	6.06	37.5
8907071200	646.50	0.177	0.009	46.0	0.33	0.049	1.33	485	6.79	39.7
8907091200	648.50	0.209	0.013	37.0	0.16	-0.056	1.60	487	7.20	37.6
8907110400	650.17	0.157	0.010	24.0	0.11	-0.041	1.34	493	7.54	40.6
8907111200	650.50	0.190	0.021	34.0	0.09	0.156	1.54	499	7.27	39.1
8907131200	652.50	0.175	0.018	31.0	0.11	0.177	1.72	506	7.61	39.0
8907151200	654.50	0.188	0.006	35.0	0.04	0.120	1.68	519	7.05	40.2
8907171200	656.50	0.209	0.007	47.0	0.07	0.037	1.76	528	7.19	40.8
8907181200	657.50	0.237	0.009	40.0	0.04	-0.025	1.71	535	7.52	42.3
8907182000	657.83	0.207	-0.001	36.0	0.03	0.067	1.75	540	10.68	28.3
8907202000	659.83	0.242	0.001	41.0	0.09	0.013	1.41	504	9.95	25.2
8907222000	661.83	0.209	0.001	35.0	0.03	-0.016	1.56	479	9.82	23.5
8907242000	663.83	0.299	0.005	58.0	0.02	-0.008	1.96	520	11.03	26.9
8907251200	664.50	0.260	0.025	28.0	0.06	0.134	1.79	521	10.73	27.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8907271200	666.50	0.280	0.033	32.0	0.07	0.154	2.35	534	11.28	28.1
8907291200	668.50	0.194	0.015	35.0	0.05	0.042	1.36	523	10.52	27.6
8907311200	670.50	0.212	0.010	45.0	0.07	0.131	1.78	522	9.67	27.6
8908011200	671.50	0.215	0.007	36.0	0.18	0.152	1.88	524	13.48	43.2
8908031200	673.50	0.185	0.006	29.0	0.14	0.107	1.76	511	10.53	41.2
8908051200	675.50	0.216	0.000	45.0	0.26	0.184	1.99	484	9.79	39.7
8908071200	677.50	0.219	-0.001	53.0	0.23	0.168	1.76	485	8.09	39.1
8908081200	678.50	0.186	0.004	48.0	0.24	0.205	1.63	488	4.77	43.7
8908101200	680.50	0.171	0.002	35.0	0.13	0.209	1.66	490	2.92	42.6
8908121200	682.50	0.163	0.001	40.0	0.02	0.134	1.66	488	2.61	43.0
8908141200	684.50	0.175	0.002	40.0	0.02	0.087	1.30	488	2.55	43.0
8908150400	685.17	0.158	0.001	38.0	-0.02	0.045	1.31	492	2.41	43.6
8908151200	685.50	0.183	0.004	41.0	0.04	0.000	1.64	486	2.00	43.2
8908171200	687.50	0.182	-0.001	45.0	0.06	0.002	1.69	497	2.29	42.6
8908191200	689.50	0.194	-0.003	50.0	0.03	-0.007	1.64	498	1.71	42.4
8908211200	691.50	0.180	-0.003	25.0	0.09	0.038	1.57	497	1.80	41.7
8908212000	691.83	0.181	0.003	42.0	0.10	0.126	1.67	492	1.84	43.4
8908232000	693.83	0.195	0.003	50.0	0.07	0.139	1.62	510	2.13	42.9
8908252000	695.83	0.197	0.002	52.0	0.10	0.078	1.53	507	2.13	43.2
8908272000	697.83	0.209	0.001	48.0	0.09	0.083	1.86	510	2.33	43.6
8908290400	699.17	0.179	0.000	30.0	0.04	0.001	1.68	511	1.97	43.3
8908291200	699.50	0.183	0.003	40.0	0.01	0.043	1.42	520	1.45	43.0
8908292000	699.83	0.185	0.005	40.0	0.01	0.116	1.39	519	1.48	43.2
8908300400	700.17	0.172	0.007	40.0	-0.02	0.154	1.52	522	1.56	41.6
8908301200	700.50	0.197	0.005	41.0	0.00	0.076	1.30	521	1.72	42.7
8909051200	706.50	0.225	0.017	60.0	0.26	0.080	1.40	532	3.96	44.8
8909052000	706.83	0.209	0.013	48.0	0.04	0.027	1.40	535	4.03	44.3
8909060400	707.17	0.208	0.012	48.0	0.03	0.017	1.40	534	3.86	44.0
8909061200	707.50	0.207	0.013	52.0	0.04	0.014	1.40	534	3.89	44.4
8909062000	707.83	0.209	0.006	49.0	0.05	0.014	1.40	534	4.37	42.6
8909070400	708.17	0.194	0.014	36.0	0.08	0.054	1.40	536	4.60	43.8
8909140905	715.38	0.214	0.007	73.0	0.08	0.348	1.51	522	5.17	42.9
8909181200	719.50	0.194	0.011	53.0	0.18	0.396	1.96	512	4.70	43.1
8909201200	721.50	0.163	0.007	43.0	0.06	0.174	1.65	513	5.13	40.8
8909221200	723.50	0.168	0.006	43.0	-0.01	0.085	1.55	512	4.94	41.3
8909241200	725.50	0.211	0.004	72.0	-0.04	0.160	1.74	520	5.09	42.0
8909260400	727.17	0.161	0.005	34.0	-0.04	-0.010	1.25	519	4.67	42.8
8909261200	727.50	0.178	0.013	49.0	0.14	0.080	1.50	518	4.29	45.9
8909281200	729.50	0.158	0.008	41.0	0.03	0.040	1.59	525	3.98	46.1
8909301200	731.50	0.145	0.007	36.0	-0.03	0.017	1.58	526	3.64	46.7
8910021200	733.50	0.153	0.006	41.0	-0.01	0.010	1.41	528	3.37	46.4
8910030400	734.17	0.151	0.004	39.0	0.03	0.059	1.54	532	3.72	45.0
8910031200	734.50	0.159	0.006	52.0	0.01	0.063	1.57	526	3.21	45.9
8910041200	735.50	0.175	0.008	64.0	0.01	0.106	1.61	537	3.36	47.1
8910051200	736.50	0.153	0.006	50.0	-0.03	0.051	1.64	537	2.92	46.6
8910061200	737.50	0.154	0.006	44.0	-0.07	0.032	1.78	538	2.49	47.6
8910071200	738.50	0.139	0.004	47.0	-0.03	0.015	1.41	540	2.37	47.6
8910081200	739.50	0.133	0.003	43.0	-0.06	0.008	1.54	541	2.30	47.7
8910091200	740.50	0.118	0.004	33.0	-0.06	-0.006	1.29	541	2.07	47.0
8910100400	741.17	0.129	0.004	35.0	-0.07	-0.004	1.49	543	2.06	47.9
8910101200	741.50	0.149	0.007	40.0	0.07	0.208	1.28	539	2.24	45.9
8910111200	742.50	0.145	0.006	35.0	-0.01	0.168	1.37	542	2.02	46.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8910121200	743.50	0.153	0.004	42.0	-0.03	0.152	1.44	543	2.15	45.6
8910131200	744.50	0.127	0.002	30.0	-0.02	0.098	1.43	541	1.97	45.8
8910141200	745.50	0.130	0.002	26.0	0.00	0.077	1.43	540	2.10	45.0
8910151200	746.50	0.144	0.003	35.0	0.00	0.055	1.40	541	2.08	45.4
8910161200	747.50	0.142	0.001	38.0	0.01	0.049	1.55	544	2.24	45.6
8910170400	748.17	0.163	0.002	50.0	0.03	0.044	1.44	535	2.42	45.7
8910171200	748.50	0.156	0.006	51.0	0.12	0.201	1.53	528	2.96	44.1
8910181200	749.50	0.157	0.007	53.0	0.13	0.254	1.01	529	3.41	43.6
8910191200	750.50	0.118	0.007	87.0	0.25	0.104	0.97	352	3.21	24.2
8910201200	751.50	0.113	0.015	34.0	0.22	0.196	1.24	458	3.41	36.2
8910211200	752.50	0.100	0.011	24.0	0.54	0.141	1.50	489	4.08	40.7
8910221200	753.50	0.087	0.006	17.0	0.52	0.220	1.34	486	3.88	41.1
8910231200	754.50	0.100	0.003	13.0	0.82	0.372	1.38	519	3.30	46.0
8910241200	755.50	0.078	0.001	10.0	0.77	0.220	1.22	512	3.18	44.3
8910251200	756.50	0.078	0.001	11.0	0.89	0.214	1.17	522	3.38	45.3
8910261200	757.50	0.076	0.001	12.0	0.91	0.159	1.27	521	3.39	45.0
8910271200	758.50	0.086	0.001	14.0	0.94	0.129	1.33	525	3.54	45.0
8910272000	758.83	0.274	0.007	190.0	2.25	0.134	1.99	584	7.78	52.8
8910280400	759.17	0.237	0.013	74.0	1.78	0.228	1.67	602	10.05	53.5
8910281200	759.50	0.242	0.012	44.0	1.40	0.343	1.58	600	9.02	49.7
8910282000	759.83	0.257	0.006	64.0	1.40	0.460	1.92	610	10.73	52.7
8910290400	760.17	0.287	0.006	77.0	1.15	0.619	1.96	615	11.57	52.9
8910291200	760.50	0.253	0.007	65.0	0.99	0.688	2.03	612	9.78	49.0
8910302000	761.83	0.258	0.029	75.0	0.92	0.911	2.27	650	10.52	48.7
8910312000	762.83	0.314	0.022	155.0	0.84	0.667	2.95	653	10.86	50.6
8911012000	763.83	0.160	0.019	50.0	0.84	1.054	2.18	610	9.40	46.0
8911020400	764.17	0.138	0.020	48.0	0.68	0.930	1.87	540	7.82	39.8
8911021200	764.50	0.096	0.023	26.0	0.41	0.458	1.07	382	4.93	23.6
8911022000	764.83	0.135	0.018	64.0	0.52	0.770	1.66	459	5.99	32.0
8911030400	765.17	0.075	0.014	40.0	0.22	0.043	0.44	264	2.85	12.7
8911031200	765.50	0.118	0.015	54.0	0.66	1.037	1.91	564	7.38	42.8
8911032000	765.83	0.075	0.014	38.0	0.35	0.223	0.72	328	3.36	18.2
8911040400	766.17	0.089	0.014	28.0	0.69	0.292	1.97	613	7.93	46.6
8911042000	766.83	0.123	0.014	56.0	0.89	0.733	2.30	731	9.08	59.3
8911052000	767.83	0.150	0.014	85.0	0.96	0.609	2.19	759	8.21	65.8
8911060400	768.17	0.163	0.016	91.0	0.95	1.052	2.06	735	7.86	63.6
8911061200	768.50	0.118	0.013	80.0	0.38	0.210	0.88	372	3.37	23.1
8911062000	768.83	0.112	0.011	66.0	0.45	0.307	1.03	417	4.02	27.8
8911070400	769.17	0.091	0.009	57.0	0.27	0.093	0.63	304	2.66	15.9
8911071200	769.50	0.063	0.003	42.0	0.26	0.088	0.55	293	2.64	14.4
8911080400	770.17	0.090	0.002	61.0	0.43	0.294	1.13	397	3.67	26.0
8911081200	770.50	0.070	0.002	59.0	0.27	0.061	0.68	275	2.86	13.5
8911082000	770.83	0.097	0.003	58.0	0.69	0.616	1.54	512	4.65	38.4
8911090400	771.17	0.116	0.002	70.0	0.93	0.785	1.74	689	6.35	58.4
8911100400	772.17	0.081	0.003	44.0	0.75	0.358	1.07	600	4.92	49.3
8911110400	773.17	0.087	0.004	39.0	1.83	1.033	2.03	801	5.59	78.9
8911120400	774.17	0.083	0.003	54.0	1.16	0.490	1.26	575	4.21	49.3
8911122000	774.83	0.090	0.002	59.0	0.86	0.345	1.01	486	3.90	41.2
8911130400	775.17	0.081	0.008	46.0	1.01	0.434	1.19	572	4.39	48.4
8911131200	775.50	0.113	0.006	64.0	1.25	0.474	1.42	776	5.50	80.2
8911140400	776.17	0.138	0.004	79.0	1.15	0.519	1.59	773	5.34	80.0
8911141200	776.50	0.167	0.004	93.0	1.06	0.394	1.51	694	4.95	72.3

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
8911151200	777.50	0.205	0.002	108.0	1.00	0.611	2.21	696	4.32	68.9
8911152000	777.83	0.430	0.003	295.0	0.68	0.200	2.57	464	3.77	40.4
8911162000	778.83	0.506	0.003	329.0	7.25	0.024	2.86	440	8.31	34.1
8911172000	779.83	0.242	0.003	99.0	8.63	0.011	1.65	538	9.37	41.5
8911180400	780.17	0.223	0.003	78.0	8.97	0.043	1.60	569	9.56	44.0
8911181200	780.50	0.142	0.002	92.0	2.58	0.012	0.89	345	4.40	20.8
8911212000	783.83	0.163	0.004	92.0	2.76	0.236	0.99	559	6.04	41.6
8911220400	784.17	0.148	0.004	74.0	3.36	0.286	1.06	632	6.96	49.0
8911221200	784.50	0.206	0.005	131.0	4.68	0.651	1.65	695	7.61	58.1
8911222000	784.83	0.231	0.004	164.0	4.15	0.502	1.83	710	7.68	64.8
8911230400	785.17	0.187	0.009	99.0	4.22	0.446	1.36	754	8.13	70.9
8911281200	790.50	0.457	0.004	331.0	3.76	0.170	1.71	621	6.75	48.9
8911282000	790.83	0.163	0.004	92.0	2.76	0.236	0.99	559	6.04	41.6
8911290400	791.17	0.148	0.004	74.0	3.36	0.286	1.06	632	6.96	49.0
8911291200	791.50	0.206	0.005	131.0	4.68	0.651	1.65	695	7.61	58.1
8911292000	791.83	0.231	0.004	164.0	4.15	0.502	1.83	710	7.68	64.8
8911300400	792.17	0.187	0.009	99.0	4.22	0.446	1.36	754	8.13	70.9
8912051200	797.50	0.073	0.010	29.0	4.93	0.468	1.08	792	7.74	74.6
8912052000	797.83	0.088	0.007	48.0	4.71	0.462	1.26	785	7.25	71.7
8912060400	798.17	0.066	0.008	28.0	4.63	0.469	1.00	775	7.23	72.0
8912121022	804.43	0.100	0.006	49.0	3.82	0.628	1.71	800	5.60	79.2
8912121200	804.50	0.094	0.002	48.0	3.87	0.725	1.62	838	6.23	79.0
8912131200	805.50	0.087	0.001	42.0	3.97	0.673	1.59	861	6.07	81.5
8912190400	811.17	0.060	0.019	9.0	3.64	0.341	1.04	909	4.86	89.8
8912192000	811.83	0.057	0.020	9.0	3.58	0.333	0.93	912	5.20	87.2
8912201200	812.50	0.058	0.018	9.0	3.41	0.371	1.01	907	5.07	85.4
8912210400	813.17	0.059	0.021	9.0	3.43	0.385	1.18	907	5.37	88.3
8912212000	813.83	0.063	0.028	9.0	3.46	0.383	1.04	916	5.20	87.4
8912221200	814.50	0.066	0.026	8.0	3.49	0.390	1.11	943	5.79	90.5
9001021200	825.50	0.097	0.019	23.0	6.29	0.586	1.03	592	6.12	56.2
9001031200	826.50	0.069	0.018	15.0	5.61	0.584	0.82	605	5.96	52.1
9001032000	826.83	0.059	0.014	16.0	5.16	0.601	0.71	591	5.74	50.8
9001040400	827.17	0.083	0.020	43.0	4.16	0.667	0.95	517	4.84	43.1
9001041200	827.50	0.137	0.018	47.0	2.73	1.098	1.48	443	4.29	31.0
9001050400	828.17	0.222	0.026	117.0	7.41	0.234	1.15	451	6.47	38.6
9001051200	828.50	0.161	0.028	65.0	8.24	0.215	0.88	492	7.06	42.1
9001052000	828.83	0.121	0.028	38.0	8.70	0.200	0.80	539	7.26	46.7
9001061200	829.50	0.104	0.023	36.0	8.46	0.236	0.84	592	7.77	49.6
9001071200	830.50	0.093	0.015	43.0	7.22	0.290	0.80	624	7.95	54.2
9001080400	831.17	0.112	0.014	75.0	7.52	0.302	0.71	670	8.20	58.4
9001082000	831.83	0.079	0.004	44.0	6.18	0.338	1.06	636	7.93	54.5
9001092000	832.83	0.110	-0.001	79.0	5.87	0.392	1.09	656	8.00	54.1
9001112000	834.83	0.075	-0.003	48.0	6.88	0.212	0.95	677	8.27	60.8
9001122000	835.83	0.140	-0.005	112.0	9.21	0.177	1.24	632	8.21	59.7
9001132000	836.83	0.149	-0.007	120.0	8.99	0.218	1.24	647	8.62	61.3
9001142000	837.83	0.073	-0.006	36.0	8.22	0.206	0.71	695	8.47	64.6
9001150400	838.17	0.044	-0.005	12.0	8.25	0.201	0.66	728	8.83	71.0
9001152000	838.83	0.039	-0.007	10.0	7.68	0.191	0.71	734	8.36	69.4
9001161200	839.50	0.088	-0.006	62.0	7.13	0.382	1.07	738	8.07	69.0
9001182000	841.83	0.103	0.002	65.0	5.31	0.244	1.11	698	7.13	60.7
9001202000	843.83	0.147	0.001	102.0	4.61	0.303	1.33	687	6.48	56.8
9001212000	844.83	0.163	0.004	95.0	6.33	0.089	1.26	676	7.82	68.4

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9001222000	845.83	0.141	0.003	54.0	7.72	0.084	1.21	618	8.53	58.2
9001232000	846.83	0.089	0.001	32.0	6.59	0.179	0.80	657	8.46	59.0
9001242000	847.83	0.186	0.004	81.0	7.59	0.096	1.25	546	7.60	48.5
9001251200	848.50	0.179	0.003	114.0	8.34	0.091	1.28	581	8.05	49.6
9001252000	848.83	0.276	0.002	245.0	7.67	0.098	1.61	664	8.53	57.9
9001262000	849.83	0.090	0.001	44.0	6.45	0.081	0.98	706	7.18	53.5
9001272000	850.83	0.097	0.007	58.0	6.38	0.103	0.92	679	7.49	67.7
9001282000	851.83	0.066	0.005	31.0	5.85	0.056	0.72	695	7.29	57.5
9001292000	852.83	0.035	0.004	21.0	5.65	0.100	0.43	322	6.90	60.0
9001301200	853.50	0.043	0.002	17.0	5.52	0.130	0.65	725	6.48	62.6
9001302000	853.83	0.043	0.008	22.0	4.70	0.182	0.69	691	5.42	65.8
9001310400	854.17	0.033	0.004	13.0	4.95	0.163	0.65	732	5.98	75.3
9001311200	854.50	0.031	0.004	9.0	5.23	0.171	0.60	760	6.46	80.4
9001312000	854.83	0.047	0.003	25.0	4.89	0.142	0.73	772	5.83	88.4
9002010400	855.17	0.038	0.003	20.0	4.69	0.155	0.61	787	6.54	91.6
9002011200	855.50	0.117	0.002	103.0	4.69	0.191	0.92	904	6.26	111.5
9002012000	855.83	0.065	0.002	37.0	4.12	0.210	0.66	823	5.65	103.0
9002020400	856.17	0.099	0.006	63.0	4.23	0.140	0.84	676	5.75	76.8
9002021200	856.50	0.384	0.019	243.0	5.31	0.102	2.04	403	5.87	39.5
9002030400	857.17	0.354	0.025	155.0	5.33	0.109	1.84	353	5.60	29.7
9002032000	857.83	0.178	0.025	56.0	7.90	0.098	1.18	463	7.47	37.5
9002041200	858.50	0.126	0.019	45.0	7.36	0.092	1.06	508	7.45	43.1
9002042000	858.83	0.239	0.034	107.0	6.65	0.082	1.05	458	6.52	38.5
9002052000	859.83	0.183	0.005	104.0	6.95	0.048	1.32	513	7.73	39.5
9002060400	860.17	0.124	0.004	58.0	7.09	0.039	1.07	563	8.08	48.7
9002062000	860.83	0.121	0.003	50.0	6.79	0.039	0.97	521	7.23	42.2
9002070400	861.17	0.117	0.001	56.0	6.90	0.052	0.97	551	7.57	43.5
9002080400	862.17	0.118	0.006	74.0	6.86	0.045	0.93	562	7.27	43.5
9002090400	863.17	0.139	0.001	102.0	6.66	0.057	1.03	595	7.36	44.6
9002100400	864.17	0.135	-0.001	108.0	6.57	0.090	0.98	620	7.03	45.9
9002110400	865.17	0.050	-0.001	22.0	6.32	0.085	0.67	633	7.25	47.4
9002111200	865.50	0.041	0.002	25.0	2.84	0.026	0.55	424	3.79	28.1
9002112000	865.83	0.045	0.001	19.0	5.90	0.051	0.65	606	6.37	47.3
9002121200	866.50	0.068	0.004	44.0	5.78	0.067	0.77	636	6.65	47.7
9002122000	866.83	0.042	0.007	28.0	4.79	0.041	0.70	564	5.37	46.9
9002130400	867.17	0.039	0.011	26.0	5.51	0.063	0.77	641	6.38	52.6
9002131200	867.50	0.081	0.012	67.0	5.59	0.075	0.82	652	6.44	52.5
9002132000	867.83	0.043	0.002	42.0	0.74	0.021	0.52	294	1.48	15.6
9002140400	868.17	0.033	0.001	32.0	0.70	0.021	0.50	288	1.29	15.0
9002141200	868.50	0.035	0.003	34.0	1.18	0.018	0.51	332	1.94	19.7
9002142000	868.83	0.098	0.004	139.0	1.08	-0.003	0.70	307	1.89	17.6
9002150400	869.17	0.115	0.008	159.0	0.97	0.015	0.64	301	2.10	16.3
9002151200	869.50	0.066	0.010	71.0	1.01	-0.003	0.54	304	2.18	18.1
9002152000	869.83	0.129	0.021	81.0	2.69	0.002	0.99	462	4.87	62.9
9002160400	870.17	0.244	0.031	141.0	2.90	0.018	1.16	297	4.90	31.4
9002161200	870.50	0.224	0.037	110.0	3.35	-0.002	1.19	267	5.01	23.2
9002162000	870.83	0.416	0.019	352.0	4.05	-0.001	1.80	290	5.97	23.7
9002170400	871.17	0.272	0.041	174.0	4.93	0.007	1.24	317	6.58	23.9
9002171200	871.50	0.193	0.015	151.0	1.92	0.027	1.00	299	3.09	18.8
9002172000	871.83	0.141	0.033	46.0	5.86	0.004	1.11	402	7.28	31.5
9002180400	872.17	0.105	0.033	20.0	6.46	0.012	0.96	445	7.86	35.2
9002181200	872.50	0.086	0.031	20.0	6.68	0.023	0.70	480	7.89	37.8

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9002182000	872.83	0.080	0.025	25.0	5.53	0.004	0.72	496	7.78	40.4
9002190400	873.17	0.066	0.024	23.0	6.49	0.016	0.74	531	8.24	44.0
9002191200	873.50	0.075	0.015	39.0	6.44	0.016	0.80	543	8.38	45.2
9002192000	873.83	0.159	0.004	88.0	5.01	-0.002	1.13	388	5.62	25.5
9002200400	874.17	0.069	0.008	27.0	6.40	0.004	0.78	538	7.74	43.1
9002210400	875.17	0.044	0.005	12.0	6.43	0.029	0.68	583	7.50	46.5
9002220400	876.17	0.049	0.004	21.0	5.75	0.039	0.68	577	6.32	46.3
9002222000	876.83	0.250	0.006	183.0	4.47	0.023	1.50	512	5.75	45.9
9002230400	877.17	0.482	0.023	294.0	4.42	0.045	2.13	371	6.71	28.8
9002231200	877.50	0.350	0.007	136.0	4.60	0.005	1.67	366	6.31	27.2
9002232000	877.83	0.255	0.008	79.0	4.25	0.016	1.30	371	5.44	26.6
9002241200	878.50	0.193	0.019	43.0	5.54	0.016	1.10	420	7.15	32.9
9002250400	879.17	0.142	0.004	56.0	5.50	0.009	1.02	469	7.10	37.3
9002251200	879.50	0.126	0.004	88.0	2.90	0.012	0.83	367	3.86	23.0
9002252000	879.83	0.104	0.004	33.0	5.95	-0.001	0.92	513	6.98	39.6
9002261200	880.50	0.072	0.004	26.0	5.58	0.021	0.83	547	6.99	43.6
9002262000	880.83	0.062	0.009	16.0	5.53	0.094	0.57	582	7.96	54.1
9002271200	881.50	0.048	0.008	13.0	5.62	0.067	0.61	601	7.34	49.0
9002272000	881.83	0.074	0.005	44.0	3.26	0.059	0.64	423	3.31	27.2
9002281200	882.50	0.053	0.011	10.0	4.62	0.068	0.68	574	5.79	51.3
9003011200	883.50	0.050	0.004	13.0	4.12	0.016	0.68	512	4.72	41.8
9003021200	884.50	0.072	0.007	37.0	4.60	0.093	0.79	538	5.68	41.5
9003030400	885.17	0.056	0.005	27.0	2.17	0.064	0.50	366	2.63	22.6
9003040400	886.17	0.050	0.003	27.0	2.12	0.049	0.50	369	2.42	22.5
9003042000	886.83	0.055	0.006	24.0	3.37	0.045	0.46	476	3.53	35.0
9003052000	887.83	0.106	0.002	127.0	2.47	0.020	0.73	347	4.24	21.7
9003060400	888.17	0.068	0.003	46.0	3.51	0.007	0.58	446	5.16	33.3
9003071200	889.50	0.063	0.003	49.0	2.53	0.030	0.79	395	4.00	26.5
9003092000	891.83	0.060	0.003	37.0	4.02	0.054	0.69	556	4.78	45.6
9003112000	893.83	0.072	0.002	41.0	2.34	0.063	0.72	414	3.88	28.4
9003120400	894.17	0.177	0.001	156.0	3.99	0.089	1.24	564	5.21	46.6
9003121200	894.50	0.072	0.002	49.0	1.98	0.066	0.58	372	3.75	24.3
9003122000	894.83	0.086	0.007	76.0	2.46	0.039	0.80	410	2.73	29.9
9003132000	895.83	0.114	0.009	104.0	1.98	0.097	0.78	367	2.66	24.6
9003141200	896.50	0.208	0.009	179.0	3.17	0.395	1.75	550	3.13	44.5
9003142000	896.83	0.066	0.010	53.0	1.60	0.092	0.66	349	2.54	21.7
9003150400	897.17	0.164	0.009	142.0	2.62	0.346	1.44	531	2.72	38.8
9003160400	898.17	0.075	0.005	63.0	1.63	0.077	0.69	359	2.46	22.7
9003161200	898.50	0.132	0.008	110.0	2.68	0.335	1.32	528	3.35	40.1
9003171200	899.50	0.100	0.004	85.0	1.88	0.189	0.99	436	2.80	30.7
9003172000	899.83	0.345	0.011	357.0	3.12	0.277	2.04	631	3.73	49.9
9003180400	900.17	0.100	0.009	94.0	1.45	0.066	0.65	335	2.31	20.9
9003190400	901.17	0.049	0.009	41.0	1.55	0.042	0.46	336	2.46	20.3
9003200400	902.17	0.055	0.006	54.0	1.22	0.032	0.48	313	2.13	18.4
9003201200	902.50	0.044	0.010	34.0	1.70	0.090	0.56	411	2.60	28.0
9003210400	903.17	0.088	0.010	71.0	2.40	0.110	0.82	533	2.60	40.0
9003211200	903.50	0.056	0.000	45.0	1.20	0.070	0.51	317	2.50	19.0
9003220400	904.17	0.082	0.000	70.0	1.80	0.100	0.80	446	3.00	32.0
9003221200	904.50	0.100	0.000	87.0	2.60	0.110	0.92	604	3.10	52.0
9003230400	905.17	0.089	0.010	77.0	1.90	0.080	0.67	327	3.00	20.0
9003240400	906.17	0.063	0.010	46.0	1.90	0.100	0.58	335	3.10	20.0
9003242000	906.83	0.057	0.010	35.0	2.20	0.100	0.54	380	2.90	25.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9003250400	907.17	0.085	0.000	65.0	2.30	0.120	0.72	495	2.50	39.0
9003260400	908.17	0.073	0.000	53.0	2.30	0.100	0.75	530	3.30	43.0
9003261200	908.50	0.062	0.010	51.0	2.10	0.080	0.61	347	2.90	21.0
9003270400	909.17	0.073	0.000	66.0	1.90	0.080	0.58	347	3.20	21.0
9003271200	909.50	0.052	-0.002	36.0	1.70	0.103	0.57	406	3.29	26.0
9003281200	910.50	0.042	-0.003	23.0	1.76	0.091	0.45	345	3.56	20.0
9003291200	911.50	0.067	-0.003	64.0	1.55	0.063	0.53	329	3.36	18.0
9003301200	912.50	0.147	-0.003	129.0	1.56	0.222	1.11	414	2.99	27.0
9003310400	913.17	0.136	-0.003	108.0	1.61	0.417	1.18	479	3.33	35.0
9003311200	913.50	0.076	-0.003	65.0	1.49	0.166	0.71	383	3.30	24.0
9003312000	913.83	0.138	-0.003	121.0	1.70	0.396	1.18	530	3.34	40.0
9004012000	914.83	0.083	-0.003	56.0	1.55	0.318	0.92	506	2.83	36.0
9004022000	915.83	0.099	-0.004	80.0	1.72	0.264	0.92	568	3.21	43.0
9004030400	916.17	0.067	-0.003	53.0	1.57	0.134	0.52	386	3.14	24.0
9004031200	916.50	0.102	0.007	80.0	1.72	0.163	0.46	484	2.77	35.0
9004041200	917.50	0.120	0.008	48.0	2.06	0.173	0.53	585	3.47	48.0
9004051200	918.50	0.133	0.008	78.0	2.51	0.145	0.71	679	5.15	66.0
9004061200	919.50	0.113	0.006	106.0	2.44	0.222	1.11	592	4.45	52.0
9004071200	920.50	0.084	0.005	105.0	2.60	0.230	1.06	568	4.52	48.0
9004081200	921.50	0.071	0.005	77.0	2.65	0.245	0.78	598	4.75	51.0
9004091200	922.50	0.053	0.005	80.0	2.59	0.266	0.93	590	4.47	50.0
9004100400	923.17	0.039	0.004	81.0	2.61	0.378	0.92	609	4.71	52.0
9004101200	923.50	0.142	0.004	103.0	2.49	0.429	1.51	598	4.14	49.0
9004111200	924.50	0.458	0.019	291.0	4.63	0.179	2.33	330	5.52	17.0
9004121200	925.50	0.202	0.017	86.0	6.69	0.087	1.37	431	7.31	25.0
9004131200	926.50	0.120	0.020	52.0	6.03	0.121	1.11	490	7.07	30.0
9004132000	926.83	0.089	0.017	34.0	3.56	0.100	0.89	398	4.31	24.0
9004140400	927.17	0.187	0.008	138.0	5.72	0.189	1.47	500	6.95	32.0
9004150400	928.17	0.133	0.007	102.0	4.83	0.153	1.04	539	6.39	35.0
9004152000	928.83	0.182	0.007	156.0	4.49	0.123	1.31	556	6.42	38.0
9004160400	929.17	0.083	0.012	46.0	3.18	0.105	0.83	404	3.60	24.0
9004162000	929.83	0.185	0.006	165.0	4.43	0.254	1.40	556	6.36	39.0
9004170400	930.17	0.101	0.013	65.0	2.96	0.099	0.88	387	3.39	23.0
9004171200	930.50	0.185	0.013	159.0	4.32	0.173	1.22	511	5.17	31.0
9004172000	930.83	0.175	0.017	149.0	3.83	0.175	1.37	465	4.60	28.0
9004181200	931.50	0.135	0.013	109.0	3.87	0.269	1.30	496	4.72	33.0
9004182000	931.83	0.175	0.009	168.0	4.38	0.235	1.41	587	5.03	41.0
9004190400	932.17	0.069	0.011	46.0	2.45	0.059	0.62	373	3.03	22.0
9004191200	932.50	0.163	0.008	152.0	3.89	0.257	1.47	553	4.66	39.0
9004201200	933.50	0.144	0.007	128.0	3.03	0.310	1.37	507	3.90	34.0
9004202000	933.83	0.055	0.010	25.0	2.18	0.017	0.55	359	2.69	21.0
9004211200	934.50	0.232	0.006	220.0	2.81	0.432	1.78	535	3.71	37.0
9004221200	935.50	0.358	0.011	268.0	4.29	0.210	2.29	434	6.39	26.0
9004231200	936.50	0.253	0.008	183.0	4.59	0.259	1.78	470	6.51	29.0
9004240400	937.17	0.276	0.008	228.0	4.37	0.338	1.96	516	6.47	33.0
9004241200	937.50	0.209	0.002	159.0	4.09	0.394	1.83	509	6.63	33.0
9004250400	938.17	0.209	0.002	175.0	3.65	0.294	1.66	560	5.22	36.0
9004251200	938.50	0.069	0.003	51.0	2.44	0.019	0.79	393	2.76	23.0
9004260400	939.17	0.162	0.002	132.0	2.83	0.234	1.41	507	3.79	33.0
9004261200	939.50	0.052	0.000	30.0	2.41	0.010	0.72	393	2.41	23.0
9004271200	940.50	0.121	0.002	116.0	2.24	0.027	1.10	395	2.04	24.0
9004280400	941.17	0.328	0.002	202.0	1.71	0.131	2.17	504	2.73	34.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9004282000	941.83	0.131	0.002	84.0	1.65	0.025	1.15	379	1.50	24.0
9004291200	942.50	0.099	0.001	61.0	1.57	0.048	0.92	369	1.57	24.0
9004301200	943.50	0.183	0.002	101.0	1.20	0.014	1.20	421	1.58	29.0
9005011200	944.50	0.066	-0.002	53.0	1.59	0.001	0.57	331	1.12	18.0
9005021200	945.50	0.147	-0.001	123.0	1.24	0.024	0.99	365	0.95	21.0
9005031200	946.50	0.055	-0.002	35.0	1.02	-0.002	0.63	322	0.08	16.0
9005041200	947.50	0.076	-0.001	73.0	0.97	0.000	0.67	310	0.21	16.0
9005042000	947.83	0.077	-0.002	79.0	1.05	0.024	0.60	302	0.25	16.0
9005050400	948.17	0.250	-0.001	157.0	0.57	0.399	1.88	402	1.18	25.0
9005051200	948.50	0.265	0.005	182.0	1.29	0.451	1.46	492	2.28	36.0
9005052000	948.83	0.892	0.002	368.0	3.06	0.492	2.78	467	4.12	33.0
9005060400	949.17	0.342	0.002	156.0	4.93	0.352	2.61	378	4.73	22.0
9005061200	949.50	0.285	0.006	148.0	6.93	0.547	3.13	430	6.62	24.0
9005062000	949.83	0.251	-0.001	148.0	6.83	0.487	2.64	451	6.26	24.0
9005071200	950.50	0.303	-0.001	230.0	6.94	0.527	2.65	498	6.83	29.0
9005080400	951.17	0.175	-0.002	140.0	2.73	0.209	1.35	384	2.42	21.0
9005081200	951.50	0.104	0.003	91.0	2.21	0.108	1.04	358	2.53	19.0
9005091200	952.50	0.217	0.003	201.0	3.07	0.385	1.83	430	4.49	25.0
9005092000	952.83	0.052	0.003	43.0	1.48	0.029	0.66	327	2.00	17.0
9005100400	953.17	0.298	0.003	285.0	2.60	0.274	1.89	432	3.87	26.0
9005110400	954.17	0.300	0.003	280.0	3.50	0.334	1.94	586	4.80	40.0
9005111200	954.50	0.105	0.003	109.0	1.20	0.019	0.72	310	1.85	16.0
9005121200	955.50	0.132	0.003	117.0	1.09	0.115	0.96	319	2.27	16.0
9005131200	956.50	0.070	0.003	71.0	0.97	0.005	0.56	285	2.09	15.0
9005140400	957.17	0.090	0.003	87.0	1.15	0.051	0.68	316	2.26	17.0
9005141200	957.50	0.154	0.003	122.0	2.31	0.256	1.32	495	4.89	38.0
9005142000	957.83	0.064	0.005	60.0	1.18	0.047	0.61	318	2.51	18.0
9005150400	958.17	0.241	0.004	220.0	4.21	0.276	1.86	528	6.18	40.0
9005151200	958.50	0.092	0.005	97.0	1.31	0.049	0.63	305	1.56	17.0
9005160400	959.17	0.087	0.004	71.0	2.01	0.150	0.83	362	2.56	21.0
9005161200	959.50	0.233	0.005	198.0	4.42	0.459	1.90	506	5.49	34.0
9005170400	960.17	0.220	0.006	149.0	4.40	0.253	1.63	349	3.61	19.0
9005171200	960.50	0.573	0.009	440.0	8.29	0.546	3.94	398	6.87	20.0
9005181200	961.50	0.264	0.010	187.0	8.65	0.408	2.02	475	7.52	27.0
9005182000	961.83	0.208	0.012	142.0	3.20	0.123	1.35	334	2.77	17.0
9005191200	962.50	0.151	0.012	110.0	2.88	0.114	0.97	326	2.40	17.0
9005201200	963.50	0.215	0.010	176.0	4.91	0.440	1.76	413	4.90	22.0
9005210400	964.17	0.079	0.007	63.0	1.79	0.123	0.71	324	2.00	17.0
9005211200	964.50	0.139	0.007	112.0	5.01	0.443	1.41	483	5.89	30.0
9005212000	964.83	0.163	0.012	112.0	4.77	0.325	1.57	542	6.01	37.0
9005220400	965.17	0.174	0.009	140.0	3.36	0.270	1.34	441	4.27	26.0
9005221200	965.50	0.184	0.005	136.0	4.67	0.318	1.68	474	5.24	28.0
9005231200	966.50	0.266	0.006	204.0	6.12	0.421	2.03	491	5.65	29.0
9005241200	967.50	0.094	0.004	60.0	1.81	0.147	0.81	326	1.89	17.0
9005261200	969.50	0.113	0.004	61.0	1.94	0.276	1.09	359	1.42	20.0
9005271200	970.50	0.188	0.005	107.0	3.68	0.631	2.15	514	3.17	31.0
9005281200	971.50	0.193	0.009	120.0	2.37	0.135	1.79	423	1.36	25.0
9005290400	972.17	0.090	0.010	62.0	1.19	0.038	0.78	317	0.93	17.0
9005291200	972.50	0.069	0.000	64.0	0.72	0.023	0.56	292	1.09	16.0
9005301200	973.50	0.123	0.000	57.0	1.11	0.117	1.08	381	1.24	22.0
9005311200	974.50	0.137	-0.001	51.0	1.31	0.100	1.49	437	0.57	29.0
9006011200	975.50	0.205	0.001	93.0	1.15	0.099	1.78	437	0.87	30.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9006021200	976.50	0.207	0.004	52.0	1.08	0.251	1.75	462	1.18	32.0
9006031200	977.50	0.226	0.015	68.0	0.93	0.312	1.80	464	1.62	32.0
9006041200	978.50	0.189	0.016	57.0	0.80	0.240	1.51	475	2.36	34.0
9006050400	979.17	0.221	0.016	87.0	0.74	0.402	1.88	483	2.56	34.0
9006051200	979.50	0.165	0.023	55.0	0.81	0.378	2.02	488	2.83	35.0
9006061200	980.50	0.160	-0.001	69.0	0.77	0.455	1.89	490	2.93	35.0
9006071200	981.50	0.142	-0.005	60.0	0.70	0.324	1.56	494	2.97	36.0
9006081200	982.50	0.214	-0.005	96.0	0.60	0.200	1.28	494	3.17	36.0
9006091200	983.50	0.206	-0.006	69.0	0.54	0.098	1.57	494	2.34	36.0
9006101200	984.50	0.201	-0.005	69.0	0.31	0.063	1.57	479	2.09	36.0
9006111200	985.50	0.229	-0.004	73.0	0.20	-0.004	1.65	489	1.36	37.0
9006112000	985.83	0.204	-0.001	66.0	0.30	0.196	1.45	505	0.76	37.0
9006132000	987.83	0.225	-0.003	57.0	0.29	0.052	1.31	509	0.03	38.0
9006152000	989.83	0.235	-0.002	57.0	0.30	0.090	1.27	513	0.27	38.0
9006172000	991.83	0.252	-0.001	76.0	0.30	0.031	1.64	526	0.58	40.0
9006190400	993.17	0.281	-0.001	81.0	0.30	0.083	1.71	532	0.14	41.0
9006191200	993.50	0.314	-0.004	118.0	0.06	0.003	1.96	552	-0.04	42.0
9006211200	995.50	0.276	-0.002	73.0	0.13	0.028	1.61	552	0.39	42.0
9006231200	997.50	0.292	-0.002	119.0	0.14	0.130	2.05	550	0.50	42.0
9006251200	999.50	0.236	-0.001	78.0	0.16	0.085	1.43	547	0.75	43.0
9006260400	1000.17	0.196	-0.003	55.0	0.19	0.048	1.47	553	0.58	42.0
9006261200	1000.50	0.242	0.004	91.0	0.27	0.144	0.22	564	0.16	43.0
9006281200	1002.50	0.231	0.004	64.0	0.27	0.165	1.64	571	0.15	43.0
9006301200	1004.50	0.226	0.003	77.0	0.28	0.207	0.46	568	0.23	42.0
9007021200	1006.50	0.226	0.002	74.0	0.29	0.258	1.74	568	0.39	41.0
9007030400	1007.17	0.218	0.002	62.0	0.29	0.321	2.16	573	0.75	43.0
9007102000	1014.83	0.170	0.002	60.0	0.34	0.223	1.74	583	1.43	46.0
9007122000	1016.83	0.141	0.002	137.0	0.74	0.093	0.86	337	1.29	18.0
9007132000	1017.83	0.161	0.002	74.0	0.47	0.251	1.26	467	1.73	32.0
9007142000	1018.83	0.181	0.001	71.0	0.40	0.177	1.47	483	1.45	36.0
9007152000	1019.83	0.183	0.001	69.0	0.28	0.012	1.47	507	0.76	39.0
9007170400	1021.17	0.150	0.000	52.0	0.72	0.027	1.64	528	0.84	41.0
9007171200	1021.50	0.201	0.000	61.0	0.65	0.195	1.78	536	0.41	41.0
9007191200	1023.50	0.201	0.002	53.0	1.43	0.210	1.71	530	0.09	43.0
9007211200	1025.50	0.167	0.012	46.0	1.64	0.249	1.53	532	0.74	43.0
9007231200	1027.50	0.169	0.013	58.0	1.57	0.417	1.71	529	1.29	43.0
9007240400	1028.17	0.128	0.001	30.0	2.07	0.305	1.53	525	1.36	42.0
9007311200	1035.50	0.234	0.010	116.0	1.14	0.230	1.61	387	3.98	25.0
9008011200	1036.50	0.263	0.014	94.0	0.75	0.282	1.92	387	3.19	25.0
9008021200	1037.50	0.182	0.007	73.0	0.66	0.119	1.10	300	1.73	16.0
9008031200	1038.50	0.105	0.000	35.0	0.63	0.050	0.78	285	1.81	14.0
9008041200	1039.50	0.227	0.009	90.0	0.24	0.177	1.53	359	2.28	24.0
9008051200	1040.50	0.086	0.001	33.0	0.67	0.095	0.68	287	1.87	14.0
9008060400	1041.17	0.138	0.002	85.0	0.72	0.017	0.74	286	1.55	14.0
9008061200	1041.50	0.181	0.018	71.0	0.75	0.255	1.35	371	2.60	22.0
9008080400	1043.17	0.210	0.005	108.0	0.81	0.282	1.71	447	2.83	29.0
9008081200	1043.50	0.090	0.004	38.0	0.72	0.042	1.05	325	1.31	16.0
9008101200	1045.50	0.120	0.003	44.0	0.40	0.126	1.16	343	1.41	20.0
9008121200	1047.50	0.152	0.002	61.0	0.26	0.206	1.23	368	2.07	22.0
9008122000	1047.83	0.156	0.002	31.0	0.52	0.041	0.72	297	1.17	14.0
9008131200	1048.50	0.121	0.002	52.0	0.47	0.129	0.87	291	1.26	14.0
9008132000	1048.83	0.167	0.003	50.0	0.23	0.054	1.17	370	2.78	23.0

Appendix E. Continued.

Datetime	Day of Study	TP mg/L	SRP mg/L	TSS mg/L	NO_{2+3} N mg/L	NH_3 N mg/L	TKN mg/L	Conduct. µS/cm	Silica mg/L	Chloride mg/L
9008141200	1049.50	0.202	0.025	56.0	0.40	0.285	1.34	432	4.40	32.0
9008161200	1051.50	0.168	0.008	64.0	0.52	0.205	1.38	430	4.09	32.0
9008171200	1052.50	0.121	0.004	60.0	0.43	0.136	1.09	336	2.65	20.0
9008181200	1053.50	0.121	0.005	68.0	0.39	0.125	1.01	342	2.69	22.0
9008191200	1054.50	0.045	0.002	31.0	0.47	0.011	0.57	280	1.44	13.0
9008201200	1055.50	0.142	0.009	52.0	0.33	0.147	1.14	334	3.29	20.0
9008210400	1056.17	0.126	0.005	50.0	0.32	0.179	0.98	334	3.13	19.0
9008211200	1056.50	0.088	-0.001	72.0	0.52	0.042	0.69	288	0.73	15.0
9008221200	1057.50	0.079	-0.001	69.0	0.54	0.050	0.69	292	1.04	14.0
9008231200	1058.50	0.088	-0.001	40.0	0.41	0.168	0.95	315	1.52	16.0
9008241200	1059.50	0.102	-0.002	31.0	0.26	0.184	1.22	348	2.04	19.0
9008251200	1060.50	0.105	-0.002	27.0	0.19	0.091	0.98	358	1.85	20.0
9008261200	1061.50	0.116	-0.004	26.0	0.12	0.093	1.14	367	1.97	21.0
9008271200	1062.50	0.135	-0.002	27.0	0.09	0.061	1.34	378	2.57	22.0
9008280400	1063.17	0.150	-0.003	34.0	0.09	0.017	1.33	385	2.59	23.0
9008281200	1063.50	0.175	0.002	42.0	0.12	0.113	1.50	394	3.59	22.0
9008301200	1065.50	0.189	0.002	38.0	0.13	0.136	1.41	408	4.87	25.0
9009011200	1067.50	0.196	0.000	38.0	0.11	0.002	1.66	409	3.93	25.0
9009031200	1069.50	0.168	-0.002	41.0	0.21	0.009	1.30	361	2.77	20.0
9009040400	1070.17	0.221	-0.001	51.0	0.11	-0.001	1.66	402	3.62	24.0
9009041200	1070.50	0.222	0.026	43.0	0.15	0.330	1.68	415	4.61	24.0
9009061200	1072.50	0.217	0.022	42.0	0.14	0.325	1.80	428	4.98	25.0
9009082000	1074.83	0.300	0.013	91.0	0.19	0.109	1.50	401	5.35	24.0
9009091200	1075.50	0.400	0.019	61.0	0.18	0.172	1.08	383	5.37	24.0
9009092000	1075.83	0.518	0.026	237.0	1.05	0.040	2.01	334	5.17	21.0
9009100400	1076.17	0.400	0.036	169.0	3.55	0.099	1.91	240	6.05	10.0
9009101200	1076.50	0.326	0.029	135.0	3.52	0.156	1.75	284	6.42	12.0
9009110400	1077.17	0.069	0.017	41.0	0.83	0.085	0.69	264	1.92	13.0
9009111200	1077.50	0.149	0.005	102.0	0.84	0.109	0.80	277	2.99	15.0
9009112000	1077.83	0.301	0.007	118.0	3.61	0.396	1.89	383	8.87	21.0
9009121200	1078.50	0.088	0.005	43.0	0.77	0.067	0.67	277	2.66	14.0
9009131200	1079.50	0.196	0.002	109.0	1.70	0.415	1.52	352	6.31	18.0
9009141200	1080.50	0.304	0.001	145.0	2.25	0.545	2.23	488	10.17	28.0
9009142000	1080.83	0.096	0.000	49.0	0.63	0.052	0.67	281	2.35	15.0
9009150400	1081.17	0.236	0.004	124.0	1.01	0.423	1.76	385	7.71	21.0
9009160400	1082.17	0.196	-0.001	102.0	1.48	0.153	1.09	333	4.20	18.0
9009170400	1083.17	0.168	0.000	135.0	0.68	0.139	1.41	275	2.32	13.0
9009171200	1083.50	0.240	0.010	93.0	2.75	0.267	1.46	408	7.37	25.0
9009172000	1083.83	0.098	0.002	38.0	0.64	0.034	0.70	290	2.22	14.0
9009251200	1091.50	0.108	0.012	62.0	2.57	0.253	1.05	624	7.37	45.0
9009252000	1091.83	0.074	0.008	39.0	0.67	0.048	0.52	308	2.04	17.0
9009261200	1092.50	0.054	0.006	26.0	0.44	0.012	0.39	266	1.51	12.0
9009271200	1093.50	0.108	0.006	64.0	0.39	0.083	0.68	285	1.18	13.0
9009281200	1094.50	0.084	0.005	32.0	0.37	0.072	0.71	284	1.68	14.0
9009291200	1095.50	0.064	0.004	28.0	0.40	0.054	0.49	269	1.38	12.0
9009301200	1096.50	0.125	0.007	60.0	0.38	0.187	0.91	324	2.25	16.0
9009302000	1096.83	0.118	0.009	48.0	0.47	0.167	0.89	377	3.03	22.0

Appendix F. Concentrations of four herbicides in Old Woman Creek at Berlin Road (USGS gaging station 04199155) and in Old Woman Creek Wetland at U.S. Highway 6 (USGS gaging station 04199165). Values are in µg/L and are not corrected for percent recovery.

Date	Day of Study	alachlor Berlin Rd.	atrazine Berlin Rd.	cyanazine Berlin Rd.	metolachlor Berlin Rd.	alachlor US Hwy 6	atrazine US Hwy 6	cyanazine US Hwy 6	metolachlor US Hwy 6
880405	188.0	0.000	0.151	0.182	0.000	0.000	0.172	0.000	0.000
880510	223.0	0.046	0.150	0.039	0.000	0.000	0.040	0.008	0.000
880517	230.0	5.006	13.626	1.874	0.213	0.133	0.246	0.064	0.000
880524	237.0	0.443	1.263	0.363	0.075	0.139	0.584	0.155	0.047
880531	244.0	0.133	0.819	0.200	0.057	0.107	0.586	0.139	0.000
880607	251.0	0.000	0.621	0.091	0.038	0.035	0.597	0.200	0.000
880614	258.0	0.000	0.670	0.130	0.043	0.058	0.489	0.218	0.000
880621	265.0	0.000	0.488	0.091	0.026	0.000	0.313	0.080	0.000
880624	268.0	0.000	0.482	0.000	0.000				
880628	272.0					0.000	0.253	0.000	0.000
880705	279.0	0.000	1.550	0.000	0.044	0.000	0.564	0.000	0.000
880712	286.0	0.000	0.382	0.055	0.000	0.000	0.183	0.047	0.000
880718	292.0	0.000	0.435	0.000	0.000				
880719	293.0	0.000	0.426	0.065	0.000	0.000	0.165	0.044	0.000
880726	300.0	0.000	0.338	0.059	0.000	0.000	0.116	0.038	0.000
880731	305.0	0.000	0.289	0.000	0.000				
880801	306.0	0.000	0.000	0.000	0.000				
880802	307.0	0.000	0.000	0.000	0.000				
880809	314.0	0.000	0.270	0.040	0.000	0.000	0.062	0.000	0.000
880813	318.0	0.000	0.344	0.051	0.000				
880816	321.0	0.000	0.316	0.000	0.000	0.000	0.094	0.000	0.000
880820	325.0	0.000	0.481	0.049	0.000	0.000	0.100	0.000	0.000
880823	328.0	0.000	0.446	0.000	0.000	0.000	0.081	0.052	0.000
880827	332.0	0.000	0.490	0.432	0.000				
880827	332.3	5.122	2.080	0.188	0.000				
880827	332.6	3.913	1.616	0.165	0.000				
880828	333.0	0.000	0.458	0.000	0.000				
880828	333.5	0.000	0.427	0.000	0.000				
880830	335.0	0.000	0.430	0.199	0.000				
880906	342.0	0.000	0.236	0.000	0.000				
880913	349.0	0.000	0.196	0.000	0.000	0.000	0.000	0.000	0.000
880920	356.0	0.000	0.211	0.000	0.000	0.000	0.025	0.000	0.000
881018	384.0	0.000	0.356	0.000	0.000	0.000	0.000	0.000	0.000
881108	405.0	0.102	0.000	0.000	0.056				
881123	420.0	0.000	0.000	0.000	0.000				
881206	433.0	0.000	0.115	0.000	0.000				
881220	447.0	0.000	0.098	0.000	0.000				
881229	456.0	0.000	0.437	0.000	0.196				
890103	461.0	0.000	0.111	0.000	0.000	0.000	0.163	0.000	0.000
890117	475.0	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000
890207	496.0	0.000	0.059	0.000	0.000	0.000	0.052	0.000	0.000
890221	510.0	0.000	0.052	0.000	0.000	0.000	0.028	0.000	0.000
890314	531.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
890328	545.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
890404	552.0	0.000	0.346	0.000	0.000	0.000	0.000	0.000	0.000
890418	566.0	0.000	0.087	0.000	0.000	0.000	0.063	0.000	0.000
890502	580.0	0.000	0.063	0.000	0.000	0.000	0.044	0.000	0.000
890503	581.0					0.000	0.141	0.000	0.000
890503	581.5					0.000	0.145	0.000	0.000
890504	582.0					0.000	0.071	0.000	0.000
890505	583.0					0.000	0.067	0.000	0.000

Appendix F. Continued.

Date	Day of Study	alachlor Berlin Rd.	atrazine Berlin Rd.	cyanazine Berlin Rd.	metolachlor Berlin Rd.	alachlor US Hwy 6	atrazine US Hwy 6	cyanazine US Hwy 6	metolachlor US Hwy 6
890506	584.0					0.000	0.102	0.000	0.000
890507	585.0					0.000	0.286	0.000	0.000
890508	586.0					0.237	0.303	0.000	0.000
890508	586.3					0.000	0.119	0.000	0.000
890508	586.6					0.110	0.255	0.000	0.221
890509	587.0	0.000	0.191	0.000	0.168	0.000	0.924	0.000	0.000
890509	587.5					0.000	0.250	0.000	0.000
890510	588.0					0.000	0.035	0.000	0.000
890510	588.5					0.000	0.176	0.000	0.000
890512	590.0					0.000	0.248	0.000	0.000
890514	592.0					0.174	0.655	0.245	0.314
890516	594.0	0.000	0.226	0.000	0.000	0.000	0.370	0.000	0.247
890511	589.0	0.266	0.565	0.000	0.242				
890520	598.0	0.245	0.532	0.000	0.000	0.822	1.137	0.000	1.057
890523	601.0	7.032	2.099	0.000	0.795	0.000	0.000	0.000	0.000
890524	602.0	5.020	2.041	0.149	2.525				
890524	602.5	1.940	0.301	0.000	0.223				
890525	603.0	1.360	0.029	0.003	0.708	0.427	0.288	0.000	0.000
890526	604.0	1.617	0.042	0.105	0.413	1.053	1.066	0.070	0.450
890526	604.3	1.209	0.985	0.000	1.179	1.724	3.875	0.441	2.209
890526	604.6	1.244	0.000	0.000	0.893	1.666	3.278	0.415	1.208
890527	605.0	2.927	0.098	0.021	2.630	1.364	2.886	0.383	1.008
890527	605.3					1.014	2.632	0.311	0.915
890527	605.6					0.955	2.006	0.283	0.884
890528	606.0	1.118	0.028	0.000	0.037	0.699	1.498	0.100	0.694
890529	607.0	0.133	0.010	0.079	0.730	0.605	1.385	0.125	0.757
890530	608.0	0.563	0.026	0.028	36.480	0.000	0.000	0.038	0.000
890531	609.0	10.053	27.075	0.000	191.458				
890531	609.3	3.982	14.028	0.357	10.763				
890531	609.6	1.661	5.612	0.000	2.994				
890601	610.0	1.356	4.053	0.000	2.022				
890601	610.5	1.073	2.997	0.000	1.101				
890602	611.0	1.034	2.337	0.000	0.000				
890603	612.0	1.021	1.773	0.000	0.000				
890603	612.5	16.135	7.252	0.000	17.764				
890604	613.0	4.441	17.833	1.059	4.543				
890604	613.3	1.288	7.981	0.000	1.901				
890604	613.6	0.802	5.270	0.000	0.000				
890605	614.0	0.000	2.780	2.780	0.000				
890609	618.0	0.000	0.957	0.000	0.000	0.000	0.597	0.145	0.150
890609	618.5	16.468	11.120	0.926	1.828				
890610	619.0	15.354	24.853	1.991	3.502	0.000	1.615	0.236	0.692
890613	622.0	0.423	3.764	1.111	0.232	0.304	0.809	0.290	0.000
890607	616.0					0.238	0.968	0.211	1.228
890610	619.5					0.000	0.593	0.172	0.000
890612	621.0					1.780	3.689	0.891	1.116
890613	622.5	28.531	11.115	3.522	2.742				
890614	623.0	2.075	9.443	2.063	3.425	5.438	9.317	3.676	1.358
890614	623.5	0.000	13.430	3.588	2.653				
890615	624.0	0.000	5.617	1.604	1.763	1.868	8.788	2.574	1.754
890616	625.0					0.000	1.528	0.451	0.000
890617	626.0	0.000	3.931	0.887	0.000	0.800	5.309	0.895	1.125
890617	626.3					1.013	4.894	0.926	0.976
890617	626.6					0.423	2.141	0.421	0.000

Appendix F. Continued.

Date	Day of Study	alachlor Berlin Rd.	atrazine Berlin Rd.	cyanazine Berlin Rd.	metolachlor Berlin Rd.	alachlor US Hwy 6	atrazine US Hwy 6	cyanazine US Hwy 6	metolachlor US Hwy 6
890618	627.0					0.000	1.144	0.219	0.000
890619	628.0	0.000	1.784	0.525	0.000	0.348	2.244	0.491	0.000
890620	629.0	0.431	1.732	0.409	0.000	0.000	0.708	0.132	0.000
890627	636.0	0.375	0.888	0.097	1.396				
890627	636.5	14.500	10.787	0.976	16.619				
890628	637.0	5.457	6.215	0.933	5.804	0.200	1.105	0.139	0.279
890701	640.0					1.321	2.261	0.245	2.540
890703	642.0	0.344	0.903	0.050	2.785	1.044	2.225	0.210	2.183
890707	646.0	0.239	0.646	0.000	9.175	0.548	1.637	0.230	1.034
890711	650.0	0.000	0.544	0.000	1.849	0.000	0.854	0.081	0.450
890718	657.0	0.000	0.000	0.000	0.000	0.000	1.141	0.072	0.533
890725	664.0	0.177	0.763	0.078	1.293	0.000	0.639	0.108	0.000
890801	671.0	0.351	1.004	0.091	1.151	0.000	0.638	0.077	0.000
890808	678.0	0.290	0.697	0.049	0.779	0.000	0.802	0.075	0.697
890815	685.0	0.000	0.392	0.000	0.000	0.000	0.768	0.029	0.000
890821	691.0	0.337	0.728	0.083	0.338	0.000	0.191	0.000	0.000
890905	706.0	0.000	0.426	0.000	0.276				
890918	719.0	0.000	0.340	0.000	1.185	0.000	0.393	0.000	0.379
891003	734.0	0.000	0.248	0.000	0.000	0.000	0.329	0.000	0.000
891017	748.0	0.832	1.108	0.000	1.801	0.000	0.197	0.000	0.000
891030	761.0	0.000	0.226	0.000	0.000	0.000	0.140	0.000	0.000
891114	783.4	0.081	0.064	0.021	0.174	0.084	0.085	0.041	0.171
891128	790.4	0.457	0.172	0.033	0.501	0.068	0.093	0.000	0.000
891212	790.5					0.000	0.077	0.000	0.000
891212	790.5	0.000	0.071	0.000	0.000				
891218	796.4	0.000	0.090	0.000	0.000				
900102	825.5	0.000	0.144	0.000	0.217	0.000	0.122	0.000	0.000
900115	838.6	0.000	0.066	0.000	0.000	0.092	0.073	0.000	0.000
900130	853.6	0.000	0.066	0.000	0.000	0.000	0.058	0.000	0.000
900212	866.6	0.000	0.063	0.000	0.000	0.000	0.060	0.000	0.000
900226	880.6	0.000	0.045	0.000	0.000	0.000	0.076	0.000	0.000
900312	894.6	0.000	0.070	0.000	0.000	0.000	0.060	0.000	0.000
900327	909.4	0.000	0.041	0.000	0.000	0.000	0.067	0.000	0.000
900410	923.5	0.219	0.079	0.000	0.243	0.000	0.058	0.000	0.000
900424	937.5	0.000	0.067	0.000	0.000	0.000	0.080	0.000	0.000
900428	941.5	0.000	0.158	0.000	0.592	0.000	0.093	0.000	0.000
900501	944.4	0.000	0.117	0.000	0.000	0.000	0.075	0.000	0.000
900504	947.8	0.421	0.000	0.000	0.000	0.000	0.071	0.000	0.000
900505	948.2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
900505	948.5	2.226	6.952	0.000	1.689	0.222	0.345	0.000	0.000
900505	948.8	2.427	7.981	0.000	1.447	1.706	3.764	0.000	0.470
900506	949.2	1.183	4.380	0.000	0.532	2.462	7.224	3.235	0.995
900506	949.5	1.052	3.777	0.000	0.000	1.511	4.593	0.000	0.742
900506	949.8					2.322	8.516	5.582	1.065
900507	950.5	0.000	0.000	0.000	0.000	1.634	6.836	4.458	0.773
900508	951.4	0.327	1.805	0.940	0.240	0.000	0.000	0.000	0.000
900509	952.5	0.000	1.452	0.000	0.000	0.528	2.291	1.203	0.311
900509	952.8					0.147	0.327	0.000	0.000
900510	953.2					0.328	1.484	0.704	0.000
900510	953.5	0.000	1.072	0.000	0.000				
905011	954.2					0.315	1.354	0.688	0.000
900511	954.5	0.268	0.784	0.000	0.000	0.000	0.165	0.000	0.000
905012	955.5	0.000	0.646	0.000	0.000	0.000	0.265	0.000	0.000
900513	956.2	13.677	14.415	7.755	1.545				

Appendix F. Continued.

Date	Day of Study	alachlor Berlin Rd.	atrazine Berlin Rd.	cyanazine Berlin Rd.	metolachlor Berlin Rd.	alachlor US Hwy 6	atrazine US Hwy 6	cyanazine US Hwy 6	metolachlor US Hwy 6
900513	956.5	2.062	4.935	1.873	0.000	0.000	0.076	0.000	0.000
900513	956.8	2.750	14.891	3.855	5.057				
900514	957.2	1.794	12.405	6.402	2.530	0.000	0.264	0.000	0.000
900514	957.4	1.039	7.345	3.343	1.452	0.404	0.639	0.821	0.424
900514	957.5					0.957	2.146	1.005	0.411
900515	958.2	0.583	4.216	0.000	0.905				
900515	958.4	0.384	3.048	1.750	0.600				
900516	959.5	5.995	34.776	20.853	10.616	1.307	5.352	0.551	23.938
900517	960.2	3.237	22.879	30.605	6.020				
900517	960.5	2.447	17.425	31.100	3.686	0.901	4.879	3.962	1.111
900517	960.8	2.095	13.908	24.713	2.893	1.938	13.273	9.609	4.087
900518	961.2	1.983	13.283	16.939	2.824	0.255	0.662	0.000	0.000
900518	961.5	2.017	12.380	14.316	3.215	0.000	0.000	0.000	0.000
900519	962.5	1.438	5.140	6.504	1.650	1.497	4.242	4.709	2.528
900520	963.5	1.169	4.130	4.998	1.689	1.660	7.090	10.591	2.939
900521	964.5	3.451	30.408	20.083	16.158	1.121	6.812	9.510	1.853
900522	965.4					1.163	6.079	4.944	2.033
900526	969.0	1.594	4.137	1.960	2.377				
900529	972.4	0.661	2.611	0.000	1.074	0.365	4.148	2.826	1.370
900529	972.5					0.081	0.343	0.000	0.174
900605	979.4	0.532	1.231	0.685	1.046	0.271	2.922	2.350	1.156
900610	984.5	0.930	2.899	1.263	1.954	0.194	2.377	1.966	0.744
900611	985.7	0.909	3.556	1.976	5.171	0.186	2.521	2.062	0.726
900619	993.4	0.487	1.804	0.998	1.985	0.180	2.303	1.736	0.731
900625	999.4					0.134	1.788	1.096	0.454
900626	1000.4	0.300	0.821	0.000	0.946				
900703	1007.4	0.957	1.306	0.674	0.927	0.118	1.494	0.945	0.346
900710	1014.6	0.408	1.400	0.000	0.954	0.117	1.428	0.000	0.236
900717	1021.4	1.559	6.602	0.000	6.391	0.440	1.471	0.000	0.929
900724	1028.4	0.361	2.263	0.000	2.843	0.392	1.225	0.000	1.123
900731	1035.4	0.000	0.000	0.000	0.248	0.000	0.000	0.000	0.198
900806	1041.4	1.073	0.000	0.000	0.886	0.000	0.000	0.000	0.170
900814	1049.4	0.250	0.000	0.000	0.975	0.000	0.000	0.000	0.000
900821	1056.4	1.194	0.000	0.000	0.746	0.000	0.000	0.000	0.000
900828	1063.4	0.268	0.000	0.000	0.000	0.000	0.000	0.000	0.000
900904	1070.4	0.576	0.000	0.000	0.000	0.000	0.000	0.000	0.000
900911	1077.4	0.144	1.138	0.000	0.527	0.000	0.551	0.000	0.278
900918	1084.4	0.092	0.647	0.000	0.386	0.000	0.664	0.000	0.287
900925	1091.4	0.000	0.286	0.000	0.226	0.152	0.390	0.000	0.085

Appendix G. Hypsographic and depth-volume table for the Old Woman Creek Wetland, after Herdendorf and Hume (1991). Stage is in feet above mean sea level.

Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3
568.89	1827	1106	569.20	4443	1494	569.51	7059	1881
568.90	1911	1119	569.21	4527	1506	569.52	7143	1894
568.91	1996	1131	569.22	4612	1519	569.53	7228	1906
568.92	2080	1144	569.23	4696	1531	569.54	7312	1919
568.93	2165	1156	569.24	4780	1544	569.55	7471	1956
568.94	2249	1169	569.25	4865	1556	569.56	7630	1994
568.95	2333	1181	569.26	4949	1569	569.57	7789	2031
568.96	2418	1194	569.27	5034	1581	569.58	7947	2069
568.97	2502	1206	569.28	5118	1594	569.59	8106	2106
568.98	2586	1219	569.29	5202	1606	569.60	8265	2144
568.99	2671	1231	569.30	5287	1619	569.61	8424	2181
569.00	2755	1244	569.31	5371	1631	569.62	8583	2219
569.01	2840	1256	569.32	5456	1644	569.63	8742	2256
569.02	2924	1269	569.33	5540	1656	569.64	8900	2294
569.03	3008	1281	569.34	5624	1669	569.65	9059	2331
569.04	3093	1294	569.35	5709	1681	569.66	9218	2369
569.05	3177	1306	569.36	5793	1694	569.67	9377	2406
569.06	3262	1319	569.37	5877	1706	569.68	9536	2444
569.07	3346	1331	569.38	5962	1719	569.69	9695	2481
569.08	3430	1344	569.39	6046	1731	569.70	9853	2519
569.09	3515	1356	569.40	6131	1744	569.71	10012	2556
569.10	3599	1369	569.41	6215	1756	569.72	10171	2594
569.11	3683	1381	569.42	6299	1769	569.73	10330	2631
569.12	3768	1394	569.43	6384	1781	569.74	10489	2669
569.13	3852	1406	569.44	6468	1794	569.75	10648	2706
569.14	3937	1419	569.45	6553	1806	569.76	10806	2744
569.15	4021	1431	569.46	6637	1819	569.77	10965	2781
569.16	4105	1444	569.47	6721	1831	569.78	11124	2819
569.17	4190	1456	569.48	6806	1844	569.79	11283	2856
569.18	4274	1469	569.49	6890	1856	569.80	11442	2894
569.19	4359	1481	569.50	6974	1869	569.81	11601	2931
569.82	11759	2969	570.13	16683	4131	570.44	20087	5911
569.83	11918	3006	570.14	16842	4168	570.45	20183	5974
569.84	12077	3044	570.15	17001	4206	570.46	20278	6037
569.85	12236	3081	570.16	17160	4243	570.47	20374	6101
569.86	12395	3119	570.17	17319	4281	570.48	20469	6164
569.87	12554	3156	570.18	17477	4318	570.49	20565	6227
569.88	12712	3193	570.19	17636	4356	570.50	20660	6290
569.89	12871	3231	570.20	17795	4393	570.51	20756	6354
569.90	13030	3268	570.21	17891	4456	570.52	20851	6417
569.91	13189	3306	570.22	17986	4519	570.53	20947	6480
569.92	13348	3343	570.23	18082	4583	570.54	21042	6543
569.93	13507	3381	570.24	18177	4646	570.55	21138	6606
569.94	13665	3418	570.25	18273	4709	570.56	21233	6670
569.95	13824	3456	570.26	18368	4772	570.57	21329	6733
569.96	13983	3493	570.27	18464	4836	570.58	21424	6796
569.97	14142	3531	570.28	18559	4899	570.59	21520	6859
569.98	14301	3568	570.29	18655	4962	570.60	21615	6923
569.99	14460	3606	570.30	18750	5025	570.61	21711	6986
570.00	14618	3643	570.31	18846	5089	570.62	21806	7049
570.01	14777	3681	570.32	18941	5152	570.63	21902	7112
570.02	14936	3718	570.33	19037	5215	570.64	21997	7176
570.03	15095	3756	570.34	19132	5278	570.65	22093	7239
570.04	15254	3793	570.35	19228	5342	570.66	22188	7302
570.05	15413	3831	570.36	19323	5405	570.67	22284	7365
570.06	15571	3868	570.37	19419	5468	570.68	22379	7429
570.07	15730	3906	570.38	19514	5531	570.69	22475	7492
570.08	15889	3943	570.39	19610	5595	570.70	22570	7555
570.09	16048	3981	570.40	19705	5658	570.71	22666	7618
570.10	16207	4018	570.41	19801	5721	570.72	22761	7682
570.11	16366	4056	570.42	19896	5784	570.73	22857	7745
570.12	16524	4093	570.43	19992	5848	570.74	22952	7808

Appendix G. Continued.

Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3
570.75	23048	7871	571.06	31000	10716	571.37	41856	14036
570.76	23143	7935	571.07	31350	10822	571.38	42207	14144
570.77	23239	7998	571.08	31701	10928	571.39	42557	14252
570.78	23334	8061	571.09	32051	11034	571.40	42907	14360
570.79	23430	8124	571.10	32401	11140	571.41	43257	14466
570.80	23525	8188	571.11	32751	11248	571.42	43607	14572
570.81	23621	8251	571.12	33101	11356	571.43	43958	14678
570.82	23716	8314	571.13	33452	11464	571.44	44308	14784
570.83	23812	8377	571.14	33802	11572	571.45	44658	14890
570.84	23907	8441	571.15	34152	11680	571.46	45008	14998
570.85	24003	8504	571.16	34502	11788	571.47	45358	15106
570.86	24098	8567	571.17	34853	11895	571.48	45709	15214
570.87	24423	8675	571.18	35203	12003	571.49	46059	15322
570.88	24748	8783	571.19	35553	12110	571.50	46409	15430
570.89	25072	8890	571.20	35903	12210	571.51	46859	15540
570.90	25397	8998	571.21	36253	12318	571.52	49345	15903
570.91	25747	9105	571.22	36603	12426	571.53	51831	16265
570.92	26097	9212	571.23	36954	12534	571.54	54316	16628
570.93	26448	9320	571.24	37304	12642	571.55	56802	16990
570.94	26798	9427	571.25	37654	12750	571.56	59289	17350
570.95	27148	9534	571.26	38004	12858	571.57	61775	17710
570.96	27498	9641	571.27	38354	12966	571.58	64262	18070
570.97	27848	9748	571.28	38705	13074	571.59	66748	18430
570.98	28199	9856	571.29	39055	13182	571.60	69235	18790
570.99	28549	9963	571.30	39405	13290	571.61	71722	19150
571.00	28899	10070	571.31	39755	13396	571.62	74208	19510
571.01	29249	10178	571.32	40105	13502	571.63	76695	19870
571.02	29599	10286	571.33	40456	13608	571.64	79181	20230
571.03	29950	10394	571.34	40806	13714	571.65	81668	20590
571.04	30300	10502	571.35	41156	13820	571.66	84155	20952
571.05	30650	10610	571.36	41506	13928	571.67	86641	21314
571.68	89128	21676	571.99	166214	32860	572.30	251031	51460
571.69	91614	22038	572.00	168701	33220	572.31	254112	52390
571.70	94101	22400	572.01	171188	33582	572.32	257192	53320
571.71	96588	22760	572.02	173675	33944	572.33	260273	54250
571.72	99074	23120	572.03	176162	34306	572.34	263353	55180
571.73	101561	23480	572.04	178649	34668	572.35	266434	56110
571.74	104047	23840	572.05	181136	35030	572.36	269515	57040
571.75	106534	24200	572.06	183623	35390	572.37	272595	57970
571.76	109021	24562	572.07	186110	35750	572.38	275676	58900
571.77	111507	24924	572.08	188597	36110	572.39	278756	59830
571.78	113994	25286	572.09	191084	36470	572.40	281837	60760
571.79	116480	25648	572.10	193571	36830	572.41	284918	61690
571.80	118967	26010	572.11	196058	37190	572.42	287998	62620
571.81	121454	26370	572.12	198545	37550	572.43	291079	63550
571.82	123940	26730	572.13	201032	37910	572.44	294159	64480
571.83	126427	27090	572.14	203519	38270	572.45	297240	65410
571.84	128913	27450	572.15	206006	38630	572.46	300321	66340
571.85	131400	27810	572.16	208493	38995	572.47	303401	67270
571.86	133887	28170	572.17	210980	39360	572.48	306482	68200
571.87	136373	28530	572.18	214062	40293	572.49	309562	69130
571.88	138860	28890	572.19	217143	41227	572.50	312643	70060
571.89	141346	29250	572.20	220225	42160	572.51	315724	70990
571.90	143833	29610	572.21	223306	43090	572.52	318804	71920
571.91	146320	29972	572.22	226386	44020	572.53	321885	72850
571.92	148806	30334	572.23	229467	44950	572.54	324965	73780
571.93	151293	30696	572.24	232547	45880	572.55	328046	74710
571.94	153779	31058	572.25	235628	46810	572.56	331127	75640
571.95	156266	31420	572.26	238709	47740	572.57	334207	76570
571.96	158753	31780	572.27	241789	48670	572.58	337288	77500
571.97	161240	32140	572.28	244870	49600	572.59	340368	78430
571.98	163727	32500	572.29	247950	50530	572.60	343449	79360

Appendix G. Continued.

Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3
572.61	346530	80290	572.92	428866	113658	573.23	479014	158092
572.62	349610	81220	572.93	430484	115092	573.24	480632	159526
572.63	352691	82150	572.94	432102	116526	573.25	482250	160960
572.64	355771	83080	572.95	433720	117960	573.26	483868	162394
572.65	358852	84010	572.96	435338	119392	573.27	485486	163828
572.66	361933	84940	572.97	436956	120824	573.28	487104	165262
572.67	365013	85870	572.98	438574	122256	573.29	488722	166696
572.68	368094	86800	572.99	440192	123688	573.30	490340	168130
572.69	371174	87730	573.00	441810	125120	573.31	491958	169564
572.70	374255	88660	573.01	443428	126554	573.32	493576	170998
572.71	377336	89590	573.02	445046	127988	573.33	495194	172432
572.72	380416	90520	573.03	446664	129422	573.34	496812	173866
572.73	383497	91450	573.04	448282	130856	573.35	498430	175300
572.74	386577	92380	573.05	449900	132290	573.36	500048	176732
572.75	389658	93310	573.06	451516	133724	573.37	501666	178164
572.76	392739	94240	573.07	453132	135158	573.38	503284	179596
572.77	395819	95170	573.08	454748	136592	573.39	504902	181028
572.78	398900	96100	573.09	456364	138026	573.40	506520	182460
572.79	401980	97030	573.10	457980	139460	573.41	508138	183894
572.80	405061	97960	573.11	459598	140894	573.42	509756	185328
572.81	408142	98890	573.12	461216	142328	573.43	511374	186762
572.82	411223	99820	573.13	462834	143762	573.44	512992	188196
572.83	414304	100750	573.14	464452	145196	573.45	514610	189630
572.84	415922	102185	573.15	466070	146630	573.46	516227	191063
572.85	417540	103620	573.16	467688	148062	573.47	517843	192497
572.86	419158	105054	573.17	469306	149494	573.48	519460	193930
572.87	420776	106488	573.18	470924	150926	573.49	519645	195520
572.88	422394	107922	573.19	472542	152358	573.50	519830	197110
572.89	424012	109356	573.20	474160	153790	573.51	520014	198704
572.90	425630	110790	573.21	475778	155224	573.52	520198	200298
572.91	427248	112224	573.22	477396	156658	573.53	520382	201892
573.54	520566	203486	573.85	526290	252860	574.16	532604	302404
573.55	520750	205080	573.86	535474	254452	574.17	533088	304088
573.56	520936	206672	573.87	544658	256044	574.18	533572	305772
573.57	521122	208264	573.88	553842	257636	574.19	534056	307456
573.58	521308	209856	573.89	563026	259228	574.20	534540	309140
573.59	521494	211448	573.90	572210	260820	574.21	535024	310824
573.60	521680	213040	573.91	563394	262412	574.22	535508	312508
573.61	521864	214632	573.92	554578	264004	574.23	535992	314192
573.62	522048	216224	573.93	545762	265596	574.24	536476	315876
573.63	522232	217816	573.94	536946	267188	574.25	536960	317560
573.64	522416	219408	573.95	528130	268780	574.26	537442	319244
573.65	522600	221000	573.96	528316	270372	574.27	537924	320928
573.66	522784	222594	573.97	528502	271964	574.28	538406	322612
573.67	522968	224188	573.98	528688	273556	574.29	538888	324296
573.68	523152	225782	573.99	528874	275148	574.30	539370	325980
573.69	523336	227376	574.00	529060	276740	574.31	539854	327664
573.70	523520	228970	574.01	529244	278334	574.32	540338	329348
573.71	523704	230562	574.02	529428	279928	574.33	540822	331032
573.72	523888	232154	574.03	529612	281522	574.34	541306	332716
573.73	524072	233746	574.04	529796	283116	574.35	541790	334400
573.74	524256	235338	574.05	529980	284710	574.36	542272	336084
573.75	524440	236930	574.06	530164	286302	574.37	542754	337768
573.76	524626	238522	574.07	530349	287894	574.38	543236	339452
573.77	524812	240114	574.08	530533	289486	574.39	543718	341136
573.78	524998	241706	574.09	530718	291078	574.40	544200	342820
573.79	525184	243298	574.10	530902	292670	574.41	544684	344504
573.80	525370	244890	574.11	531087	294263	574.42	545168	346188
573.81	525550	246490	574.12	531271	295855	574.43	545652	347872
573.82	525735	248082	574.13	531456	297448	574.44	546136	349556
573.83	525920	249675	574.14	531640	299040	574.45	546620	351240
573.84	526105	251267	574.15	532120	300720	574.46	546981	352505

Appendix G. Continued.

Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3	Stage ft	Area m^2	Volume m^3
574.47	547342	353770	574.78	562560	406805	575.08	576394	459296
574.48	547905	355733	574.79	563043	408490	575.09	576855	461048
574.49	548467	357697	574.80	563503	410240	575.10	577315	462800
574.50	549030	359660	574.81	563963	411992	575.11	577776	464555
574.51	549514	361342	574.82	564424	413744	575.12	578236	466310
574.52	549998	363024	574.83	564884	415496	575.13	578696	468063
574.53	550482	364706	574.84	565345	417248	575.14	579156	469817
574.54	550966	366388	574.85	565805	419000	575.15	579616	471570
574.55	551450	368070	574.85	565805	419000	575.16	580076	473322
574.56	551932	369754	574.86	566265	420752	575.17	580537	475074
574.57	552414	371438	574.87	566726	422504	575.18	580997	476826
574.58	552896	373122	574.88	567186	424256	575.19	581458	478578
574.59	553378	374806	574.89	567647	426008	575.20	581918	480330
574.60	553860	376490	574.90	568107	427760	575.21	582378	482080
574.61	554344	378174	574.91	568567	429512	575.22	582839	483830
574.62	554828	379858	574.92	569028	431264	575.23	583299	485580
574.63	555312	381542	574.93	569488	433016	575.24	583760	487330
574.64	555796	383226	574.94	569949	434768	575.25	584220	489080
574.65	556280	384910	574.95	570409	436520	575.26	584680	490832
574.66	556762	386594	574.96	570869	438272	575.27	585141	492584
574.67	557244	388278	574.97	571330	440024	575.28	585601	494336
574.68	557726	389962	574.98	571790	441776	575.29	586062	496088
574.69	558208	391646	574.99	572251	443528	575.30	586522	497840
574.70	558690	393330	575.00	572711	445280	575.31	586982	499592
574.71	559174	395014	575.01	573171	447032	575.32	587443	501344
574.72	559658	396698	575.02	573632	448784	575.33	587903	503096
574.73	560142	398382	575.03	574092	450536	575.34	588364	504848
574.74	560626	400066	575.04	574553	452288	575.35	588824	506600
574.75	561110	401750	575.05	575013	454040	575.36	589284	508352
574.76	561593	403435	575.06	575473	455792	575.37	589745	510104
574.77	562077	405120	575.07	575934	457544	575.38	590205	511856
575.39	590666	513608	575.70	611663	570890	576.01	634273	628882
575.40	591126	515360	575.71	612392	572760	576.02	635003	630754
575.41	591586	517112	575.72	613122	574630	576.03	635732	632626
575.42	592047	518864	575.73	613851	576500	576.04	636462	634498
575.43	592507	520616	575.74	614581	578370	576.05	637191	636370
575.44	592968	522368	575.75	615310	580240	576.06	637920	638240
575.45	593428	524120	575.76	616039	582113	576.07	638650	640110
575.46	594157	525990	575.77	616769	583987	576.08	639379	641980
575.47	594887	527860	575.78	617498	585860	576.09	640109	643850
575.48	595616	529730	575.79	618228	587730	576.10	640838	645720
575.49	596346	531600	575.80	618957	589600	576.11	641567	647590
575.50	597075	533470	575.81	619686	591470			
575.51	597804	535342	575.82	620415	593340			
575.52	598534	537214	575.83	621145	595210			
575.53	599263	539086	575.84	621874	597080			
575.54	599993	540958	575.85	622603	598950			
575.55	600722	542830	575.86	623332	600820			
575.56	601451	544700	575.87	624062	602690			
575.57	602181	546570	575.88	624791	604560			
575.58	602910	548440	575.89	625521	606430			
575.59	603640	550310	575.90	626250	608300			
575.60	604369	552180	575.91	626979	610172			
575.61	605098	554050	575.92	627709	612044			
575.62	605828	555920	575.93	628438	613916			
575.63	606557	557790	575.94	629168	615788			
575.64	607287	559660	575.95	629897	617660			
575.65	608016	561530	575.96	630626	619530			
575.66	608745	563402	575.97	631356	621400			
575.67	609475	565274	575.98	632085	623270			
575.68	610204	567146	575.99	632815	625140			
575.69	610934	569018	576.00	633544	627010			

Appendix H. Seasonal time-weighted mean concentrations of nutrients, suspended sediment, and conductivity at the Berlin Road sampling station (Up) and at US Hwy 6 (Down) for spring (Apr-Jun), summer (Jul-Sep), fall (Oct-Dec), and winter (Jan-Mar). Conductivity is mS/m @ 25°C; other values are mg/L.

Start & End Datetimes		N	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduct.	Silica	Chloride
8804010100	Up	96	0.076	0.0072	26.3	1.33	0.093	0.77	662	5.43	72.5
8807010100	Down	105	0.267	0.0036	109.2	0.79	0.124	1.63	467	2.47	35.5
	D/U		3.51	0.50	4.15	0.60	1.33	2.12	0.71	0.46	0.49
8807010100	Up	67	0.356	0.0084	26.2	1.87	0.051	1.07	944	9.98	120.3
8809221900	Down	65	0.723	0.0055	111.5	0.12	0.121	2.80	534	2.42	52.7
	D/U		2.03	0.65	4.26	0.06	2.39	2.61	0.57	0.24	0.44
8810210100	Up	70	0.042	0.0123	4.5	3.11	0.022	0.53	1090	7.01	123.4
8901010100	Down	73	0.188	0.0069	47.0	0.43	0.094	1.76	628	3.37	57.9
	D/U		4.46	0.56	10.36	0.14	4.29	3.35	0.58	0.48	0.47
8901010100	Up	112	0.049	0.0067	13.6	8.68	0.034	0.60	813	5.44	78.1
8904010100	Down	120	0.102	0.0046	60.8	6.87	0.167	1.00	710	4.39	63.9
	D/U		2.08	0.68	4.46	0.79	4.89	1.66	0.87	0.81	0.82
8904010100	Up	133	0.135	0.0116	63.7	5.93	0.030	1.04	543	6.43	43.6
8907010100	Down	192	0.164	0.0048	134.8	3.34	0.201	1.44	436	4.13	29.3
	D/U		1.21	0.42	2.12	0.56	6.68	1.38	0.80	0.64	0.67
8907010100	Up	95	0.068	0.0132	21.0	2.13	1.200	2.49	749	7.46	82.8
8910010100	Down	57	0.194	0.0078	43.4	0.13	0.118	1.60	509	5.64	39.7
	D/U		2.86	0.59	2.07	0.06	0.10	0.64	0.68	0.76	0.48
8910010100	Up	90	0.067	0.0137	12.7	3.95	0.756	1.36	802	6.81	83.7
8912220100	Down	92	0.148	0.0075	68.0	2.11	0.346	1.45	633	5.41	55.6
	D/U		2.21	0.55	5.35	0.53	0.46	1.07	0.79	0.79	0.66
9001030100	Up	103	0.067	0.0085	22.0	5.80	0.158	0.77	617	6.59	53.8
9004010100	Down	137	0.107	0.0067	66.9	4.70	0.132	0.90	524	5.67	43.1
	D/U		1.59	0.79	3.04	0.81	0.83	1.17	0.85	0.86	0.80
9004010100	Up	122	0.084	0.0093	40.8	4.11	0.117	0.87	625	5.01	52.9
9007010100	Down	117	0.187	0.0045	106.3	2.14	0.186	1.37	468	2.75	32.1
	D/U		2.23	0.48	2.60	0.52	1.59	1.57	0.75	0.55	0.61
9007010100	Up	100	0.116	0.0195	30.4	4.08	0.099	0.82	665	7.73	62.9
9009300100	Down	73	0.166	0.0057	61.8	0.78	0.177	1.34	416	2.72	27.3
	D/U		1.43	0.29	2.03	0.19	1.79	1.63	0.63	0.35	0.43

Appendix I. Time-weighted mean concentrations of nutrients, suspended sediment, and conductivity at the Berlin Road sampling station (Up) and at US Hwy 6 (Down) for individual months or partial months. **Conductivity is mS/m @ 25°C; other values are mg/L.**

Start & End Datetimes		N	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduct.	Silica	Chloride
8803220100	Up	5	0.025	0.005	8.2	4.13	0.015	0.46	605	7.31	55.6
8804010100	Down	11	0.116	0.001	98.3	2.51	0.022	0.81	407	6.13	29.7
	D/U		4.66	0.23	12.04	0.61	1.52	1.75	0.67	0.84	0.53
8804010100	Up	32	0.075	0.013	34.0	3.23	0.087	0.66	565	5.18	49.7
8805010100	Down	43	0.175	0.003	118.0	2.06	0.165	1.39	455	3.86	34.3
	D/U		2.35	0.21	3.47	0.64	1.90	2.10	0.80	0.74	0.69
8805010100	Up	36	0.043	0.004	16.5	0.57	0.085	0.64	633	4.19	67.6
8806010100	Down	35	0.259	0.005	91.6	0.26	0.112	1.53	426	1.89	33.3
	D/U		5.99	1.07	5.55	0.46	1.31	2.41	0.67	0.45	0.49
8806010100	Up	28	0.111	0.005	28.8	0.24	0.107	1.01	786	6.93	99.8
8807010100	Down	27	0.376	0.004	121.0	0.06	0.093	2.03	531	1.66	39.6
	D/U		3.40	0.70	4.21	0.27	0.87	2.00	0.68	0.24	0.40
8807010100	Up	12	0.671	0.007	34.6	0.26	0.041	1.36	779	10.77	94.9
8808010100	Down	16	0.795	0.007	119.0	0.02	0.089	2.69	582	2.19	50.0
	D/U		1.18	1.00	3.44	0.09	2.16	1.97	0.75	0.20	0.53
8808010100	Up	30	0.243	0.012	24.2	4.55	0.057	1.02	981	10.48	125.0
8809010100	Down	24	0.781	0.006	110.7	0.23	0.189	3.11	528	2.86	56.6
	D/U		3.22	0.51	4.58	0.05	3.34	3.05	0.54	0.27	0.45
8809010100	Up	25	0.085	0.006	17.4	0.29	0.055	0.76	1117	8.22	148.3
8809221900	Down	25	0.542	0.003	102.3	0.10	0.068	2.50	475	2.12	50.8
	D/U		6.39	0.48	5.88	0.33	1.24	3.32	0.43	0.26	0.34
8810210100	Up	11	0.076	0.021	4.9	0.08	0.02	0.55	1153	7.12	148.2
8811010100	Down	12	0.222	0.002	55.4	0.04	0.022	2.04	517	0.47	49.5
	D/U		2.93	0.11	11.22	0.46	1.11	3.73	0.45	0.07	0.33
8811010100	Up	37	0.046	0.012	5.2	3.60	0.027	0.60	1089	8.01	126.8
8812010100	Down	31	0.241	0.007	73.5	0.09	0.099	1.97	567	2.89	51.2
	D/U		5.19	0.64	14.03	0.03	3.62	3.31	0.52	0.36	0.40
8812010100	Up	22	0.026	0.010	3.7	3.70	0.017	0.45	1069	6.00	111.3
8901010100	Down	30	0.124	0.008	18.4	0.89	0.114	1.47	727	4.86	67.4
	D/U		4.75	0.80	4.94	0.24	6.66	3.24	0.68	0.81	0.61
8901010100	Up	40	0.064	0.013	17.0	11.06	0.017	0.66	823	7.20	80.5
8902010100	Down	48	0.130	0.008	78.5	9.07	0.203	1.23	735	6.70	65.0
	D/U		2.03	0.61	4.61	0.82	12.06	1.87	0.89	0.93	0.81
8902010100	Up	34	0.043	0.002	6.9	8.38	0.071	0.47	830	5.92	78.9
8903010100	Down	34	0.073	0.002	35.9	6.89	0.182	0.72	742	4.55	67.5
	D/U		1.72	1.02	5.22	0.82	2.56	1.53	0.89	0.77	0.86
8903010100	Up	38	0.040	0.005	16.3	6.59	0.018	0.67	788	3.26	75.0
8904010100	Down	38	0.100	0.004	65.4	4.65	0.118	1.02	654	1.95	59.6
	D/U		2.51	0.74	4.00	0.71	6.49	1.53	0.83	0.60	0.79
8904010100	Up	37	0.127	0.008	41.4	7.23	0.031	0.88	593	5.08	47.5
8905010100	Down	75	0.129	0.005	137.8	4.88	0.147	1.31	481	3.73	35.9
	D/U		1.01	0.58	3.33	0.68	4.80	1.49	0.81	0.73	0.76
8905010100	Up	53	0.128	0.008	70.7	5.33	0.03	1.20	541	5.60	40.5
8906010100	Down	58	0.200	0.003	150.4	3.29	0.216	1.62	450	4.19	30.4
	D/U		1.56	0.34	2.13	0.62	7.16	1.35	0.83	0.75	0.75

Appendix I. Continued.

8906010100	Up	43	0.151	0.019	78.8	5.25	0.029	1.05	496	8.61	42.8
8907010100	Down	60	0.162	0.007	115.1	1.85	0.238	1.38	377	4.44	21.6
	D/U		1.08	0.38	1.46	0.35	8.11	1.31	0.76	0.52	0.50
8907010100	Up	33	0.083	0.017	35.6	1.72	0.022	0.75	674	7.91	60.6
8908010100	Down	20	0.200	0.012	36.3	0.21	0.093	1.62	504	8.33	33.2
	D/U		2.40	0.71	1.02	0.12	4.26	2.15	0.75	1.05	0.55
8908010100	Up	25	0.051	0.005	11.2	0.67	0.025	0.55	738	7.60	84.9
8909010100	Down	22	0.190	0.002	42.2	0.09	0.102	1.63	501	4.04	42.4
	D/U		3.75	0.52	3.75	0.14	4.03	2.97	0.68	0.53	0.50
8909010100	Up	37	0.070	0.019	16.4	4.11	3.68	6.38	840	6.84	103.5
8910010100	Down	15	0.191	0.010	52.3	0.09	0.161	1.55	523	4.60	43.6
	D/U		2.74	0.51	3.20	0.02	0.04	0.24	0.62	0.67	0.42
8910010100	Up	39	0.071	0.016	12.8	3.93	1.171	1.81	831	5.98	96.3
8911010100	Down	37	0.150	0.007	45.5	0.37	0.196	1.52	536	3.98	45.2
	D/U		2.11	0.41	3.55	0.09	0.17	0.84	0.65	0.67	0.47
8911010100	Up	34	0.090	0.014	19.6	3.86	0.477	1.12	744	7.41	72.2
8911300100	Down	43	0.191	0.007	115.2	2.44	0.391	1.51	585	6.19	48.5
	D/U		2.13	0.46	5.88	0.63	0.82	1.35	0.79	0.84	0.67
8912051900	Up	13	0.030	0.010	2.3	3.94	0.512	1.00	855	6.84	85.1
8912220100	Down	10	0.076	0.010	29.2	3.94	0.508	1.29	847	5.87	81.4
	D/U		2.54	1.07	12.53	1.00	0.99	1.30	0.99	0.86	0.96
9001030100	Up	36	0.077	0.009	23.0	7.23	0.188	0.84	667	7.96	60.5
9002010100	Down	36	0.107	0.005	62.1	6.63	0.239	0.99	646	7.51	58.6
	D/U		1.39	0.62	2.70	0.92	1.27	1.19	0.97	0.94	0.97
9002010100	Up	32	0.100	0.014	37.1	5.93	0.128	0.81	542	7.15	46.1
9003010100	Down	58	0.133	0.011	72.7	5.28	0.049	0.96	504	6.29	41.5
	D/U		1.33	0.76	1.96	0.89	0.38	1.19	0.93	0.88	0.90
9003010100	Up	35	0.028	0.004	8.1	4.25	0.154	0.66	631	4.74	53.7
9004010100	Down	43	0.083	0.004	66.2	2.39	0.106	0.75	428	3.40	30.2
	D/U		2.94	1.19	8.19	0.56	0.69	1.14	0.68	0.72	0.56
9004010100	Up	39	0.057	0.008	30.7	4.20	0.127	0.82	586	4.63	45.9
9005010100	Down	44	0.157	0.007	116.7	3.16	0.19	1.22	496	4.37	35.2
	D/U		2.76	0.90	3.80	0.75	1.50	1.50	0.85	0.94	0.77
9005010100	Up	49	0.130	0.009	71.3	5.56	0.159	1.12	584	5.26	42.9
9006010100	Down	48	0.174	0.004	126.9	2.85	0.221	1.38	391	2.94	22.6
	D/U		1.34	0.44	1.78	0.51	1.39	1.24	0.67	0.56	0.53
9006010100	Up	34	0.063	0.011	19.2	2.53	0.063	0.67	708	5.11	70.3
9007010100	Down	25	0.230	0.003	75.2	0.41	0.146	1.49	520	0.98	38.6
	D/U		3.67	0.23	3.91	0.16	2.33	2.22	0.73	0.19	0.55
9007010100	Up	32	0.070	0.013	25.1	7.05	0.076	0.74	714	7.30	70.3
9008010100	Down	14	0.184	0.004	67.9	0.92	0.237	1.66	512	1.41	38.7
	D/U		2.61	0.30	2.70	0.13	3.11	2.24	0.72	0.19	0.55
9008010100	Up	40	0.098	0.016	29.4	1.65	0.102	0.80	639	7.50	63.2
9009010100	Down	31	0.143	0.005	52.9	0.42	0.136	1.16	354	2.48	20.8
	D/U		1.46	0.29	1.80	0.25	1.33	1.45	0.55	0.33	0.33
9009010100	Up	28	0.183	0.030	37.1	3.48	0.118	0.93	640	8.43	54.6
9009300100	Down	28	0.170	0.008	64.7	1.00	0.156	1.19	381	4.34	22.1
	D/U		0.93	0.28	1.74	0.29	1.32	1.28	0.60	0.51	0.41

Appendix J. Time-weighted mean concentrations of nutrients, suspended sediment, and conductivity at the Berlin Road sampling station (Up) and at US Hwy 6 (Down) for specific storm runoff events and successive baseflow intervals that occurred when the barrier beach was open. **Conductivity is mS/m @ 25°C; other values are mg/L.**

Start & End Datetimes		N	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduct.	Silica	Chloride
STORM EVENTS											
8906031300	Up	7	0.312	0.0353	204.6	5.14	0.044	1.78	43.3	9.05	26.6
8906070700	Down	11	0.327	0.0143	237.4	2.88	0.344	2.12	38.2	6.32	19.7
	D/U		1.05	0.40	1.16	0.56	7.84	1.19	0.88	0.70	0.74
8906121300	Up	7	0.298	0.0246	186.3	6.25	0.039	1.48	51.2	9.68	35.7
8906161300	Down	10	0.220	0.0056	174.9	3.46	0.398	1.87	43.4	7.30	28.7
	D/U		0.74	0.23	0.94	0.55	10.24	1.26	0.85	0.75	0.80
8911141900	Up	9	0.312	0.0262	69.9	6.98	0.306	1.37	60.0	8.78	49.9
8911201300	Down	6	0.276	0.0025	166.1	4.24	0.118	1.80	46.3	6.04	36.3
	D/U		0.88	0.10	2.38	0.61	0.38	1.32	0.77	0.69	0.73
8912301900	Up	4	0.175	0.0306	49.2	7.11	0.088	1.26	53.4	7.12	59.0
9001030100	Down	1	0.097	0.0190	23.0	6.29	0.586	1.03	59.2	6.12	56.2
	D/U		0.56	0.62	0.47	0.88	6.65	0.82	1.11	0.86	0.95
9001031300	Up	9	0.131	0.0249	49.9	7.99	0.247	0.90	59.9	7.79	52.5
9001090100	Down	10	0.114	0.0178	52.0	6.79	0.385	0.93	57.2	7.07	48.4
	D/U		0.87	0.72	1.04	0.85	1.56	1.03	0.95	0.91	0.92
9001171300	Up	5	0.104	0.0067	35.5	6.91	0.192	1.11	66.5	8.05	64.9
9001200100	Down	1	0.103	0.0020	65.0	5.31	0.244	1.11	69.8	7.13	60.7
	D/U		0.99	0.30	1.83	0.77	1.27	1.00	1.05	0.89	0.94
9001200700	Up	5	0.094	0.0057	24.1	7.77	0.118	0.89	63.5	8.48	60.8
9001241900	Down	4	0.136	0.0021	74.2	6.12	0.179	1.17	66.3	7.67	60.2
	D/U		1.45	0.37	3.08	0.79	1.52	1.32	1.04	0.90	0.99
9004100700	Up	7	0.318	0.0203	198.0	6.26	0.032	1.83	40.8	6.95	25.1
9004130100	Down	3	0.283	0.0145	167.2	4.87	0.207	1.76	43.5	5.85	28.0
	D/U		0.89	0.72	0.84	0.78	6.37	0.96	1.07	0.84	1.11
9004201900	Up	6	0.104	0.0120	51.6	4.76	0.097	1.05	49.7	6.12	35.9
9004240100	Down	4	0.249	0.0087	194.6	3.65	0.251	1.75	45.8	5.13	28.9
	D/U		2.39	0.73	3.77	0.77	2.60	1.66	0.92	0.84	0.80
9005040700	Up	10	0.287	0.0094	98.7	5.85	0.293	1.79	52.3	5.01	36.9
9005081900	Down	11	0.248	0.0014	154.1	3.50	0.305	1.81	40.4	3.42	23.4
	D/U		0.86	0.15	1.56	0.60	1.04	1.01	0.77	0.68	0.63
9005121900	Up	7	0.125	0.0222	38.9	6.86	0.287	1.27	57.1	6.21	42.7
9005151900	Down	6	0.107	0.0037	100.7	1.63	0.087	0.84	35.1	2.89	21.7
	D/U		0.85	0.17	2.59	0.24	0.30	0.66	0.61	0.46	0.51
9005151900	Up	6	0.223	0.0044	274.9	9.47	0.276	1.71	49.2	8.06	28.9
9005181300	Down	5	0.292	0.0071	221.2	5.89	0.376	2.17	42.0	5.44	24.1
	D/U		1.31	1.61	0.80	0.62	1.36	1.27	0.85	0.68	0.83

Appendix J. Continued.

Start & End Datetimes		N	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduct.	Silica	Chloride
INTER-STORM PERIODS											
8906070700	Up	8	0.091	0.0142	34.4	5.87	0.027	0.97	59.9	8.61	44.3
8906121300	Down	11	0.099	0.0094	94.8	1.71	0.197	1.37	37.8	4.36	21.2
	D/U		1.09	0.67	2.76	0.29	7.18	1.41	0.63	0.51	0.48
8906161300	Up	17	0.105	0.0123	44.3	4.56	0.024	0.79	45.7	8.08	49.6
8907011700	Down	23	0.121	0.0042	68.7	1.10	0.168	1.04	36.1	3.17	20.8
	D/U		1.15	0.34	1.55	0.24	7.11	1.31	0.79	0.39	0.42
8911201300	Up	36	0.035	0.0126	4.7	4.14	0.536	1.02	82.7	7.71	80.3
8912301900	Down	23	0.131	0.0114	67.5	3.91	0.435	1.28	80.1	6.49	74.7
	D/U		3.75	0.90	14.27	0.94	0.81	1.25	0.97	0.84	0.93
9001090100	Up	9	0.058	0.0018	10.0	7.66	0.299	0.88	69.4	8.28	64.2
9001171300	Down	8	0.095	0.0000	66.3	7.53	0.269	1.01	68.4	8.28	62.6
	D/U		1.64	0.00	6.65	0.98	0.90	1.15	0.99	1.00	0.98
9001241900	Up	6	0.054	0.0048	18.7	6.52	0.137	0.80	69.0	7.75	60.3
9001291900	Down	6	0.136	0.0038	84.1	6.86	0.086	1.07	65.4	7.60	56.5
	D/U		2.52	0.79	4.50	1.05	0.63	1.35	0.95	0.98	0.94
9004130100	Up	8	0.029	0.0089	11.7	5.09	0.132	0.74	57.7	5.19	42.1
9004201900	Down	15	0.144	0.0108	113.2	4.21	0.182	1.21	49.6	5.24	32.2
	D/U		4.91	1.22	9.68	0.83	1.38	1.62	0.86	1.01	0.77
9004240100	Up	12	0.013	0.0027	10.0	3.24	0.139	0.75	62.4	2.54	49.5
9005040700	Down	14	0.141	0.0015	102.6	2.04	0.084	1.14	41.0	2.32	25.3
	D/U		10.86	0.58	10.27	0.63	0.60	1.51	0.66	0.91	0.51
9005081900	Up	4	0.028	0.0030	12.5	4.20	0.127	0.77	62.8	3.60	47.0
9005121900	Down	6	0.191	0.0030	178.7	2.12	0.200	1.36	40.0	3.24	23.2
	D/U		6.90	1.00	14.27	0.51	1.58	1.76	0.64	0.90	0.49
9005181300	Up	9	0.173	0.0093	94.6	7.13	0.108	1.19	55.4	7.12	36.0
9005231900	Down	9	0.187	0.0087	141.9	4.24	0.293	1.48	42.0	4.31	24.0
	D/U		1.08	0.93	1.50	0.59	2.72	1.24	0.76	0.61	0.67

Appendix K. **Time-weighted mean concentrations of nutrients, suspended sediment, and conductivity at the Berlin Road sampling station (Up) and at US Hwy 6 (Down) during periods when barrier beach was open and closed.** **Conductivity is mS/m @ 25°C; other values are mg/L.**

Start & End Datetimes		N	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Conduct.	Silica	Chloride
OPEN											
8805091500	Up	6	0.058	0.001	20.1	0.54	0.006	0.66	639	4.49	65.4
8805142000	Down	6	0.184	4E-04	120.8	0.75	0.006	1.23	356	2.65	21.7
	D/U		3.14	0.33	6.00	1.39	1.00	1.86	0.56	0.59	0.33
8812310300	Up	246	0.092	0.009	38.6	7.37	0.032	0.82	678	5.95	60.8
8907011700	Down	315	0.134	0.005	98.2	5.11	0.184	1.23	573	4.27	46.6
	D/U		1.45	0.51	2.54	0.69	5.74	1.49	0.84	0.72	0.77
8910281300	Up	54	0.066	0.014	12.1	3.88	0.555	1.09	786	7.24	76.6
8912220100	Down	60	0.155	0.009	82.4	3.02	0.456	1.47	687	6.57	61.1
	D/U		2.37	0.62	6.80	0.78	0.82	1.35	0.87	0.91	0.80
(Missing data 891223 - 900103)											
9001030100	Up	107	0.065	0.008	21.4	5.66	0.158	0.76	620	6.52	54.3
9004051100	Down	142	0.107	0.007	66.7	4.58	0.135	0.89	524	5.56	43
	D/U		1.64	0.80	3.11	0.81	0.86	1.17	0.84	0.85	0.79
9004100900	Up	73	0.111	0.009	62.9	5.32	0.153	1.08	566	5.09	41.3
9005281100	Down	76	0.183	0.006	134.6	3.29	0.211	1.41	423	3.79	25.7
	D/U		1.64	0.64	2.14	0.62	1.38	1.31	0.75	0.74	0.62
9007271100	Up	35	0.10	0.018	31.4	3.11	0.088	0.83	617	7.09	55.9
9008221100	Down	23	0.162	0.007	69.1	0.61	0.161	1.22	355	2.63	21.6
	D/U		1.58	0.40	2.20	0.20	1.84	1.48	0.58	0.37	0.39
9009091800	Up	18	0.188	0.034	19.0	4.51	0.113	0.87	604	9.67	43.2
9009300100	Down	21	0.143	0.007	71.1	1.38	0.16	1.02	370	4.31	21.4
	D/U		0.76	0.21	3.74	0.31	1.41	1.16	0.61	0.45	0.49
CLOSED											
8804180500	Up	25	0.032	0.005	9.5	1.52	0.146	0.51	592	3.86	54.7
8805091500	Down	26	0.187	0.002	76.6	0.71	0.206	1.55	500	2.02	41.8
	D/U		5.83	0.39	8.05	0.47	1.41	3.04	0.84	0.52	0.77
8805142000	Up	115	0.258	0.007	25.7	1.3	0.069	1.01	869	8.5	109.3
8809221900	Down	111	0.587	0.005	110.9	0.11	0.104	2.44	514	2.1	46.6
	D/U		2.28	0.72	4.32	0.08	1.52	2.43	0.59	0.25	0.43
(Missing data 880923 - 881020)											
8810210100	Up	69	0.042	0.012	4.5	2.88	0.022	0.52	1093	7.00	124.1
8812310300	Down	70	0.187	0.007	45.7	0.33	0.093	1.76	626	3.33	57.8
	D/U		4.46	0.56	10.24	0.11	4.26	3.37	0.57	0.48	0.47
8907011700	Up	131	0.068	0.013	19.3	2.59	1.187	2.35	769	7.11	86.2
8910281300	Down	89	0.18	0.007	42.4	0.17	0.119	1.56	512	5.06	40.8
	D/U		2.64	0.54	2.20	0.06	0.10	0.66	0.67	0.71	0.47
9004051100	Up	6	0.022	0.008	6.4	3.68	0.15	0.52	625	3.91	50.3
9004100900	Down	6	0.087	0.006	88.7	2.56	0.235	0.91	606	4.68	53.4
	D/U		3.91	0.74	13.92	0.70	1.57	1.77	0.97	1.20	1.06
9005281100	Up	65	0.069	0.012	23.2	4.58	0.068	0.71	708	6.08	69.6
9007271100	Down	43	0.2	0.003	68.4	0.68	0.183	1.55	516	0.99	38.5
	D/U		2.92	0.23	2.95	0.15	2.69	2.19	0.73	0.16	0.55
9008221100	Up	21	0.11	0.014	44.2	0.75	0.121	0.85	725	6.97	81.9
9009091800	Down	16	0.18	0.006	44	0.18	0.129	1.38	384	3.54	22.2
	D/U		1.64	0.42	1.00	0.25	1.06	1.63	0.53	0.51	0.27

Appendix L. Fluxes of water (1000 m^3) and of nutrients and suspended solids (k the Old Woman Creek Wetland from the watershed (Up) and into L from the wetland at US Hwy 6 (Down) for individual months or part months (P). Missing data for parts of months resulted from malfur stage recorders. Downstream loads were computed only for those months (*) when the mouth was open (Table 3). No upstream loads be calculated for the 1988 water year because of infrequent nutrier or zero discharge resulting from the drought.

Start & End Dates		Water	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Silica
P 15 Apr 89	Up	852	54	2.5	25,683	5,202	25	779	4,072
30 Apr 89	Down	829	129	3.3	102,598	3,336	155	1,145	3,257
	D/U	0.973	2.380	1.336	3.995	0.641	6.122	1.470	0.800
D/U ratio, adjusted		**1.000**	**2.446**	**1.373**	**4.106**	**0.659**	**6.291**	**1.511**	**0.822**
1 May 89	Up	5,274	2252	71.5	1,483,653	27,773	222	11,733	35,588
31 May 89	Down	5,181	1588	14.4	1,192,106	18,975	1,436	11,177	26,197
	D/U	0.982	0.705	0.202	0.803	0.683	6.468	0.953	0.736
D/U ratio, adjusted		**1.000**	**0.718**	**0.205**	**0.818**	**0.695**	**6.585**	**0.970**	**0.749**
1 Jun 89	Up	2,456	1147	81.5	899,122	12,246	138	5,504	19,964
30 Jun 89	Down	2,419	822	25.8	627,525	7,614	1,164	5,909	18,327
	D/U	0.985	0.717	0.317	0.698	0.622	8.435	1.074	0.918
D/U ratio, adjusted		**1.000**	**0.728**	**0.322**	**0.709**	**0.631**	**8.564**	**1.090**	**0.932**
1 Jul 89	Up	402	128	14.1	129,033	1,207	22	983	3,807
31 Jul 89	Down	0	0	0	0	0	0	0	0
	D/U	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
D/U ratio, adjusted		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
1 Aug 89	Up	95	6	0.7	1,225	142	3	57	992
31 Aug 89	Down	0	0	0	0	0	0	0	0
	D/U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
D/U ratio, adjusted		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
1 Sep 89	Up	113	10	2.6	2,825	540	453	838	811
30 Sep 89	Down	0	0	0	0	0	0	0	0
	D/U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
D/U ratio, adjusted		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
1 Oct 89	Up	400	68	12.4	17,587	1,893	321	775	3,184
31 Oct 89	Down	653	181	5.1	49,306	781	413	1,381	7,231
	D/U	1.634	2.679	0.412	2.804	0.413	1.287	1.782	2.271
D/U ratio, adjusted		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
1 Nov 89	Up	1,575	1318	58.7	220,530	9,920	305	2,946	13,211
30 Nov 89	Down	1,572	667	7.9	415,681	9,184	583	4,353	14,140
	D/U	0.998	0.506	0.135	1.885	0.926	1.913	1.478	1.070
D/U ratio, adjusted		**1.000**	**0.507**	**0.136**	**1.889**	**0.928**	**1.917**	**1.480**	**1.072**
1 Dec 89	Up	346	12	4.0	1,113	1,307	202	358	2,580
31 Dec 89	Down	357	13	8.1	-7,621	2,192	339	534	3,156
	D/U	1.032	1.130	2.001	-6.847	1.677	1.676	1.493	1.223

D/U ratio, adjusted	**1.000**	**1.095**	**1.939**	**-6.632**	**1.625**	**1.623**	**1.446**	**1.185**

Appendix L. Continued.

Start & End Dates		Water	TP	SRP	TSS	NO_{2+3} N	NH_3 N	TKN	Silica
1 Jan 90	Up	6,432	647	92.5	211,742	47,319	849	5,626	49,482
31Jan 90	Down	5,521	633	56.3	317,648	34,918	1,961	5,799	38,943
	D/U	0.858	0.978	0.609	1.500	0.738	2.311	1.031	0.787
D/U ratio, adjusted		**1.000**	**1.140**	**0.709**	**1.748**	**0.860**	**2.692**	**1.201**	**0.917**
1 Feb 90	Up	5,060	915	143.1	481,199	25,541	323	5,582	30,722
P 16 Feb 90	Down	6,377	1,330	111.8	800,307	31,410	373	7,674	38,032
	D/U	1.260	1.454	0.781	1.663	1.230	1.155	1.375	1.238
D/U ratio, adjusted		**1.000**	**1.153**	**0.620**	**1.320**	**0.976**	**0.916**	**1.091**	**0.982**
P 12 Mar 90	Up	520	13	1.1	4,562	2,156	88	362	2,168
31 Mar 90	Down	415	66	1.7	56,135	1,262	93	531	1,484
	D/U	0.798	5.014	1.613	12.305	0.585	1.051	1.468	0.685
D/U ratio, adjusted		**1.000**	**6.283**	**2.021**	**15.418**	**0.733**	**1.317**	**1.840**	**0.858**
1 Apr 90	Up	3,205	694	56.8	372,967	17,177	241	4,612	19,002
*30 Apr 90	Down	3,292	910	42.0	610,486	14,018	825	5,884	18,324
	D/U	1.027	1.312	0.739	1.637	0.816	3.423	1.276	0.964
D/U ratio, adjusted		**1.000**	**1.277**	**0.720**	**1.594**	**0.795**	**3.333**	**1.242**	**0.939**
1 May 90	Up	2,160	962	25.1	683,901	15,004	651	4,848	13,536
*31 May 90	Down	2,078	672	8.7	459,327	8,906	952	4,502	9,968
	D/U	0.962	0.698	0.347	0.672	0.594	1.463	0.929	0.736
D/U ratio, adjusted		**1.000**	**0.726**	**0.361**	**0.698**	**0.617**	**1.520**	**0.965**	**0.765**
1 Jun 90	Up	187	14	2.3	4,376	577	10	136	935
30-Jun-90	Down	0	0	0.0	0	0	0	0	0
	D/U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
D/U ratio, adjusted		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
1 Jul 90	Up	503	118	17.9	59,775	7,626	141	805	4,545
*31 Jul 90	Down	498	88	2.3	29,798	1,127	185	913	1,074
	D/U	0.991	0.744	0.131	0.499	0.148	1.314	1.134	0.236
D/U ratio, adjusted		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
1 Aug 90	Up	206	43	6.1	19,612	436	13	239	1,416
*31 Aug 90	Down	132	79	7.2	26,321	51	145	588	1,310
	D/U	0.641	1.853	1.185	1.342	0.117	11.390	2.457	0.925
D/U ratio, adjusted		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
1 Sep 90	Up	1,891	1,009	101.2	622,861	7,777	111	3,834	13,323
*30 Sep 90	Down	1,518	558	32.0	252,474	3,761	374	2,934	11,459
	D/U	0.803	0.553	0.316	0.405	0.484	3.365	0.765	0.860
D/U ratio, adjusted		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

1990 Water Year

Total Up	22,484	5,812	521.0	2,700,225	136,733	3,255	30,123	154,104
Total Down	22,413	5,197	283.0	3,009,862	107,610	6,244	35,093	145,121

kg) into ake Erie :ial nctioning e parts of s could nt data
Chloride
40,471
32,623
0.806
0.828
138,316
139,395
1.008
1.026
68,584
65,976
0.962
0.977
13,024
0
0.000
N/A
7,021
0
0.000
0.000
11,297
0
0.000
0.000
25,457
34,762
1.366
N/A
70,622
92,430
1.309
1.311
30,268
47,062
1.555

1.506
Chloride
372,979
307,219
0.824
0.960
188,664
264,140
1.400
1.111
28,841
20,279
0.703
0.881
103,188
104,306
1.011
0.984
69,684
62,179
0.892
0.928
12,228
0
0.000
0.000
24,491
22,979
0.938
N/A
10,119
9,114
0.901
N/A
37,409
37,241
0.996
N/A
973,950
1,001,711

Appendix N. **Conductivity (µS/cm) and concentrations (mg/L) of nutrients and suspended solids in all samples collected for atmospheric deposition (particulate and dissolved) in the 1990 Water Year. Concentrations are from single samples collected during or following precipitation events and include particulate deposition since the preceding sample. Negative data values were replaced by zero for calculations. Shaded values are estimated from preceding and succeeding values.**

Date	Note	TP	SRP	TSS	NO2+3 N	NH3 N	TKN	Silica	Chloride	Conduct.
890925		0.019	0.005	4.9	2.28	0.392	0.872	0.27	0.0	53
891010		0.103	0.040	2.5	1.62	0.992	2.412	0.00	1.0	106
891017		0.032	0.010	0.0	0.70	0.682	1.101	0.00	0.7	27
891019		0.001	0.004	0.0	0.21	0.076	0.117	0.00	0.0	9
891023		0.023	0.004	6.1	1.53	0.329	0.764	0.10	0.2	33
891101		0.098	0.023	8.6	2.66	0.572	1.159	0.00	0.6	57
891106		0.052	0.002	16.5	2.47	0.976	1.693	0.00	0.5	50
891108		0.008	0.003	2.4	0.76	0.228	0.433	0.00	0.5	29
891109		0.011	0.001	2.3	1.40	0.280	0.475	0.00	0.5	41
891113	11/14??	0.048	0.002	21.3	3.19	0.933	1.894	0.65	1.0	0.00
891115		0.020	0.007	0.5	1.34	0.464	0.705	0.11	0.9	28
891116		0.009	0.006	0.0	0.27	0.055	0.089	0.03	0.3	8
Mean 11/13-11/16		0.026	0.005	7.3	1.60	0.484	0.896	0.26	0.73	12.00
891120		0.122	0.010	48.7	0.42	0.014	0.830	0.09	0.6	18
891127		0.041	0.004	13.1	7.49	1.492	3.162	0.39	7.0	157
891128		0.004	0.005	5.2	0.60	0.373	0.849	0.00	0.6	22
NO NUTRIENT OR SEDIMENT DATA FOR DECEMBER 1989										
900105		0.029	0.000	12.5	1.17	0.300	0.567	0.00	0.7	33
900103	900109?	0.966	0.000	331.3	0.14	0.022	6.855	0.12	0.2	10
900110		0.022	0.004	17.2	2.74	1.178	1.537	0.07	0.9	52
900111		0.030	0.004	0.0	2.65	1.232	1.922	0.05	1.7	0.00
900118		0.041	0.003	35.6	1.84	0.718	1.000	0.00	2.9	47
900122		0.005	0.003	4.1	0.74	0.331	0.388	0.00	1.1	34
900125		0.024	0.000	0.0	1.40	0.636	0.874	0.00	0.5	36
900129		0.012	0.000	6.4	1.30	0.515	0.819	0.00	1.1	37
900202		0.003	0.000	1.3	0.67	0.232	0.644	0.00	0.3	24
900205		0.018	0.000	7.5	0.92	0.269	0.380	0.00	0.3	40
900207		0.006	0.006	0.2	1.14	0.242	0.333	0.00	1.3	28
900209		0.037	0.005	5.4	2.37	0.979	1.341	0.00	1.3	51
900219		0.005	0.003	0.9	0.80	0.324	0.406	0.00	0.5	33
900222		0.005	0.001	0.0	0.69	0.224	0.285	0.00	1.7	22
900226		0.137	0.003	81.5	2.74	1.628	2.796	0.08	2.0	70
900309		0.021	0.000	10.5	1.50	0.851	1.317	0.01	1.6	38
900312		0.014	0.005	4.8	2.66	0.758	1.154	0.00	5.0	75
	900316?	0.058	0.000	20.6	2.73	0.893	1.621	0.00	2.1	52
900320		0.032	0.002	14.9	2.64	1.254	2.789	0.00	1.2	58
900326		0.038	0.000	11.8	4.90	2.830	3.956	0.00	2.0	111
900330		0.053	0.000	24.1	5.50	1.590	2.542	0.10	2.0	111
900402		0.007	0.000	7.6	1.90	0.950	1.127	0.00	0.0	61
900405		0.009	0.000	6.9	1.70	1.160	1.373	0.00	0.0	62
900409		0.050	0.000	24.9	5.30	2.070	2.816	0.00	3.0	0.00

Appendix N. Continued.

Date	Note	TP	SRP	TSS	NO2+3 N	NH3 N	TKN	Silica	Chloride	Conduct.
900410		0.053	0.000	13.0	1.50	0.810	1.879	0.00	0.0	0.00
900411		0.000	0.000	0.0	0.40	0.210	0.286	0.00	2.0	17
900416		0.014	0.000	4.6	1.10	0.570	0.622	0.00	2.0	31
900417		0.008	0.000	7.8	4.00	2.430	3.614	0.00	1.0	91
900423		0.034	0.010	0.0	0.90	0.850	2.836	0.00	0.0	27
900514		0.043	0.000	9.7	2.40	0.390	1.020	2.00	6.0	25
900521		0.085	0.010	7.0	0.60	0.910	1.650	0.00	1.0	21
900528		0.033	0.000	0.3	1.10	0.130	0.595	0.00	1.0	26
900529		0.060	0.000	10.7	1.60	0.100	0.726	0.00	1.0	42
900530		0.034	0.000	1.4	0.30	0.010	0.525	0.00	0.0	15
900604		0.024	0.000	14.1	0.70	0.400	1.331	0.00	0.0	21
900619		0.063	0.000	7.9	0.90	0.030	0.820	0.00	0.0	23
900608	?	0.001	0.000	0.0	0.80	0.300	0.581	0.00	1.0	17
900621		0.254	0.000	12.7	1.00	0.460	2.419	0.00	1.0	48
900622		0.041	0.000	5.5	2.30	0.800	1.112	0.00	1.0	28
900629		0.049	0.000	4.2	2.10	0.820	2.064	0.00	1.0	37
900701		0.000	0.000	3.5	1.00	0.540	1.218	0.00	1.0	25
900710		0.213	0.010	3.1	1.90	0.310	2.807	0.00	1.0	47
900712		0.040	0.000	2.7	0.90	0.420	0.836	0.00	1.0	22
900712	900713?	0.004	0.000	0.3	0.40	0.170	0.241	0.00	0.0	11
900714		0.000	0.000	0.0	0.30	0.070	0.128	0.00	0.0	11
900723		0.061	0.040	0.0	0.50	0.430	0.983	0.00	0.0	39
900806		0.032	0.000	0.0	1.00	0.250	0.902	0.00	0.0	25
900807		0.035	0.000	1.2	0.80	0.630	1.181	0.00	0.0	34
900820		0.015	0.000	1.0	0.80	0.190	0.325	0.00	0.0	41
900910		0.011	0.000	0.0	0.50	0.160	0.453	0.00	0.0	22
900910Rep		0.005	0.000	0.6	0.50	0.100	0.359	0.00	0.0	21
900910 Ave		0.008	0.000	0.3	0.50	0.130	0.406	0.00	0.0	21.5
900916		0.097	0.020	0.0	0.60	0.160	0.587	0.00	1.0	22
900917		0.082	0.000	0.0	0.40	0.020	0.481	0.00	1.0	14
900919		0.084	0.000	0.0	0.60	0.020	0.527	0.00	1.0	30
900920		0.067	0.000	0.0	0.20	0.010	0.077	0.00	1.0	18
900924		0.000	0.000	2.5	1.00	0.160	0.522	0.00	1.0	31
900929		0.020	0.000	3.8	1.90	0.750	1.185	0.00	0.0	64
901004		0.007	0.000	0.6	0.60	0.210	0.448	0.00	1.0	17
901008		0.277	0.000	51.2	3.30	1.850	5.932	0.70	1.0	83

Appendix O. Precipitation and pan evaporation recorded at the Old Woman Creek visitor center during the 1990 Water Year. Beginning and ending hours of precipitation are shown. Evaporation was not recorded in winter.

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
891001	0	0	0	0	0.1
891002	0	0	0	0	0.15
891003	0	0	0	0	0.16
891004	0	0	0	0	0.13
891005	0	0	0	0	0.17
891006	0	0	0	0	0.1
891007	0	0	0	0	0.12
891008	0	0	0	0	0.06
891009	0	0	0	0	0.07
891010	0.52	13.21	700	1200	-0.42
891011	0	0	0	0	0.13
891012	0	0	0	0	0.12
891013	0	0	0	0	0.15
891014	0	0	0	0	0.14
891015	0	0	0	0	0.15
891016	0.74	18.8	1900	2000	-0.74
891016	0.25	6.35	2300	2400	-0.25
891017	0.38	9.65	100	600	-0.3
891017	0.02	0.51	900	900	0.06
891018	0.08	2.03	2100	2400	0
891019	1.31	33.27	0	900	-1.3
891019	0.05	1.27	1300	1400	-0.05
891020	0.05	1.27	2000	2400	-0.05
891021	0.1	2.54	0	500	-0.1
891022	0	0	0	0	-0.1
891023	0	0	0	0	0.07
891024	0	0	0	0	0.05
891025	0	0	0	0	0.07
891026	0	0	0	0	0.05
891027	0	0	0	0	0.06
891028	0	0	0	0	0.07
891029	0	0	0	0	0.1
891030	0	0	0	0	0.09
891031	0.18	4.57	1100	1400	-0.12
	Total	93.47			
891101	0	0	0	0	0.06
891102	0	0	0	0	-0.05
891103	0.04	1.02	400	700	0.06
891104	0	0	0	0	0.04
891105	0.13	3.3	2300	2400	-0.01
891106	0	0	0	0	0.04
891107	0.35	8.89	900	1400	-0.46
891108	0.18	4.57	2100	2300	-0.08
891109	0	0	0	0	0.03
891110	0	0	0	0	0.03
891111	0	0	0	0	0.01
891112	0	0	0	0	0.02
891113	0	0	0	0	
891114	0.17	4.32	2100	2400	-0.18
891115	0.08	2.03	1100	1200	-1.07
891115	0.98	24.89	1700	2200	
891116	0.15	3.81	0	600	
891116	0.1	2.54	1300	1600	
891117	0	0	0	0	
891118	0	0	0	0	
891120	0	0	0	0	
891121	0	0	0	0	
891122	0	0	0	0	
891123	0	0	0	0	
891124	0	0	0	0	
891125	0.02	0.51	2200	2400	
891126	0.03	0.76	0	400	
891127	0	0	0	0	
891128	0.57	14.48	0	100	
891129	0	0	0	0	
891130	0	0	0	0	
	Total	71.12			

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
891201	0	0	0	0	
891202	0	0	0	0	
891203	0	0	0	0	
891204	0	0	0	0	
891205	0	0	0	0	
891206	0.02	0.51	1800	2000	
891207	0	0	0	0	
891208	0	0	0	0	
891209	0	0	0	0	
891210	0.01	0.25	0	0	
891211	0	0	0	0	
891212	0.03	0.76	1100	1200	
891213	0	0	0	0	
891214	0	0	0	0	
891215	0.1	2.54	0	0	
891216	0	0	0	0	
891217	0	0	0	0	
891218	0	0	0	0	
891219	0.05	1.27	0	0	
891220	0.06	1.52	0	0	
891221	0.01	0.25	0	0	
891222	0	0	0	0	
891223	0	0	0	0	
891224	0	0	0	0	
891225	0	0	0	0	
891226	0.08	2.03	0	0	
891227	0	0	0	0	
891228	0.04	1.02	0	0	
891229	0.2	5.08	1700	2000	
891230	0.25	6.35	1800	2100	
891231	0.14	3.56	0	1000	
	Total	25.14			
900101		0	0		
900102		0	0		
900103		0	0		
900104	0.15	3.81	700	1000	
900104	0.02	0.51	1600	1700	
900105	0	0	0	0	
900106	0	0	0	0	
900107	0	0	0	0	
900108	0	0	0	0	
900108	0	0	0	0	
900109	0.11	2.79	1500	2400	
900110	0.12	3.05	0	1200	
900111	0	0	0	0	
900112	0	0	0	0	
900113	0	0	0	0	
900114	0	0	0	0	
900115	0	0	0	0	
900115	0	0	0	0	
900116	0	0	0	0	
900117	0.15	3.81	1100	1400	
900118	0.11	2.79	200	300	
900119	0	0	0	0	
900120	0.27	6.86	600	1800	
900121	0.05	1.27	400	600	
900122	0	0	0	0	
900123	0.06	1.52	500	600	
900124	0	0	0	0	
900125	0.08	2.03	1400	1500	
900126	0	0	0	0	
900127	0	0	0	0	
900128	0.05	1.27	1300	1500	
900129	0.23	5.84	1200	1300	
900130	0	0	0	0	
900131	0	0	0	0	
	Total	35.55			

Appendix O. Continued.

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
900201	0.25	6.35	1900	2400	
900202	0.63	16.00	0	1200	
900203	0.08	2.03	2200	2400	
900204	0.09	2.29	0	200	
900205	0.2	5.08	1200	1400	
900206	0	0	0	0	
900207	0.03	0.76	0	100	
900208	0	0	0	0	
900209	0	0	0	0	
900210	0	0	0	0	
900211	0	0	0	0	
900212	0	0	0	0	
900213	0.04	1.02	2000	2400	
900215	1.32	33.53	800	2400	
900216	0.39	9.91	0	1000	
900217	0	0	0	0	
900218	0	0	0	0	
900219	0	0	0	0	
900220	0	0	0	0	
900221	0	0	0	0	
900222	0.14	3.56	900	2000	
900223	0.13	3.3	1300	1800	
900224	0	0	0	0	
900225	0	0	0	0	
900226	0.37	9.4	1200	1700	
900227	0	0	0	0	
900228	0	0	0	0	
	Total	93.23			
900301	0	0	0	0	
900302	0	0	0	0	
900303	0	0	0	0	
900304	0	0	0	0	
900305	0	0	0	0	
900306	0	0	0	0	
900307	0.02	0.51	1400	1600	
900308	0.01	0.25	2000	2100	
900309	0.09	2.29	0	200	
900309	0.15	3.81	800	900	
900310	0.13	3.3	1200	1400	
900311	0.02	0.51	1700	1800	
900312	0	0	0	0	
900314	0	0	0	0	
900315	0	0	0	0	
900316	0.16	4.06	600	1000	
900317	0	0	0	0	
900318	0	0	0	0	
900319	0.17	4.32	1100	1700	
900320	0	0	0	0	
900321	0	0	0	0	
900322	0.05	1.27	1900	2200	
900323	0	0	0	0	
900324	0	0	0	0	
900325	0	0	0	0	
900326	0	0	0	0	
900327	0	0	0	0	
900328	0	0	0	0	
900329	0.05	1.27	1500	2000	
900330	0	0	0	0	
900331	0.05	1.27	100	300	
900331	0.02	0.51	900	1100	
	Total	23.37			

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
900401	0.28	7.11	100	300	-0.14
900402	0.1	2.54	400	500	-0.03
900402	0.03	0.76	1600	2100	
900403	0.13	3.30	0	0	-0.2
900404	0.02	0.51	0	100	0.14
900405	0.02	0.51	1200	1300	0.04
900406	0	0.00	0	0	
900407	0.04	1.02	1800	1900	
900408	0	0.00	0	0	
900409	0	0.00	0	0	-0.08
900410	0.22	5.59	0	600	
900410	1.12	28.45	1100	2300	
900411	0.1	2.54	1800	2200	-0.01
900412	0	0.00	0	0	0.09
900413	0	0.00	0	0	-0.06
900414	0.24	6.10	600	1200	-0.01
900415	0	0.00	0	0	
900416	0	0.00	0	0	
900417	0.04	1.02	200	400	0.09
900418	0	0.00	0	0	0.2
900419	0	0.00	0	0	0.1
900420	0.49	12.45	1300	2300	-0.55
900421	0.13	3.30	0	600	0.06
900422	0	0.00	0	0	0.17
900423	0	0.00	0	0	0.19
900424	0	0.00	0	0	0.22
900425	0	0.00	0	0	0.31
900426	0	0.00	0	0	0.23
900427	0	0.00	0	0	0.18
900428	0	0.00	0	0	0.39
900429	0	0.00	0	0	0.17
900430	0	0.00	0	0	0.22
	Total	75.20			
900501	0	0.00	0	0	0.19
900502	0	0.00	0	0	0.17
900503	0.05	1.27	1600	2000	-0.04
900504	1.27	32.26	900	1600	-1.39
900504	0.05	1.27	2100	2200	
900505	0.11	2.79	300	1000	0.02
900506	0	0.00	0	0	
900507	0	0.00	0	0	0.22
900508	0	0.00	0	0	0.31
900509	0	0.00	0	0	0.7
900510	0.11	2.79	500	600	-0.05
900510	0.09	2.29	1500	1800	
900511	0	0.00	0	0	-0.3
900512	0.12	3.05	1000	1200	-0.67
900512	0.17	4.32	2000	2400	
900513	0.42	10.67	0	100	-0.13
900513	0.05	1.27	700	800	
900514	0	0.00	0	0	0.13
900515	0.06	1.52	2300	2400	
900516	0.08	2.03	300	1000	
900516	0.2	5.08	1000	1200	
900516	0.25	6.35	1500	1600	
900516	0.02	0.51	1600	1800	
900517	0.03	0.76	1700	1800	
900518	0.13	3.30	100	300	0.2
900519	0	0.00	0	0	0.07
900520	0	0.00	0	0	-0.03
900521	0.22	5.59	100	200	0.1
900522	0	0.00	0	0	-0.1
900523	0	0.00	0	0	0.2
900524	0	0.00	0	0	0.12
900525	0.4	10.16	1600	2300	-0.34
900526	0	0.00	0	0	0.25
900527	0	0.00	0	0	0.08
900528	0	0.00	0	0	0
900529	0.11	2.79	200	500	0.07
900529	0.03	0.76	1000	1200	
900530	0	0.00	0	0	0.18
900531	0	0	0	0	0.28
	Total	100.83			

Appendix O. Continued.

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
900601	0	0.00	0	0	0.39
900602	0.13	3.30	1600	1800	-0.25
900603	0.01	0.25	0	300	0.1
900603	0.16	4.06	300	400	
900603	0.2	5.08	1900	2200	
900604	0	0.00	0	0	0.06
900605	0	0.00	0	0	0.16
900606	0	0.00	0	0	
900607	0	0.00	0	0	
900608	0.28	7.11	200	1000	-0.17
900608	0.02	0.51	1000	1200	
900608	0.17	4.32	1300	1400	
900609	0.03	0.76	800	900	0.32
900610	0	0.00	0	0	0.39
900611	0	0.00	0	0	0.18
900612	0	0.00	0	0	0.13
900613	0	0.00	0	0	0.11
900614	0.35	8.89	900	1000	-0.21
900615	0	0.00	0	0	0.2
900616	0	0.00	0	0	0.29
900617	0	0.00	0	0	0.3
900618	0	0.00	0	0	0.34
900619	0	0.00	0	0	0.01
900620	0.17	4.32	1500	1900	-0.04
900621	0	0.00	0	0	0.17
900622	0.07	1.78	100	200	0.37
900622	0.05	1.27	1900	2000	
900623	0.09	2.29	1500	1700	-0.34
900624	0.09	2.29	1000	1400	-0.06
900625	0	0.00	0	0	0.2
900626	0	0.00	0	0	0.25
900627	0	0.00	0	0	0.17
900628	0.19	4.83	1000	1500	-0.14
900629	0	0.00	0	0	0.06
900630	0.27	6.86	400	500	0.06
	Total	57.92			
900701	0	0.00	0	0	0.23
900702	0	0.00	0	0	0.22
900703	0	0.00	0	0	0.33
900704	0	0.00	0	0	0.38
900705	0	0.00	0	0	0.26
900706	0	0.00	0	0	0.15
900707	0	0.00	0	0	0.38
900708	0	0.00	0	0	0.3
900709	0.16	4.06	900	1000	0.02
900710	0	0.00	0	0	0.19
900711	0.05	1.27	300	400	-0.28
900711	0.24	6.10	500	1400	
900712	0.39	9.91	500	900	-0.32
900713	0.1	2.54	300	900	
900714	1.34	34.04	400	900	0.02
900715	0	0.00	0	0	0.2
900716	0	0.00	0	0	0.17
900717	0.05	1.27	200	300	0.28
900718	0	0.00	0	0	0.27
900719	0	0.00	0	0	0.24
900720	0.02	0.51	800	1000	0
900720	0.04	1.02	1800	1900	
900721	0.02	0.51	800	900	-0.44
900722	1.21	30.73	800	1600	-0.49
900723	0	0.00	0	0	0.17
900724	0	0.00	0	0	0.24
900725	0	0.00	0	0	0.24
900726	0	0.00	0	0	0.34
900727	0	0.00	0	0	0.2
900728	0	0.00	0	0	0.21
900729	0	0.00	0	0	0.13
900730	0	0.00	0	0	0.18
900731	0	0.00	0	0	0.18
	Total	91.96			

Date	precip inches	precip mm	begin hr	end hr	pan evap inches
900801	0	0	0	0	0.22
900802	0	0	0	0	0.25
900803	0	0	0	0	0.2
900804	0.1	2.54	400	600	-0.58
900804	0.56	14.22	800	900	
900805	0	0	0	0	0.05
900806	0.19	4.83	800	1300	0.16
900807	0	0	0	0	0.2
900808	0	0	0	0	0.23
900809	0	0	0	0	0.18
900810	0	0	0	0	0.35
900811	0	0	0	0	0.09
900812	0	0	0	0	
900813	1.43	36.32	0	800	0.07
900814	0	0	0	0	0.21
900815	0	0	0	0	0.21
900816	0	0	0	0	0.15
900817	0.03	0.76	1200	1300	0.19
900818	0.03	0.76	1200	1300	-0.24
900818	0.28	7.11	1500	1800	
900818	0.02	0.51	2200	2300	
900819	0	0	0	0	0.1
900820	0	0	0	0	0.02
900821	0.02	0.51	1300	1400	0.05
900822	0	0	0	0	0.13
900823	0	0	0	0	0.15
900824	0	0	0	0	0.21
900825	0	0	0	0	0.06
900826	0	0	0	0	0.18
900827	0	0	0	0	0.21
900828	0.03	0.76	1900	2000	0.24
900829	0	0	0	0	0.23
900830	0	0	0	0	0.2
900831	0	0	0	0	0.23
	Total	68.32			
900901	0	0.00	0	0	
900902	0	0.00	0	0	
900903	0	0.00	0	0	0.2
900904	0	0.00	0	0	0.16
900905	0	0.00	0	0	0.05
900906	0.05	1.27	1800	1900	
900907	1	25.40	200	400	
900907	0.07	1.78	400	800	
900908	0	0.00	0	0	
900909	1.97	50.04	0	600	
900910	0	0.00	0	0	0.05
900911	0	0.00	0	0	0.05
900912	0	0.00	0	0	0.2
900913	0	0.00	0	0	0.2
900914	0.95	24.13	1600	1700	-0.71
900915	0	0.00	0	0	-0.05
900916	0.1	2.54	600	700	-0.01
900916	0.2	5.08	1000	1100	
900917	0	0.00	0	0	0.1
900918	0	0.00	0	0	-0.09
900919	0.44	11.18	0	1000	-0.2
900920	0	0.00	0	0	0.14
900921	0.15	3.81	1600	2100	
900922	0.13	3.30	1900	2000	0
900923	0.05	1.27	500	600	0.02
900924	0	0.00	0	0	0.14
900925	0	0.00	0	0	0.15
900926	0	0.00	0	0	0.11
900927	0	0.00	0	0	0.1
900928	0	0.00	0	0	0.06
900929	0.14	3.56	800	1100	-0.6
900929	0.44	11.18	1900	2400	
900930	0.02	0.51	600	700	0.07
	Total	145.05			
901001	0	0	0	0	0.14
901002	0	0	0	0	0.12

Appendix P. True Basic© programs written to compute discharge, residence times, mean concentrations, and fluxes (loads). Complete programs are available from the author.

Program Name	Description
PRGM RES.TIME 3.0	Finds the RESIDENCE TIME and NUMBER OF TURNOVERS of water in the OWC Wetland for an individual storm.
PRGM MEAN CONC.Rev	Produces SIMPLE MEAN CONCENTRATIONS and TIME-WEIGHTED MEAN CONCENTRATIONS for all nine chemical parameters at the upstream and downstream sampling stations.
SPECIFIC INTVL. PRGM.7.3	Finds ALL STAGE CHANGES GREATER THAN OR EQUAL TO A SPECIFIED INTERVAL. Computes VOLUME CHANGES FOR EACH INTERVAL. Computes UPSTREAM CREEK (all tributaries) DISCHARGE FOR EACH INTERVAL.
PRGM-US6 FLUX CALC v.6.1	Produces MATERIALS FLUXES FOR EACH STAGE INTERVAL at the mouth of OWC Wetland, according to Figure 4 of Krieger (1993). SPECIFIC INTVL. PRGM.7.3 must first be run to produce input data files.
UP-LOADING PRGR v.2.1a	Computes the TOTAL DISCHARGE OF OLD WOMAN CREEK AT BERLIN ROAD and also the estimated DISCHARGE FOR ALL TRIBUTARIES into the wetland (1.187 x discharge at Berlin Road) for the month input at the prompt of the computer.

Appendix P. True Basic® programs written to compute residence times, time-weighted mean concentrations, and fluxes (loads).

PROGRAM "PRGM RES.TIME 3.0"

```
OPTION NOLET
PRINT "'PRGM RES.TIME 3.0'     31 January 1996"
PRINT "Finds the RESIDENCE TIME and NUMBER OF
TURNOVERS"
PRINT "of water in the Old Woman Creek Wetand for an
individual storm."
PRINT
PRINT "Version 3.0 is identical to 2.0 except it prints out
the hourly discharges"
PRINT "at Berlin Road and creates tab-delimited file for
input to CricketGraph."

! THE EQUATIONS:

!   MEAN INSTANTANEOUS RETENTION TIME =
[SUM (Vsub-i/Qsub-i)]/t
!
!       where Vsub-i is wetland volume (cubic meters) at
hour i
!         and Qsub-i is discharge (cubic meters per day) for
entire
!           upland watershed (=Berlin*1.187) at hour i
!         and t is total number of hourly readings during the
storm

!   MEAN RETENTION TIME = (Mean V)/(Mean Q)

!       where Mean V = [SUM(Vsub-i)]/t
!         and Mean Q = [SUM(Qsub-i)]/t

!   REPLACEMENTS (TURNOVERS) = [Duration of
storm (days)]/retention time

OPEN #9: PRINTER
PRINT #9: "This print-out was created on ":Date$:" at
":Time$;"              kak"
PRINT #9:
PRINT #9: "'PRGM RES.TIME 3.0'    31 January 1996"
PRINT #9: "Finds the RESIDENCE TIME and NUMBER
OF TURNOVERS"
PRINT #9: "of water in the Old Woman Creek Wetand for
an individual storm."
PRINT #9:

!Residence Time Computed by Method 1:
! Mean RT = SUM(Vsub-i/Qsub-i) where i
! corresponds to each hourly stage reading from the mouth

OPEN #1: NAME "US6 Stages 88-90WYs", ORG TEXT,
ACCESS INPUT
OPEN #2: NAME "Area-Vol-long", ORG TEXT, ACCESS
INPUT

OPEN #3: NAME "Berlin Stages 88-90WYs.dupl", ORG
TEXT, ACCESS INPUT

DIM Llevels(7)
DIM Blevels(7)
DIM A_V(3)
DIM stages(2)
DIM Lstage(2)
DIM Bstage(2)
DIM BerlinQ(2)
DIM Runoff(2)
PRINT "Specify start and end date-times beginning at
0100, 0700, 1300, or 1900."
PRINT
INPUT PROMPT "What is the beginning date-time?
(yymmddhh00)  ": StartDate
C$=str$(StartDate)
P1$="###,##"

OPEN #4: NAME "L_Stages." & C$, ORG TEXT,
ACCESS OUTIN, CREATE NEW
OPEN #5: NAME "B_Stages." & C$, ORG TEXT,
ACCESS OUTIN, CREATE NEW
OPEN #6: NAME "Rating Table-Berlin.dupl", ORG
TEXT, ACCESS INPUT
OPEN #7: NAME "Hrly Dschrges." & C$, ORG TEXT,
ACCESS OUTIN, CREATE NEW
OPEN #8: NAME "Dschrg.Data." & C$, ORG TEXT,
ACCESS OUTIN, CREATE NEW

PRINT
INPUT PROMPT "What is the ending date-time?
": EndDate
PRINT
PRINT #9:

! * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
! This part of program modified from Specific Intvl
Program 7.3

PRINT "   Program is searching for LAKE data . . ."
PRINT
INPUT #1: LLevels$          !First line of file is name of file
DO WHILE Llevels(1) < StartDate
  MAT INPUT #1: Llevels
LOOP
IF Llevels(1)>StartDate THEN
  PRINT
  PRINT "# # # # #  Please restart program using a starting
hour of  # # # # #"
  PRINT "# # # # #          0100, 0700, 1300, or 1900.
# # # # #"
  PRINT
  PAUSE 10
   ! If one of these hours is not used, the program will miss
   ! some data on preceding US6 stage data line.
END IF
```

```
! Make file for Lake stages during this storm:

PRINT

DO WHILE Llevels(1) <= EndDate
 FOR i = 2 to 7
  If i=2 THEN hour=Llevels(1)        ! Assign time to each
stage reading
  If i=3 THEN hour=Llevels(1) + 100
  If i=4 THEN hour=Llevels(1) + 200
  If i=5 THEN hour=Llevels(1) + 300
  If i=6 THEN hour=Llevels(1) + 400
  If i=7 THEN hour=Llevels(1) + 500
  PRINT #4: Hour;",  ";Llevels(i)
 NEXT i
 MAT INPUT #1: Llevels
LOOP

!  Now make file for Berlin stages and during this storm:

PRINT
PRINT "   Program is searching for CREEK data . . ."
PRINT
INPUT #3: BLevels$     !First line of file is name of file
DO WHILE Blevels(1) < StartDate
  MAT INPUT #3: Blevels
LOOP
PRINT
PRINT
PRINT
DO WHILE Blevels(1) <= EndDate
 FOR i = 2 to 7
  If i=2 THEN hour=BLevels(1)        ! Assign time to
each stage reading
  If i=3 THEN hour=BLevels(1) + 100
  If i=4 THEN hour=BLevels(1) + 200
  If i=5 THEN hour=BLevels(1) + 300
  If i=6 THEN hour=BLevels(1) + 400
  If i=7 THEN hour=BLevels(1) + 500
  PRINT #5: Hour;",  ";BLevels(i)
 NEXT i
 MAT INPUT #3: BLevels
LOOP

PRINT
PRINT

!*********************************
*******

PRINT
PRINT
RESET #4: begin
RESET #5: begin
DO WHILE Lstage(1) < EndDate
  MAT INPUT #4: Lstage     ! (1) = DateTime  (2) = stage
  PRINT
       ! Read area and volume for given lake stage:
  RESET #2: begin
  DO UNTIL Lstage(2) = A_V(1)
    MAT INPUT #2: A_V        ! (1) = stage  (2) = area
(3) = volume
  LOOP
  PRINT "LAKE    ";Lstage(1);" ";Lstage(2);" ";A_V(1);"
";A_V(3)
  PRINT

       ! Now find the discharge at Berlin for that datetime:

  RESET #5: begin
  DO UNTIL Bstage(1) = Lstage(1)
    MAT INPUT #5: Bstage   ! (1) = DateTime  (2) = stage
  LOOP
  PRINT "BERLIN ";" ";Bstage(1);" ";Bstage(2);" ";

  RESET #6: begin ! Find the discharge for the Berlin stage
  DO UNTIL Bstage(2) = BerlinQ(1)
   MAT INPUT #6: BerlinQ   ! (1) = stage  (2) = discharge
  LOOP
  MetricQ = BerlinQ(2)*0.02832       ! Converts cfs to
cubic m/sec

  PRINT #7: Bstage(1);",  ";MetricQ          ! Save datetime
and discharge
  PRINT #8: Bstage(1);chr$(9);MetricQ        ! Tab-
delimited file for graphs

  TotalQ = MetricQ*1.187             ! Converts discharge
@ Berlin Rd to
  PRINT "cu.m/s =";TotalQ;"  ";      !  total watershed
                                        discharge
  IF MaxQ < TotalQ THEN
    MaxQ = TotalQ
    MaxDate=Bstage(1)       !Record max discharge
  END IF
  PRINT "MaxQ =";MaxQ

  ! Compute Vsub-i divided by Qsub-i
  RT_INSTANT = A_V(3)/(TotalQ*86400)          !
86,400 seconds per day
  PRINT "RT_INSTANT=";RT_INSTANT;
  SumRT_Instant = SumRT_Instant + RT_INSTANT

  ! Sum V and Q
  SumVol=SumVol + A_V(3)
  SumQ = SumQ + (TotalQ*86400)          ! in units of
cubic m/day
  Total_Flux = Total_Flux + (TotalQ*3600)       ! 3,600
seconds per hour
  Total_Hours=Total_Hours + 1
  PRINT "Sum V =";SumVol;"  Sum Q =";SumQ; "
Hours =";Total_Hours
  PRINT
LOOP
PRINT
PRINT
PRINT #9:
      ! Calculate mean V divided by mean Q
Days = Total_hours/24
meanV=SumVol/Total_Hours          ! cubic meters
meanQ=SumQ/Total_Hours            ! mean cubic m/day
RT_MEAN = meanV/meanQ
```

```
MEAN_INST_RT = SumRT_Instant/Total_hours
DISPLACEMENTS1 = Days/MEAN_INST_RT
DISPLACEMENTS2 = Days/RT_MEAN
PRINT
PRINT
PRINT "*****************************
**********"
PRINT
PRINT " FOR THE STORM BEGINNING ";StartDate;
        " AND ENDING ";EndDate;"(";
PRINT USING "##.###": Days;
PRINT " Days):"
PRINT
PRINT " Maximum upstream discharge was ";
PRINT USING "###.###": MaxQ;
PRINT " cubic meters/sec on";MaxDate
PRINT
PRINT " Total Upstream Surface Flux of Water was ";
PRINT USING "#,###,###,###": Total_Flux;
PRINT " cubic meters"
PRINT
PRINT " Mean Volume of OWC Wetland was ";
PRINT USING "###,###": meanV;
PRINT " cubic meters"
PRINT
PRINT " Mean Instantaneous Retention Time = ";
PRINT USING P1$: MEAN_INST_RT;
PRINT " Days,"
PRINT " equivalent to";
PRINT USING "###.###": DISPLACEMENTS1;
PRINT " Total Replacements (Turnovers) of the Wetland
Water"
PRINT
PRINT " Mean Retention Time = ";
PRINT USING P1$: RT_MEAN;
PRINT " Days, equivalent to";
PRINT USING "###.###": DISPLACEMENTS2;
PRINT " Replacements"

PRINT #9: "**************************
************"
PRINT #9: "THE EQUATIONS:"
PRINT #9:
PRINT #9: "   MEAN INSTANTANEOUS RETENTION
TIME = [SUM (Vsub-i/Qsub-i)]/t"
PRINT #9:
PRINT #9: "      where Vsub-i is wetland volume (cubic
meters) at hour i"
PRINT #9: "        and Qsub-i is discharge (cubic meters
per day) for entire"
PRINT #9: "          upland watershed (=Berlin*1.187) at
hour i"
PRINT #9: "        and t is total number of hourly readings
during the storm"
PRINT #9:
PRINT #9: "   MEAN RETENTION TIME = (Mean
V)/(Mean Q)"
PRINT #9:
PRINT #9: "      where Mean V = [SUM(Vsub-i)]/t"
PRINT #9: "        and Mean Q = [SUM(Qsub-i)]/t"
PRINT #9:
PRINT #9: "   REPLACEMENTS (TURNOVERS) =
[Duration of storm (days)]/retention time"
PRINT #9:
PRINT #9: "*************************
************"
PRINT #9:
PRINT #9:
PRINT #9:
PRINT #9: " FOR THE STORM BEGINNING
";StartDate;" AND ENDING ";EndDate;"(";
PRINT #9, USING "##.##": Days;
PRINT #9: " Days):"
PRINT #9:
PRINT #9: " Maximum upstream discharge was ";
PRINT #9, USING "###.###": MaxQ;
PRINT #9: " cubic meters/sec on";MaxDate
PRINT #9:
PRINT #9: " Total Upstream Surface Flux of Water was ";
PRINT #9, USING "#,###,###,###": Total_Flux;
PRINT #9: " cubic meters"
PRINT #9:
PRINT #9: " Mean Volume of OWC Wetland was ";
PRINT #9, USING "###,###": meanV;
PRINT #9: " cubic meters"
PRINT #9:
PRINT #9: " Mean Instantaneous Retention Time = ";
PRINT #9, USING P1$: MEAN_INST_RT;
PRINT #9: " Days,"
PRINT #9: " equivalent to";
PRINT #9, USING "##.##": DISPLACEMENTS1;
PRINT #9: " Total Replacements (Turnovers) of the
Wetland Water"
PRINT #9:
PRINT #9: " Mean Retention Time = ";
PRINT #9, USING P1$: RT_MEAN;
PRINT #9: " Days, equivalent to";
PRINT #9, USING "##.##": DISPLACEMENTS2;
PRINT #9: " Replacements"

RESET #7: begin
PRINT
PRINT
PRINT " Hourly Discharges (cu.m/s) at Berlin Road:"
PRINT #9:
PRINT #9:
PRINT #9: " Hourly Discharges (cu.m/s) at Berlin Road:"
PRINT #9:
DO UNTIL CX=Total_Hours
  MAT INPUT #7: Runoff    ! (1) = Datetime  (2) =
Discharge, cu.m/s @ Berlin
  CX=CX+1
  PRINT Runoff(1);Runoff(2);"   ";
  PRINT #9: Runoff(1);
  PRINT #9, USING "##.##": Runoff(2);
  PRINT #9: "   ";
LOOP
PRINT
PRINT "          * * * * END * * *"
m$="a2 c2 a"
play m$
END
```

PROGRAM "PRGM MEAN CONC.Rev"

```
! "PRGM MEAN CONC.Rev"
! 3/13/96; rev. 8/7/97

! This program produces simple mean concentrations and
time-weighted mean concentrations for all nine
! chemical parameters.  Flow-weighted and flux-weighted
means are not calculated because they are essentially
! undefined at the mouth of the wetland where flows and
fluxes are bidirectional.
! TWMCs are stored in a file to be accessed by Excel to
create tables.

OPTION NOLET

PRINT " This program will calculate simple and time-
weighted mean concentrations."
PRINT
INPUT PROMPT "What is the BEGINNING datetime?  ":
StartDate
PRINT
INPUT PROMPT "What is the ENDING datetime?     ":
EndDate
PRINT
PRINT

OPEN #1: NAME "US6 Nutr Data 88-90WYs copy", ORG
TEXT, ACCESS INPUT
   ! Columns: (1) datetime, (2) dos, (3) stage, (4) TP, (5)
SRP,
   !       (6) SS,(7) NO23 N, (8) NH3 N, (9) TKN, (10)
Conductivity,
   !       (11) SiO2, (12) Chloride
   ! These data are edited form of "US6 Nutrients" file,
from which have been
   ! deleted all rows containing "-9" or "-1" values except
for conductivity,
   ! and for which individual data containing "-9" or "-1"
are converted to an
   ! estimated value based on preceding and succeeding
data.

OPEN #2: NAME "Berlin Nutr Data 88-90WYs copy",
ORG TEXT, ACCESS INPUT
   ! Same format as file #1
OPEN #3: name "Concentrat'ns for XL", ORG TEXT,
ACCESS OUTIN, CREATE NEWOLD
   ! #3 created to capture output for transfer to Excel
document.
SET #3: MARGIN 98
OPEN #9: PRINTER
PRINT #9: "  This report was run on ";Date$;".  PRGM
MEAN CONC.Rev";
PRINT #9:
PRINT #9:
PRINT #9:
PRINT #9: " * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * * * * * * * "
PRINT #9:
PRINT #9: "     MEAN CONCENTRATIONS (mg/L)
FOR PERIOD ";StartDate;
PRINT #9: "  TO ";EndDate
PRINT #9:
PRINT #9: " * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * * * * * * * "
PRINT #9:

INPUT #1: Header$  ! These three lines get rid of headers
INPUT #1: Header$                  ! at beginning of files.
INPUT #2: Header$
DIM DnSum_c(12)
DIM DnSum_ct(12)
DIM DnMean(12)
DIM DnTime_Wt(12)
DIM UpSum_c(12)
DIM UpSum_ct(12)
DIM UpMean(12)
DIM UpTime_Wt(12)
DIM Future(12)
DIM Present(12)
DIM Past(12)

!            First, calculate averages for Berlin Road.
PRINT "       Please be patient. The computer is looking
up Berlin data."
PRINT #9:
PRINT #9: "  Sample times, days of study, and
concentrations at Berlin Road (Up):"
PRINT #9: " DateTime   DoS    TP   SRP  TSS   NO23 N
NH3 N  TKN  COND  SiO2  Cl"
PRINT #9:

MAT INPUT #2: Past
MAT INPUT #2: Present
DO WHILE Present(1) < StartDate
  MAT INPUT #2: Present
  IF Present(1)<StartDate THEN Past(2)=Present(2)
!Record time of prior sample
LOOP
PRINT
MAT INPUT #2: Future                        !Next sample
DO WHILE Present(1)<=EndDate
  Interval=((Future(2)-Past(2))/2)

!            Accumulate values for mean concentrations.

  UpSum_t = UpSum_t + Interval              ! Sum of t(i)
  UpSamples = UpSamples + 1                 ! n
  FOR i = 4 to 12
    IF Present(i)<0 THEN
      IF Present(i)<-.2 THEN Present(i)=-999999 ! Flag
missing or erroneous values
      IF Present(i)>=-.2 THEN Present(i)=0   ! Convert
background values to 0
    END IF
```

```
  NEXT i
  FOR i = 4 to 12
    UpSum_c(i) = UpSum_c(i) + Present(i)    ! Sum of c(i)
    UpSum_ct(i) = UpSum_ct(i) + (Present(i)*Interval) !
Sum of c(i)*t(i)
  NEXT i
  PRINT Present(1);
  PRINT #9: "
";Present(1);Present(2);Present(4);Present(5);Present(6);Pre
sent(7);Present(8);
  PRINT #9:
Present(9);Present(10);Present(11);Present(12)
  Past(2) = Present(2) ! Record beginning of next interval
  FOR i=1 to 12
    Present(i)=Future(i)              ! Next sample
becomes present sample
  NEXT i
  MAT INPUT #2: Future
LOOP
PRINT
PRINT #9:
PRINT    "  N = ";UpSamples
PRINT #9: "  N = ";UpSamples

!                    Now Calculate Means.
FOR i=4 to 12
  UpMean(i) = UpSum_c(i)/UpSamples            !
Simple Mean
  UpTime_Wt(i) = UpSum_ct(i)/UpSum_t          !
Time-Weighted Mean
NEXT i

!    Now compute the average concentrations for US6 data.

PRINT
PRINT "         Now the computer is looking up US6 data."
PRINT #9:
PRINT #9: " Sample times, days of study, and
concentrations at US6 (Down):"
PRINT #9: " DateTime  DoS   TP  SRP TSS  NO23 N
NH3 N  TKN  COND  SiO2  Cl"
PRINT #9:
MAT INPUT #1: Past
MAT INPUT #1: Present
DO WHILE Present(1) < StartDate
  MAT INPUT #1: Present
  IF Present(1)<StartDate THEN Past(2)=Present(2)
!Record time of prior sample
LOOP
PRINT
MAT INPUT #1: Future                    !Next sample
DO WHILE Present(1)<=EndDate
  Interval=((Future(2)-Past(2))/2)

!              Accumulate values for mean concentrations.

  DnSum_t = DnSum_t + Interval            ! Sum of t(i)
  DnSamples = DnSamples + 1               ! n
  FOR i = 4 to 12
    IF Present(i)<0 THEN
      IF Present(i)<-.2 THEN Present(i)=-999999 ! Flag
missing or erroneous values
      IF Present(i)>=-.2 THEN Present(i)=0   ! Convert
background values to 0
    END IF
  NEXT i
  FOR i = 4 to 12
    DnSum_c(i) = DnSum_c(i) + Present(i)    ! Sum of c(i)
    DnSum_ct(i) = DnSum_ct(i) + (Present(i)*Interval) !
Sum of c(i)*t(i)
  NEXT i
  PRINT Present(1);
  PRINT #9: "
";Present(1);Present(2);Present(4);Present(5);Present(6);Pre
sent(7);Present(8);
  PRINT #9:
Present(9);Present(10);Present(11);Present(12)
  Past(2) = Present(2)   ! Record beginning of next interval
  FOR i=1 to 12
    Present(i)=Future(i)              ! Next sample becomes
present sample
  NEXT i
  MAT INPUT #1: Future
LOOP
PRINT
PRINT #9:
PRINT    "  N = ";DnSamples
PRINT #9: "  N = ";DnSamples

!                    Now Calculate Means.
FOR i=4 to 12
  DnMean(i) = DnSum_c(i)/DnSamples      ! Simple Mean
  DnTime_Wt(i) = DnSum_ct(i)/DnSum_t    ! Time-
Weighted Mean
NEXT i

PRINT
PRINT
PRINT " * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * * * * *"
PRINT
PRINT "    MEAN CONCENTRATIONS (mg/L) FOR
PERIOD ";StartDate;
PRINT " TO ";EndDate
PRINT
PRINT " * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * * * * *"
PRINT
PRINT
PRINT
PRINT
PRINT
PRINT "          TP    SRP    TSS   NO23 N    NH3 N
TKN  COND  SiO2   Cl"
RESET #3: END
PRINT #3: "-,-,N,TP,SRP,TSS,NO23 N,NH3
N,TKN,COND,SiO2,Cl"
PRINT
PRINT " SIMPLE"
PRINT " Up    ";
PRINT USING "###.###":  UpMean(4);
PRINT USING "###.####":  UpMean(5);
PRINT USING "##,###.#":  UpMean(6);
PRINT USING "#####.##":  UpMean(7);
```

```
PRINT USING "#####.###": UpMean(8);
PRINT USING "####.##":  UpMean(9);
PRINT USING "###,###":  UpMean(10);
PRINT USING "####.##":  UpMean(11);
PRINT USING "####.#":   UpMean(12)
PRINT "  Down   ";
PRINT USING "###.###":  DnMean(4);
PRINT USING "###.####": DnMean(5);
PRINT USING "##,###.#": DnMean(6);
PRINT USING "#####.##": DnMean(7);
PRINT USING "#####.###": DnMean(8);
PRINT USING "####.##":  DnMean(9);
PRINT USING "###,###":  DnMean(10);
PRINT USING "####.##":  DnMean(11);
PRINT USING "####.#":   DnMean(12)
PRINT
PRINT "  Down/Up ";
PRINT USING "####.##":  DnMean(4)/UpMean(4);
PRINT USING "#####.##": DnMean(5)/UpMean(5);
PRINT USING "#####.##": DnMean(6)/UpMean(6);
PRINT USING "#####.##": DnMean(7)/UpMean(7);
PRINT USING "######.##": DnMean(8)/UpMean(8);
PRINT USING "####.##":  DnMean(9)/UpMean(9);
PRINT USING "####.##":  DnMean(10)/UpMean(10);
PRINT USING "####.##":  DnMean(11)/UpMean(11);
PRINT USING "###.##":  DnMean(12)/UpMean(12)
PRINT
PRINT
PRINT
PRINT " TIME-WEIGHTED"
PRINT "  Up     ";
PRINT USING "###.###":  UpTime_Wt(4);
PRINT USING "###.####": UpTime_Wt(5);
PRINT USING "##,###.#": UpTime_Wt(6);
PRINT USING "#####.##": UpTime_Wt(7);
PRINT USING "#####.###": UpTime_Wt(8);
PRINT USING "####.##":  UpTime_Wt(9);
PRINT USING "###,###":  UpTime_Wt(10);
PRINT USING "####.##":  UpTime_Wt(11);
PRINT USING "####.#":   UpTime_Wt(12)
PRINT "  Down   ";
PRINT USING "###.###":  DnTime_Wt(4);
PRINT USING "###.####": DnTime_Wt(5);
PRINT USING "##,###.#": DnTime_Wt(6);
PRINT USING "#####.##": DnTime_Wt(7);
PRINT USING "#####.###": DnTime_Wt(8);
PRINT USING "####.##":  DnTime_Wt(9);
PRINT USING "###,###":  DnTime_Wt(10);
PRINT USING "####.##":  DnTime_Wt(11);
PRINT USING "####.#":   DnTime_Wt(12)
PRINT
PRINT "  Down/Up ";
PRINT USING "####.##":
DnTime_Wt(4)/UpTime_Wt(4);
PRINT USING "#####.##":
DnTime_Wt(5)/UpTime_Wt(5);
PRINT USING "#####.##":
DnTime_Wt(6)/UpTime_Wt(6);
PRINT USING "#####.##":
DnTime_Wt(7)/UpTime_Wt(7);
PRINT USING "######.##":
DnTime_Wt(8)/UpTime_Wt(8);
PRINT USING "####.##":
DnTime_Wt(9)/UpTime_Wt(9);
PRINT USING "####.##":
DnTime_Wt(10)/UpTime_Wt(10);
PRINT USING "####.##":
DnTime_Wt(11)/UpTime_Wt(11);
PRINT USING "###.##":
DnTime_Wt(12)/UpTime_Wt(12)

PRINT #3: StartDate;",Up,";Upsamples;",";
PRINT #3, USING "###.###": UpTime_Wt(4);
PRINT #3: ",";
PRINT #3, USING "###.####": UpTime_Wt(5);
PRINT #3: ",";
PRINT #3, USING "##,###.#": UpTime_Wt(6);
PRINT #3: ",";
PRINT #3, USING "#####.##": UpTime_Wt(7);
PRINT #3: ",";
PRINT #3, USING "#####.###": UpTime_Wt(8);
PRINT #3: ",";
PRINT #3, USING "####.##": UpTime_Wt(9);
PRINT #3: ",";
PRINT #3, USING "###,###": UpTime_Wt(10);
PRINT #3: ",";
PRINT #3, USING "####.##": UpTime_Wt(11);
PRINT #3: ",";
PRINT #3, USING "####.#":  UpTime_Wt(12)
PRINT #3: EndDate;",Down,";DnSamples;",";
PRINT #3, USING "###.###":  DnTime_Wt(4);
PRINT #3: ",";
PRINT #3, USING "###.####": DnTime_Wt(5);
PRINT #3: ",";
PRINT #3, USING "##,###.#": DnTime_Wt(6);
PRINT #3: ",";
PRINT #3, USING "#####.##": DnTime_Wt(7);
PRINT #3: ",";
PRINT #3, USING "#####.###": DnTime_Wt(8);
PRINT #3: ",";
PRINT #3, USING "####.##":  DnTime_Wt(9);
PRINT #3: ",";
PRINT #3, USING "###,###":  DnTime_Wt(10);
PRINT #3: ",";
PRINT #3, USING "####.##":  DnTime_Wt(11);
PRINT #3: ",";
PRINT #3, USING "####.#":   DnTime_Wt(12)
PRINT #3: "-,D/U,-,";
PRINT #3, USING "####.##":
DnTime_Wt(4)/UpTime_Wt(4);
PRINT #3: ",";
PRINT #3, USING "#####.##":
DnTime_Wt(5)/UpTime_Wt(5);
PRINT #3: ",";
PRINT #3, USING "#####.##":
DnTime_Wt(6)/UpTime_Wt(6);
PRINT #3: ",";
PRINT #3, USING "#####.##":
DnTime_Wt(7)/UpTime_Wt(7);
PRINT #3: ",";
PRINT #3, USING "######.##":
DnTime_Wt(8)/UpTime_Wt(8);
PRINT #3: ",";
```

```
PRINT #3, USING "####.##":
DnTime_Wt(9)/UpTime_Wt(9);
PRINT #3: ",";
PRINT #3, USING "####.##":
DnTime_Wt(10)/UpTime_Wt(10);
PRINT #3: ",";
PRINT #3, USING "####.##":
DnTime_Wt(11)/UpTime_Wt(11);
PRINT #3: ",";
PRINT #3, USING "###.##":
DnTime_Wt(12)/UpTime_Wt(12)

PRINT              ! Print out the same tables on the printer:
PRINT #9:
PRINT #9:
PRINT #9: "              ---------- MEAN
CONCENTRATIONS (mg/L) ----------"
PRINT #9:
PRINT #9: "            TP    SRP    TSS  NO23 N    NH3
N  TKN  COND  SiO2   Cl"
PRINT #9: " SIMPLE"
PRINT #9: "  Up     ";
PRINT #9, USING "###.###":  UpMean(4);
PRINT #9, USING "###.####": UpMean(5);
PRINT #9, USING "##,###.#": UpMean(6);
PRINT #9, USING "#####.##": UpMean(7);
PRINT #9, USING "#####.###": UpMean(8);
PRINT #9, USING "####.##":  UpMean(9);
PRINT #9, USING "###,###":  UpMean(10);
PRINT #9, USING "####.##":  UpMean(11);
PRINT #9, USING "####.#":   UpMean(12)
PRINT #9: "  Down    ";
PRINT #9, USING "###.###":  DnMean(4);
PRINT #9, USING "###.####": DnMean(5);
PRINT #9, USING "##,###.#": DnMean(6);
PRINT #9, USING "#####.##": DnMean(7);
PRINT #9, USING "#####.###": DnMean(8);
PRINT #9, USING "####.##":  DnMean(9);
PRINT #9, USING "###.###":  DnMean(10);
PRINT #9, USING "####.##":  DnMean(11);
PRINT #9, USING "####.#":   DnMean(12)
PRINT #9:
PRINT #9: "  Down/Up ";
PRINT #9, USING "####.##":  DnMean(4)/UpMean(4);
PRINT #9, USING "#####.##": DnMean(5)/UpMean(5);
PRINT #9, USING "#####.##": DnMean(6)/UpMean(6);
PRINT #9, USING "#####.##": DnMean(7)/UpMean(7);
PRINT #9, USING "######.##": DnMean(8)/UpMean(8);
PRINT #9, USING "####.##":  DnMean(9)/UpMean(9);
PRINT #9, USING "####.##":  DnMean(10)/UpMean(10);
PRINT #9, USING "####.##":  DnMean(11)/UpMean(11);
PRINT #9, USING "###.##":   DnMean(12)/UpMean(12)
PRINT #9:
PRINT #9:
PRINT #9: "            TP    SRP    TSS  NO23 N    NH3
N  TKN  COND  SiO2   Cl"
PRINT #9: " TIME-WEIGHTED"
PRINT #9: "  Up     ";
PRINT #9, USING "###.###":  UpTime_Wt(4);
PRINT #9, USING "###.####": UpTime_Wt(5);
PRINT #9, USING "##,###.#": UpTime_Wt(6);
PRINT #9, USING "#####.##": UpTime_Wt(7);
PRINT #9, USING "#####.###": UpTime_Wt(8);
PRINT #9, USING "####.##":  UpTime_Wt(9);
PRINT #9, USING "###,###":  UpTime_Wt(10);
PRINT #9, USING "####.##":  UpTime_Wt(11);
PRINT #9, USING "####.#":   UpTime_Wt(12)
PRINT #9: "  Down    ";
PRINT #9, USING "###.###":  DnTime_Wt(4);
PRINT #9, USING "###.####": DnTime_Wt(5);
PRINT #9, USING "##,###.#": DnTime_Wt(6);
PRINT #9, USING "#####.##": DnTime_Wt(7);
PRINT #9, USING "#####.###": DnTime_Wt(8);
PRINT #9, USING "####.##":  DnTime_Wt(9);
PRINT #9, USING "###,###":  DnTime_Wt(10);
PRINT #9, USING "####.##":  DnTime_Wt(11);
PRINT #9, USING "####.#":   DnTime_Wt(12)
PRINT #9:
PRINT #9: "  Down/Up ";
PRINT #9, USING "####.##":
DnTime_Wt(4)/UpTime_Wt(4);
PRINT #9, USING "#####.##":
DnTime_Wt(5)/UpTime_Wt(5);
PRINT #9, USING "#####.##":
DnTime_Wt(6)/UpTime_Wt(6);
PRINT #9, USING "#####.##":
DnTime_Wt(7)/UpTime_Wt(7);
PRINT #9, USING "######.##":
DnTime_Wt(8)/UpTime_Wt(8);
PRINT #9, USING "####.##":
DnTime_Wt(9)/UpTime_Wt(9);
PRINT #9, USING "####.##":
DnTime_Wt(10)/UpTime_Wt(10);
PRINT #9, USING "####.##":
DnTime_Wt(11)/UpTime_Wt(11);
PRINT #9, USING "###.##":
DnTime_Wt(12)/UpTime_Wt(12)

CLOSE #9

PRINT "End"
END
```

Appendix P. Continued.

PROGRAM "SPECIFIC INTVL. PRGM.7.3"

```
! "Specific Intvl. Prgm.7.3" finds all stage changes greater than or equal to a specified interval. Computes
! volume changes for each interval. Computes upstream creek (all tributaries) discharge for each interval.
! 2/23/93   (minor format changes on 6/9/93 & 1/15/96) kak

PRINT Date$;"  ";Time$;"   kak"

OPTION NOLET
DIM Stages(2)
DIM StagesUp(7)
DIM StagesUpA(7)
PRINT
INPUT PROMPT "GIVE A NAME TO THE OUTPUT FILE (OUT.05-May89, etc.): ": OUT$
PRINT
OPEN #1: name "US6 Stages 88-90WYs", ORG TEXT, ACCESS INPUT
OPEN #2: NAME OUT$ & ".Plot", ORG TEXT, ACCESS OUTPUT, CREATE NEW
! #2 is tab delimited output file for plotting stage intervals.
OPEN #3: NAME OUT$, ORG TEXT, ACCESS OUTIN, CREATE NEW
   ! #3 is temporary file to store stage intervals till they
! are printed to hard copy; also for input to other programs.
OPEN #4: name OUT$ & ".Temp", ORG TEXT, ACCESS OUTIN, CREATE NEW
      ! #4 is temporary file which contains 2-column data converted
      ! from the 7-column data in file #1.
OPEN #5: name "Area-Vol-long", ORG TEXT, ACCESS INPUT
      ! #5 contains area and volume for each stage to nearest 0.01 ft.
OPEN #6: name "Berlin Stages 88-90WYs", ORG TEXT, ACCESS INPUT
      ! #6 contains upstream creek stage data
OPEN #7: name "Rating Table-Berlin", ORG TEXT, ACCESS INPUT
      ! #7 matches stage with discharge

PRINT "* * * * NOTE:  There are no US6 stage data from 9002180100 through  * * *"
PRINT "* * * *      9003091200.  There are no Berlin stage data from    * * *"
PRINT "* * * *      8810010100 through 8904132400.  * * *"
PRINT
PRINT "What is the desired stage interval"
INPUT PROMPT "(hundredths of a foot, e.g., .05)? ": Interval
PRINT
PRINT "Type in the desired beginning and ending"
PRINT "date/times (inclusive) for computing stage intervals"
PRINT "Use format yymmddhhhh.  Use starting hour of 0100, 0700, 1300 or 1900."
PRINT
INPUT PROMPT "Beginning date/time? ": StartDate
INPUT PROMPT "   Ending Date/Time? ": EndDate
PRINT
PRINT #2: "End Time";chr$(9);"Day of Study";chr$(9);"End Stage";chr$(9);
PRINT #2: chr$(9);"Vol.Change";chr$(9);"Creek Flux";chr$(9);"Total Flux"

! This part of this program puts US6 stage data in 2-column format.
DIM Levels(7)
DIM AreaVol(3)
INPUT #1: File$
INPUT #6: File2$
PRINT "Reading File:  ";File$;" . . . ."
PRINT
DO WHILE Levels(1) < StartDate
  MAT INPUT #1: Levels
LOOP
IF Levels(1)>StartDate THEN
  PRINT
  PRINT "# # # # #  Please restart program using a starting hour of  # # # # #"
  PRINT "# # # # #          0100, 0700, 1300, or 1900.  # # # # #"
  PRINT
  PAUSE 10
   ! If one of these hours is not used, the program will miss some data on
   ! preceding US6 stage data line.
END IF
PRINT "EndDate = ";EndDate
DO WHILE Levels(1) <= EndDate + 10000 ! 10000 gives extra lines of data
            ! at end of temp. file to prevent bombing out.
 PRINT Levels(1);
 FOR i = 2 to 7
  If i=2 THEN hour=Levels(1)      ! Assign time to each stage reading
  If i=3 THEN hour=Levels(1) + 100
  If i=4 THEN hour=Levels(1) + 200
  If i=5 THEN hour=Levels(1) + 300
  If i=6 THEN hour=Levels(1) + 400
  If i=7 THEN hour=Levels(1) + 500
  PRINT #4: Hour;",  ";Levels(i)     ! Format for the rest of this program
 NEXT i
 MAT INPUT #1: Levels
LOOP

PRINT
PRINT
RESET #4: begin
MAT INPUT #4: Stages
```

```
EndStage = Stages(2)  !First stage reading; EndStage is
tentative end of
              ! current stage interval.
EndTime = Stages(1)
PrevEnd = EndStage     ! Saves previous endstage
PrevTime = EndTime

  ! This loop goes to first Berlin stage data line for
selected interval.
  DO WHILE StagesUp(1) <= PrevTime
    ! Save the present stage-data line in "StagesUpA":
    FOR i = 1 to 7
      StagesUpA(i) = StagesUp(i)
    NEXT i
    PRINT
  MAT INPUT #6: StagesUp

  LOOP

DO UNTIL AreaVol(1) = PrevEnd   ! Find beginning
stage in A-V file. and save
                    ! first volume.
  MAT INPUT #5: AreaVol
LOOP
FirstVol = AreaVol(3)
LastVol = AreaVol(3)

C=0
LINE_OUT = 0
PRINT
PRINT "This report was generated from Program 'Specific
Intvl. Prgm.7.3' on ";
PRINT Date$
PRINT
PRINT " End Time Day of Study End Stage Stage Chg.
Vol. Chg Trib.Disch"
PRINT

DO WHILE EndTime <= EndDate
  IF END #4 THEN EXIT DO
  MAT INPUT #4: Stages
  DIFF = Stages(2) - EndStage
  C=C+1          ! Keeps track of number of hourly
readings in interval.
  IF ABS(Diff) >= Interval THEN
    CALL BIG (BigDiff)
  ELSE
   CALL SMALL (OpposWay)
  END IF
  IF EndTime=EndDate THEN CALL BIG_END (BigEnd)
LOOP

!* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * *

SUB BIG (BigDiff)
  IF Diff >= Interval THEN
    Way$ = "Up"
    IF C=1 THEN OldWay$ = Way$     ! Records current
up/down series
  ELSE IF Diff <= -Interval THEN
    Way$ = "Down"
    IF C=1 THEN OldWay$ = Way$     ! C=1 writes the
1st row of output data
  END IF                    ! differently than other rows.
  IF OldWay$ = Way$ THEN
    IF C=1 THEN
      BigTime=EndTime
      CALL Day_of_Study (DOS)
      PRINT #2:
BigTime;chr$(9);DOS;chr$(9);EndStage;chr$(9);"0";chr$(
9);"0"
      PRINT #3:
BigTime;",";DOS;",";EndStage;",";"0";",";"0";",";"0"
      PrevDos = DOS
      Line_Out=Line_Out+1
    END IF
    BigDiff = Stages(2) - PrevEnd
    EndStage = Stages(2)
    EndTime = Stages(1)
  ELSE
    CALL BIG_END (BigEnd)
  END IF
END SUB

!* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * *

SUB BIG_END (BigEnd)

  BigEnd = EndStage
  BigTime = EndTime
  Change = EndStage - PrevEnd
  CALL Volume (VolChg)
  CALL Day_of_Study (DOS)
  IF PrevTime <> EndTime THEN CALL UPSTREAM
(CrkFlux)
  PRINT #2:
BigTime;chr$(9);DOS;chr$(9);BigEnd;chr$(9);VolChg;chr
$(9);CrkFlux;
  PRINT #2: chr$(9);(CrkFlux*(-1))+VolChg
  PRINT #3:
BigTime;",";DOS;",";BigEnd;",";Change;",";VolChg;",";Cr
kFlux
  PRINT
  PrevEnd = EndStage
  PrevTime = EndTime
  PrevDos = DOS
  VolChg = 0
  CrkFlux = 0
  EndStage = Stages(2)
  EndTime = Stages(1)
  OldWay$ = Way$       ! Change direction of new
interval
  C=1
  Line_Out = Line_Out+1   ! Tracks # of lines in
temporary file
END SUB

!* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * *

SUB SMALL (OpposWay)
```

```
   IF Diff >0 THEN Way$ = "Up"
   IF Diff <0 THEN Way$ = "Down"
   IF Diff =0 THEN Way$ = OldWay$
   IF Way$ = OldWay$ THEN
     IF OldWay$="Up" THEN
      IF Stages(2) >= EndStage THEN
          EndStage = Stages(2)
          EndTime=Stages(1)
      END IF
     ELSE IF OldWay$="Down" THEN
      IF Stages(2) <= EndStage THEN
          EndStage = Stages(2)
          EndTime=Stages(1)
      END IF
     END IF
   ELSE
     OpposWay = Stages(2)
   END IF
END SUB

!*********************************
*********

SUB Day_of_Study (DOS)
!
!      This subroutine converts calendar date/time to metric
!       day of study (e.g., 8903021200 = 519.50).
!
Cal$ = str$(BigTime)
Hr$ = Cal$(7:10)
Hour = val(Hr$)
Day$ = Cal$(1:6)
Day = val(Day$)


SELECT CASE Day
CASE 871001 to 871031          ! Day of Study (DOS) = 1
on 871001
   Daay=Day - 871000
CASE 871101 to 871130
   Daay=(Day - 871100) + 31
CASE 871201 to 871231
   Daay=(Day - 871200) + 61
CASE 880101 to 880131
   Daay=(Day - 880100) + 92
CASE 880201 to 880229
   Daay=(Day - 880200) + 123
CASE 880301 to 880331
   Daay=(Day - 880300) + 152
CASE 880401 to 880430
   Daay=(Day - 880400) + 183
CASE 880501 to 880531
   Daay=(Day - 880500) + 213
CASE 880601 to 880630
   Daay=(Day - 880600) + 244
CASE 880701 to 880731
   Daay=(Day - 880700) + 274
CASE 880801 to 880831
   Daay=(Day - 880800) + 305
CASE 880901 to 880930
   Daay=(Day - 880900) + 336
CASE 881001 to 881031
   Daay=(Day - 881000) + 366
CASE 881101 to 881130
   Daay=(Day - 881100) + 397
CASE 881201 to 881231
   Daay=(Day - 881200) + 427
CASE 890101 to 890131
   Daay=(Day - 890100) + 458
CASE 890201 to 890228
   Daay=(Day - 890200) + 489
CASE 890301 to 890331
   Daay=(Day - 890300) + 517
CASE 890401 to 890430
   Daay=(Day - 890400) + 548
CASE 890501 to 890531
   Daay=(Day - 890500) + 578
CASE 890601 to 890630
   Daay=(Day - 890600) + 609
CASE 890701 to 890731
   Daay=(Day - 890700) + 639
CASE 890801 to 890831
   Daay=(Day - 890800) + 670
CASE 890901 to 890930
   Daay=(Day - 890900) + 701
CASE 891001 to 891031
   Daay=(Day - 891000) + 731
CASE 891101 to 891130
   Daay=(Day - 891100) + 762
CASE 891201 to 891231
   Daay=(Day - 891200) + 792
CASE 900101 to 900131
   Daay=(Day - 900100) + 823
CASE 900201 to 900228
   Daay=(Day - 900200) + 854
CASE 900301 to 900331
   Daay=(Day - 900300) + 882
CASE 900401 to 900430
   Daay=(Day - 900400) + 913
CASE 900501 to 900531
   Daay=(Day - 900500) + 943
CASE 900601 to 900630
   Daay=(Day - 900600) + 974
CASE 900701 to 900731
   Daay=(Day - 900700) + 1004
CASE 900801 to 900831
   Daay=(Day - 900800) + 1035
CASE 900901 to 900930
   Daay=(Day - 900900) + 1066
CASE ELSE
   Print "No such date exists!!"
END SELECT

Hundreds = Hour/2400
Dos = Daay + Hundreds

END SUB

!################################
########

SUB VOLUME (VolChg)   ! Computes volume gained or
lost from wetland during
                ! present stage interval.
```

```
IF Change > 0 THEN RESET #5: begin
PRINT "EndStage =";EndStage;"  in Sub Volume"
DO UNTIL AreaVol(1) = EndStage
  IF END #5 THEN
    PRINT "Problem Matching Stage on";EndTime;" with
volume file"
  END IF
  MAT INPUT #5: AreaVol
LOOP
LastVol = AreaVol(3)
VolChg = LastVol - FirstVol
FirstVol=LastVol

END SUB

! * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * *

SUB UPSTREAM(CrkFlux)      !Adapted from Sub
Ave_Discharge found in
  !                        "Upstream Loading Program v.2"

  ! This subroutine takes an edited form of
  ! the USGS stage data set for Berlin Road in which six
hourly stages
  ! are printed on each line, and finds all hourly creek
stages within the
  ! stage interval which was just determined for US6.

  PRINT "In Subroutine UPSTREAM: Reading Data from
File ";File2$;" . . . ."
  PRINT
  PRINT "Finding first line of Berlin stage data for this
interval . . . ."
  PRINT
  !
  !       Find first stage.
  !
  IF PrevTime = StagesUpA(1) THEN
    LET First_Stage=2        !First_Stage = column #
  END IF
  IF PrevTime = StagesUpA(1) + 100 THEN
    LET First_Stage=3
  END IF
  IF PrevTime = StagesUpA(1) + 200 THEN
    LET First_Stage=4
  END IF
  IF PrevTime = StagesUpA(1) + 300 THEN
    LET First_Stage=5
  END IF
  IF PrevTime = StagesUpA(1) + 400 THEN
    LET First_Stage=6
  END IF
  IF PrevTime = StagesUpA(1) + 500 THEN
    LET First_Stage=7
  END IF
  !
  ! Now find out if the end of the interval (BigTime)
occurs
  ! on the current (first) line of data.
  !
  IF BigTime = StagesUpA(1) + 100 THEN
     Last_Stage = 3   !Last_Stage = column #
     SaveRow=1          ! See note below about
SaveRow.
  ELSE IF BigTime = StagesUpA(1) + 200 THEN
     Last_Stage = 4
     SaveRow=1
  ELSE IF BigTime = StagesUpA(1) + 300 THEN
     Last_Stage = 5
     SaveRow=1
  ELSE IF BigTime = StagesUpA(1) + 400 THEN
     Last_Stage = 6
     SaveRow=1
  ELSE IF BigTime >= StagesUpA(1) + 500 THEN
     Last_Stage = 7
  END IF
  IF BigTime = StagesUpA(1) + 500 THEN SaveRow = 1
  IF C>1 THEN
    FOR i = First_Stage to Last_Stage
     PRINT "Looking for discharge rate . . . . (1)"
     RESET #7: begin          !Find the discharge rate
from rating table.
     DO WHILE StageUp<>StagesUpA(i)
       INPUT #7: StageUp, Discharge
     LOOP
     Sum_Discharge = Sum_Discharge + Discharge
     N = N + 1          ! N = number of stages
      PRINT
      PRINT "Begin Int.  End Interv.   StagesUp(1)   N
Sum_Discharge"
      PRINT PrevTime;" ";BigTime;"  ";StagesUpA(1);"
";N;"  ";Sum_Discharge
      PRINT
    NEXT i
  END IF
  PRINT
  !
  ! Now go to next stage data line in file and test for end
of interval.
  !
  DO UNTIL SaveRow = 1        ! See explanation below.
    First_Stage = 2
    IF BigTime = StagesUp(1) THEN LET Last_Stage = 2
    IF BigTime = StagesUp(1) + 100 THEN LET
Last_Stage = 3
    IF BigTime = StagesUp(1) + 200 THEN LET
Last_Stage = 4
    IF BigTime = StagesUp(1) + 300 THEN LET
Last_Stage = 5
    IF BigTime = StagesUp(1) + 400 THEN LET
Last_Stage = 6
    IF BigTime >=StagesUp(1) + 500 THEN LET
Last_Stage = 7
    PRINT "  Now Looking For Discharge Rate . . . (2)"
    FOR i = First_Stage to Last_Stage
      PRINT
     !Find the discharge rate.
     IF PrevStagesUp=0 THEN RESET #7: begin
     IF StagesUp(i)<PrevStagesUp THEN RESET #7:
begin
     IF StagesUp(i)<>PrevStagesUp THEN
       DO WHILE StageUp<>StagesUp(i)
```

```
        INPUT #7: StageUp, Discharge
       PrevStagesUp=StagesUp(i)
       LOOP
      END IF
       Sum_Discharge = Sum_Discharge + Discharge
       N = N + 1
       PRINT
       PRINT "Begin Int.  End Interv.   StagesUp(1)   N
Sum_Discharge"
       PRINT PrevTime;" ";BigTime;"  ";StagesUp(1);"
";N;"  ";Sum_Discharge
       PRINT
     NEXT i

     ! "SaveRow" equal to 1 prevents next stage data line
from being
     ! read, because the next stage interval will need to use
the present line.
     !
     IF BigTime = StagesUp(1)        THEN SaveRow=1
     IF BigTime = StagesUp(1) + 100  THEN SaveRow=1
     IF BigTime = StagesUp(1) + 200  THEN SaveRow=1
     IF BigTime = StagesUp(1) + 300  THEN SaveRow=1
     IF BigTime = StagesUp(1) + 400  THEN SaveRow=1
     IF BigTime = StagesUp(1) + 500  THEN SaveRow=1
     IF SaveRow <> 1 THEN MAT INPUT #6: StagesUp
     PRINT
   LOOP
       ! Save the present stage-data line in "StagesUpA".
       IF BigTime>StagesUpA(1) + 500 THEN
         FOR i = 1 to 7
          LET StagesUpA(i) = StagesUp(i)
         NEXT i
         MAT INPUT #6: StagesUp
       END IF

   PRINT
   PRINT "For the interval ";PrevTime;" through
";BigTime;":";
   PRINT "Number of Stages = ";N
   AveDischarge = Sum_Discharge/N
   CrkFlux = (DOS-PrevDos)*AveDischarge*2904.41
         ! 2904.41 = 1.187 * 86400 sec/day * .02832
(cu.m/s) per cfs
         ! 1.187 = flux @ Berlin Rd. + flux from
unmeasured tributaries
   PRINT "  Ave.Creek Discharge = ";AveDischarge;"
Total Trib.Flux = ";CrkFlux
   PRINT
   N=0
   Sum_Discharge=0
   AveDischarge=0
   PrevStagesUp=0
   SaveRow=0
END SUB

!* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * *

RESET #3: begin
OPEN #9: PRINTER
SET #9: MARGIN 84
PRINT #9: Date$;"  ";Time$;"      kak"
PRINT #9: "This report was generated by Program
'SPECIFIC INTVL.PRGM.7.3'.";
PRINT #9: "Times and stages were output to file  ";OUT$;
PRINT #9: "   (Input File: 'US6 Stages 88-90WYs')"
PRINT #9:
PRINT #9:
PRINT #9: "Stage Interval >=";Interval;"
Start:";StartDate;"    End:";EndDate
PRINT #9:
PRINT #9: "                                              ";
PRINT #9: "                 Total"
PRINT #9: " End Time    Day of Study  End Stage  Stage
Chg.  Vol. Chg";
PRINT #9: "   Trib.Flux.     Flux"
PRINT #9:
DIM Copy(6)
Line=1
DO WHILE Line <= Line_Out       ! Retrieve stage
intervals and make hard copy.
  MAT INPUT #3: Copy
  PRINT #9: Copy(1);
  PRINT #9, USING "######.###": Copy(2);
  PRINT #9: "      ";
  PRINT #9, USING "##.##": Copy(3);
  PRINT #9: "   ";
  PRINT #9, USING "####.##":Copy(4);
  PRINT #9: "    ";
  PRINT #9, USING "#########": Copy(5);
  PRINT #9: "      ";
  PRINT #9, USING "#######": Copy(6);
  PRINT #9: "   ";
  PRINT #9, USING "########": (Copy(5)*(-1))+Copy(6)
  Line=Line+1
LOOP

PRINT
PRINT "  * * * *  Remember to delete output file  ";
PRINT OUT$ & ".Temp";"   * * * *"
PRINT
PRINT "                        E N D"
PRINT #9:
PRINT #9:
PRINT #9: "                        E N D"

END
```

PROGRAM "PRGM-US6 FLUX CALC v.6.1"

```
! "PRGM-US6 FLUX CALC v.6.1"
! 1/15/96
! Version 6.1 is the same as version 6 except that the on-screen diagnostics
! have been deleted.
! This program produces materials fluxes for each stage interval at
! the mouth of OWC wetland, according to Figure 4 of Krieger 1993.
OPTION NOLET
PRINT "WHAT IS THE NAME OF THE STAGE INTERVAL FILE?"
INPUT PROMPT "                (e.g., 'OpenMouth <date>') ": IN_FILE$
PRINT
INPUT PROMPT "WHAT ARE THE INCLUSIVE DATES FOR THE LOAD CALCULATIONS?  ": When$
PRINT "Note:  To calculate loads for short time periods, e.g. a single storm, it will"
PRINT "      be necessary first to create a new source file by excerpting data"
PRINT "      from a larger 'stage interval file' "
PRINT "      or first to run 'Specific Intvl. Prgm 7.3' for that"
PRINT "      specific time interval in order to create a short 'stage interval file'."
PRINT "      Be sure to use a 'lmhosamples' file with dates ranging well before"
PRINT "      and after the short interval you are computing."
PRINT
PRINT "DO YOU WANT TO PRINT LOAD TOTALS BY MONTH? "
INPUT PROMPT "(Yes = 'y'; No = 'n')  ":No_months$
PRINT

OPEN #1: NAME IN_FILE$, ORG TEXT, ACCESS INPUT
   ! This is a stage interval file that was generated earlier by the
   ! stage interval program.
   ! Columns: (1) datetime, (2) DOS, (3) end stage, (4) stage change,
   !          (5) volume change, (6) tributary flux
DIM Begin_Intvl (6)
DIM End_Intvl (6)
DIM Stage (6)
DIM Lake (12)
DIM LakeSave(12)
DIM Intvl_Values(12)        ! Final Chem concentrations For File #2
DIM Load_Values(12)         ! Final Loads for File #5
DIM TotalLoad(12)

OPEN #2: NAME "US6 Concs. " & When$, ORG TEXT, ACCESS OUTIN, CREATE NEW
   ! Columns: (1) Proxy code: 1 = outflowing sample taken during the interval
   !          -1 = inflowing sample taken during the interval
   !           9 = outflowing proxy sample from another time
   !          -9 = inflowing proxy sample from another time
   !  (2) Beginning DOS [Day of Study], (3) Ending DOS,
   !          (4) thru (12) same as File #3
   ! This file will contain the final loading results.

   ! NOTE:  Loadings will be computed for all stage intervals in the
   !        input file -- subsets of dates cannot be selected.
PRINT #2: Date$, Time$,"          kak"

OPEN #3: NAME "US6 Nutr Data Edited.2", ORG TEXT, ACCESS INPUT
   ! Columns: (1) datetime, (2) dos, (3) stage, (4) TP, (5) SRP,
   !          (6) SS,(7) NO23 N, (8) NH3 N, (9) TKN, (10) Conductivity,
   !          (11) SiO2, (12) Chloride
   ! These data are edited form of "US6 Nutrients" file, from which have been
   ! deleted all rows containing "-9" or "-1" values except for conductivity,
   ! and for which individual data containing "-9" or "-1" are converted to an
   ! estimated value based on preceding and succeeding data.

INPUT PROMPT "Do you want to use an existing 'low mho samples' file? (y/n) ": hmm$
IF hmm$<>"y" THEN
 CALL LowMhoSamples (z)    ! Save low-mho (<350) samples with rising stage.
ELSE
 INPUT PROMPT "Type in the file name:  ": lomoname$
 PRINT
 OPEN #4: NAME lomoname$, ORG TEXT, ACCESS INPUT
END IF
OPEN #5: NAME "US6 Loads " & When$, ORG TEXT, ACCESS OUTIN, CREATE NEW
   ! This file contains the final product--the loads for each stage interval.

Load_Rows=0
DIM Chem(12)
DIM ChemLine(12)
DIM AveChem(12)
DIM SaveChem(12)
DIM LakeChem(12)
DIM Proxy (12)
DIM LowMho(12)
DIM AveLowMho(12)
DIM Load(11)
```

```
RESET #1: begin
RESET #3: begin
MAT INPUT #1: Begin_Intvl
  ! This data line contains the values at the beginning of
the first stage
  ! interval.
DateTimeStart=Begin_Intvl(1)

PRINT
PRINT "The program is running . . ."
PRINT
PRINT DateTimeStart;" is beginning time of the source
data."
PRINT

MAT INPUT #1: End_Intvl  !This shows the ending info
for 1st stage interval.


INPUT #3: Header$          ! First two lines are strings.
INPUT #3: Header$
Mat INPUT #3: Chem

DO WHILE Chem(1)<Begin_Intvl(1)
  MAT INPUT #3: Chem
LOOP
FOR i=4 to 12
 IF Chem(i)<0 THEN Chem(i)=0
NEXT i
CALL CONDITIONS (Nlines)  ! - - - - - - - -

!***********************************************
*******************************

!       * * * * * *  SUB LowMhoSamples  * * * * * *

SUB LowMhoSamples (z)
OPEN #4: NAME "LMhoSamp" & When$, ORG TEXT,
ACCESS OUTIN, CREATE NEW
PRINT
PRINT "SUB 'LowMhoSamples' now running . . . . . "
RESET #3: begin
RESET #1: begin
INPUT #3: Chem$            !First two lines are strings.
INPUT #3: Chem$

DO UNTIL z=1
 WHEN ERROR IN                 ! At end of chem data.
   MAT INPUT #3: Chem
   FOR i=4 to 12
     IF Chem(i)<0 THEN Chem(i)=0
   NEXT i
 USE
   EXIT DO
 END WHEN
 IF Chem(10)<350 THEN
   RESET #1: begin
   MAT INPUT #1: Stage
   DO WHILE Stage(1)<Chem(1)
    WHEN ERROR IN              ! At end of chem data.
     MAT INPUT #1: Stage
    USE
      z=1
      EXIT DO
    END WHEN
   LOOP

  IF Stage(4)>0 THEN
    FOR i=1 to 11
     A$=str$(Chem(i)) & ", " ! Makes sure a comma
follows each number
      PRINT #4: A$; ! except last one, to prevent read error.
    NEXT i
    PRINT #4: Chem(12)
    PRINT "Saved This Low-Mho Rising Sample:"
    MAT PRINT Chem;
  END IF
 END IF
LOOP

RESET #4: begin
OPEN #9: PRINTER
PRINT #9: Date$,"   ",Time$,"          kak"
PRINT #9: "  This report is from 'PRGM US6 FLUX
CALC v.5', Subroutine LowMhoSamples."
PRINT #9:
PRINT #9: "  These low-mho, rising stage chem data lines
were saved in file 'LMhoSamples";When$
PRINT #9:
DO UNTIL z2=1
  WHEN ERROR IN
    MAT INPUT #4: Chem
    PRINT #9: "  ";
    MAT PRINT #9: Chem;
  USE
    z2=1
    EXIT DO
  END WHEN
LOOP

PRINT #9: "                    END OF FILE #4"
CLOSE #9
END SUB

!***********************************************
*******************************

SUB REPEAT (LowLines)
LowLines=0
NLines=0
NoSam=0                    ! See Sub NoSample.
For i=1 to 12
  ChemLine(i)=0
Next i

FOR i=1 to 6
  Begin_Intvl(i)=End_Intvl(i)      ! Assign new
beginning of interval.
NEXT i

WHEN ERROR IN
  MAT INPUT #1: End_Intvl
  CALL CONDITIONS (Nlines)  ! - - - - - - - - -
USE
```

```
  EXIT SUB
END WHEN
END SUB

!*************************************************
*******************************

SUB CONDITIONS (Nlines)
IF Chem(1)>End_Intvl(1) AND
Begin_Intvl(1)<>SaveChem(1) THEN CALL NoSample
(None)
                                  ! Step 1 (No) in Fig. 4
DO WHILE Chem(1)<=End_Intvl(1) OR
Begin_Intvl(1)=SaveChem(1)

 ! Prepare data for Step 5a with this IF statement (Steps
2a(N),3b(N),4b(Y)):
 ! (Sampled lake water during rising stage.)

  IF End_Intvl(4)>0 AND End_Intvl(6)<End_Intvl(5)
AND Chem(10)<350 THEN
     FOR i=4 to 12
      LowMho(i)=LowMho(i)+Chem(i)  ! Sums low-
conductivity chem samples
                ! occurring during this rising stage interval;
Step 5a.
     NEXT i
     LowLines=LowLines +1          ! Counts number of
low-cond. samples.
  END IF

  IF Begin_Intvl(1)=SaveChem(1) THEN
    FOR i=4 to 12
      ChemLine(i)=ChemLine(i)+SaveChem(i)
    NEXT i
    Nlines=Nlines+1
  END IF
  IF Chem(1)<=End_Intvl(1) THEN
   FOR i=4 to 12
    ChemLine(i)=Chemline(i)+Chem(i) ! Sum individual
parameter values for
    NEXT i            ! the samples contained in this interval.
    ChemLine(1)=Chem(1)
    Nlines=Nlines+1     ! Count the samples in this interval.
  END IF
  IF Chem(1)=End_Intvl(1) THEN
    FOR i=1 to 12          ! This data line becomes 1st line
      SaveChem(i)=Chem(i)       ! for next stage interval.
      NEXT i
  ELSE
      FOR i=1 to 12
       SaveChem(i)=0
       Next i
  END IF
  IF Chem(1)>End_Intvl(1) THEN EXIT DO   !Prevents
going to next chem line.
  MAT INPUT #3: Chem
  FOR i=4 to 12
   IF Chem(i)<0 THEN Chem(i)=0
  NEXT i
  LOOP
  IF Nlines>0 THEN
  ! Now compute average chem concentrations and loads...
    FOR i=4 to 12
      AveChem(i)=ChemLine(i)/Nlines
      NEXT i
  END IF

IF NoSam=0 THEN
  IF End_Intvl(4)<0 AND Proxy(1)=0 THEN
   CALL OUTload (OutQuant)  !Indicates falling stage;
satisfies Steps 2a(Y) & 3a.
  ELSE IF End_Intvl(6)>End_Intvl(5) THEN
   CALL OUTload (OutQuant)  !Satisfies Steps 3b(yes),4a--
rising but water exited.
  ELSE
   CALL INload (InQuant)
    ! Indicates rising stage (Step 2a(No) & water entered
from L.Erie--3b(No).
  END IF
END IF
FOR i=1 to 12
  Proxy(i)=0
NEXT i
FOR i = 1 to 12
   ChemLine(i)=0          ! Clear variables.
   AveChem(i)=0
NEXT i
NLines=0
CALL REPEAT (LowLines)
END SUB

!*************************************************
*******************************

SUB NOSAMPLE (None)
    ! and go to Step 6 in Fig. 4.
   IF End_Intvl(4)>0 AND End_Intvl(6)<End_Intvl(5)
THEN  ! Water came in from
     CALL INLOAD (InQuant) ! Lake Erie--Step 7b(No).
   ELSE
     CALL PROXY_OUT (PostTime)
   END IF
   NoSam=1       ! Prevents going again to Sub InLoad or
Outload.
END SUB

!*************************************************
*******************************

SUB OUTLOAD (OutQuant)

   AveChem(1)=1
   AveChem(2)=Begin_Intvl(2)
   AveChem(3)=End_Intvl(2)
   FOR i=1 to 11              ! Write these values to File #2.
     B$=str$(AveChem(i)) & ","  ! Put commas between
values.
     PRINT #2: B$;
   NEXT i
   PRINT #2: AveChem(12)
```

```
   C$=str$(End_Intvl(1)) & ","    ! Write end datetime to
loads file (#5).
   PRINT #5: C$;
   PRINT "The wetland loads to the lake for interval ending
";C$;" are being calculated. . ."
   PRINT
   C$=str$(End_Intvl(2)) & ","    ! Write end Day-of-study
to file #5.
   PRINT #5: C$;
   Flux=(End_Intvl(6)-End_Intvl(5))*.001  !Total Flux for
the interval--1,000 cu.m.
   C$=str$(Flux) & ","
   PRINT #5 :C$;
   FOR i=4 to 11                ! Calculate and write loads to
File #5.
      IF AveChem(i)<0 THEN AveChem(i)=0
      Load(i)=AveChem(i)*Flux
      C$=str$(Load(i)) & "," ! Add commas.
      PRINT #5: C$;
   NEXT i
   Load12=AveChem(12)*Flux
   PRINT #5: Load12
   Load_Rows=Load_Rows+1

END SUB

!************************************************
******************************

SUB INLOAD (InQuant)
   !These are the steps to get average LowMho
concentrations:

   IF LowMho(12)>0 THEN ! A sample(s) was assigned to
LowMho for this interval.
        FOR i=4 to 12
         AveLowMho(i)=LowMho(i)/LowLines
         NEXT i
   AveLowMho(1)=-1
   AveLowMho(2)=Begin_Intvl(2)
   AveLowMho(3)=End_Intvl(2)
   FOR i=1 to 11                ! Write these values to File #2.
      B$=str$(AveLowMho(i)) & ","   ! Put commas
between values.
      PRINT #2: B$;
   NEXT i
   PRINT #2: AveLowMho(12)

   C$=str$(End_Intvl(1)) & ","    ! Write end datetime to
loads file (#5).
   PRINT #5: C$;
   PRINT "The lake loads to the wetland for interval ending
";C$;" are being calculated. . ."
   PRINT
   C$=str$(End_Intvl(2)) & ","    ! Write end Day-of-study
to file #5.
   PRINT #5: C$;
   Flux=(End_Intvl(6)-End_Intvl(5))*.001  !Total Flux for
the interval--1,000 cu.m.
   C$=str$(Flux) & ","
   PRINT #5 :C$;
   FOR i=4 to 11      ! Calculate and write loads to File #5.
      IF AveLowMho(i)<0 THEN AveLowMho(i)=0
      Load(i)=AveLowMho(i)*Flux
      C$=str$(Load(i)) & "," ! Add commas.
      PRINT #5: C$;
   NEXT i
   Load12=AveLowMho(12)*Flux
   PRINT #5: Load12
   FOR i=1 to 12              !Reset LowMho values to zero.
      LowMho(i)=0
   NEXT i
   Load_Rows=Load_Rows+1

 ELSE
     CALL PROXY_IN (PreTime)      !No samples for
this interval; get a proxy.
 END IF

END SUB

!************************************************
******************************

SUB PROXY_IN (PreTime)

RESET #4: begin
FOR i=1 to 12
   Lake(i)=0
NEXT i
Lake(1)=0
DO UNTIL Lake(1)>=Begin_Intvl(1)
  FOR i=1 to 12
    LakeSave(i)=Lake(i)      ! Saves current line.
  NEXT i
  WHEN ERROR IN
     MAT INPUT #4: Lake
  USE
     EXIT DO
  END WHEN
LOOP
IF Lake(1)>End_Intvl(1) THEN
ELSE
  DO UNTIL Lake(1)>End_Intvl(1)
    WHEN ERROR IN
      MAT INPUT #4: Lake
    USE
      FOR i=1 to 12
       Lake(i)=0
      NEXT i
      EXIT DO
    END WHEN
  LOOP
  PRINT ">>>>>>>>>> SHOULD NOT BE IN THIS
SUBROUTINE <<<<<<<<<<"
END IF

! Now figure time intervals of lake samples before & after
this stage interval.

PreTime=Begin_Intvl(2)-LakeSave(2)
PostTime=Lake(2)-End_Intvl(2)
```

```
IF PreTime<PostTime THEN          ! PreTime is closer to
this stage
  FOR i=1 to 12                   ! interval than PostTime.
    Proxy(i)=LakeSave(i)
  NEXT i
ELSE                              ! PostTime is closer.
  FOR i=1 to 12
    Proxy(i)=Lake(i)
  NEXT i
END IF
Proxy(1)=-9
Proxy(2)=Begin_Intvl(2)
Proxy(3)=End_Intvl(2)

!Use Proxy values for this rising stage interval.

FOR i=1 to 11                     ! Write these values to File #2.
  B$=str$(Proxy(i)) & ","         ! Put commas between values.
  PRINT #2: B$;
NEXT i
PRINT #2: Proxy(12)

   C$=str$(End_Intvl(1)) & ","    ! Write end datetime to
loads file (#5).
   PRINT #5: C$;
   PRINT "The loads for interval ending ";C$;" are being
calculated. . ."
   PRINT
   C$=str$(End_Intvl(2)) & ","    ! Write end Day-of-study
to file #5.
   PRINT #5: C$;
   Flux=(End_Intvl(6)-End_Intvl(5))*.001  !Total Flux for
the interval--1,000 cu.m.
   C$=str$(Flux) & ","
   PRINT #5 :C$;
   FOR i=4 to 11        ! Calculate and write loads to File #5.
     IF Proxy(i)<0 THEN Proxy(i)=0
     Load(i)=Proxy(i)*Flux
     C$=str$(Load(i)) & "," ! Add commas.
     PRINT #5: C$;
   NEXT i
   Load12=Proxy(12)*Flux
   PRINT #5: Load12
   Load_Rows=Load_Rows+1
END SUB

!**********************************************
******************************

SUB PROXY_OUT (PostTime)

RESET #3: begin
Lake(1)=0
INPUT #3: Chem$                   !First two lines are strings.
INPUT #3: Chem$

DO UNTIL Lake(1)>=Begin_Intvl(1)

  !These 2 IF statements select only samples taken while
water was exiting.
  IF End_Intvl(4)<0 THEN          ! Water going out during
falling stage.
    FOR i=1 to 12
      LakeSave(i)=Lake(i)         ! Saves current line.
    NEXT i
  END IF
  IF End_Intvl(4)>0 AND Lake(6)>Lake(5) THEN !
Water going out during rising
      FOR i=1 to 12                    ! stage.
      LakeSave(i)=Lake(i)         ! Saves current line.
    NEXT i
  END IF

  WHEN ERROR IN
     MAT INPUT #3: Lake
     FOR i=4 to 12
       IF Lake(i)<0 THEN Lake(i)=0
     NEXT i
  USE
     EXIT DO
  END WHEN

LOOP
IF Lake(1)>End_Intvl(1) THEN
ELSE
  DO UNTIL Lake(1)>End_Intvl(1)
    MAT INPUT #3: Lake
    FOR i=4 to 12
      IF Lake(i)<0 THEN Lake(i)=0
    NEXT i

  LOOP
  PRINT ">>>>>>>>>> SHOULD NOT BE IN THIS
SUBROUTINE <<<<<<<<<<"
END IF

! Now calc. time intervals of wetland samples before &
after this stage interval.

PreTime=Begin_Intvl(2)-LakeSave(2)
PostTime=Lake(2)-End_Intvl(2)

IF PreTime<PostTime THEN          ! PreTime is closer to
this stage
  FOR i=1 to 12                   ! interval than PostTime.
    Proxy(i)=LakeSave(i)
  NEXT i
ELSE                              ! PostTime is closer.
  FOR i=1 to 12
    Proxy(i)=Lake(i)
  NEXT i
END IF
Proxy(1)=9
Proxy(2)=Begin_Intvl(2)
Proxy(3)=End_Intvl(2)

!Use Proxy values for this discharging, rising stage interval.

FOR i=1 to 11                     ! Write these values to File #2.
  B$=str$(Proxy(i)) & ","         ! Put commas between values.
  PRINT #2: B$;
NEXT i
PRINT #2: Proxy(12)
```

```
   C$=str$(End_Intvl(1)) & ","   ! Write end datetime to
loads file (#5).
   PRINT #5: C$;
   PRINT "The loads for interval ending ";C$;" are being
calculated. . ."
   PRINT
   C$=str$(End_Intvl(2)) & ","   ! Write end Day-of-study
to file #5.
   PRINT #5: C$;
   Flux=(End_Intvl(6)-End_Intvl(5))*.001  !Total Flux for
the interval--1,000 cu.m.
   C$=str$(Flux) & ","
   PRINT #5 :C$;
   FOR i=4 to 11      ! Calculate and write loads to File #5.
      IF Proxy(i)<0 THEN Proxy(i)=0
      Load(i)=Proxy(i)*Flux      ! Concentration x volume
      C$=str$(Load(i)) & "," ! Add commas.
      PRINT #5: C$;
   NEXT i
   Load12=Proxy(12)*Flux
   PRINT #5: Load12
   Load_Rows=Load_Rows+1
END SUB

!************************************************
*******************************

SUB WHICHMONTH (Month$)

SELECT CASE Load_Values(1)
CASE 8710010000 TO 8710312400
   Month$="OCTOBER 1987"
CASE 8711010000 TO 8711302400
   Month$="NOVEMBER 1987"
CASE 8712010000 TO 8712312400
   Month$="DECEMBER 1987"
CASE 8801010000 TO 8801312400
   Month$="JANUARY 1988"
CASE 8802010000 TO 8802292400
   Month$="FEBRUARY 1988"
CASE 8803010000 TO 8803312400
   Month$="MARCH 1988"
CASE 8804010000 TO 8804302400
   Month$="APRIL 1988"
CASE 8805010000 TO 8805312400
   Month$="MAY 1988"
CASE 8806010000 TO 8806302400
   Month$="JUNE 1988"
CASE 8807010000 TO 8807312400
   Month$="JULY 1988"
CASE 8808010000 TO 8808312400
   Month$="AUGUST 1988"
CASE 8809010000 TO 8809302400
   Month$="SEPTEMBER 1988"
CASE 8810010000 TO 8810312400
   Month$="OCTOBER 1988"
CASE 8811010000 TO 8811302400
   Month$="NOVEMBER 1988"
CASE 8812010000 TO 8812312400
   Month$="DECEMBER 1988"
CASE 8901010000 TO 8901312400
   Month$="JANUARY 1989"
CASE 8902010000 TO 8902282400
   Month$="FEBRUARY 1989"
CASE 8903010000 TO 8903312400
   Month$="MARCH 1989"
CASE 8904010000 TO 8904302400
   Month$="APRIL 1989"
CASE 8905010000 TO 8905312400
   Month$="MAY 1989"
CASE 8906010000 TO 8906302400
   Month$="JUNE 1989"
CASE 8907010000 TO 8907312400
   Month$="JULY 1989"
CASE 8908010000 TO 8908312400
   Month$="AUGUST 1989"
CASE 8909010000 TO 8909302400
   Month$="SEPTEMBER 1989"
CASE 8910010000 TO 8910312400
   Month$="OCTOBER 1989"
CASE 8911010000 TO 8911302400
   Month$="NOVEMBER 1989"
CASE 8912010000 TO 8912312400
   Month$="DECEMBER 1989"
CASE 9001010000 TO 9001312400
   Month$="JANUARY 1990"
CASE 9002010000 TO 9002292400
   Month$="FEBRUARY 1990"
CASE 9003010000 TO 9003312400
   Month$="MARCH 1990"
CASE 9004010000 TO 9004302400
   Month$="APRIL 1990"
CASE 9005010000 TO 9005312400
   Month$="MAY 1990"
CASE 9006010000 TO 9006302400
   Month$="JUNE 1990"
CASE 9007010000 TO 9007312400
   Month$="JULY 1990"
CASE 9008010000 TO 9008312400
   Month$="AUGUST 1990"
CASE 9009010000 TO 9009302400
   Month$="SEPTEMBER 1990"
CASE 9010010000 TO 9010312400
   Month$="OCTOBER 1990"
END SELECT
END SUB

!************************************************
*******************************

SUB MONTHTOTALS1 (OldMonth$)

  IF No_months$="y" THEN
   PRINT #9: OldMonth$;" TOTALS
_____
       "
  ELSE
   PRINT #9:"      TOTALS
_____
       "
  END IF
   PRINT #9:"                ";
   PRINT #9, USING " #,###,###": TotalLoad(3);      !
Total Flux
```

```
  PRINT #9, USING "  ##,###": TotalLoad(4);        ! TP
  PRINT #9, USING "   #,###.##": TotalLoad(5);    ! SRP
  PRINT #9, USING " ##,###,###": TotalLoad(6);    ! TSS
  PRINT #9, USING "   ###,###": TotalLoad(11)    ! SiO2
  PRINT #9:
  PRINT #9: " DateTime   End DOS    Flux      TP
SRP      TSS     SiO2"
  PRINT #9:

  FOR i=3 to 12
    TotalLoad(i)=0          !Reset totals to zero.
  NEXT i
  OldMonth$=Month$
  Lines=0
END SUB

!************************************************
******************************

SUB MONTHTOTALS2 (OldMonth$)

 IF No_months$="y" THEN
  PRINT #9: OldMonth$;" TOTALS
_____
      "
_____
 ELSE
  PRINT #9:"      TOTALS
_____
      "
_____
 END IF
  PRINT #9:"              ";
  PRINT #9, USING "#,###,###": TotalLoad(3);     !
Total Flux
  PRINT #9, USING " #,###,###": TotalLoad(7);    !
NO23 N
  PRINT #9, USING "   ###,###": TotalLoad(8);  ! NH3 N
  PRINT #9, USING "  ###,###": TotalLoad(9);     ! TKN
  PRINT #9, USING "   ###,###": TotalLoad(12)   ! Cl
  PRINT #9:
  PRINT #9: " DateTime   End DOS    Flux    NO23 N
NH3 N     TKN       Cl"
  PRINT #9:
  FOR i=3 to 12
    TotalLoad(i)=0
  NEXT i
  OldMonth$=Month$
  Lines=0
END SUB

!************************************************
******************************

! Now it's time to print out the load reports!!!

CLOSE #9              ! This causes printer to spit out the
diagnostic data
OPEN #9: PRINTER      ! and start the loading data on a
new page.
SET #9: MARGIN 84
PRINT #9: Date$;"  ";Time$;"
kak"
PRINT #9: "           ********************
*******"
PRINT #9: "           *                          *"
PRINT #9: "           *  LAKE LOADS for the period ";
When$
PRINT #9: "           *                          *"
PRINT #9: "           ********************
*******"
PRINT #9:
PRINT #9:
PRINT #9: "  These loads were computed by program
'PRGM US6 FLUX CALC v.6.1'"
PRINT #9: "  and were stored in file 'US6
Loads";When$;"'."
PRINT #9:
PRINT #9: "  The following input variables were used to
produce these results:"
PRINT #9: "    Name of the stage interval file:
";IN_FILE$
PRINT #9: "    The inclusive dates: ";When$;" beginning
";DateTimeStart
PRINT #9: "    Were load totals printed by months?
";No_months$
 IF hmm$ = "y" THEN PRINT #9: "    This existing 'low
mho' file was used: ";lomoname$
 IF hmm$<> "y" THEN
   PRINT #9: "    This new 'low mho' file was created:
LMhoSamp";
   PRINT #9: When$
 END IF
PRINT #9:
PRINT #9: "  These existing data files were used:"
PRINT #9: "    stage interval file '";IN_FILE$; "', and";
PRINT #9: " 'US6 Nutr Data Edited.2'."
PRINT #9:

PRINT
PRINT #9:
PRINT #9: "              1000 cu.m   <---------- kg ---
---------->"
PRINT #9: " DateTime   End DOS    Flux      TP      SRP
TSS     SiO2"
PRINT #9: "-----------------------------------------------------
-------------"

IF No_months$="y" THEN
 RESET #5: begin
 MAT INPUT #5: Load_Values
 CALL WHICHMONTH (Month$)
 OldMonth$=Month$
END IF
RESET #5: begin
PRINT "Now feeding LOAD data for TP, SRP, TSS and
SiO2 to the printer . . ."
DO WHILE Counterx<Load_Rows
 Counterx=Counterx+1
 Lines=Lines+1
  MAT INPUT #5: Load_Values
  IF No_months$="y" THEN
   CALL WhichMonth (Month$)
   IF Month$<>OldMonth$ THEN CALL
MONTHTOTALS1 (OldMonth$)
```

```
   END IF
   PRINT #9: Load_Values(1);                    ! Date-
Time
   PRINT #9, USING "####.###": Load_Values(2);        !
End DOS
   PRINT #9, USING " #,###.##": Load_Values(3);       !
Total Flux
   PRINT #9, USING " #,###.##": Load_Values(4);    ! TP
   PRINT #9, USING "   ###.###": Load_Values(5); ! SRP
   PRINT #9, USING "  #,###,###": Load_Values(6); !TSS
   PRINT #9, USING "    ##,###": Load_Values(11) ! SiO2
   IF Lines=5 THEN
     PRINT #9:
     Lines=0
   END IF
   FOR i=3 to 12
     TotalLoad(i)=TotalLoad(i)+Load_Values(i)
   NEXT i
 IF Counterx=Load_Rows THEN CALL
MONTHTOTALS1 (OldMonth$)
LOOP
CLOSE #9
Lines=0

! Now print out the second and last group of the loads . . .

OPEN #9: PRINTER
SET #9: MARGIN 84
PRINT #9: Date$;"  ";Time$;"  * * * * * *  LOADS -- " &
When$:
PRINT #9: "  * * * * * *  kak"
PRINT #9:
PRINT #9: "   These loads were computed by program
'PRGM US6 FLUX CALC v.6.1'"
PRINT #9: "   and were stored in file 'US6
Loads";When$;"'."
PRINT
PRINT #9:
PRINT #9: "                  1000 cu.m  <---------------- kg ----
---------->"
PRINT #9: " DateTime   End DOS     Flux    NO23 N
NH3 N     TKN       Cl"
PRINT #9: "-----------------------------------------------------
------------"

IF No_months$="y" THEN
 RESET #5: begin
 MAT INPUT #5: Load_Values
 CALL WHICHMONTH (Month$)
 OldMonth$=Month$
END IF
RESET #5: begin
PRINT "Now feeding LOAD data for N and Cl to the
printer . . ."
Counterx=0
DO WHILE Counterx<Load_Rows
 Counterx=Counterx+1
 Lines=Lines+1
  MAT INPUT #5: Load_Values
  IF No_months$="y" THEN
    CALL WhichMonth (Month$)
   IF Month$<>OldMonth$ THEN CALL
MONTHTOTALS2 (OldMonth$)
  END IF
  PRINT #9: Load_Values(1);                    ! Date-Time
  PRINT #9, USING "###.###": Load_Values(2);       !
End DOS
  PRINT #9, USING " #,###.##": Load_Values(3);     !
Total Flux
  PRINT #9, USING "   ###,###": Load_Values(7);    !
NO23 N
  PRINT #9, USING "    ###.##": Load_Values(8);    !
NH3 N
  PRINT #9, USING "    #,###": Load_Values(9);    ! TKN
  PRINT #9, USING "    ###,###": Load_Values(12)  ! Cl
  IF Lines=5 THEN
    PRINT #9:
    Lines=0
  END IF
  FOR i=3 to 12
    TotalLoad(i)=TotalLoad(i)+Load_Values(i)
  NEXT i
IF Counterx=Load_rows THEN CALL MONTHTOTALS2
(OldMonth$)
LOOP

! Alert user that the program is finished.
  m1$ = "t130 mn e8 d8 <g2 b2 >c"
  play m1$

PRINT "                  END OF PROGRAM"
CLOSE #9
END
```

PROGRAM "UP-LOADING PRGR v.2.1a"

```
! "UPSTREAM LOADING PROGRAM v.2.1a" (final revision 15 January 1996) is exactly the same as Berlin
! Nutr Data 88-90WYs except that v.2.1a opens "Berlin Nutr Data 88-90WYs copy" rather than "Berlin Nutr
! Data2.1". Versions 2, 2.1, and 2.1a compute the total discharge of Old Woman Creek at Berlin Road and
! also the estimated discharge for all tributaries into the wetland (1.187 * discharge at Berlin Road) for the month
! input at the prompt of the computer.
!
OPTION NOLET
OPEN #1: name "Rating Table-Berlin", ORG TEXT, ACCESS INPUT
! File #1 contains Stage (ft.), Discharge (cfs)
OPEN #3: name "Berlin Stages 88-90WYs", ORG TEXT, ACCESS INPUT

PRINT
PRINT "CAUTION! There are no stage data at Berlin Rd. for the period"
PRINT "              881019 1500 through 890413 1200."
PRINT
PRINT "Please type in the desired beginning and ending"
PRINT "date/times (inclusive) for discharge and load computations."
PRINT "Use the format yy/mm/dd/hour; for example -- 8908011200."
PRINT
INPUT PROMPT "Beginning Date/Time? ": Begin_Date_Time
INPUT PROMPT "  Ending Date/Time? ": End_Date_Time
PRINT
PRINT "If this is a specific month,input the USGS reported "
INPUT PROMPT "total flow for that month (if not, enter a zero): ": USGS_Flow
PRINT
PRINT "Loads are being calculated . . ."
PRINT
DIM Berlin_NutrA(12)
DIM Berlin_NutrB(12)
DIM Berlin_NutrC(12)
DIM Berlin_NutrD(12)
DIM Est$(12)        !Flag to indicate if column contains estimated values
    !because of missing data. "No" unless estimate present.
FOR i = 1 to 12
  LET Est$(i) = "No"
NEXT i
DIM Load(100,12)
!Nutrient Data for OWC @ Berlin Rd.
!(1) Date/Time, (2) Day of Study (3) Stage, (4) TP, (5) SRP,
!(6) SS, (7) NO23-N,(8) NH3-N, (9) TKN,
!(10) Conductivity, (11) SiO2, and (12) Cl.
OPEN #2: name "Berlin Nutr Data 88-90WYs copy", ORG TEXT, ACCESS INPUT
INPUT #2: Header$
!
!Find the data in the discharge and nutrient files that match the beginning date specified above.
!
MAT INPUT #2: Berlin_NutrA
DO WHILE Berlin_NutrB(1) < Begin_Date_Time
  MAT INPUT #2: Berlin_NutrB
  IF Berlin_NutrB(1)<Begin_Date_Time THEN
    FOR i=1 to 12
      LET Berlin_NutrA(i) = Berlin_NutrB(i)
    NEXT i
    !This "For" step keeps a record of the sample interval
    !immediately preceding the first interval after the time specified above.
  END IF
LOOP

!Do calculations one sample interval at a time, accumulating
!total discharge. Berlin_NutrA is the preceding sample;
!Berlin_NutrB is the current sample; Berlin_NutrC is the next sample.
!Get the next sample:
MAT INPUT #2: Berlin_NutrC
DO WHILE Berlin_NutrB(1)<=End_Date_Time
  LET Interval=(Berlin_NutrC(2) - Berlin_NutrA(2))/2
  !Indicate progress by playing a musical note.
  LET Music1$ = "t300 ml o4 c"
  PLAY Music1$
  LET Start_Time = ((Berlin_NutrB(2) - Berlin_NutrA(2))/2) + Berlin_NutrA(2)
  LET End_Time = ((Berlin_NutrC(2) - Berlin_NutrB(2))/2) + Berlin_NutrB(2)

  ! Use subroutine DOS_TO_DATE to convert beginning and ending days-of-study
  ! to calendar dates in order to access the USGS stage data files
  ! in subroutine Ave_Discharge.
  !
  Dos = Start_time
  CALL DOS_TO_DATE(Dos)
  Clndr_Start=val(yymmddhhhh$)    !beginning date-time of this interval
  Dos = End_Time
  CALL Dos_to_Date(Dos)
  Clndr_End=val(YYMMDDHHHH$)      !ending date-time of this interval

  CALL AVE_DISCHARGE (Ave_Disch)
  ! Find the discharge rate for the stage of the current sample interval (Clndr_Start - Clndr_End),
  ! and compute total discharge (flux).

  RESET #1: begin
```

```
  INPUT #1: Stage, Discharge
  DO WHILE Stage<>Berlin_NutrB(3)
    INPUT #1: Stage, Discharge
  LOOP
  LET Interval_Seconds = Interval*86400
  LET FLUX = Ave_Disch*Interval_Seconds
  LET Metric_Flux = Flux*.02832
  LET Total_Flux = Total_Flux + Metric_Flux

  !-- Compute Loads of Each Nutrient and Store in a
Matrix along with date/time, interval, and discharge (flux).
  LET Row=Row +1    !Assigns matrix row to current data
  LET Load (Row,1) = Berlin_NutrB(1)  !Stores current
sample time
  LET Load (Row,2) = Interval*24      !Stores sample
interval in hours
  LET Load (Row,3) = Metric_Flux      !Stores flux during
this interval
  FOR i=4 to 12
    !To account for single missing values, take the average
    !of the previous and next samples as the best estimate.
    !This still doesn't help if two sample values are missing
    ! in sequence.  Missing data are indicated by a -5.
    IF Berlin_NutrB(i) = -5 THEN
      LET Berlin_NutrB(i) = (Berlin_NutrA(i) +
Berlin_NutrC(i))/2
      IF Berlin_NutrC(i) = -5 THEN
        LET Berlin_NutrB(i) = 0
      END IF
      LET Est$(i) = "yes"
    END IF
    !To account for negative values (below detection
limits) other than -5,
    !replace them with "0" for the calculations.
    IF Berlin_NutrB(i) <0 THEN
      LET Berlin_NutrB(i) = 0
      LET Music1$ = "t300 ml o5 c"
      PLAY Music1$
    END IF
    LET Berlin_NutrD(i) = Berlin_NutrB(i) * Metric_Flux
    ! Load = concentration (g/cu.m) * flux (cu.m) * .001
    ! The ".001" reports in kilograms
    LET Load(Row,i) = Berlin_NutrD(i)
  NEXT i
  !Now keep cumulative totals --
  LET TP = TP + Load(Row,4)
  LET SRP = SRP + Load(Row,5)
  LET SS = SS + Load(Row,6)
  LET NO23 = NO23 + Load(Row,7)
  LET NH3 = NH3 + Load(Row,8)
  LET TKN = TKN + Load(Row,9)
  LET SiO2 = SiO2 + Load(Row,11)
  LET Cl = Cl + Load(Row,12)

  !--- Advance to Next Sample Interval ---
  !Current sample becomes preceding sample:
  FOR i=1 to 12
    LET Berlin_NutrA(i) = Berlin_NutrB(i)
  NEXT i
  !Next sample becomes current sample:
  FOR i=1 to 12
    LET Berlin_NutrB(i) = Berlin_NutrC(i)
  NEXT i
  !Get the next sample:
  MAT INPUT #2: Berlin_NutrC
LOOP
LET USGS_Ratio = USGS_Flow / Total_Flux

SUB AVE_DISCHARGE(Ave_Disch)
  !
  ! This subroutine takes an edited form of the USGS stage
data set in which six hourly stages are printed
  ! on each line, and matches sample times to stages.
  DIM Stages(7)
  DIM StagesA(7)
  INPUT #3: File$
  PRINT "Reading Data from File: ";File$
  DO WHILE Stages(1) <= Clndr_Start
    ! Save the present stage-data line in "StagesA":
    FOR i = 1 to 7
      LET StagesA(i) = Stages(i)
    NEXT i
  MAT INPUT #3: Stages
  LOOP
  !
  !       Find first stage.
  !
  IF Clndr_Start = StagesA(1) THEN
    LET First_Stage=2        !First_Stage = column #
  END IF
  IF Clndr_Start = StagesA(1) + 100 THEN
    LET First_Stage=3
  END IF
  IF Clndr_Start = StagesA(1) + 200 THEN
    LET First_Stage=4
  END IF
  IF Clndr_Start = StagesA(1) + 300 THEN
    LET First_Stage=5
  END IF
  IF Clndr_Start = StagesA(1) + 400 THEN
    LET First_Stage=6
  END IF
  IF Clndr_Start = StagesA(1) + 500 THEN
    LET First_Stage=7
  END IF
  !
  ! Now find out if the end of the interval (Clndr_End)
occurs on the current (first) line of data.
  !
  IF Clndr_End = StagesA(1) + 100 THEN LET
Last_Stage = 3   !Last_Stage = column #
  IF Clndr_End = StagesA(1) + 200 THEN LET
Last_Stage = 4
  IF Clndr_End = StagesA(1) + 300 THEN LET
Last_Stage = 5
  IF Clndr_End = StagesA(1) + 400 THEN LET
Last_Stage = 6
  IF Clndr_End >= StagesA(1) + 500 THEN LET
Last_Stage = 7
  FOR i = First_Stage to Last_Stage
    LET SumStages = SumStages + StagesA(i)
    RESET #1: begin          !Find the discharge rate.
    INPUT #1: Stage, Discharge
    DO WHILE Stage<>StagesA(i)
```

```
      INPUT #1: Stage, Discharge
    LOOP
    LET Sum_Discharge = Sum_Discharge + Discharge
    LET N = N + 1          ! N = number of stages
  NEXT i
  PRINT
  !
  ! Now go to next stage data line in file and test for end
of interval.
  !
  DO UNTIL Stages(1) > Clndr_End
    LET First_Stage = 2
    IF Clndr_End = Stages(1)      THEN LET Last_Stage
= 2
    IF Clndr_End = Stages(1) + 100 THEN LET
Last_Stage = 3
    IF Clndr_End = Stages(1) + 200 THEN LET
Last_Stage = 4
    IF Clndr_End = Stages(1) + 300 THEN LET
Last_Stage = 5
    IF Clndr_End = Stages(1) + 400 THEN LET
Last_Stage = 6
    IF Clndr_End >=Stages(1) + 500 THEN LET
Last_Stage = 7
    FOR i = First_Stage to Last_Stage
      LET SumStages = SumStages + Stages(i)
      RESET #1: begin      !Find the discharge rate.
      INPUT #1: Stage, Discharge
      DO WHILE Stage<>Stages(i)
        INPUT #1: Stage, Discharge
      LOOP
      LET Sum_Discharge = Sum_Discharge + Discharge
      LET N = N + 1
    NEXT i
    MAT INPUT #3: Stages
    PRINT
  LOOP

  Ave_Disch = Sum_Discharge/N
  PRINT
  N=0
  SumStages=0
  Sum_Discharge=0
  Stages(1)=0
  RESET #3: begin
END SUB

!                SUBROUTINE DOS_TO_DATE
!
! Converts Day of Study to calendar date in year-month-
day-hour format.
!
! Thanks to Pete Richards for providing the format for
most of this routine.
!
SUB DOS_TO_DATE(Dos)
  SELECT CASE Dos          ! Dos is Day of Study;
DOS=1 on 871001.
  CASE 0 to 0.9999
    PRINT "Error--Day of Study <1 encountered."
  CASE 1.0000 to 31.9999
    LET yy=87
    LET mm$="10"
    LET dd =int(Dos)
CASE 32.0000 to 61.9999
    LET yy=87
    LET mm$="11"
    LET dd =int(Dos) - 31
CASE 62.0000 to 92.9999
    LET yy=87
    LET mm$="12"
    LET dd =int(Dos)-61
CASE 93.0000 to 123.9999
    LET yy=88
    LET mm$="01"
    LET dd =int(Dos)-92
CASE 124.0000 to 152.9999
    LET yy=88
    LET mm$="02"
    LET dd =int(Dos)-123
CASE 153.0000 to 183.9999
    LET yy=88
    LET mm$="03"
    LET dd =int(Dos)-152
CASE 184.0000 to 213.9999
    LET yy=88
    LET mm$="04"
    LET dd =int(Dos)-183
CASE 214.0000 to 244.9999
    LET yy=88
    LET mm$="05"
    LET dd =int(Dos)-213
CASE 245.0000 to 274.9999
    LET yy=88
    LET mm$="06"
    LET dd =int(Dos)-244
CASE 275.0000 to 305.9999
    LET yy=88
    LET mm$="07"
    LET dd =int(Dos)-274
CASE 306.0000 to 336.9999
    LET yy=88
    LET mm$="08"
    LET dd =int(Dos)-305
CASE 337.0000 to 366.9999
    LET yy=88
    LET mm$="09"
    LET dd =int(Dos)-336
CASE 367.0000 to 397.9999
    LET yy=88
    LET mm$="10"
    LET dd =int(Dos)-366
CASE 398.0000 to 427.9999
    LET yy=88
    LET mm$="11"
    LET dd =int(Dos) - 397
CASE 428.0000 to 458.9999
    LET yy=88
    LET mm$="12"
    LET dd =int(Dos)-427
CASE 459.0000 to 489.9999
    LET yy=89
    LET mm$="01"
    LET dd =int(Dos)-458
```

```
CASE 490.0000 to 517.9999
   LET yy=89
   LET mm$="02"
   LET dd =int(Dos)-489
CASE 518.0000 to 548.9999
   LET yy=89
   LET mm$="03"
   LET dd =int(Dos)-517
CASE 549.0000 to 578.9999
   LET yy=89
   LET mm$="04"
   LET dd =int(Dos)-548
CASE 579.0000 to 609.9999
   LET yy=89
   LET mm$="05"
   LET dd =int(Dos)-578
CASE 610.0000 to 639.9999
   LET yy=89
   LET mm$="06"
   LET dd =int(Dos)-609
CASE 640.0000 to 670.9999
   LET yy=89
   LET mm$="07"
   LET dd =int(Dos)-639
CASE 671.0000 to 701.9999
   LET yy=89
   LET mm$="08"
   LET dd =int(Dos)-670
CASE 702.0000 to 731.9999
   LET yy=89
   LET mm$="09"
   LET dd =int(Dos)-701
CASE 732.0000 to 762.9999
   LET yy=89
   LET mm$="10"
   LET dd =int(Dos)-731
CASE 763.0000 to 792.9999
   LET yy=89
   LET mm$="11"
   LET dd =int(Dos) - 762
CASE 793.0000 to 823.9999
   LET yy=89
   LET mm$="12"
   LET dd =int(Dos)-792
CASE 824.0000 to 854.9999
   LET yy=90
   LET mm$="01"
   LET dd =int(Dos)-823
CASE 855.0000 to 882.9999
   LET yy=90
   LET mm$="02"
   LET dd =int(Dos)-854
CASE 883.0000 to 913.9999
   LET yy=90
   LET mm$="03"
   LET dd =int(Dos)-882
CASE 914.0000 to 943.9999
   LET yy=90
   LET mm$="04"
   LET dd =int(Dos)-913
CASE 944.0000 to 974.9999
   LET yy=90
   LET mm$="05"
   LET dd =int(Dos)-943
CASE 975.0000 to 1004.9999
   LET yy=90
   LET mm$="06"
   LET dd =int(Dos)-974
CASE 1005.0000 to 1035.9999
   LET yy=90
   LET mm$="07"
   LET dd =int(Dos)-1004
CASE 1036.0000 to 1066.9999
   LET yy=90
   LET mm$="08"
   LET dd =int(Dos)-1035
CASE 1067.0000 to 1096.9999
   LET yy=90
   LET mm$="09"
   LET dd =int(Dos)-1066
CASE Else
   PRINT "Error - Day of Study after 900930"
END SELECT

LET Hundredths = Dos - int(Dos)
LET hour = hundredths*2400
LET hhhh = round(hour, -2)
! Use "round" rather than "truncate" to ensure date-time
is inside,
! not outside, the sample or stage interval.
LET y$=str$(yy)
LET d$=str$(dd)
IF len(d$)=1 THEN d$[1:0]="0"
LET h$=str$(hhhh)
IF len(h$)=3 THEN H$[1:0]="0"
IF len(h$)=2 THEN H$[1:0]="00"
IF len(h$)=1 THEN H$[1:0]="000"
IF d$<>"01" THEN
  IF h$ = "0000" THEN
   h$ = "2400"
   d = val(d$) -1
   d$ = str$(d)
   IF len(d$)=1 THEN d$[1:0]="0"
  END IF
ELSE
  IF h$ = "0000" THEN h$ = "0100"
END IF
LET yymmddhhhh$ = y$ & mm$ & d$ & h$

END SUB
 LET Music1$ = "t300 mn o5 e e e c1 d d d <b1"
 PLAY Music1$

!Print out table of results on screen. Save formatted
numbers for printing out on printer afterward.
PRINT
PRINT "LOADS OF P, S.S., & Si FOR PERIOD
BEGINNING";Begin_Date_Time;
PRINT "AND ENDING";End_Date_Time
PRINT
PRINT "                Flux"
PRINT "       Interval  1,000  <---------- Load, kg ---
---------->"
```

```
PRINT " Date/Time  (Hours)  cu.m    Total P    SRP
Susp.Sol.   Silica"
PRINT
FOR i=1 to Row
   PRINT Load(i,1);            !date/time
   PRINT USING " ###.##": Load(i,2); !interval
   PRINT USING "#,###.##": Load(i,3) * .001;   !flux
   PRINT USING "   ###.###": Load(i,4) * .001;    !TP
   PRINT USING " ###.###": Load(i,5) * .001;   !SRP
   PRINT USING "  #,###,###.##": Load(i,6) * .001;  !SS
   PRINT USING "   #,###.##": Load(i,11) * .001;    !SiO2
   PRINT
NEXT i

PRINT
PRINT "TOTALS at"
PRINT USING "    Berlin Rd.  ###,###.##  ":
Total_Flux*.001;
PRINT USING " ####.###": TP * .001;
PRINT USING "####.###": SRP * .001;
PRINT USING "  #,###,###.##": SS * .001;
PRINT USING "  ##,###.##": SiO2 * .001;
PRINT
PRINT
PRINT "TOTALS for Entire"
PRINT USING "  OWC Watershed  ###,###.##  ":
Total_Flux*.001187;
PRINT USING " ####.###": TP * .001187;
PRINT USING "####.###": SRP * .001187;
PRINT USING "  #,###,###.##": SS * .001187;
PRINT USING "  ##,###.##": SiO2 * .001187;
PRINT
PRINT "USGS Flow Ratio =";USGS_Ratio
PRINT "Adjusted-Flow Totals for Entire"
PRINT USING "  OWC Watershed  ###,###.##  ":
Total_Flux*.001187*USGS_Ratio;
PRINT USING " ####.###": TP * .001187 * USGS_Ratio;
PRINT USING "####.###": SRP * .001187 *
USGS_Ratio;
PRINT USING "  #,###,###.##": SS * .001187 *
USGS_Ratio;
PRINT USING "  ##,###.##": SiO2 * .001187 *
USGS_Ratio;
PRINT
PRINT "Load has Estimated"
PRINT "      Values?              ";Est$(4);"     ";Est$(5);
PRINT "         ";Est$(6);"       ";Est$(11)
PRINT
PRINT

!Now print table of Flux, nitrogen forms, and chloride.
PRINT
PRINT "LOADS OF N and Cl FOR PERIOD
BEGINNING";Begin_Date_Time;
PRINT "AND ENDING";End_Date_Time
PRINT
PRINT "                  Flux"
PRINT "        Interval  1,000 <---------- Load, kg --
---------->"
PRINT " Date/Time  (Hours)  cu.m   NO2,NO3-N
NH3-N    TKN    Chloride"
PRINT

FOR i=1 to Row
   PRINT Load(i,1);            !date/time
   PRINT USING " ###.##": Load(i,2); !interval
   PRINT USING "##,###.##": Load(i,3) * .001;  !flux
   PRINT USING " ##,###.##": Load(i,7) * .001; !NO23
   PRINT USING "  ##,###.##": Load(i,8) * .001;   !NH3
   PRINT USING " ##,###.##": Load(i,9) * .001; !TKN
   PRINT USING "##,###,###.#": Load(i,12) * .001;   !Cl
   PRINT
NEXT i
PRINT
PRINT "TOTALS at"
PRINT USING "    Berlin Rd.  ###,###.## ":
Total_Flux*.001;
PRINT USING "  ##,###.#": NO23 * .001;
PRINT USING "  #,###.##": NH3 * .001;
PRINT USING "###,###.##": TKN * .001;
PRINT USING "##,###,###.#": Cl * .001;
PRINT
PRINT
PRINT "TOTALS for Entire"
PRINT USING "  OWC Watershed  ###,###.## ":
Total_Flux*.001187;
PRINT USING "  ##,###.#": NO23 * .001187;
PRINT USING "  ##,###.##": NH3 * .001187;
PRINT USING " ###,###.#": TKN * .001187;
PRINT USING "##,###,###.#": Cl * .001187;
PRINT
PRINT "USGS Flow Ratio =";USGS_Ratio
PRINT "Adjusted-Flow Totals for Entire"
PRINT USING "  OWC Watershed  ###,###.## ":
Total_Flux*.001187*USGS_Ratio;
PRINT USING "  ##,###.#": NO23 * .001187 *
USGS_Ratio;
PRINT USING "   ###,###.##": NH3 * .001187 *
USGS_Ratio;
PRINT USING " ###,###.#": TKN * .001187 *
USGS_Ratio;
PRINT USING "##,###,###.#": Cl * .001187 *
USGS_Ratio;
PRINT
PRINT "Load has Estimated"
PRINT "      Values?              ";Est$(7);"
";Est$(8);
PRINT "      ";Est$(9);"       ";Est$(12)
PRINT
PRINT
PRINT
PRINT
PRINT "A hard copy is now being printed."
  ! Print out the same tables on the printer:
  OPEN #9: PRINTER
  PRINT #9: "This report was run on ";Date$;".  Up-
Loading Prgr v.2.1a,";
  PRINT #9: " averaged hourly discharges"
  PRINT #9:
  PRINT #9: "* * * * * * * * * * * * * * * * * * * * * * * * *
* * * * * * * * * * * *"
  PRINT #9:
  PRINT #9: "UPSTREAM LOADS OF P, S.S., & Si FOR
PERIOD ";Begin_Date_Time;
  PRINT #9: "  TO  ";End_Date_Time
```

```
  PRINT #9:
  PRINT #9: "*************************
************"
  PRINT #9:
  PRINT #9:
  PRINT #9: "                    Flux"
  PRINT #9: "          Interval  1,000   <------------ Load,
kg ------------>"
  PRINT #9: " Date/Time  (Hours) cu.m    Total P    SRP
Susp.Sol.  Silica"
  PRINT #9:
  FOR i=1 to Row
     PRINT #9: Load(i,1);      !date/time
     PRINT #9, USING " ###.##": Load(i,2);    !interval
     PRINT #9, USING "#,###.##": Load(i,3) * .001; !flux
     PRINT #9, USING "   ###.###": Load(i,4) * .001; !TP
     PRINT #9, USING " ###.###": Load(i,5) * .001; !SRP
     PRINT #9, USING "  #,###,###.##": Load(i,6) * .001;
!SS
     PRINT #9, USING "  #,###.##": Load(i,11) * .001;
!SiO2
     PRINT #9:
  NEXT i
  PRINT #9:
  PRINT #9, USING "        TOTALS ###,###.##  ":
Total_Flux*.001;
  PRINT #9, USING " ####.###": TP * .001;
  PRINT #9, USING "####.###": SRP * .001;
  PRINT #9, USING "   ##,###,###": SS * .001;
  PRINT #9, USING "  ##,###.##": SiO2 * .001;
  PRINT #9:
  PRINT #9: "TOTALS for Entire"
  PRINT #9, USING "  OWC Watershed  ###,###.##  ":
Total_Flux*.001187;
  PRINT #9, USING " ####.###": TP * .001187;
  PRINT #9, USING "####.###": SRP * .001187;
  PRINT #9, USING "   ##,###,###": SS * .001187;
  PRINT #9, USING "  ##,###.##": SiO2 * .001187;
  PRINT #9:
  PRINT #9:

  PRINT #9: "                    cu.m    Total P    SRP
Susp.Sol.  Silica"
  PRINT #9:
  PRINT #9:
  PRINT #9: "USGS Flow Ratio =";USGS_Ratio
  PRINT #9: "Adjusted-Flow Totals for Entire"
  PRINT #9, USING "  OWC Watershed  ###,###.##  ":
Total_Flux*.001187 * USGS_Ratio;
  PRINT #9, USING " ####.###": TP * .001187 *
USGS_Ratio;
  PRINT #9, USING "####.###": SRP * .001187 *
USGS_Ratio;
  PRINT #9, USING "   ##,###,###": SS * .001187 *
USGS_Ratio;
  PRINT #9, USING "  ##,###.##": SiO2 * .001187 *
USGS_Ratio;
  PRINT #9:
  PRINT #9: "Load has Estimated"
  PRINT #9: "        Values?              ";Est$(4);"
";Est$(5);
  PRINT #9: "         ";Est$(6);"        ";Est$(11)
```

```
  CLOSE #9
  OPEN #9: PRINTER    !Starts second report on new page
  PRINT #9: "*************************
************"
  PRINT #9:
  PRINT #9: "UPSTREAM LOADS OF N and Cl FOR
THE PERIOD  ";Begin_Date_Time;
  PRINT #9: "  TO  ";End_Date_Time
  PRINT #9:
  PRINT #9: "*************************
************"
  PRINT #9:
  PRINT #9:
  PRINT #9: "                    Flux"
  PRINT #9: "          Interval  1,000   <-------------- Load,
kg -------------->"
  PRINT #9: " Date/Time  (Hours)  cu.m    NO2,NO3-N
NH3-N    TKN    Chloride"
  PRINT #9:
  FOR i=1 to Row
     PRINT #9: Load(i,1);      !date/time
     PRINT #9, USING " ###.##": Load(i,2);    !interval
     PRINT #9, USING "##,###.##": Load(i,3) * .001;
!flux
     PRINT #9, USING " ##,###.##": Load(i,7) * .001;
!NO23
     PRINT #9, USING "  ###,###.##": Load(i,8) * .001;
!NH3
     PRINT #9, USING " ##,###.##": Load(i,9) * .001;
!TKN
     PRINT #9, USING "##,###,###.#": Load(i,12) * .001;
!Cl
     PRINT #9:
  NEXT i
  PRINT #9:
  PRINT #9: "TOTALS at"
  PRINT #9, USING "    Berlin Rd.   ###,###.## ":
Total_Flux*.001;
  PRINT #9, USING "##,###.##": NO23 * .001;
  PRINT #9, USING "  ###,###.##": NH3 * .001;
  PRINT #9, USING "###,###.##": TKN * .001;
  PRINT #9, USING "##,###,###.#": Cl * .001;
  PRINT #9:
  PRINT #9: "TOTALS for Entire"
  PRINT #9, USING "  OWC Watershed   ###,###.## ":
Total_Flux*.001187;
  PRINT #9, USING "##,###.##": NO23 * .001187;
  PRINT #9, USING "  ###,###.##": NH3 * .001187;
  PRINT #9, USING "###,###.##": TKN * .001187;
  PRINT #9, USING "##,###,###.#": Cl * .001187;
  PRINT #9:

  PRINT #9:
  PRINT #9: "                    cu.m   NO2,NO3-N    NH3-N
TKN    Chloride"

  PRINT #9:
  PRINT #9:

  PRINT #9: "USGS Flow Ratio =";USGS_Ratio
  PRINT #9: "Adjusted-Flow Totals for Entire"
```

```
  PRINT #9, USING "  OWC Watershed  ###,###.## ":
Total_Flux*.001187*USGS_Ratio;
  PRINT #9, USING "##,###.##": NO23 * .001187 *
USGS_Ratio;
  PRINT #9, USING "  ###,###.##": NH3 * .001187 *
USGS_Ratio;
  PRINT #9, USING "###,###.##": TKN * .001187 *
USGS_Ratio;
  PRINT #9, USING "##,###,###.#": Cl * .001187 *
USGS_Ratio;
  PRINT #9:
  PRINT #9: "Load has Estimated"
  PRINT #9: "       Values?              ";Est$(7);"
";Est$(8);
  PRINT #9: "       ";Est$(9);"        ";Est$(12)
  CLOSE #9

PRINT "End"
END
```
