WATER QUALITY SECTION

OF THE

POTOMAC INTEGRATED ANALYSIS REPORT

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Table of Contents

List of Figures.....v

List of Tables.....viii

Executive Summary.....ix

I. Introduction.....I-1

A. Background.....I-1
B. Water Quality Parameters Evaluated for Trends.....I-2

II. Methods.....II-1

A. Water Quality Monitoring Stations Included in the Study.....II-1
B. Field Methods and Sampling Regime.....II-1
C. Laboratory Methods.....II-3
D. Statistical Methods.....II-4
i. Initial Treatment of the Data.....II-4
ii. Flow Correction.....II-5
iii. Trend Tests.....II-7
iv. Tests of Homogeneity.....II-9
v. Seasons Evaluated for Trends.....II-9

Tables.....II-11

Figures.....II-16

III. Trends in Nutrients and Biologically Mediated Water Quality Variables..III-1

A. Surface Trends for Raw Data for 1985-1996.....III-1
i. Tidal Fresh Zone.....III-1
a. Mainstem Stations.....III-1
b. Piscataway Creek.....III-3
c. Mattawoman Creek.....III-5
d. Gunston Cove.....III-5
ii. Oligohaline Zone.....III-6
iii. Mesohaline Zone.....III-7
B. Bottom Trends for Raw Data for 1985-1996.....III-8
i. Tidal Fresh Zone.....III-8
a. Mainstem Stations.....III-8

b. Piscataway Creek....III-10
c. Mattawoman Creek....III-10
d. Gunston Cove....III-10
ii. Oligohaline Zone....III-11
iii. Mesohaline Zone....III-12
C. Surface Trends for Flow-Adjusted Data for 1985-1996....III-12
i. Tidal Fresh Zone....III-13
ii. Oligohaline Zone....III-13
iii. Mesohaline Zone....III-14
D. Bottom Trends for Flow-Adjusted Data for 1985-1996....III-15
i. Tidal Fresh Zone....III-15
ii. Oligohaline Zone....III-16
iii. Mesohaline Zone....III-17
E. Surface Trends for Raw Data for mid-1970s-1996....III-18
i. Tidal Fresh....III-18
ii. Oligohaline Zone....III-20
iii. Mesohaline Zone....III-20
F. Bottom Trends for Raw Data for mid-1970s-1996....III-21
i. Tidal Fresh Zone....III-21
ii. Oligohaline Zone....III-22
iii. Mesohaline Zone....III-22
G. Surface Trends for Flow-Adjusted Data for mid-1970s-1996....III-22
i. Tidal Fresh Zone....III-22
ii. Oligohaline Zone....III-23
iii. Mesohaline Zone....III-24
H. Bottom Trends for Flow-Adjusted Data for mid-1970s-1996....III-25
i. Tidal Fresh Zone....III-25
ii. Oligohaline Zone....III-26
iii. Mesohaline Zone....III-27

Tables....III-28

Figures....III-29

IV. Changes in Nutrients and Flow at the Wastewater Treatment Plants and the Fall-Line....IV-1

A. Wastewater Treatment Plant Loading and Flow....IV-1
i. Historical Perspective on Wastewater Treatment Plants....IV-1
ii. Changes in Total Nitrogen Loads and Flow....IV-3
iii. Changes in Total Phosphorus Loads and Flow....IV-3
iv. Changes in Phosphate Loads and Flow....IV-3

v. Loads Contributed by Individual Plants.....IV-4
B. Changes in Loads and Concentrations at the Fall-Line.....IV-5
i. Changes in Loads for 1978-1996.....IV-5
ii. Trends in Concentrations at the Fall-Line.....IV-5

Tables.....IV-7

Figures.....IV-8

V. Links Between Tidal Fresh Water Quality, the Wastewater Treatment Plants, and the Fall-Line.....V-1

A. Total Nitrogen.....V-1
B. Total Phosphorus.....V-2
C. Orthophosphate.....V-2

Figures.....V-3

References.....R-1

VI. Surface and Bottom Trends in Raw Data for 1985-1996.....VI-1

VII. Surface and Bottom Trends in Flow-Adjusted Data for 1985-1996.....VII-1

VIII. Surface and Bottom Trends in Raw Data for mid-1970s-1996.....VIII-1

IX. Surface and Bottom Trends in Flow-Adjusted Data for mid-1970s-1996...IX-1

X. Surface and Bottom Trends in Raw Data for Gunston Cove.....X-1

List of Figures

Figure No.	Title	Page
ES-1a	Twelve Year Nutrient Surface Trends in Raw Data for Mainstem Stations for 1985-1996	xvi
ES-1b	Twelve Year Non-nutrient Surface Trends in Raw Data for Mainstem Stations for 1985-1996	xvii
ES-1c	Eleven Year Nutrient Surface Trends in Raw Data for Tidal Creeks and Gunston Cove Stations for 1986-1996	xviii
ES-1d	Eleven Year Non-nutrient Surface Trends in Raw Data for Tidal Creeks and Gunston Cove Stations for 1986-1996	xix
ES-2a	Twelve Year Nutrient Bottom Trends in Raw Data for Mainstem Stations for 1985-1996	xx
ES-2b	Twelve Year Non-nutrient Bottom Trends in Raw Data for Mainstem Stations for 1985-1996	xxi
ES-2c	Eleven Year Nutrient Bottom Trends in Raw Data for Tidal Creeks and Gunston Cove Stations for 1986-1996	xxii
ES-2d	Eleven Year Non-nutrient Bottom Trends in Raw Data for Tidal Creeks and Gunston Cove Stations for 1986-1996	xxiii
ES-3a	Twelve Year Nutrient Surface Trends in Flow-Adjusted Data for Mainstem Stations for 1985-1996	xxiv
ES-3b	Twelve Year Non-nutrient Surface Trends in Flow-Adjusted Data for Mainstem Stations for 1985-1996	xxv
ES-4a	Twelve Year Nutrient Bottom Trends in Flow-Adjusted Data for Mainstem Stations for 1985-1996	xxvi
ES-4b	Twelve Year Non-nutrient Bottom Trends in Flow-Adjusted Data for Mainstem Stations for 1985-1996	xxvii
ES-5a	Twenty-five Year Nutrient Surface Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxviii
ES-5b	Twelve-five Year Non-nutrient Surface Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxix
ES-6a	Twenty-five Year Nutrient Bottom Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxx
ES-6b	Twelve-five Year Non-nutrient Bottom Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxxi
ES-7a	Twenty-five Year Nutrient Surface Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxxii
ES-7b	Twelve-five Year Non-nutrient Surface Trends in Flow-Adjusted Data for Mainstem Stations for mid-1970s-1996	xxxiii
ES-8a	Twenty-five Year Nutrient Bottom Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxxiv
ES-8b	Twelve-five Year Non-nutrient Bottom Trends in Raw Data for Mainstem Stations for mid-1970s-1996	xxxv

II-1 Potomac Estuary Stations....II-16
II-2 Succession of Laboratories that have Analyzed Water Quality Samples from the Potomac Mainstem and Maryland Tidal Creeks....II-17

III-1a Monthly medians of surface nutrient water quality variables for XFB2470....III-29
III-1b Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB2470....III-30
III-2a Monthly medians of surface nutrient water quality variables for XFB1433....III-31
III-2b Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB1433....III-32
III-3a Monthly medians of surface nutrient water quality variables for XEA6596....III-33
III-3b Monthly medians of surface non-nutrient water quality variables and bottom DO for XEA6596....III-34
III-4a Monthly medians of surface nutrient water quality variables for XEA1840....III-35
III-4b Monthly medians of surface non-nutrient water quality variables and bottom DO for XEA1840....III-36
III-5a Monthly medians of surface nutrient water quality variables for XFB1986....III-37
III-5b Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB1986....III-38
III-6a Monthly medians of surface nutrient water quality variables for PIS0033....III-39
III-6b Monthly medians of surface non-nutrient water quality variables and bottom DO for PIS0033....III-40
III-7a Monthly medians of surface nutrient water quality variables for MAT0016....III-41
III-7b Monthly medians of surface non-nutrient water quality variables and bottom DO for MAT0016....III-42
III-8a Monthly medians of surface nutrient water quality variables for MAT0078....III-43
III-8b Monthly medians of surface non-nutrient water quality variables and bottom DO for MAT0078....III-44
III-9a Monthly medians of surface nutrient water quality variables for Gunston 7....III-45
III-9b Monthly medians of surface non-nutrient water quality variables and bottom DO for Gunston 7....III-46
III-10a Monthly medians of surface nutrient water quality variables for Gunston 9....III-47
III-10b Monthly medians of surface non-nutrient water quality variables and bottom DO for Gunston 9....III-48
III-11a Monthly medians of surface nutrient water quality variables for XDA4238....III-49
III-11b Monthly medians of surface non-nutrient water quality variables and bottom DO for XDA4238....III-50
III-12a Monthly medians of surface nutrient water quality variables for XDA1177....III-51
III-12b Monthly medians of surface non-nutrient water quality variables and bottom DO for XDA1177....III-52
III-13a Monthly medians of surface nutrient water quality variables for XDB3321....III-53
III-13b Monthly medians of surface non-nutrient water quality variables and bottom DO for XDB3321....III-54

III-14a Monthly medians of surface nutrient water quality variables for XDC1706.....III-55
III-14b Monthly medians of surface non-nutrient water quality variables and bottom DO for XDC1706.....III-56
III-15a Monthly medians of surface nutrient water quality variables for MLE2.2.....III-57
III-15b Monthly medians of surface non-nutrient water quality variables and bottom DO for MLE2.2.....III-58
III-16a Monthly medians of surface nutrient water quality variables for MLE2.3.....III-59
III-16b Monthly medians of surface non-nutrient water quality variables and bottom DO for MLE2.3.....III-60

IV-1 Historic total nitrogen and total phosphorus loads for the major wastewater treatment plants on the Potomac River.....IV-9
IV-2 Recent orthophosphate loads for the major wastewater treatment plants on the Potomac River.....IV-10
IV-3 Percent of average daily total nitrogen load contributed by the major wastewater treatment plants on the Potomac River.....IV-11
IV-4 Percent of average daily total phosphorus load contributed by the major wastewater treatment plants on the Potomac River.....IV-12
IV-5 Percent of average daily orthophosphate load contributed by the major wastewater treatment plants on the Potomac River.....IV-13
IV-6 Percent of total flow contributed by the major wastewater treatment plants on the Potomac River.....IV-14
IV-7 Minimum, average, and maximum wastewater treatment plant flow as a percentage of total Potomac River flow.....IV-15
IV-8 Increases in population and wastewater treatment plant flow for the Washington, D.C., Metropolitan area.....IV-16
IV-9 Total nitrogen and total phosphorus loads for the fall-line monitoring station at Chain Bridge.....IV-17
IV-10 Ammonium and orthophosphate loads for the fall-line monitoring station at Chain Bridge.....IV-18
IV-11 Total suspended solids and nitrite plus nitrate for the fall-line monitoring station at Chain Bridge.....IV-19

V-1 Comparison of total nitrogen concentrations in the tidal fresh zone V-3
V-2 Comparison of total phosphorus concentrations in the tidal fresh zone.....V-4
V-3 Comparison of orthophosphate concentrations in the tidal fresh zone.....V-5

List of Tables

Table No.	Title	Page
ES-1	Maryland, Chesapeake Bay Program, and Historic Station Names for the Tidal Potomac River and Creeks	xv
II-1	Maryland, Chesapeake Bay Program, and Historic Station Names for the Tidal Potomac River and Creeks	II-11
II-2	Laboratory Analysis of Water Quality Parameters	II-12
II-3	Chronology of Detection Limits for Water Column Parameters in Chesapeake Bay Tributary Monitoring Program	II-13
II-4	Chronology of Detection Limits for Water Column Parameters Applicable to Station MLE2.3	II-14
II-5	Trend Analysis Seasons and Salinity Zones	II-15
III-1	Potomac River Sampling Stations	III-28
IV-1	Year On-Line, Receiving Stream, and Salinity Zone for the Major Wastewater Treatment Plants, on the Potomac River	IV-7

EXECUTIVE SUMMARY

The Potomac River, one of the major estuaries of the Chesapeake Bay in Maryland, drains 14,670 square miles of diverse forested, agricultural, and highly urbanized land in the coastal plain, Piedmont, and Blue Ridge provinces of Maryland, Virginia, and West Virginia. The estuarine portion of the river begins near the western boundary of the District of Columbia and continues 113 miles across the coastal plain. The importance of the Potomac River in terms of the health of the Bay is underscored by the fact that the Potomac River contributes approximately 20% of the fresh water flow to the Bay (second to the Susquehanna River), 28% of the total nitrogen load and 33% of the total phosphorus load from the non-tidal part of the Chesapeake Bay Basin (USGS, 1998).

This report describes short-term (1985-1996) and long-term (mid-1970s-1996) trends in the water quality of the tidal Potomac River. The Seasonal Kendall test of monotonic trend was used on raw and flow-adjusted data if the number of censored flow-adjusted data did not exceed 5%. In cases where the number of censored data exceeded 5%, trends in flow-adjusted data were analyzed using the Statistical Analysis System (SAS) LIFEREG procedure, an implementation of Tobit regression (Tobin, 1958). Data were adjusted for flow to control for any statistically significant constituent-flow relationship. Trends in raw data were considered significant if they were detected at the 99% confidence level ($p \leq 0.01$) and at the 95% level ($p \leq 0.05$) for flow-adjusted trends.

Trends were analyzed for the following water quality indicators: total phosphorus (TP), orthophosphate (PO_4), total nitrogen (TN), dissolved inorganic nitrogen (DIN), nitrite plus nitrate (NO_{23}), ammonium (NH_4), total suspended solids (TSS), Secchi depth (SECCHI), active chlorophyll *a* (CHLA), dissolved oxygen (DO), and total alkalinity (TALK). In addition to analyzing the raw data for annual trends (flow-adjusted data were only analyzed for annual trends), the following seasonal trends were analyzed: March-May, April-June, June-September, July-September, April-October, October-December, March-November. Seasonal trends were analyzed to allow comparisons to living resources data.

Trends were analyzed for four mainstem tidal fresh stations (XFB2470, XFB1433, XEA6596, XEA1840), three oligohaline zone stations (XDA4283, XDA1177, XDB3321), and three mesohaline zone stations (XDC1706, MLE2.2, MLE2.3). In addition, trends were analyzed at four stations located in tidal creeks (XFB1986, PIS0033, MAT0016, MAT0078) and two stations in Gunston Cove (Stations 7 and 9). Annual trend results for the water quality indicators of primary concern are described below.

Some stations in the tidal portion of the Potomac River have been sampled by various agencies and academic institutions for many decades. Over the years, a variety of station names have been used which have relied on local geography, the State of Maryland Bay Grid Identification System, and more recently, the Chesapeake Bay Program segmentation scheme. Table ES-1 lists the station name under each of the naming conventions and the salinity zone in which each

station may be found. The State of Maryland Bay Grid station names are used in this report because the Bay Program segments and names were not finalized when this report was first written.

Surface Trends for Raw Data (1985-1996) and (1986-1996)

The surface trends in raw data are presented in Figures ES-1a and ES-1b. There were no significant trends for either TP or PO_4F at any Potomac mainstem station. Significant decreases of 20% and 13% were detected for TN at two tidal fresh stations. TN increased by 32% at XDB3321 (sampling stopped at this station in 1990). TN also increased at one mesohaline zone station (MLE2.3) by 15%. DIN increased by 69% at XDB3321. Significant increases in TSS were detected at several mainstem stations. TSS increased by 38% at one tidal fresh station. Increases of 51% and 45% were observed at two oligohaline zone stations. Dramatic increases of 101% and 87% were detected in TSS at two mesohaline zone stations. Although TSS increased at a number of mainstem stations, only one significant decrease in SECCHI (19%) was observed in the mesohaline zone. CHLA increased at only one station, XFB2470 in the tidal fresh zone, by 121%. Conflicting trends were observed in DO. DO increased by 18% and 10% at two tidal fresh stations and decreased at one mesohaline zone station by 8%.

Piscataway Creek, Matawoman Creek, and Gunston Cove

Surface trends in raw data for Piscataway and Matawoman Creeks and Gunston Cove are presented in Figures ES-1c and ES-1d. TP decreased by 42% at one Gunston Cove station. No significant TP trends were observed in the Potomac tidal creeks. Only one significant trend in PO_4F was detected in the tidal creeks, an increase of 179% at MAT0016 on Mattawoman Creek. Significant decreases in TN ranging from15% to 27% were detected at all four Potomac tidal creek stations. TN decreased by 35% at one Gunston Cove station (GUN07). DIN decreased by 26% and 30% at the Piscataway Creek stations and by 39% and 26% at the Gunston Cove stations. A significant increase (60%) in TSS was observed at one Piscataway Creek station. SECCHI increased by 60% at GUN07. CHLA increased by 140% at one Piscataway Creek station and by 110% at GUN09. Conflicting trends in DO were observed in Piscataway Creek, where the upper station had a 10% decrease and the lower station had a 20% increase. DO increased by 10% at GUN09.

Bottom Trends for Raw Data (1985-1996) and (1986-1996)

Bottom layer trends in raw data for the Potomac mainstem stations are presented in Figures ES-2a and ES-2b. No significant TP or PO_4F trends were observed on the Potomac mainstem. Decreases in TN ranged from 13% to 16% in the tidal fresh zone. No other significant TN trends were observed. Only one DIN trend, an increase of 72%, was observed along the Potomac mainstem at XDB3321, where sampling stopped in September 1990. TSS increased by 120% at MLE2.2. Three significant increases were detected in CHLA. CHLA increased by 132% and 105% at two tidal fresh stations and by 61% at one oligohaline zone station. Bottom DO

increased by 13% at XFB2470 and by 16% at XDC1706.

Piscataway Creek, Matawoman Creek, and Gunston Cove

Bottom layer trends in raw data for Piscataway and Matawoman Creeks and Gunston Cove are presented in Figures ES-2c and ES-2d. Bottom layer nutrient analyses are not performed for the Potomac tidal creek stations; however, DO is analyzed at the two deeper stations. TP decreased by 36% at GUN07. TN and DIN also decreased at GUN07 by 35% and 38%, respectively. DIN decreased by 27% at GUN09. Bottom DO increased by 20% at GUN09.

Surface Flow-Adjusted Trends (1985-1996)

Surface flow-adjusted trends for the Potomac mainstem stations are presented in Figures ES-3a and ES-3b. No significant TP or PO_4F trends were detected in the mainstem stations. Decreases in TN were observed in all three salinity zones. TN decreases in the tidal fresh zone ranged from 9% to 23%. TN decreased by 22% and 12% at two oligohaline zone stations and by 19% at one mesohaline zone station. Decreases in DIN were also observed at all three salinity zones along the mainstem. DIN decreased by 12% and 21% at two tidal fresh stations, by 26% at one oligohaline zone station, and by 42% and 29% at two mesohaline zone stations. DIN increased by 50% at XDB3321, where sampling stopped in 1990.

Significant trends in TSS were only observed in the mesohaline zone, where increases of 60% and 80% were detected. Conflicting trends in SECCHI were detected in the mesohaline zone. SECCHI increased by 10% at the station where TSS increased by 80% and decreased by 20% at a station where the trend in TSS was not significant. Increasing trends in CHLA were observed only in the tidal fresh and oligohaline zones. CHLA increases in the tidal fresh ranged from 80% to 260%. CHLA increased by 60% and 30% at two oligohaline zone stations. One increasing and four decreasing trends were detected in DO in the Potomac mainstem. DO increased by 10% at one tidal fresh station and decreased by 10% at another. Decreases in DO of 10% were also observed at one oligohaline and one mesohaline zone station. DO decreased by 20% at another mesohaline zone station.

Bottom Flow-Adjusted Trends (1985-1996)

Flow-adjusted bottom layer trends for 1985-1996 are summarized in Figures ES-4a and ES-4b. One increasing trend was observed for TP and one for PO_4F, both in the mesohaline zone. TP increased by 38% at MLE2.3 and PO_4F increased by 119% at MLE2.2. TN decreased by 12% and 16% at two tidal fresh stations and by 14% at one oligohaline zone station. TN increased by 23% at MLE2.2 in the mesohaline zone. Three significant trends were detected for DIN in the mainstem Potomac. A 32% decrease was observed at one oligohaline zone station and a 33% decrease was observed at one mesohaline zone station. A 22% increase in DIN was detected at MLE2.2 in the mesohaline zone.

TSS decreased by 60% at XDB3321 and increased by 100% at MLE2.2. CHLA increased at all four tidal fresh stations and at one station in the oligohaline zone. Tidal fresh increases ranged from 40% to 220%. The increase at the oligohaline zone station was 60%. Decreases in DO of 10% were observed at two tidal fresh stations and one oligohaline zone station. DO decreased by 20% at each of two stations in the mesohaline zone.

Surface Trends for Raw Data (mid-1970s-1996)

Long-term surface trends for raw data are presented in Figures ES-5a and ES-5b. For the long-term trends, significant decreases in TP were detected in the tidal fresh and oligohaline zones. Decreases in the tidal fresh zone ranged from 27% to 39%. A 22% decrease in TP was observed at one oligohaline zone station. Significant trends in PO_4W were only detected in the tidal fresh zone where decreases ranged from 40% to 61%. Increasing trends in TN were observed in both the tidal fresh and oligohaline zones. Tidal fresh TN increases ranged from 19% to 38% for the four stations. TN increases of 19% and 35% were observed at two oligohaline zone stations. Significant increases ranging from 20% to 39% were detected at three tidal fresh stations for DIN. All three stations in the oligohaline zone had significant increasing DIN trends, which ranged from 24% to 43%. Significant increases in TSS were observed in all three salinity zones. TSS increased by 50% and 60% at two tidal fresh stations, by 70% and 30% at two oligohaline zone stations and by 30% at the one mesohaline zone station with long-term data available. No significant trends in SECCHI were detected in spite of the increases in TSS. CHLA decreased by 30% at one tidal fresh station and by 20% and 30% at two stations in the oligohaline zone. DO increased by 10% at the upper-most tidal fresh station and decreased by 10% at the lower-most. DO decreased by 10% at the mesohaline zone station.

Bottom Trends for Raw Data (mid-1970s-1996)

The results of the long-term bottom trends in raw data are presented in Figures ES-6a and ES-6b. There were no significant bottom layer trends in TP. Decreases in PO_4W were observed at all four tidal fresh station and at two oligohaline zone stations. Decreases in the tidal fresh zone ranged from 37% to 57%. Decreases of 34% and 36% were detected at the two oligohaline zone stations. Trends in TN and DIN were not significant. A 90% increase in TSS was detected at XEA6596 in the tidal fresh zone. No other TSS trends were significant. A 20% increase in CHLA was detected at XFB2470 in the tidal fresh zone, which is not where the increasing TSS trend was observed. DO increased by 10% at one tidal fresh station and decrease by 10% at another. A 10% decrease in DO was also observed at one oligohaline zone station.

Surface Flow-Adjusted Trends (mid-1970s-1996)

The long-term flow-adjusted surface trend results are presented in Figures ES-7a and ES-7b. Significant decreases ranging from 31% to 39% were detected in TP at the four tidal fresh stations. TP decreased by 25% at two stations in the oligohaline zone and by 23% at the mesohaline zone station. Four significant trends were also detected in PO_4W in the tidal fresh

zone. The PO_4W tidal fresh zone trends were estimated using the SAS LIFEREG procedure and a percent change calculation that differs from that used for most other trends. As a result, the decreases, which ranged from 49% to 66%, may not be strictly comparable to other trends that were estimated using Sen's slope. No significant PO_4W trends were detected in the oligohaline zone, although a decrease of 46% was detected in the mesohaline zone. Significant trends in TN were detected at all four tidal fresh stations and all three stations in the oligohaline zone. In the tidal fresh zone, TN increases ranged from 17% to 38%, while those in the oligohaline zone ranged from 22% to 46%. Increasing DIN trends were detected at all stations, including the mesohaline zone. Increases in the tidal fresh zone ranged from 20% to 40%, while those in the oligohaline zone ranged from 27% to 57%. DIN at the mesohaline zone station increased by 23%.

Three significant increases ranging from 40% to 60% were observed in the tidal fresh zone for TSS. Increasing TSS trends ranging from 30% to 80% were detected at the three oligohaline zone stations. The trend in TSS at the mesohaline zone station was not significant. Even though large increases in TSS were observed at almost all stations, no significant trends in SECCHI were observed. Significant trends in CHLA were observed at only two stations, one in the tidal fresh zone and one in the oligohaline zone. CHLA decreased by 30% in the tidal fresh zone and by 50% in the oligohaline zone. DO increased by 10% at one tidal fresh station and decreased by 10% and 20% at two others. DO decreased by 10% at one oligohaline zone station and decreased by 20% at the mesohaline zone station.

Bottom Flow-Adjusted Trends (mid-1970s-1996)

Long-term bottom layer flow-adjusted trend results are presented in Figures ES-8a and ES-8b. A significant decreasing TP trend of 38% was detected in the tidal fresh zone. No other significant TP trends were observed. Decreasing PO_4W trends ranging from 48% to 66% were detected at all four tidal fresh zone stations. It should be noted that the PO_4W trend at the upper-most tidal fresh station was estimated using the Seasonal Kendall test and Sen's slope and that trends and slopes at the lower three stations were estimated using SAS LIFEREG. As a result, the percent changes across the four stations may not be strictly comparable. Decreasing PO_4W trends were also found at the oligohaline zone stations. Decreasing PO_4W trends in the oligohaline zone ranged from 25% to 34%. PO_4W trends at stations XDA4238 and XDB3321 were also estimated using SAS LIFEREG and may not be comparable to trends at other stations. Only two significant trends in TN were detected, one in the tidal fresh zone, where TN increased by 24% and one in the oligohaline zone, where a 15% increase was observed. DIN also increased at one tidal fresh and one oligohaline zone station. DIN increased by 18% at the tidal fresh station and increased by 28% at the oligohaline zone station.

One significant trend was detected in TSS, an increase of 50% at XDC1706. CHLA increased at the upper two tidal fresh stations by 30% and 20%. CHLA decreased by 70% at XDB3321, where sampling stopped in 1990. Conflicting DO trends were observed in the tidal fresh, where an increase of 10% was detected at the upper station and a 20% decrease was detected at the

lower station. DO decreased by 10% at two oligohaline zone stations and decreased by 20% at the mesohaline zone station.

Wastewater Treatment Plant Loads and Flow

Based on a comparison of the average TN loads for 1970 to those in 1996, TN loads at the major WWTPS decreased by 8% even though flow increased by 70%. For the 1985 to 1996 time period, TN loads decreased by 6% despite a 21% increase in flow. TP loads decreased dramatically from 1970 to 1996, since efforts to reduce phosphorus were initially the focus of the Potomac restoration program. As a result of upgrades at Blue Plains and the phosphate detergent ban, TP loads decreased by 98% for the 1970-1996 time period. For 1985-1996, TP loads decreased by 44%.

The data record for PO_4 at the WWTPs is less complete than it is for TN and TP and data before 1985 are not available. To obtain a reasonable estimate of the change in the PO_4 load, data for Blue Plains, the largest plant in the estuary, were reviewed. It was observed that PO_4 data for Blue Plains were reported for only six months in 1985. To complete the 1985 Blue Plains data record, the six months of available data were averaged and the average concentration was used with the reported flow to calculate loads for the missing six months of data. Only Blue Plains data for 1985 were estimated because the plant accounts for approximately 70% of the total flow for the major plants. Using the estimated 1985 loads for Blue Plains, PO_4 decreased by an estimated 55% for the 1985 to 1996 time period, despite an increase in flow of 21%.

River Input Station at Chain Bridge

Concentration and load data for the river input station at Chain Bridge are only available back to 1978, and trend results are only available for the 1985-1996 time period. The trend in flow-adjusted TN concentrations for 1985-1996 was not significant. TP concentrations at the fall-line station decreased by 50% for 1985-1996. PO_4 concentrations for 1985-1996 decreased by 36%.

The trends described above for the tidal Potomac River were no doubt a result of the continuing improvements to wastewater treatment facilities and the bans on phosphate detergents implemented in 1985 (Maryland) and 1986 (Virginia and the District of Columbia). These improvements have led to substantially improved nutrient levels, dissolved oxygen, organic matter, and turbidity in the Potomac Estuary (MWCOG, 1989). In the report that follows, the results of long-term water quality monitoring programs are compiled and statistically analyzed to assess what effect these reductions are having on actual environmental conditions in the Potomac River.

Table ES-1. Maryland, Chesapeake Bay Program, and historic station names for the tidal Potomac River and creeks.

Salinity Zone	Maryland Name	Bay Program Name	Historic Name
Tidal Fresh Zone	XFB2470	TF2.1	Piscataway Creek
	XFB1433	TF2.2	Dogue Creek
	XEA6596	TF2.3	Indian Head
	XEA1840	TF2.4	Possum Point
	XFB1986	XFB1986	NA[1]
	PIS0033	PIS0033	NA
	MAT0016	MAT0016	NA
	MAT0078	MAT0078	NA
Oligohaline Zone	XDA4238	RET2.1	Smith Point
	XDA1177	RET2.2	Maryland Point
	XDB3321	RET2.3	Nanjemoy Creek
Mesohaline Zone	XDC1706	RET2.4	301 Bridge (Morgantown)
	MLE2.2	LE2.2	Ragged Point
	MLE2.3	LE2.3	Point Lookout

[1]NA - Not available, no historic name for this station.

Potomac River (1985-1996)

Twelve Year Surface Trends in Raw Data

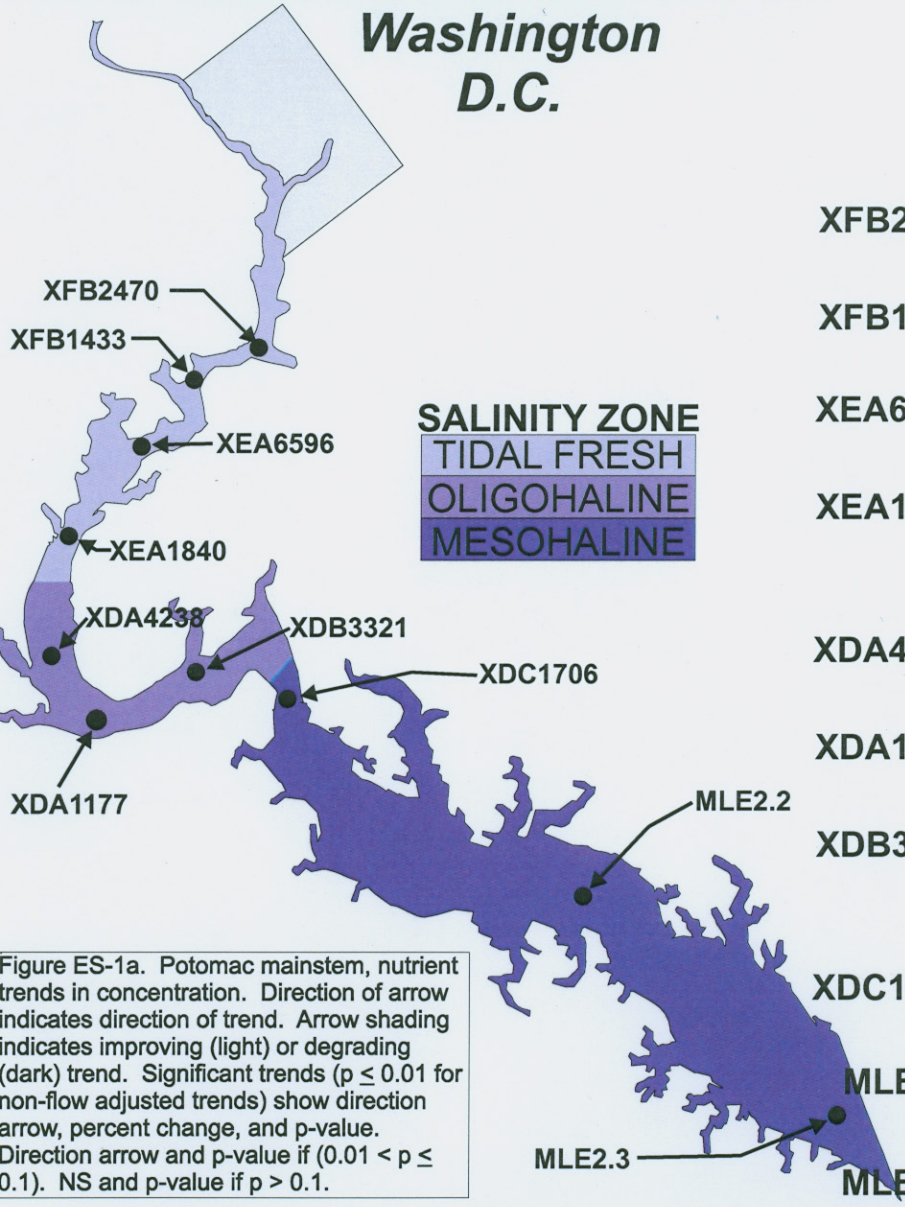


Figure ES-1a. Potomac mainstem, nutrient trends in concentration. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

	TP	PO4F	TN	DIN
XFB2470	↑ NS p=0.021	↑ NS p=0.072	↓ NS p=0.012	↓ NS p=0.043
XFB1433	NS p=0.240	NS p=0.100	↓ 20% p=0.002	↓ NS p=0.088
XEA6596	NS p=0.608	NS p=0.199	↓ 13% p=0.004	NS p=0.115
XEA1840	↑ NS p=0.063	NS p=0.376	↓ NS p=0.021	NS p=0.287
XDA4238	NS p=0.764	NS p=0.496	↓ NS p=0.085	NS p=0.232
XDA1177	↑ NS p=0.041	NS p=0.752	NS p=0.535	NS p=0.851
XDB3321*	NS p=0.143	NA	↑ 32% p=0.001	↑ 69% p=0.000
XDC1706	NS p=0.914	NS p=0.319	NS p=0.690	NS p=0.883
MLE2.2	NS p=0.745	NS p=0.379	NS p=0.129	NS p=0.492
MLE2.3	↑ NS p=0.011	NS p=0.274	↑ 15% p=0.010	NS p=0.511

NA - Data not available for this station. PO4F trends start in October 1990. *Station not sampled after September 1990.

Potomac River (1985-1996)

Twelve Year Surface Trends in Raw Data

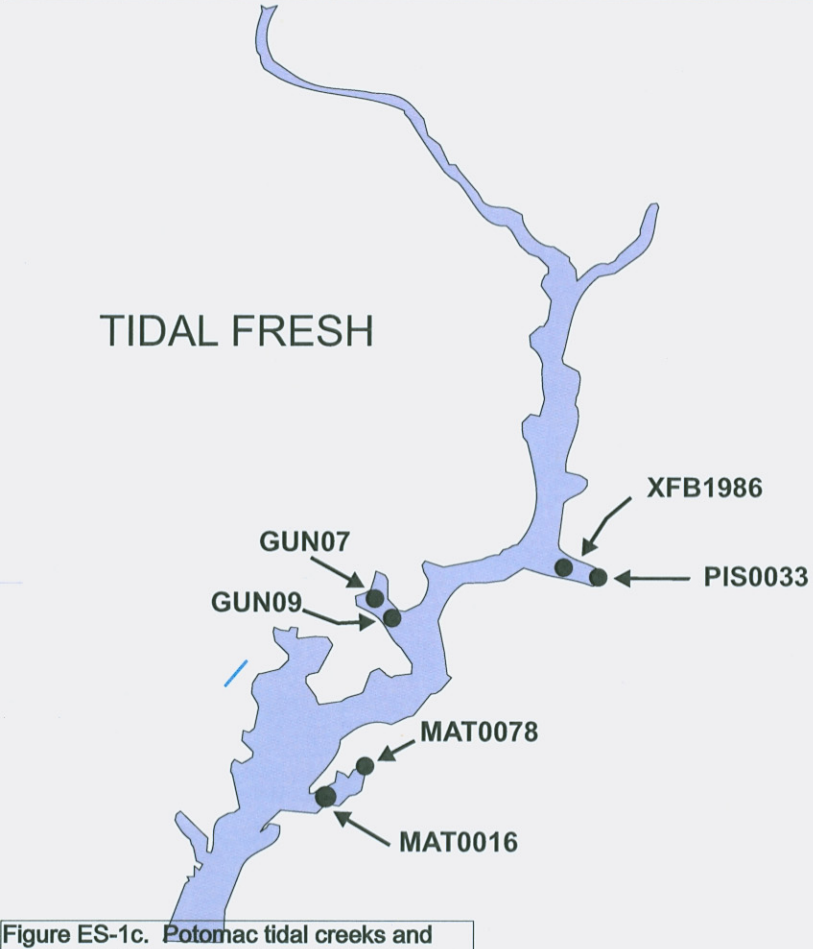
	TSS	SECCHI	CHAA	DO_FLD
XFB2470	↑ NS p=0.019	NS p=0.152	↑ 121% p=0.000	↑ 18% p=0.000
XFB1433	↑ 38% p=0.006	NS p=0.862	↑ NS p=0.041	↑ 10% p=0.002
XEA6596	↑ NS p=0.043	NS p=0.719	NS p=0.670	↑ NS p=0.017
XEA1840	↑ NS p=0.021	↓ NS p=0.085	NS p=0.538	NS p=0.771
XDA4238	↑ 51% p=0.004	↓ NS p=0.061	↑ NS p=0.090	NS p=0.176
XDA1177	↑ 45% p=0.001	↓ NS p=0.018	NS p=0.144	NS p=0.384
XDB3321*	NS p=0.389	NS p=1.00	NS p=0.248	NS p=0.458
XDC1706	↑ 101% p=0.000	↓ NS p=0.084	NS p=0.408	NS p=0.677
MLE2.2	↑ 87% p=0.000	NS p=0.323	NS p=0.656	NS p=0.884
MLE2.3	NS p=0.769	↓ 19% p=0.006	NS p=0.309	↓ 8% p=0.005

*Station not sampled after September 1990.

Figure ES-1b. Potomac mainstem, non-nutrient trends in concentration, except for SECCHI, which is depth. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

Potomac River (1986-1996)

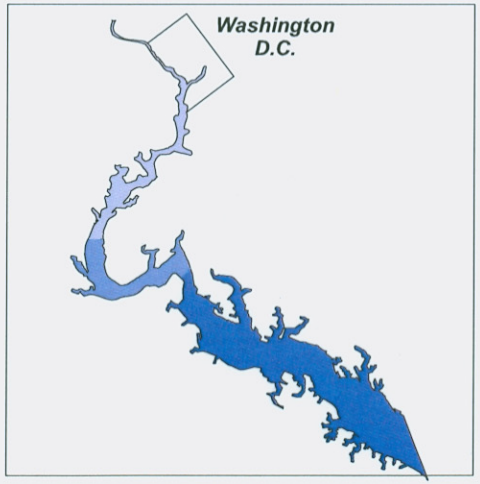
Eleven Year Surface Trends in Raw Data



	TP	PO4F	TN	DIN
PIS0033	NS p=0.558	↓ NS p=0.045	↓ 25% p=0.004	↓ 26% p=0.003
XFB1986	↑ NS p=0.017	NS p=0.080	↓ 27% p=0.000	↓ 30% p=0.000
MAT0078	NS p=0.528	NS p=0.567	↓ 23% p=0.000	NS p=0.557
MAT0016	NS p=0.205	↑ 179% p=0.001	↓ 15% p=0.003	NS p=0.504
GUN07	↓ 42% p=0.000	NS p=0.673	↓ 35% p=0.000	↓ 39% p=0.003
GUN09	NS p=0.672	NS p=0.061	↓ NS p=0.088	↓ 26% p=0.001

Figure ES-1c. Potomac tidal creeks and Gunstone Cove nutrient trends in concentration. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

PO4F trends for the Potomac tidal creeks start in October 1990.



SALINITY ZONE

- TIDAL FRESH
- OLIGOHALINE
- MESOHALINE

Potomac River (1986-1996)

Eleven Year Surface Trends in Raw Data

	TSS	SECCHI	CHAA	DO
PIS0033	↑ NS p=0.020	NA	NS p=0.206	↓ 10% p=0.008
XFB1986	↑ 60% p=0.001	↓ NS p=0.054	↑ 140% p=0.000	↑ 20% p=0.000
MAT0078	↑ NS p=0.027	NA	NS p=0.396	NS p=0.116
MAT0016	NS p=0.560	NS p=0.822	↓ NS p=0.822	NS p=0.771
GUN07	↓ NS p=0.056	↑ 60% p=0.000	NS p=0.737	↑ NS p=0.067
GUN09	NS p=0.765	NS p=0.204	↑ 110% p=0.000	↑ 10% p=0.002

SALINITY ZONE

- TIDAL FRESH
- OLIGOHALINE
- MESOHALINE

Figure ES-1d. Potomac tidal creeks and Gunston Cove non-nutrient trends in concentration, except for SECCHI, which is depth. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.
Gray box indicates seasonal heterogeneity.

Potomac River (1985-1996)

Twelve Year Bottom Trends in Raw Data

	TP	PO4F	TN	DIN
XFB2470	NS p=0.296	NS p=0.244	↓ 15% p=0.010	↓ NS p=0.020
XFB1433	NS p=0.669	NS p=0.176	↓ 16% p=0.001	↓ NS p=0.020
XEA6596	NS p=0.608	NS p=0.199	↓ 13% p=0.004	NS p=0.115
XEA1840	NS p=0.702	NS p=0.499	NS p=0.142	NS p=0.440
XDA4238	NS p=0.793	NS p=0.958	NS p=0.167	NS p=0.170
XDA1177	NS p=0.813	NS p=0.875	NS p=0.661	NS p=0.491
XDB3321*	NS p=0.404	NA	↑ NS p=0.067	↑ 72% p=0.002
XDC1706	NS p=0.498	↑ NS p=0.094	NS p=0.143	NS p=0.294
MLE2.2	NS p=0.681	↑ NS p=0.047	↑ NS p=0.016	NS p=0.351
MLE2.3	↑ NS p=0.035	NS p=0.849	NS p=0.173	NS p=0.886

Figure ES-2a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station. PO4F trends start in October 1990. *Station not sampled after September 1990.

Potomac River (1985-1996)

Twelve Year Bottom Trends in Raw Data

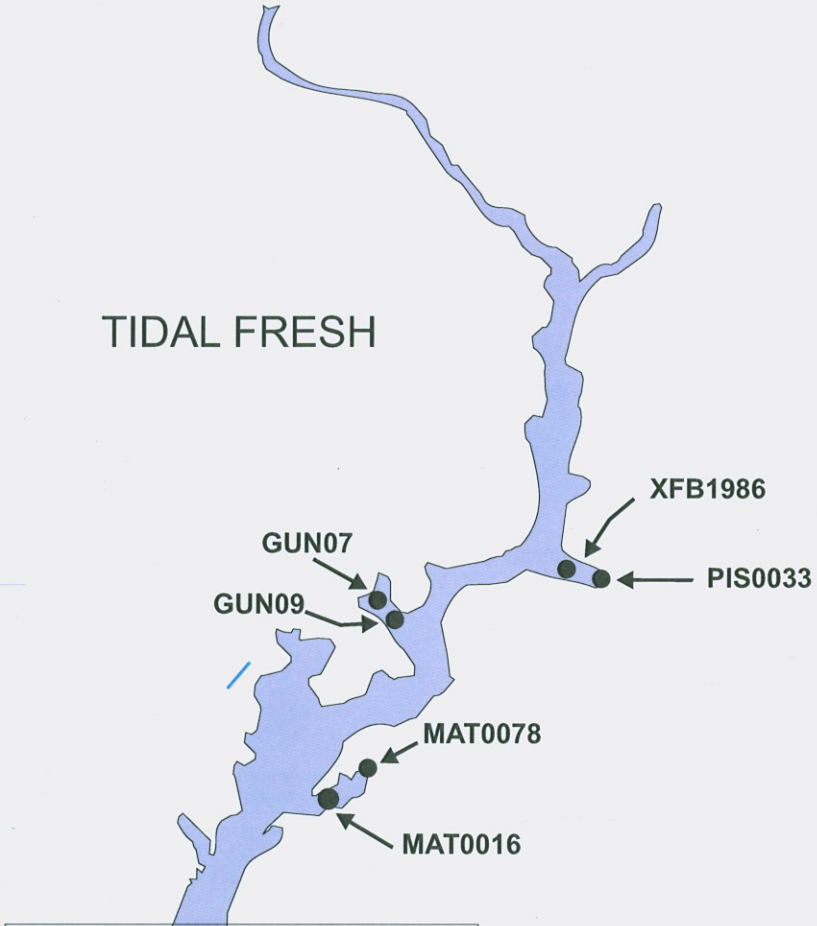
	TSS	CHAA	DO_FLD
XFB2470	NS p=0.816	↑ 132% p=0.000	↑ 13% p=0.002
XFB1433	NS p=0.277	↑ 105% p=0.003	↑ NS p=0.011
XEA6596	↑ NS p=0.060	NS p=0.119	NS p=0.189
XEA1840	NS p=0.756	↑ NS p=0.068	NS p=0.443
XDA4238	NS p=0.705	↑ 61% p=0.001	NS p=0.570
XDA1177	NS p=0.694	↑ NS p=0.013	NS p=0.303
XDB3321*	↓ NS p=0.070	NS p=1.000	↑ NS p=0.020
XDC1706	NS p=1.000	↑ NS p=0.013	↑ 16% p=0.003
MLE2.2	↑ 120% p=0.000	↑ NS p=0.054	NS p=0.211
MLE2.3	NS p=0.529	NS p=0.404	NS p=0.422

*Station not sampled after September 1990.

Figure ES-2b. Potomac mainstem, non-nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

Potomac River (1986-1996)

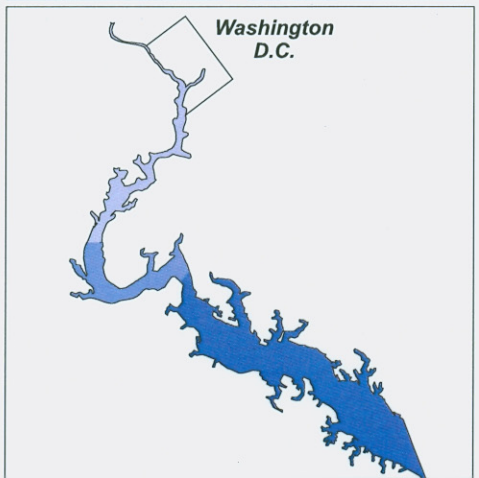
Eleven Year Bottom Trends in Raw Data



	TP	PO4F	TN	DIN
PIS0033	NA	NA	NA	NA
XFB1986	NA	NA	NA	NA
MAT0078	NA	NA	NA	NA
MAT0016	NA	NA	NA	NA
GUN07	↓ 36% p=0.001	NS p=0.182	↓ 35% p=0.000	↓ 38% p=0.005
GUN09	NS p=0.369	NS p=0.605	↓ NS p=0.035	↓ 27% p=0.001

Figure ES-2c. Potomac tidal creeks and Gunston Cove nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.

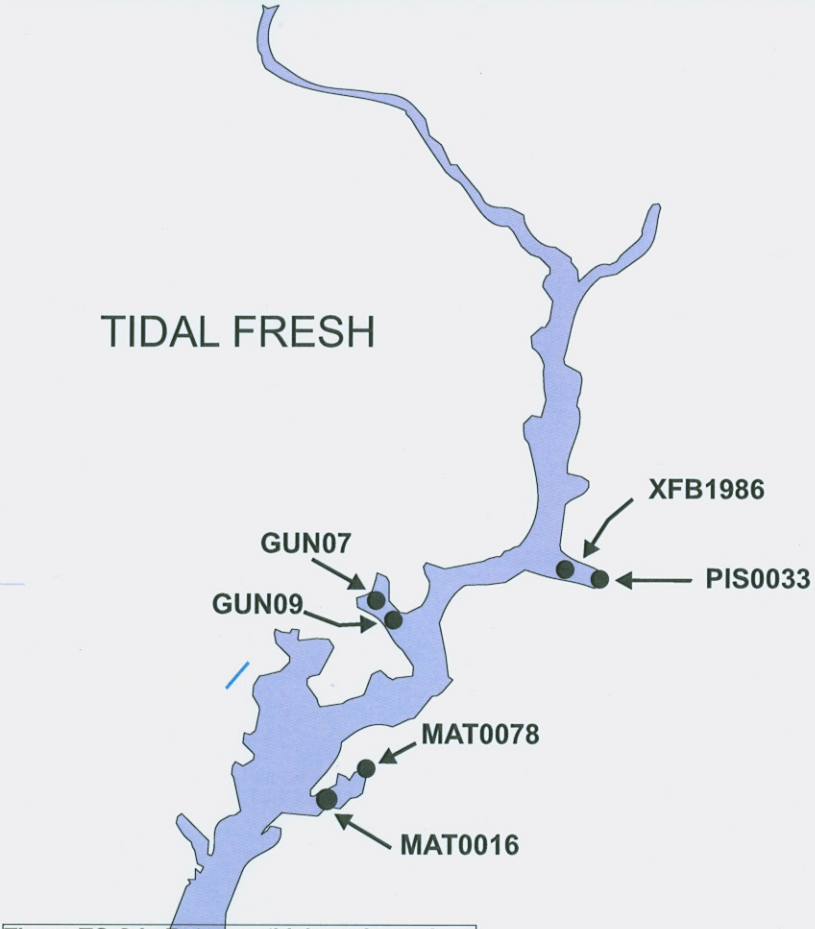


SALINITY ZONE

- TIDAL FRESH
- OLIGOHALINE
- MESOHALINE

Potomac River (1986-1996)

Eleven Year Bottom Trends in Raw Data



	TSS	CHAA	DO
PIS0033	NA	NA	NA
XFB1986	NA	NA	NS p=0.871
MAT0078	NA	NA	NA
MAT0016	NA	NA	NS p=0.121
GUN07	NS p=0.674	NA	↑ NS p=0.033
GUN09	NS p=0.297	NA	↑ 20% p=0.000

SALINITY ZONE

- TIDAL FRESH
- OLIGOHALINE
- MESOHALINE

Figure ES-2d. Potomac tidal creeks and Gunston Cove non-nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

Potomac River (1985-1996)

Twelve Year Surface Trends in Flow-Adjusted Data

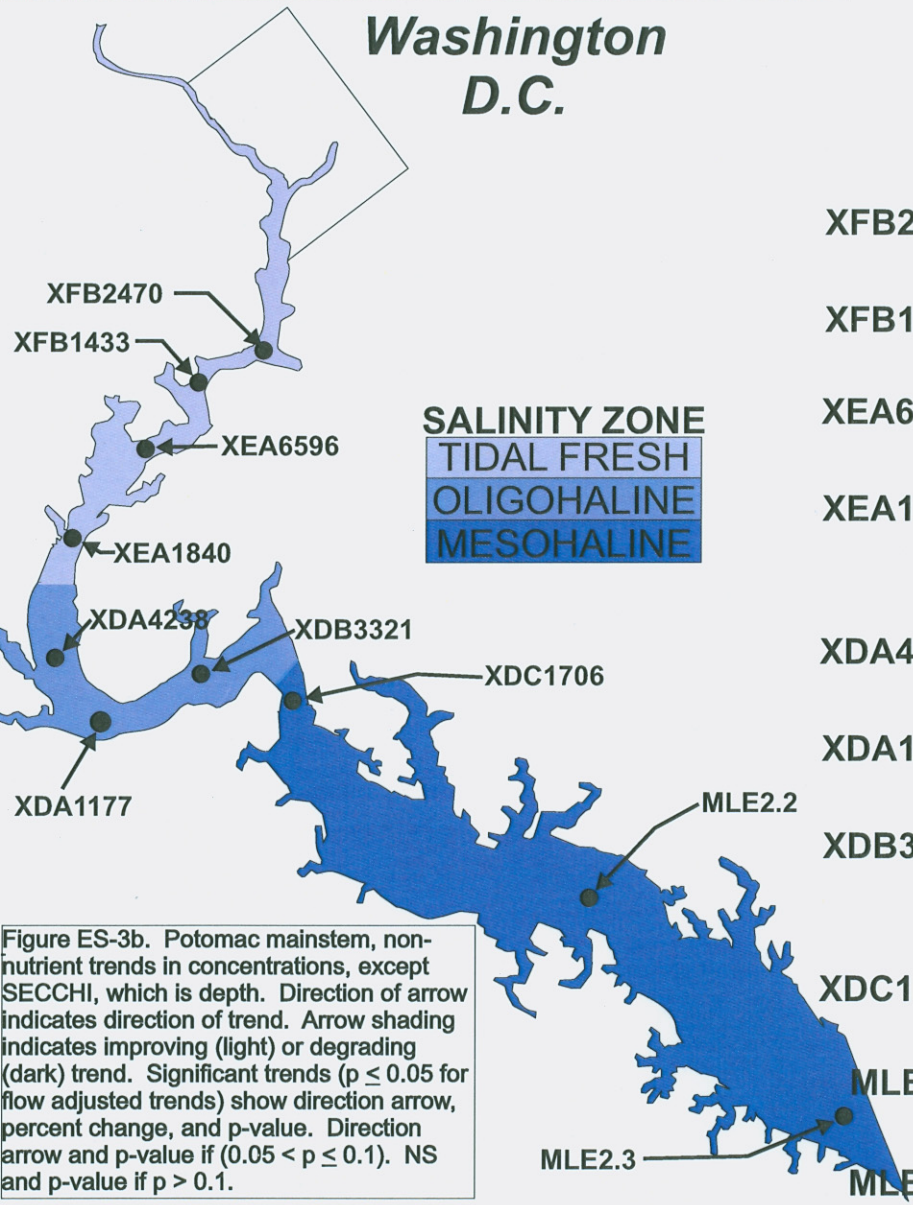
	TP	PO4F	TN	DIN
XFB2470	NS p=0.864	NS p=0.630	NS p=0.120	NS p=0.533
XFB1433	NS p=0.915	NS p=0.750	↓ 9% p=0.045	NS p=0.206
XEA6596	NS p=0.200	NS p=0.957	↓ 12% p=0.030	↓ 12% p=0.019
XEA1840	NS p=0.833	NS p=0.533	↓ 23% p=0.001	↓ 21% p=0.026
XDA4238	NS p=0.607	NS p=0.834	↓ 22% p=0.001	↓ 26% p=0.004
XDA1177	NS p=0.798	NS p=0.496	↓ 12% p=0.026	↓ NS p=0.057
XDB3321*	NS p=0.143	NA	NS p=0.141	↑ 50% p=0.001
XDC1706	NS p=0.879	NS p=0.114	↓ 19% p=0.018	↓ 42% p=0.017
MLE2.2	NS p=0.634	NS p=0.154	NS p=0.382	NS p=0.098
MLE2.3	NS p=0.235	NS p=0.665	NS p=0.555	↓ 29% p=0.029

Figure ES-3a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station. PO4F trends start in October 1990. *Station not sampled after September 1990.

Potomac River (1985-1996)

Twelve Year Surface Trends in Flow-Adjusted Data



	TSS	SECCHI	CHAA	DO_FLD
XFB2470	NS p=0.818	NS p=0.851	↑ 260% p=0.000	↑ 10% p=0.026
XFB1433	NS p=0.786	↑ NS p=0.088	↑ 130% p=0.000	NS p=0.545
XEA6596	NS p=0.984	NS p=0.229	↑ 80% p=0.014	NS p=0.756
XEA1840	NS p=0.967	NS p=0.483	NS p=0.718	↓ 10% p=0.007
XDA4238	NS p=0.299	NS p=0.967	↑ 60% p=0.001	NS p=0.110
XDA1177	NS p=0.967	NS p=0.984	↑ 30% p=0.014	↓ 10% p=0.012
XDB3321*	NS p=0.540	↑ NS p=0.066	NS p=0.158	NS p=0.326
XDC1706	↑ 60% p=0.008	NS p=0.755	NS p=0.766	↓ 10% p=0.000
MLE2.2	↑ 80% p=0.000	↑ 10% p=0.025	NS p=0.832	NS p=0.100
MLE2.3	NS p=0.615	↓ 20% p=0.023	NS p=0.776	↓ 20% p=0.000

*Station not sampled after September 1990.

Figure ES-3b. Potomac mainstem, non-nutrient trends in concentrations, except SECCHI, which is depth. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

Potomac River (1985-1996)

Twelve Year Bottom Trends in Flow-Adjusted Data

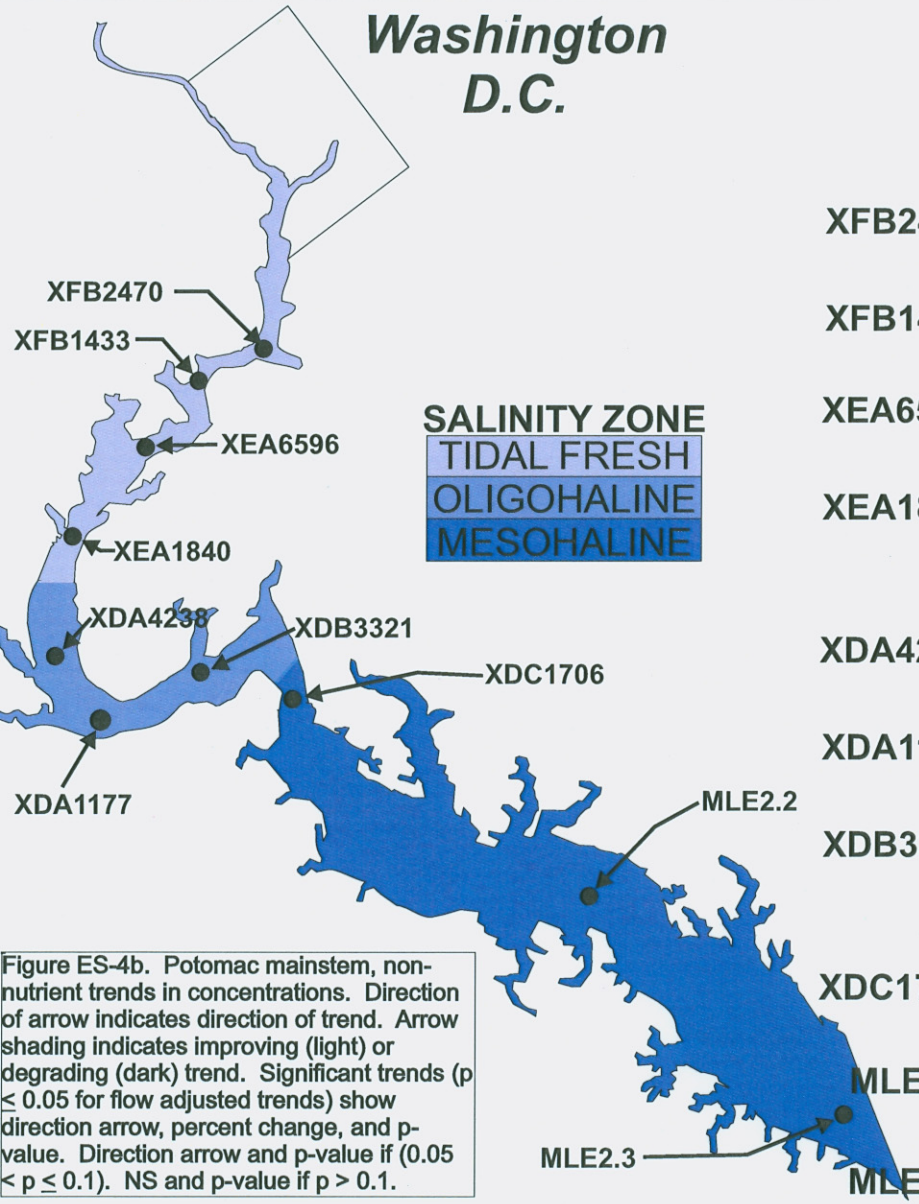
	TP	PO4F	TN	DIN
XFB2470	NS p=0.798	NS p=1.000	↓ NS p=0.086	NS p=0.701
XFB1433	NS p=0.495	NS p=0.743	↓ 12% p=0.026	↓ NS p=0.070
XEA6596	NS p=0.949	NS p=0.709	NS p=0.113	↓ NS p=0.054
XEA1840	NS p=0.702	NS p=0.876	↓ 16% p=0.017	↓ NS p=0.058
XDA4238	NS p=0.497	NS p=0.269	↓ 14% p=0.005	↓ 32% p=0.001
XDA1177	NS p=0.344	NS p=0.495	NS p=0.287	NS p=0.348
XDB3321*	NS p=0.370	NA	NS p=0.187	↑ NS p=0.051
XDC1706	NS p=0.600	NS p=0.297	NS p=0.270	NS p=0.785
MLE2.2	NS p=0.545	↑ 119% p=0.002	↑ 23% p=0.024	↑ 22% p=0.037
MLE2.3	↑ 38% p=0.001	NS p=0.679	NS p=0.597	↓ 33% p=0.025

Figure ES-4a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station. PO4F trends start in October 1990. *Station not sampled after September 1990.

Potomac River (1985-1996)

Twelve Year Bottom Trends in Flow-Adjusted Data



	TSS	CHAA	DO_FLD
XFB2470	NS p=0.140	↑ 220% p=0.000	NS p=0.818
XFB1433	NS p=0.491	↑ 180% p=0.003	NS p=0.723
XEA6596	NS p=0.866	↑ 90% p=0.009	↓ 10% p=0.030
XEA1840	NS p=0.433	↑ 40% p=0.023	↓ 10% p=0.000
XDA4238	NS p=0.367	↑ 60% p=0.006	↓ 10% p=0.001
XDA1177	NS p=0.650	↑ NS p=0.080	NS p=0.147
XDB3321*	↓ 60% p=0.046	NS p=0.151	NS p=0.262
XDC1706	NS p=0.319	NS p=0.865	NS p=0.934
MLE2.2	↑ 100% p=0.000	NS p=0.799	↓ 20% p=0.011
MLE2.3	↓ NS p=0.082	NS p=0.132	↓ 20% p=0.001

*Station not sampled after September 1990.

Figure ES-4b. Potomac mainstem, non-nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

Potomac River (1974-1996)

Twenty-five Year Surface Trends in Raw Data

	TP	PO4W	TN	DIN
XFB2470	↓ 27% p=0.000	↓ 58% p=0.000	↑ 19% p=0.001	↑ NS p=0.017
XFB1433	↓ 29% p=0.000	↓ 61% p=0.000	↑ 15% p=0.002	↑ 20% p=0.001
XEA6596	↓ 30% p=0.000	↓ 50% p=0.000	↑ 28% p=0.000	↑ 29% p=0.000
XEA1840	↓ 39% p=0.000	↓ 40% p=0.000	↑ 38% p=0.000	↑ 39% p=0.000
XDA4238	↓ 22% p=0.001	NS p=0.207	↑ NS p=0.021	↑ 24% p=0.004
XDA1177	↓ NS p=0.039	NS p=0.191	↑ 19% p=0.001	↑ 36% p=0.003
XDB3321*	NS p=0.107	NS p=0.105	↑ 35% p=0.000	↑ 43% p=0.000
XDC1706	↓ NS p=0.016	↓ NS p=0.052	NS p=0.380	↑ NS p=0.024
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

Figure ES-5a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station. PO4W trends end in September 1990. *Station not sampled after September 1990.

Potomac River (1974-1996)

Twenty-five Year Surface Trends in Raw Data

	TSS	SECCHI	CHAA	DO_FLD
XFB2470	↑ 50% p=0.000	↓ NS p=0.043	↑ NS p=0.021	↑ 10% p=0.004
XFB1433	↑ 60% p=0.000	NS p=0.354	NS p=0.830	NS p=0.710
XEA6596	↑ NS p=0.020	NS p=0.876	↓ NS p=0.088	↓ NS p=0.033
XEA1840	NS p=0.351	NS p=0.368	↓ 30% p=0.000	↓ 10% p=0.000
XDA4238	↑ 70% p=0.003	NS p=0.218	↓ 20% p=0.006	NS p=0.192
XDA1177	↑ 30% p=0.010	NS p=0.226	NS p=0.136	↓ NS p=0.069
XDB3321*	NS p=0.140	NS p=0.475	↓ 30% p=0.006	↓ NS p=0.046
XDC1706	↑ 30% p=0.004	NS p=0.446	NS p=0.171	↓ 10% p=0.000
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

Figure ES-5b. Potomac mainstem, non-nutrient trends in concentrations, except SECCHI, which is depth. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.01$ for non-flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.01 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.

*Station not sampled after September 1990.

Potomac River (mid-1970s-1996)

Twenty-five Year Bottom Trends in Raw Data

	TP	PO4W	TN	DIN
XFB2470	NS p=0.807	↓ 57% p=0.002	NS p=0.228	NS p=0.621
XFB1433	↓ NS p=0.046	↓ 46% p=0.002	NS p=0.908	NS p=0.897
XEA6596	↓ NS p=0.065	↓ 48% p=0.000	NS p=0.219	NS p=0.112
XEA1840	NS p=0.305	↓ 37% p=0.010	↑ NS p=0.010	↑ NS p=0.056
XDA4238	NS p=0.234	↓ 34% p=0.010	NS p=0.424	NS p=0.592
XDA1177	NS p=0.989	↓ 36% p=0.008	NS p=0.175	NS p=0.312
XDB3321*	NS p=0.976	↓ NS p=0.083	NS p=1.000	NS p=0.466
XDC1706	NS p=0.333	NS p=0.330	NS p=0.584	NS p=0.956
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

Figure ES-6a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

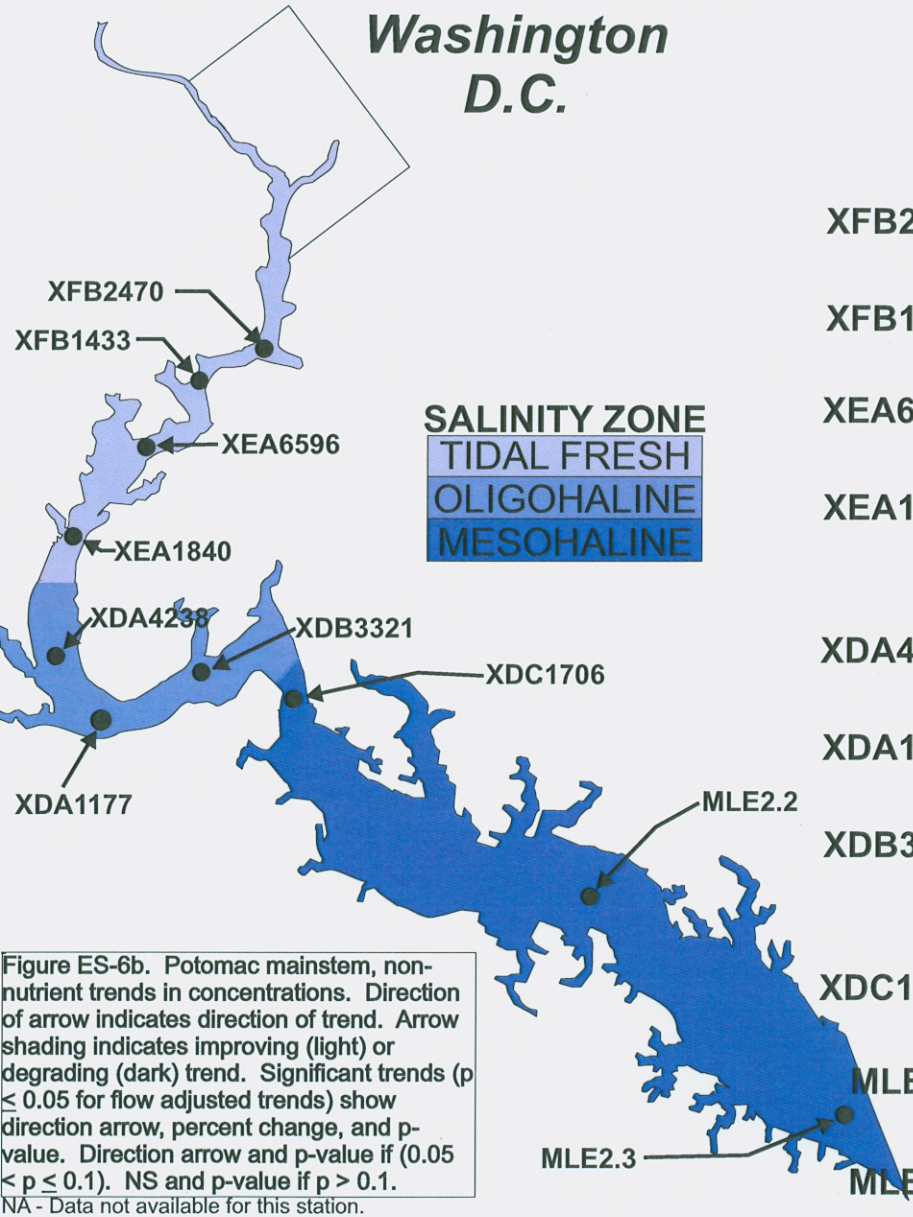
NA - Data not available for this station.

PO4W trends end in September 1990.

*Station not sampled after September 1990.

Potomac River (mid-1970s-1996)

Twenty-five Year Bottom Trends in Raw Data



	TSS	CHAA	DO_FLD
XFB2470	↑ NS p=0.022	↑ 20% p=0.000	↑ 10% p=0.008
XFB1433	↑ NS p=0.012	↑ NS p=0.039	NS p=0.144
XEA6596	↑ 90% p=0.004	NS p=0.679	NS p=0.372
XEA1840	NS p=0.771	NS p=0.765	↓ 10% p=0.009
XDA4238	↑ NS p=0.070	↑ NS p=0.071	NS p=0.216
XDA1177	↑ NS p=0.049	NS p=0.543	↓ NS p=0.014
XDB3321*	NS p=1.000	↓ NS p=0.076	↓ 10% p=0.004
XDC1706	↑ NS p=0.011	↑ NS p=0.083	↓ NS p=0.050
MLE2.2	NA	NA	NA
MLE2.3	NA	NA	NA

*Station not sampled after September 1990.

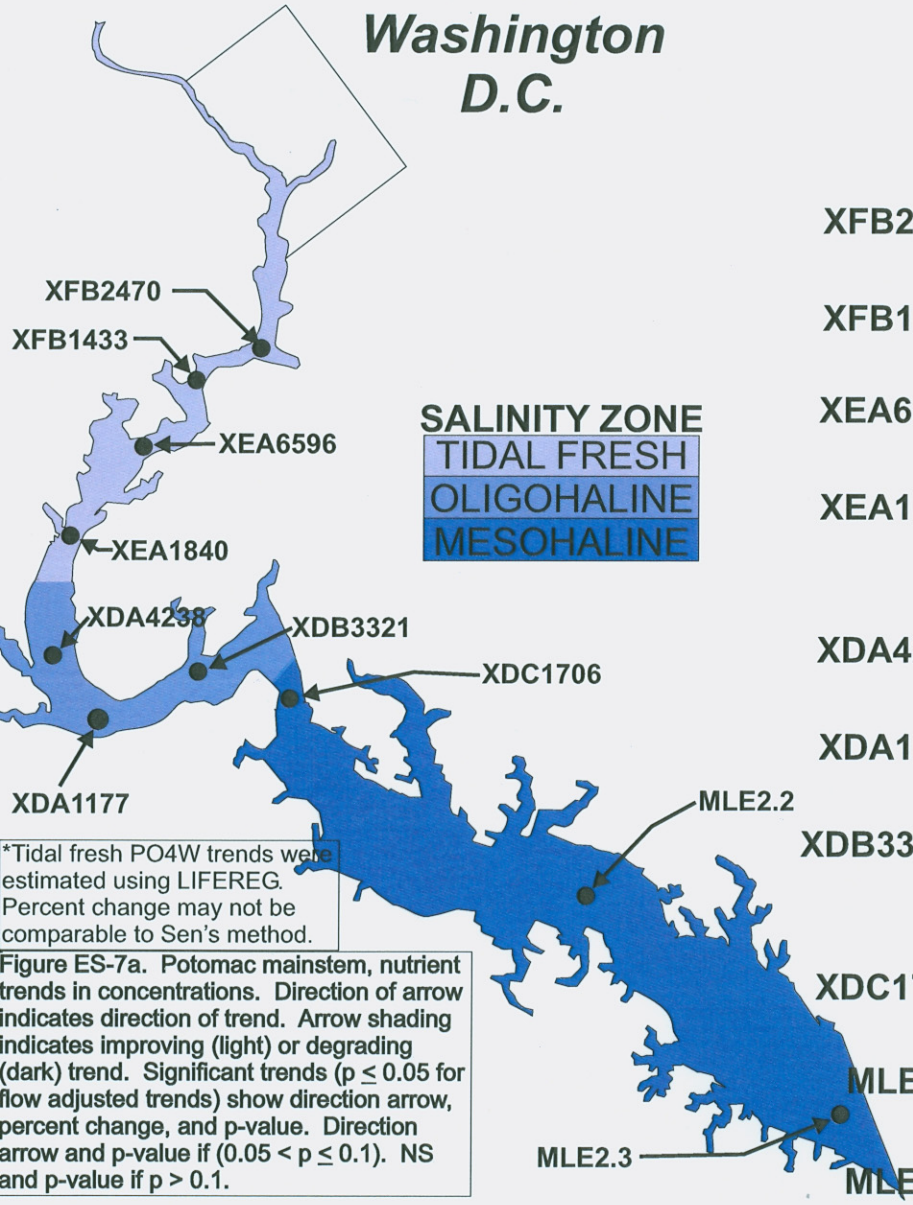
Figure ES-6b. Potomac mainstem, non-nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.

Gray box indicated seasonal heterogeneity.

Potomac River (mid-1970s-1996)

Twenty-five Year Surface Trends in Flow-Adjusted Data



	TP	PO4W*	TN	DIN
XFB2470	↓ 31% p=0.000	↓ 66% p=0.000	↑ 23% p=0.000	↑ 20% p=0.004
XFB1433	↓ 32% p=0.000	↓ 64% p=0.000	↑ 17% p=0.003	↑ 21% p=0.001
XEA6596	↓ 34% p=0.000	↓ 62% p=0.000	↑ 28% p=0.000	↑ 31% p=0.000
XEA1840	↓ 39% p=0.000	↓ 49% p=0.000	↑ 38% p=0.000	↑ 40% p=0.000
XDA4238	↓ 25% p=0.001	NS p=0.210	↑ 22% p=0.001	↑ 27% p=0.000
XDA1177	↓ 25% p=0.022	NS p=0.265	↑ 24% p=0.001	↑ 36% p=0.000
XDB3321**	NS p=0.129	NS p=0.100	↑ 46% p=0.000	↑ 57% p=0.000
XDC1706	↓ 23% p=0.015	↓ 46% p=0.001	NS p=0.300	↑ 23% p=0.017
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

*Tidal fresh PO4W trends were estimated using LIFEREG. Percent change may not be comparable to Sen's method.

Figure ES-7a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station. PO4W trends end in September 1990. **Station not sampled after September 1990

Potomac River (mid-1970s-1996)

Twenty-five Year Surface Trends in Flow-Adjusted Data

	TSS	SECCHI	CHAA	DO_FLD
XFB2470	↑ 60% p=0.005	NS p=0.176	NS p=0.110	↑ 10% p=0.002
XFB1433	↑ 40% p=0.006	NS p=0.929	NS p=0.641	NS p=0.726
XEA6596	↑ 50% p=0.011	NS p=0.388	NS p=0.102	↓ 10% p=0.040
XEA1840	NS p=0.181	NS p=0.250	↓ 30% p=0.000	↓ 20% p=0.000
XDA4238	↑ 80% p=0.024	NS p=0.305	↓ NS p=0.069	NS p=0.107
XDA1177	↑ 30% p=0.027	NS p=0.398	NS p=0.262	↓ 10% p=0.004
XDB3321*	↑ 40% p=0.019	NS p=0.315	↓ 50% p=0.001	↓ NS p=0.060
XDC1706	NS p=0.121	NS p=0.510	NS p=0.402	↓ 20% p=0.000
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

Figure ES-7b. Potomac mainstem, non-nutrient trends in concentrations, except SECCHI, which is depth. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.

*Station not sampled after September 1990.

Potomac River (mid-1970s-1996)

Twenty-five Year Bottom Trends in Flow-Adjusted Data

	TP	PO4W*	TN	DIN
XFB2470	NS p=0.276	↓ 48% p=0.000	↑ NS p=0.065	↑ 18% p=0.033
XFB1433	↓ 38% p=0.022	↓ 66% p=0.000	NS p=0.555	NS p=0.818
XEA6596	↓ NS p=0.057	↓ 66% p=0.000	NS p=0.127	NS p=0.174
XEA1840	NS p=0.123	↓ 49% p=0.000	↑ 24% p=0.012	NS p=0.108
XDA4238	NS p=0.182	↓ 34% p=0.017	NS p=0.256	NS p=0.735
XDA1177	NS p=0.692	↓ 25% p=0.035	↑ 15% p=0.042	NS p=0.299
XDB3321**	NS p=0.953	↓ 30% p=0.031	NS p=0.465	↑ 28% p=0.033
XDC1706	NS p=0.278	↓ NS p=0.071	NS p=0.537	NS p=0.550
MLE2.2	NA	NA	NA	NA
MLE2.3	NA	NA	NA	NA

*Lower three tidal fresh, XDA4238, and XDB3321 trends were estimated using LIFEREG. Percent change may not be comparable to Sen's method.

Figure ES-8a. Potomac mainstem, nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

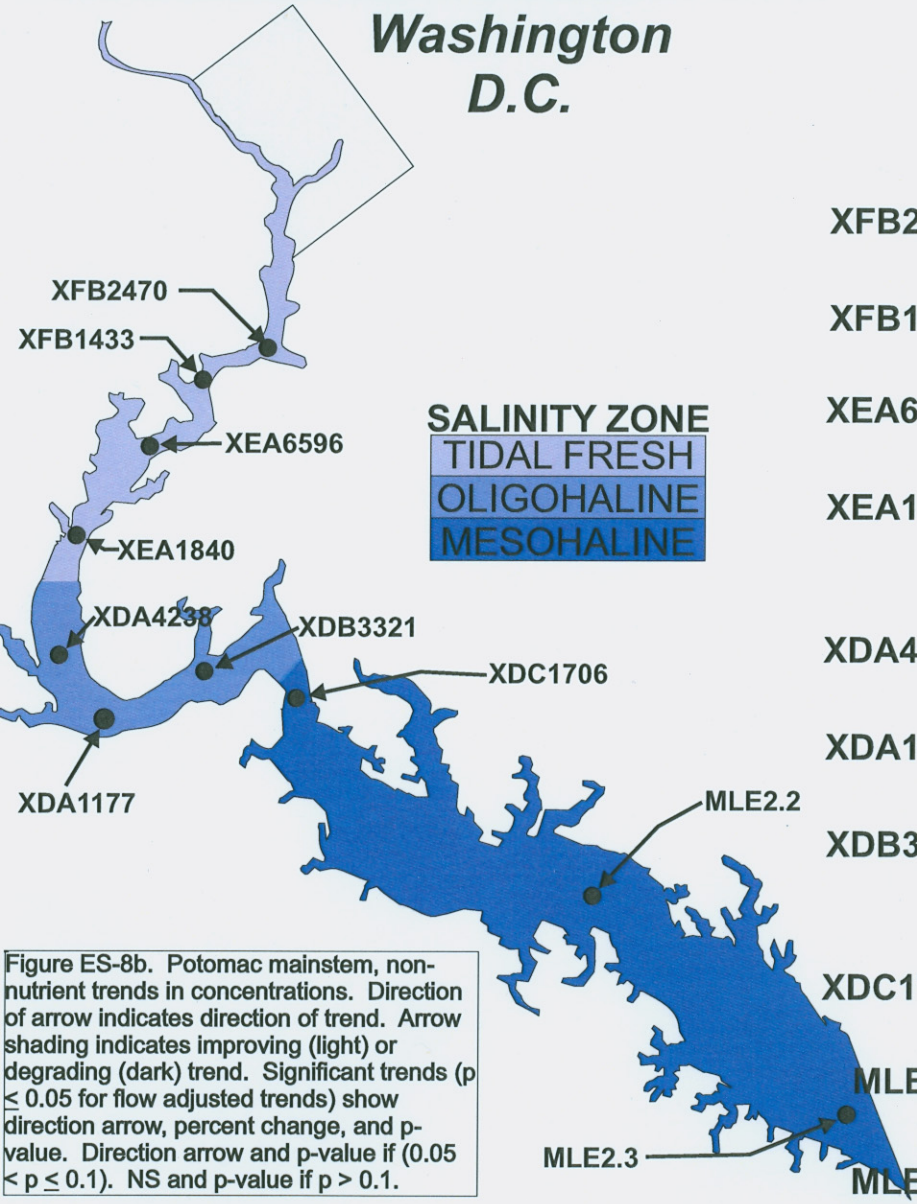
NA - Data not available for this station.

PO4W trends end in September 1990.

**Station not sampled after September 1990

Potomac River (mid-1970s-1996)

Twenty-five Year Bottom Trends in Flow-Adjusted Data



	TSS	CHAA	DO_FLD
XFB2470	NS p=0.462	↑ 30% p=0.000	↑ 10% p=0.003
XFB1433	NS p=0.310	↑ 20% p=0.003	NS p=0.543
XEA6596	NS p=0.146	NS p=0.452	NS p=0.210
XEA1840	NS p=0.891	NS p=0.867	↓ 20% p=0.001
XDA4238	NS p=0.182	NS p=0.197	NS p=0.128
XDA1177	↑ NS p=0.027	NS p=0.924	↓ 10% p=0.006
XDB3321*	NS p=0.972	↓ 70% p=0.001	↓ 10% p=0.028
XDC1706	↑ 50% p=0.040	NS p=0.371	↓ 20% p=0.002
MLE2.2	NA	NA	NA
MLE2.3	NA	NA	NA

Figure ES-8b. Potomac mainstem, non-nutrient trends in concentrations. Direction of arrow indicates direction of trend. Arrow shading indicates improving (light) or degrading (dark) trend. Significant trends ($p \leq 0.05$ for flow adjusted trends) show direction arrow, percent change, and p-value. Direction arrow and p-value if ($0.05 < p \leq 0.1$). NS and p-value if $p > 0.1$.

NA - Data not available for this station.

*Station not sampled after September 1990.

I. INTRODUCTION

A. Background

The EPA Chesapeake Bay Study (EPA, 1982) concluded that deteriorating conditions in the Chesapeake Bay, including poor summer bottom dissolved oxygen conditions and declines in living resources, resulted largely from problems associated with nutrient enrichment. The Bay Study provided the scientific basis for the 1983 EPA publication *Chesapeake Bay: A Framework for Action* that recommended a reduction in point and non-point source nutrient loading to the Bay. Following the publication of these recommendations, the 1983 Chesapeake Bay Agreement was signed by the Chesapeake Bay Executive Council that includes the Governors of Maryland, Virginia, and Pennsylvania, the Mayor of the District of Columbia, the EPA Administrator, and the Chairman of the Chesapeake Bay Commission. This historic agreement began a unique cooperative effort to restore, protect, and manage the Bay. The subsequent 1987 Bay Agreement called for a 40% reduction in controllable nitrogen and phosphorus loads to the Bay from the 1985 baseline by the year 2000. "Controllable" loads are those resulting from human activity, excluding atmospheric emissions. The 40% reduction goal was reaffirmed in the 1992 Amendments to the Bay Agreement. These amendments emphasized the importance of a watershed-based approach to nutrient reduction. A new focus was placed on the tributaries, and a commitment was made to design and implement basin-specific nutrient reduction plans known as Tributary Strategies. In addition, it was stipulated that nutrient loads 40% below 1985 levels are not only goals, but caps to future allowable load limits, even as populations and development increase.

Tremendous progress has been made toward meeting the 40% goal for nutrient reduction. In Maryland, practices already implemented to reduce phosphorus loads are projected to reduce controllable phosphorus loadings to 38% below the 1985 baseline, for a total phosphorus load reduction of 34% from baseline. Much of the improvement can be traced to December 1985, when Maryland banned phosphate detergents. Similar bans in Pennsylvania, Virginia, and the District of Columbia, along with upgrades to waste-water treatment plants (WWTPs) further curtailed point-source loadings of phosphorus. Practices implemented to decrease nitrogen loads are projected to reduce controllable nitrogen loadings to 23% below the 1985 baseline, for a total nitrogen load reduction of 17% from baseline. As with phosphorus, much of this progress derives from improvements at WWTPs. Additional reductions were made in non-point sources of both nitrogen and phosphorus. Successes include Statewide efforts to maintain stream-side grass or forest buffer strips, apply agricultural Best Management Practices, and effectively manage urban storm water.

Ambient water quality conditions, not loads, determine the suitability of the Bay as habitat for aquatic plants and animals. Analysis of long-term trends in ambient water quality, therefore provides a measure of our "real" progress toward the goal of a healthier Bay. Trend tests allow us to determine if and where Bay water quality is improving. These analyses provide managers

with information on areas where current management strategies are working and where changes are necessary.

The objectives of this project are (1) to test for long-term trends in indicators of nutrient enrichment in tidal portions of the Potomac River, and (2) to relate trend information to changes in nutrient loads that have resulted from management actions.

B. Water Quality Variables Evaluated For Trends

The following 12 water quality variables were evaluated for trends:

1) total phosphorus (TP),
2) orthophosphate (PO_4),
3) total nitrogen (TN),
4) dissolved inorganic nitrogen (DIN),
5) nitrate plus nitrite (NO_{23}),
6) ammonium (NH_4),
7) total suspended solids (TSS),
8) Secchi depth (SECCHI),
9) active chlorophyll a (CHLA),
10) field dissolved oxygen (DO_FLD),
11) field pH (PH_FLD), and
12) total alkalinity (TALK)

The nutrient variables included are TP, PO_4, TN, DIN, NO_{23}, and NH_4. Both nitrogen and phosphorus are required for the metabolic processes of phytoplankton. Total nitrogen and total phosphorus were examined because they provide measures of all components of these nutrients in the water column, dissolved and particulate in both inorganic and organic forms. Concentrations of the various species of these nutrients cycle seasonally through physical and biological processes. Dissolved inorganic nitrogen, which consists of nitrate, nitrite and ammonium, is the most available form for uptake by phytoplankton. Depending on season and location, DIN can comprise less than 5% to greater than 95% of the total nitrogen pool. Relative concentrations of DIN are greatest in the tidal fresh zone during cold, high volume flows, and are lowest in high-salinity zones during warm low-flow periods (Boynton *et al.*, 1995).

Unlike nitrogen, inorganic phosphorus adheres readily to suspended matter and is also stored within phytoplankton cells, so that the largest fraction of the phosphorus pool is generally particulate rather than dissolved. However, orthophosphate and other dissolved forms are very important to the ecosystem because they represent phosphorus immediately available for uptake by plants. As such, this fraction may cycle very rapidly through the plankton community (Boynton *et al.*, 1995; Wetzel, 1983).

When available in high concentrations, nitrogen and phosphorus can promote excessive growth

of algae. In low concentrations, they can be limiting to growth. Both DIN and PO_4 are important in establishing habitat requirements for submerged aquatic vegetation (SAV) (EPA, 1992). Growing season (April to October) median concentrations of DIN $\leq$ 0.15 mg/l in the mesohaline, $PO_4 \leq 0.02$ mg/l in the tidal fresh and oligohaline, and $PO_4 \leq 0.01$ mg/l in the mesohaline have been correlated with the presence of SAV in areas suitable for SAV growth (EPA, 1992; Dennison *et al.*, 1993).

SECCHI is a commonly used visual estimation of light attenuation. Light attenuation determines the depth at which aquatic plants, both phytoplankton and SAV, can photosynthesize. Light attenuation, and therefore SECCHI, is affected by dissolved or suspended materials. Total suspended solids (TSS) include all organic and inorganic particulate matter in the water column. High TSS concentrations, which are normally comprised of inorganic particles from runoff, dense phytoplankton communities, or both, increase light attenuation and lower SECCHI. Concentrations of TSS and light attenuation are addressed in the SAV habitat requirements (EPA, 1992). Median concentrations of TSS during the growing season should normally be less than 15 mg/l for all salinity zones; light attenuation coefficients (K_d) of less than 2 m^{-1} for the tidal fresh and oligohaline, and less than 1.5 m^{-1} for the mesohaline are correlated with SAV presence (EPA, 1992; Dennison *et al.*, 1993). These light attenuation habitat requirements correspond to SECCHI of 0.7 m (tidal fresh and oligohaline) and 1.0 m (mesohaline).

Active chlorophyll *a* is one of the most commonly used measures of phytoplankton abundance. High chlorophyll concentration is an indication of eutrophic conditions. Chlorophyll is also addressed in the SAV habitat requirements because a growing season median less than 15 mg/l has been correlated with SAV presence (EPA, 1992; Dennison *et al.*, 1993).

Dissolved oxygen is vital to the survival of all organisms that respire aerobically, and its depletion in the Bay has long been identified as a principal impact of nutrient enrichment in the Chesapeake Bay (EPA, 1982). Oxygen enters the estuary from the atmosphere and from the photosynthetic activity of aquatic plants including phytoplankton. At the surface, dissolved oxygen levels are generally more than adequate because of mixing with the atmosphere. In deeper waters, the level of dissolved oxygen is dependent on the rate of oxygen consumption, the amount of mixing with aerated surface waters, and lateral or longitudinal hydrodynamic transport. Bottom dissolved oxygen levels become depressed when mixing with surface waters is minimal and bacterial decomposition of organic matter is high (Day *et al.*, 1989). Bottom DO concentrations greater than 5 mg/l are considered healthy for most living resources. Concentrations below 5 mg/l may be biologically stressful for aquatic animals, and DO concentrations less than 1 mg/l are considered unsuitable habitat (Jordan *et al.*, 1993).

pH is a measure of the hydrogen ion concentration [H^+] and quantifies the acidity or alkalinity of a system. In natural waters pH can range from <2 to14 with a pH of 7 considered neutral (Wetzel, 1983). In estuaries, pH averages from 7.0 to 7.5 in fresh areas and from 8.0 to 8.6 in more saline waters. Short-term swings and long-term changes in pH can be very harmful to aquatic organisms, which in marine systems prefer conditions with pH ranging from 6.5 to 8.5.

Survival of many aquatic plants and animals may be affected at pH less than 5.0 or greater than 9.0 (EPA, 1993). Because pH is defined in a logarithmic scale, a change in pH of one unit corresponds to a ten-fold change in hydrogen ion concentration.

Alkalinity refers to the quantity and types of compounds which can change the pH of a system from neutral to alkaline and represents the sum of all the titratable bases present in the system. Because in many surface waters alkalinity is primarily a function of carbonate, bicarbonate, and hydroxide concentrations, alkalinity is expressed in terms of $CaCO_3$. In aquatic systems, alkalinity may also include the contribution from phosphates, silicates, and borates. The buffering capacity of aquatic systems is important in maintaining a pH range suitable for reproduction and growth.

II. METHODS

A. Water Quality Monitoring Stations Included in the Study

The water quality stations analyzed for trends in this report include ten located in the Potomac mainstem, four on tidal creeks which discharge into the Potomac from the Maryland side and two stations in Gunston Cove, which is located in Virginia. The ten mainstem and four tidal creek stations are monitored under the U.S. EPA Chesapeake Bay Program by Maryland Department of Natural Resources (DNR). Gunston Cove is monitored under the Gunston Cove Study by the Biology Department of George Mason University (GMU) located in Fairfax County, Virginia and funded by the Fairfax County Department of Public Works.

The ten mainstem stations include: XFB2470 (at the mouth of Piscataway Creek); XFB1433 (near Marshall Hall); XEA6596 (near Indian Head); XEA1840 (between Stump Neck and Moss Point); XDA4238 (south of Smith Point); XDA1177 (Maryland Point); XDB3321 (at the mouth of Nanjemoy Creek); XDC1706 (Morgantown/301 Bridge); MLE2.2 (Ragged Point); and, MLE2.3 (Point Lookout at the mouth of the Potomac River). The four stations in Maryland tidal creeks are: XFB1986 (Piscataway Creek near Buoy 6); PIS0033 (Piscataway Creek near Route 210); MAT0016 (Matawoman Creek across from Sweden Point); and, MAT0078 (Matawoman Creek near Route 225). Although a number of stations in Gunston Cove are sampled, only two were selected for this report based on location and completeness of the data record. The two Gunston Cove stations included: Gunston 7 (center of Gunston Cove); and, Gunston 9 (Potomac River channel at the mouth of the Cove). Station names, locations and identifying landmarks are provided in Fig. II-1.

Some stations in the tidal portion of the Potomac River have been sampled by various agencies and academic institutions for many decades. Over the years, a variety of station names have been used which have relied on local geography, the State of Maryland Bay Grid Identification System, and more recently, the Chesapeake Bay Program segmentation scheme. Table II-1 lists the station name under each of the naming conventions and the salinity zone in which each station may be found. The State of Maryland Bay Grid and historic station names are used in this report because the Bay Program segments and names were not finalized when this report was first written.

B. Field Methods and Sampling Regime

The stations DNR monitors were sampled twenty times per year including one sampling date per month during the late fall and early winter (November through February) and two sampling dates per month during the growing season (March through October). This level of sampling allows for the resolution of seasonal cycles that appear in many water quality variables and provides sufficient statistical power to detect trends (MDE, 1993a). Gunston Cove stations are monitored twice per month except during March and in the fall, when they are monitored once per month.

The goal of the depth sampling protocol for nutrients is to characterize water quality in the surface mixed layer and the bottom mixed layer in areas of density stratification. In areas where density gradients are minimal or non-existent samples are collected at surface (0.3-0.5 meter depth) and bottom (1 meter less than the total depth). Four samples (surface, above-pycnocline, below-pycnocline, and bottom) are collected in areas that demonstrate appreciable salinity stratification. For all parameters evaluated in this report, data from the surface or surface mixed and bottom or bottom mixed layers were analyzed depending on station depth and the presence or absence of salinity stratification.

Mainstem stations from XFB2470 to XDB3321 are located in tidal fresh or transition zone waters. Because waters in the upper Potomac estuary lack the salinity to become stratified, all parameters for the upper seven mainstem stations were analyzed as surface or bottom data (unmixed). Data for the lower three mainstem stations, from XDC1706 to MLE2.3, were analyzed after being combined into a surface-mixed zone and a bottom-mixed zone. The surface- and bottom-mixed zones were created by calculating the mean of the surface and above pycnocline data and the mean of the bottom and below pycnocline data, respectively. Note that multiple layer data for XDC1706 were not available until October 1990, following a revision of the Potomac River monitoring protocol to have it more closely match the Bay program protocol; consequently, XDC1706 data for trend analyses prior to October 1990 were either surface or bottom (unmixed). Multiple layer data for MLE2.2 and MLE2.3 were available since the start of sampling under the U.S. EPA Chesapeake Bay monitoring program in July 1984.

Data for Piscataway and Matawoman Creek stations were unmixed since all four are located in tidal fresh waters. For the lower two stations (XFB1986 and MAT0016) both surface and bottom data were analyzed. Only surface data were analyzed for the upper two stations (PIS0033 and MAT0078) since they are located in shallow water and "bottom" data are not available. Finally, only surface and bottom (unmixed) samples were analyzed for Gunston Cove, which is located in tidal fresh water and hence does not undergo salinity stratification.

Physical variables, including PH_FLD, dissolved oxygen, and SECCHI, are measured *in situ*. PH_FLD and dissolved oxygen are measured using Hydrolab System Water Quality Instrumentation (HSWQIM, 1984). SECCHI is measured with a 20 centimeter Secchi disk (MDE, 1993b).

Systematic water quality sampling on the Potomac River has been underway for several decades. The original field sampling protocol on the Potomac called for the delivery of whole (unfiltered) water samples to the laboratory for nutrient analyses. When the Chesapeake Bay Monitoring Program started in July 1984, all samples for the mainbay and the tidal tributary stations other than the Potomac River were filtered in the field before being sent to the laboratory for analysis (samples were filtered in the field to reduce the impact of biological activity on the constituents to obtain more accurate results). Analysis of whole water samples continued for the Potomac River stations (except MLE2.3) for several years after the inception of the Bay Program because of the historical precedent. In October 1990, following an internal decision at the Maryland

Department of the Environment to make the Potomac River analyses consistent with the rest of the Bay Program, the field staff began to filter samples collected on the Potomac River thus matching the Bay Program methodology. Starting in October 1990, samples for laboratory analysis were vacuum-filtered using 0.7 μ filters for all tidal DNR-monitored stations except MLE2.3, which was collected and analyzed under the Bay Program since July 1984. The change from whole to filtered water analyses potentially affected the following nutrients evaluated in this report: PO_4, NH_4, NO_{23}, TN, and DIN.

Samples were not analyzed using both methods at the time of the change to provide transition data that would demonstrate possible effects on trends. However, to examine the potential impact of changing from whole to filtered analyses, samples from the Patuxent River cruise on 22 April 1997 were split and the analytical results for whole and filtered PO_4, NO_{23}, NO_2, and NH_4 were compared by the Chesapeake Biological Laboratory (CBL) using graphical methods, a paired t-Test, and regression analysis. Except for whole and filtered PO_4, the graphs of whole versus filtered samples for the remaining constituents were linear. The results of a paired t-Test supported what was demonstrated graphically, i.e., that except for PO_4, filtering did not have a significant impact on the results. Although these tests were performed on a different river system and a different time period, they indicate that except for PO_4, there should be no confounding effect on trend analyses resulting from combining data before and after field filtering was initiated on the Potomac River. As a result, PO_4 trends were performed on two time periods by separating the whole and filtered samples, but the nitrogen species were combined. The above method of comparing whole and filtered samples is direct and avoids the complications associated with statistically or graphically analyzing historical ambient concentration data such as changes in the flow regime, treatment processes at WWTPs, and the implementation of the clean air act to reduce atmospheric loads of NO_x.

C. Laboratory Methods

Four laboratories were involved in the nutrient analyses of water samples during the period of this study (Fig. II-2). Samples taken prior to 1980 were analyzed at Maryland's Water Resources Administration (WRA) laboratory in Annapolis. A transition period occurred during 1980-1981 when responsibility for analysis of nutrient samples was transferred from WRA to Maryland's Department of Health and Mental Hygiene (DHMH) laboratory in Baltimore, Maryland. The chemical methodologies used did not change during this transition. Samples from all Potomac River stations, except the lower Potomac station MLE2.3, continue to be analyzed at the DHMH laboratory. From June 1984 - May 1985, samples from station MLE2.3 (located at the mouth of the Potomac and collected as part of the Chesapeake Bay mainstem monitoring program) were analyzed by Maryland's Office of Environmental Programs staff at the EPA Central Regional Laboratory (CRL) in Annapolis, Maryland. Beginning May 16, 1985, samples from MLE2.3 were analyzed by CBL.

Chemical analysis methods differed at the various laboratories (Table II-2). Total phosphorus (TP) was measured directly at the DHMH Laboratory and was measured directly at CBL from

October 1986 - September 1987. All other CBL TP values are calculated as the sum of particulate phosphorus (PP) and total dissolved phosphorus (TDP). Orthophosphate was measured directly at all laboratories, and DIN was always calculated as the sum of nitrite and nitrate (NO_2+NO_3) and ammonium (NH_4). Total nitrogen (TN) was calculated either as the sum of total (unfiltered) Kjeldahl nitrogen (TKNW) and NO_2+NO_3, or the sum of particulate nitrogen (PN) and total dissolved nitrogen (TDN). Changes in detection limits (DL) which occurred during the study period are detailed in Tables II-3 and II-4.

D. Statistical Methods

i. Initial Treatment of Data

Because detection limit changes occurred during the study period, censoring the data before trend analysis was necessary to avoid incorporating method-related step trends. To preclude the introduction of method-related step trends, values for TP, PO_4, NO_{23}, NH_4, and TSS measured below the highest detection limit were set to one-half the highest detection limit for the effected data within the study period (MDE, 1993b). The decision to use one-half the detection limit for data recorded as below detect is based on the assumption that all measurements between zero and the detection limit are equally likely to occur. When the data between zero and the level of detection are uniformly distributed, the mean of the data is unbiased (Gilbert, 1987). Component parameters (NH_4, NO_{23}, and TKNW) measured below the highest detection limit were set to half the highest detection limit prior to the calculation of DIN or TN.

As described in Laboratory Methods, samples for all of the Maryland tidal Potomac stations except MLE2.3 are analyzed at the DHMH laboratory (samples for MLE2.3 are analyzed at CBL). Due to differences in the detection limits between the two laboratories (CBL detection limits are lower), data for the mesohaline zone stations (XDC1706, MLE2.2, and MLE2.3) could not be combined without losing a great deal of information at MLE2.3. In addition, since the focus of this report is individual station trends, as opposed to trends across stations within a given salinity zone, samples analyzed at CBL for MLE2.3 were not censored to the higher detection limits of DHMH-analyzed samples. The potential for method-related trends within a salinity zone would only have affected stations in the mesohaline zone because stations in the tidal fresh and oligohaline zones, and XDC1706 and MLE2.2 in the mesohaline zone, are analyzed by DHMH.

Because multiple observations are available per time period (month) in the data set, a summary statistic was needed. Options for a summary statistic included selecting the data point closest to the mid-point of the time interval, or selecting the mean, trimmed mean, or the median of the observations. Although choosing the observation from the middle of the time period would be the simplest solution, doing so would result in a loss of information from the unused data. In general, the median is recommended when the number of data points within each time period is essentially the same (Reckhow, et al., 1992), which is the case with the monitoring program data set.

For the purpose of scoring monthly medians with detection limit problems, a monthly median was considered affected if $\geq$ 50% data collected during the month were below the highest detection limit of the study period. Calculated variables (TN and DIN) were considered to have detection limit problems only when the components measured below detection comprised at least 10% of the value of the parameter.

Prior analyses of the monitoring program data indicated that total phosphorus values submitted by DHMH between July 1984 and December 1989 were consistently high relative to CBL, Virginia Institute of Marine Science (VIMS), and Old Dominion University (ODU), the other laboratories that participate in the Chesapeake Bay Coordinated Split Sample Program. Following a review of the split sample data, a problem was discovered in the method of calculating DHMH TP values. Subsequently, a computer program was developed that applied a general correction factor to compensate for this bias. This general correction factor adjusted the data to be more in line with the CBL TP values, but was found less reliable at low concentrations than at average or high concentrations. A project to recalculate each individual value from that period using the original data, calibration standards, blank results, and regression curves was completed in the fall of 1996 and the correct data were entered into the DNR water quality data base. Due to record keeping problems, not all of the data in the DNR data base were corrected as part of the re-calibration project. Data for July 1984 through December 1984 could not be re-calibrated for any of the Potomac mainstem stations analyzed at DHMH. In addition, for some stations (XDA1177, XEA6596, and XFB2470) data for all of 1985 could not be re-calibrated. In an attempt to have as complete a data set as possible, the decision was made to use the old TP correction program to adjust the DHMH-analyzed data not corrected as part of the re-calibration project. TP data for MLE2.3 were not affected by the difficulties at the DHMH lab since the MLE2.3 data used in this report were analyzed by CBL. In addition, all the TP data from the four Maryland tidal creek stations were recalculated as part of the re-calibration project.

ii. Flow Correction

Because many water quality variables are strongly influenced by flow either directly or indirectly, flow-adjusted data were tested for trends in addition to the raw (observed) data. As part of an on-going effort to reduce the variability in water quality data that can be attributed to flow, and therefore better discern the effects of management actions to improve water quality, the Data Analysis Workgroup (DAWG) of the Chesapeake Bay Program's Monitoring Subcommittee funded a study to develop statistical flow adjustment models, which are described below.

The first part of the flow adjustment project entailed selecting an appropriate "averaging window" for flow *i.e.*, finding the number of days preceding the water quality sampling date that best summarized flow conditions for the period likely to influence the data. The study group evaluated models associated with 3-, 7-, 14-, and 28-day averaging times. Following an analysis of r-values (correlation coefficients) for the four averaging times, it was concluded that since they were quite similar, averaging time was not highly correlated with flow. The study group

decided that "Based on these results and considerations of the flow averaging technique, a flow averaging value of seven (7) days was deemed appropriate for all flow corrections" (Alden, *et al.*, unpublished).

It was observed by the study group that because the U.S. Geological Survey (USGS) gaging stations, where flow is measured, are often located several river miles up-stream of the nearest water quality monitoring stations and tens of miles from the farthest, the effect of flow on water quality at down-stream monitoring stations could be delayed by several days to weeks. In an attempt to capture the potential delayed effects as pulses of fresh water move downstream, flow lag models of up to 100 days were evaluated. The lag time in the flow-concentration relation that provided the best fit was determined by plotting correllograms of each of the averaging times described above for selected transformations of flow. The correlation coefficient between flow and concentration for one-day lags up to 100 days was calculated and the r-value was plotted against the lag time to determine when in the lag series the best fitting model, judged from the highest r-value, occurred. With regard to lag times, the study concluded that "The upper estuary lag times are generally accommodated by a lag of 4-7 days. Down estuary lag times are on the order of 4 to 7 weeks" (Alden, *et al.*, unpublished). Following discussions with the entire DAWG, it was recommended that the following lag times be used in the flow adjustment program: tidal fresh zone - 3- and 7-day lags; oligohaline zone - 3-, 7-, and 14-day lags; mesohaline and polyhaline zones - 7-, 14-, and 21-day lags.

In *A Study of Trends in Total Phosphorus Measurements at NASQAN Stations* (Smith *et al.*, 1982) 11 concentration-flow models were described, including the following:

Linear (Lin)	$P = F$
Logarithmic (Log)	$P = \log e\,(F)$
Inverse (Inv)	$P = 1 / F$
Hyperbolic	$P = 1 / (1 + 10^{x\beta^*} x\, F)$

where:

P = the water quality parameter
F = the freshwater discharge
x = a value from -2.5 to 1.5 at increments of 0.5
β^* = the integer value of the $\log_{10}$ transformed grand mean flow for the station in question.

Eight separate hyperbolic flow transformations were evaluated (denoted as Hyp-1 to Hyp-8), one for each increment.

The DAWG study group compared the 11 models by calculating an F-statistic using the

following formula:

$$F = (SSR1 - SSRa) / (SSE1 / d.f.)$$

where:

SSR1 = the regression sum of squares from the model producing the highest R^2
SSE1 = the error sum of squares from the best model
d.f. = the degrees of freedom.

With regard to the 11 potential transformations of flow, the study group found that:

> Within each of the four salinity regimes, the selection frequency was highest for either the Hyp-4 or Log transformations. A total of 72% of the station/parameter combinations analyzed had significant relationships with either the Hyp-4 or Log transformations of flow. The selection frequency was calculated a second time excluding all station/parameter combinations which had the Hyp-4 or Log transformations selected as the best or an alternative transformation. For these cases, the selection frequency was highest for either the Hyp-3 or Hyp-5 transformations. Nearly 85% of the remaining station/parameter combinations with significant relationships to flow had either the Hyp-3 or Hyp-5 as the best or an alternative transformation. Therefore, the Hyp-3, Hyp-4, Hyp-5, and Log transformations were selected as either the best or an alternative model for over 90% of the station/parameter combinations with significant relationships to flow (Alden, *et al.*, unpublished).

Based on these results, the study group recommended that only the Hyp-3, Hyp-4, Hyp-5, and natural log transformations be used for flow adjusting the data.

A Statistical Analysis Software (SAS) program was written that calculated R^2 statistics for each averaging time, lag, and flow transformation appropriate for the stations in a given salinity zone. The flow-adjusted residuals from the model that produced the highest R^2 were then output to a data set and evaluated for trends.

iii. Trend Tests

The seasonal Kendall test for trend was used for all trend analyses (Helsel and Hirsch, 1992; Hirsch and Slack, 1984; Gilbert, 1987). This test, adopted by the U.S. Geological Survey (USGS, 1993a), is a non-parametric test that addresses the confounding effects of seasonal differences in water quality data. Use of a non-parametric test of trend for water quality data was preferred since the data tend not to be normally distributed (often positively skewed). The test was run on monthly medians. To compensate for the potential presence of serial correlation in the data sets (which would increase the probability of Type I error, *i.e.*, falsely rejecting the null hypothesis of no trend), a conservative p-value was chosen for evaluation of trends (Alden *et al.*,

1992). Trends are reported as statistically significant at the $p \leq 0.01$ level for raw data and $p \leq 0.05$ for flow-adjusted data.

In addition to evaluating the presence of a significant trend in the water quality data, it is also of interest to estimate the magnitude of change for those cases where a significant trend has been discerned. The Sen estimate of slope, a non-parametric slope estimator, is used with the Seasonal Kendall test to assess the magnitude of change in the data series. The Sen estimate of slope is the median of all the differences that are calculated in the Seasonal Kendall trend test. Although the Seasonal Kendall test and the direction of the Sen estimate of slope are robust to data sets with large numbers of censored data, the magnitude of the slope estimate is likely to be biased when the level of censoring is high. Note that the presence of a limited number of censored data points (less than approximately 5%) is not likely to affect the magnitude of slope to any significant degree (Hirsch, *et al.*, 1991).

The percent change for statistically significant trends was calculated using the equation:

Percent change = (Sen Slope Estimate * Years) / (Initial Median Concentration) * 100.

"Initial" values reported here are medians of the first two years of data in the time series. "Median" values reported here were calculated by determining the monthly medians for the time period in question, then taking the median of this reduced data set.

Assessing the significance level, and the direction and magnitude of trend in flow-adjusted data is a straightforward process that uses the procedures described above for raw data provided that the data record is un-censored or contains only a limited number of censored data points. Currently, there is no non-parametric test for assessing monotonic trends in censored flow-adjusted data. The difficulty with using the Seasonal Kendall test to estimate the significance of trend in censored flow-adjusted data concerns how "ties" are broken when the adjustment for flow is made. In the calculation of variance, censored data are treated as ties, thus reducing the amount of information in the data set. Adjusting for flow breaks the ties, thus giving the false impression that the data set contains more information than is actually the case. The reduction in the variance associated with breaking the ties may lower the trend p-value leading the analyst to falsely reject the null hypothesis of no trend.

To solve the problem of assessing trends in censored flow-adjusted data, the DAWG decided to use Tobit regression (Tobin, 1958) in those cases where the number of censored data points exceeded 5%. Tobit regression estimates the parameters of a linear regression model that relates the response variable (*e.g.*, TN, SECCHI) to explanatory variables such as time, season, and flow using maximum likelihood estimation (MLE) (Hirsch *et al.*, 1991). Tobit regression was performed using the SAS implementation PROC LIFEREG, which fits a parametric model to left- or right-censored data (water quality data may be left-censored). Because PROC LIFEREG fits a parametric model the data, it was recommended that the response variable first be

transformed using the natural log transformation to better meet the normality assumption of the model (Elgin Perry, personal communication). The data were transformed by specifying the LNORMAL option in the MODEL statement of PROC LIFEREG.

The percent change from log transformed data was calculated by estimating the difference between the logarithm of the final parameter estimate and the logarithm of the baseline parameter estimate using the following equation:

$$(e^{\beta_2(t_2 - t_1)} - 1) \times 100$$

where:

β_2 = the slope estimate for time
t_2 = the end of the period of observation
t_1 = the beginning of the period of observation

iv. Tests of Homogeneity

The Seasonal Kendall test has the implicit assumption that the trend is homogeneous across the seasons of interest (months). That is to say, the trend for all of the months will be moving in the same direction, or at least the direction will not vary from month to month to any significant degree. In some cases however, the trend in a water quality variable may be increasing for some months and decreasing for others. When there is heterogeneity between months in a test of annual trend the results may be misleading. In addition, for the Potomac River, where multiple stations are located in each salinity zone, global statements about water quality may also be of interest. Basin wide statements about trends can be made if the trend is homogeneous across seasons and stations for all seasons and stations included in the test.

Tests of homogeneity for season, station, and season-station interaction have been developed by combining the results of the Seasonal Kendall test into chi-square statistics following the procedure of van Belle and Hughes (van Belle and Hughes, 1984). In cases where the season, station, and season-site interaction chi-square statistics are not significant (*i.e.*, the null hypothesis of homogeneity is not rejected), then a statement about a global or basin wide trend can be made. If seasons are heterogeneous, but the stations are homogeneous, trends can be analyzed for individual seasons. For cases where sites and seasons are heterogeneous or a significant site-season interaction exists, then the only meaningful trend test will be for individual site-seasons (van Belle and Hughes, 1984). Although the focus of this report is trends at individual stations, significant trends within a salinity zone will be described based on the results of the chi-square homogeneity statistics.

v. Seasons Evaluated for Trends

Large-scale annual trend analyses for the tidal Potomac have been completed as part of other

investigations (Tributary Strategy Teams and State of the Bay reports); however, when this project was initiated, there had been no attempts to evaluate trends for multiple seasons. One component of the current project involves examining a variety of temporal scales and seasons to establish links between changes in water quality and changes in living resources. To achieve that goal, water quality trends corresponding to a variety of living resources seasons were evaluated. The seasons, salinity zones, and rationale for selecting the season are provided in Table II-5.

Table II-1. Maryland, Chesapeake Bay Program, and historic station names for the tidal Potomac River and creeks.

Salinity Zone	Maryland Name	Bay Program Name	Historic Name
Tidal Fresh Zone	XFB2470	TF2.1	Piscataway Creek
	XFB1433	TF2.2	Dogue Creek
	XEA6596	TF2.3	Indian Head
	XEA1840	TF2.4	Possum Point
	XFB1986	XFB1986	NA[1]
	PIS0033	PIS0033	NA
	MAT0016	MAT0016	NA
	MAT0078	MAT0078	NA
Oligohaline Zone	XDA4238	RET2.1	Smith Point
	XDA1177	RET2.2	Maryland Point
	XDB3321	RET2.3	Nanjemoy Creek
Mesohaline Zone	XDC1706	RET2.4	301 Bridge (Morgantown)
	MLE2.2	LE2.2	Ragged Point
	MLE2.3	LE2.3	Point Lookout

[1]NA - Not available, no historic name for this station.

Table II-2. Laboratory Analysis of Water Quality Parameters.

Parameter	Component	Laboratory	Method
TP	TP	DHMH	block digestion EPA, 1979, method 365.4
TP	TP	CBL (Oct 86 - Sep 87)	acid persulfate EPA, 1979, method 365.4
TP	PP	CBL	Aspila *et al.*, 1976
TP	TDP	CBL	D'Elia *et al.*, 1977 persulfate oxidation
PO4	PO4	ALL LABS	EPA, 1979. Method 365.1; colorimeric; automated ascorbic acid
TN	TKNW	CRL	helix digestion, EPA, 1979, method 351.2; colorimetric automated phenate
TN	TKNW	DHMH	block digestion, EPA, 1979, method 351.2
TN	TKNW	CBL (Oct 86 - Sep 87)	EPA, 1979, method 351.1
TN	NO23	ALL LABS	EPA, 1979, method 353.2
TN	PN	CBL	Leeman Labs Inc., 1988
TN	TDN	CBL	D'Elia *et al.*, 1977, persulfate oxidation
DIN	NO23	ALL LABS	EPA, 1979, method 353.2
DIN	NH4	ALL LABS	EPA, 1979, method 350.1
TSS	TSS	ALL LABS	APHA, 1981. (Sect. 209D, p. 94., gravimetric)
CHLA	CHLA	DHMH	APHA, 1981. (Sect. 1002G, pp. 50-54. spectrophotometric; trichromatic)

Table II-3. Chronology of Detection Limits for Water Column Parameters in Chesapeake Bay Tributary Monitoring Program.

Parameter	18 Jun 84 - 31 May 86	01 Jun 86 - Present
Ammonium (mg/l as N)	0.02 mg/l	0.008 mg/l
Nitrate + Nitrite (mg/l as N)	0.02 mg/l	0.02 mg/l
Nitrite (mg/l as N)	0.002 mg/l	0.002 mg/l
Total Kjeldahl Nitrogen unfiltered mg/l as N	0.1 mg/l	0.1 mg/l
Total Dissolved Phosphorus (mg/l as P)	0.01 mg/l	0.01 mg/l
Orthophosphate (PO_4) (mg/l as P)	0.01 mg/l	0.004 mg/l
Total Phosphorus (mg/l as P)	0.01 mg/l	0.01 mg/l
Total Suspended Solids (mg/l)	1.0 mg/l	1.0 mg/l
Chlorophyll *a* (mg/l)	0.01 μg/l	0.01 μg/l

Table II-4. Chronology of Detection Limits for Water Column Parameters Applicable to Station MLE2.3

Parameter	18 Jun. 84 - 28 Feb. 85	01 Mar. 85 - 15 May. 85	16 May. 85 - 30 Sep. 86	01 Oct. 86 - 31 Sep. 87	01 Oct. 87 - 19 Sep. 88	20 Sep. 88 - Present
Ammonium (mg/l as N)	0.02 mg/l 0.04 mg/l (Feb. 85 only)	0.003 mg/l	0.003 mg/l	0.003 mg/l	0.003 mg/l	0.003 mg/l
Nitrate + Nitrite (mg/l as N)	0.04 mg/l	0.0009 mg/l	0.0009 mg/l	0.0009 mg/l	0.00015 mg/l	0.0002 mg/l
Nitrite (mg/l as N)	0.01 mg/l	0.0005 mg/l	0.0005 mg/l	0.0005 mg/l	0.00015 mg/l	0.0002 mg/l
Total Kjeldahl Nitrogen (TN) unfiltered mg/l as N	0.2 mg/l	0.2 mg/l	n.a.	0.2 mg/l - 5.0 mg/l	n.a.	n.a.
Particulate Nitrogen (mg/l as N)	*c	*c	0.001 mg/l	*c	0.0001 mg/l	0.0105 mg/l
Total Dissolved Nitrogen (mg/l as N)	*c	*c	0.03 mg/l	*c	0.02 mg/l	0.02 mg/l
Total Dissolved Phosphorus (mg/l as P)	0.12 mg/l 0.010 mg/l (Feb. 85 only)	0.005 mg/l	0.005 mg/l	0.012 mg/l	0.001 mg/l	0.001 mg/l
Orthophosphate (P04) (mg/l as P)	0.007 mg/l 0.012 mg/l (Feb. 85 only)	0.0016 mg/l	0.0016 mg/l	0.0016 mg/l	0.001 mg/l	0.001 mg/l
Total Phosphorus (TP) (mg/l as P)	0.012 mg/l 0.010 mg/l (Feb. 85 only)	0.005 mg/l	*c	0.012 mg/l	*c	*c
Participate Phosphorous (mg/l as P)	*c	*c	.0013 mg/l	*c	0.0012 mg/l	0.0012 mg/l
Total Suspended Solids (mg/l)	4 mg/l	4 mg/l	1 mg/l	1 mg/l	1.98 mg/l	1.5 mg/l
Chlorophyll a (ug/l)	0.01 ug/l	0.01 ug/l	0.01 ug/l	0.01 ug/l	0.01 ug/l	0.01 ug/l

*c = calculated value
n.a. = not analyzed for and not calculated

Table II-5. Trend Analysis Seasons and Salinity Zones.

Season	Salinity Zone	Rationale
Annual	Tidal fresh	Management actions
	Oligohaline	Management actions
	Mesohaline	Management actions
March - May	Tidal fresh	Microzooplankton, phytoplankton
	Oligohaline	Microzooplankton, phytoplankton
	Mesohaline	Microzooplankton, phytoplankton
April - June	Tidal fresh	Mesozooplankton
June - September	Tidal fresh	Phytoplankton
July - September	Tidal fresh	Mesozooplankton, fish, phytoplankton
	Oligohaline	Mesozooplankton, fish, phytoplankton
	Mesohaline	Mesozooplankton, fish phytoplankton
April - October	Tidal fresh	Submerged aquatic vegetation
	Oligohaline	Submerged aquatic vegetation
October - December	Tidal fresh	Phytoplankton
	Oligohaline	Phytoplankton
	Mesohaline	Phytoplankton
March - November	Mesohaline	Phytoplankton

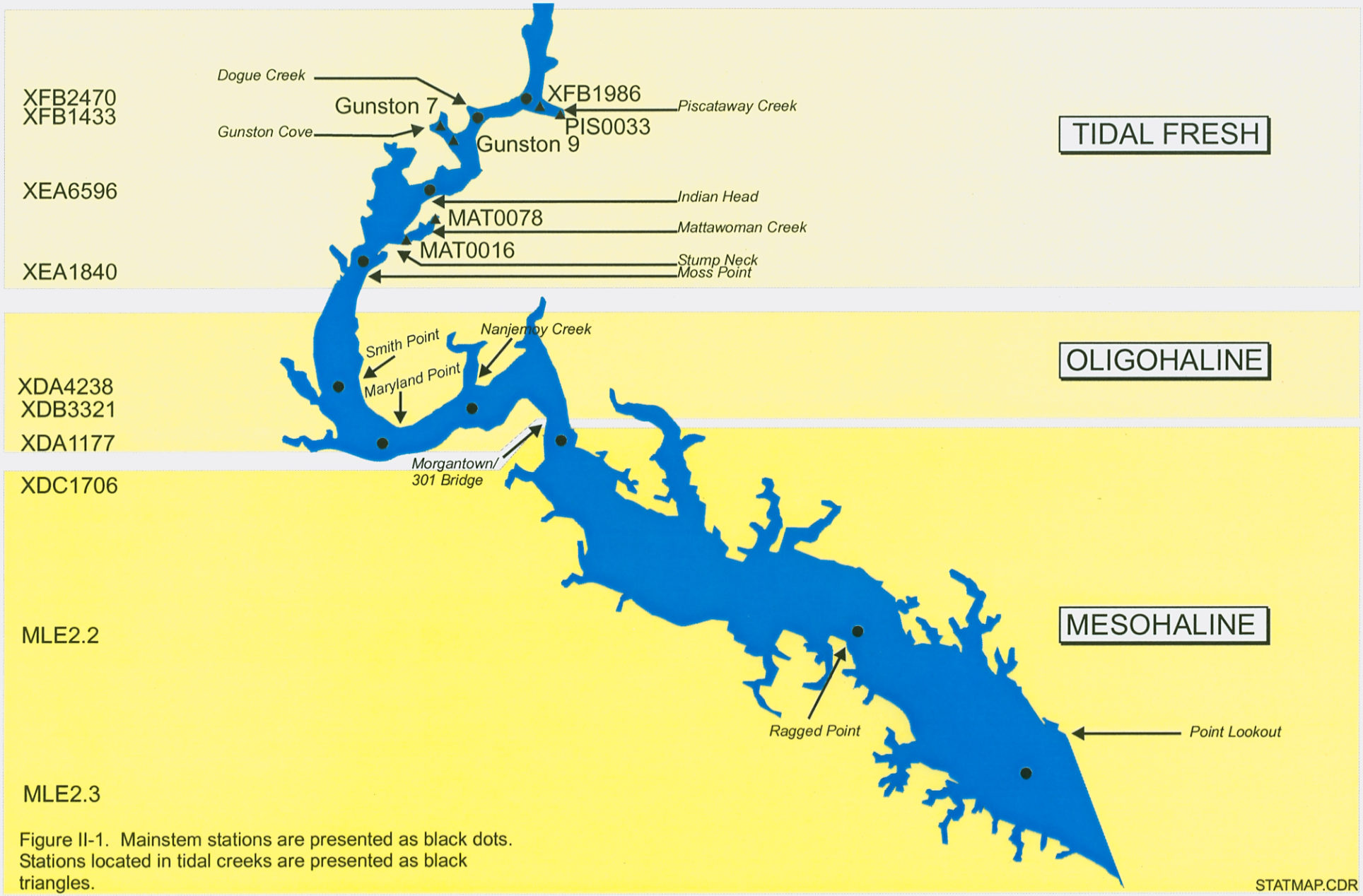


Figure II-1. Mainstem stations are presented as black dots. Stations located in tidal creeks are presented as black triangles.

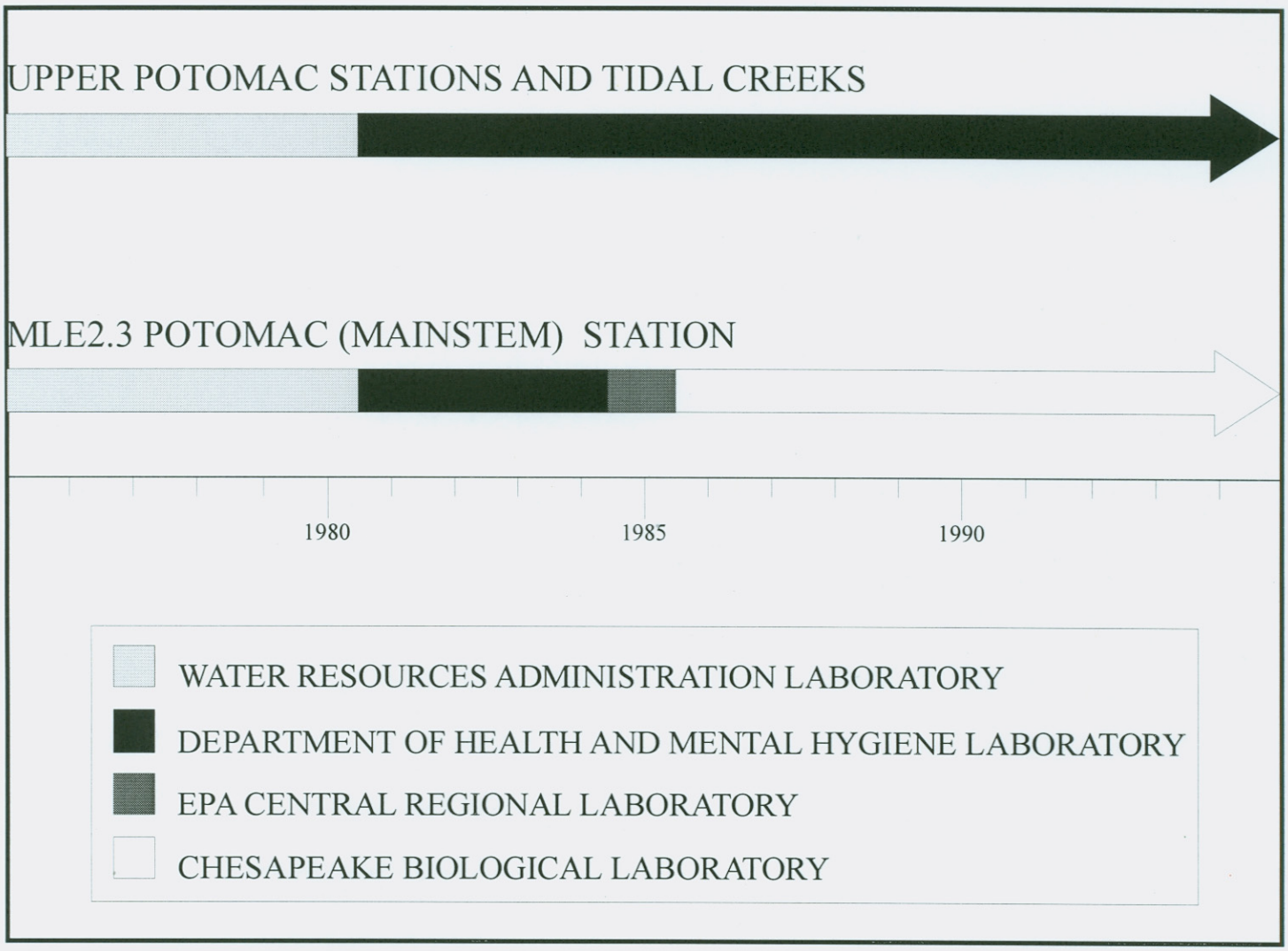


Figure II-2. Succession of laboratories that have analyzed water quality samples from the Potomac mainstem and Maryland tidal creeks.

FIGII2.CDR

III. TRENDS IN NUTRIENTS AND BIOLOGICALLY MEDIATED WATER QUALITY VARIABLES

The Potomac estuary is conceptually divided into three zones based on long-term salinity measurements according to the Venice System (Symposium, 1959). The upper-most region is termed tidal fresh because the river is tidally influenced and has a salt concentration of less than 0.5 ppt. Salt concentrations in the transition or oligohaline zone range from 0.5 ppt to less than 5 ppt. The lower estuarine or mesohaline zone has salt concentrations that range from 5 to 18 ppt. Water quality monitoring stations are located in each of the three salinity zones of the Potomac estuary. The station name, longitude and latitude, location, and depth of the tidal fresh, oligohaline, and mesohaline stations are presented in Table III-1.

As an aid to visualizing changes in water quality over the period of record, monthly medians of surface data are presented for the more important water quality indicators, including: TP, PO_4, TN, DIN, TSS, SECCHI, and CHLA. Bottom DO values are also presented. Figures are presented for the following stations: XFB2470 (Figures III-1a and III-1b), XFB1433 (Figures III-2a and III-2b), XEA6596 (Figures III-3a and III-3b), XEA1840 (Figures III-4a and III-4b), XFB1986 (Figures III-5a and III-5b), PIS0033 (Figures III-6a and III-6b), MAT0016 (Figures III-7a and III-7b), MAT0078 (Figures III-8a and III-8b), Gunston 7 (Figures III-9a and III-9b), Gunston 9 (Figures III-10a and III-10b), XDA4238 (Figures III-11a and III-11b), XDA1177 (Figures III-12a and III-12b), XDB3321 (Figures III-13a and III-13b), XDC1706 (Figures III-14a and III-14b), MLE2.2 (Figures III-15a and III-15b), MLE2.3 (Figures III-16a and III-16b).

Please note that in the following discussion of trends, "significant" means statistically significant at $p \leq 0.01$ for non-flow adjusted trends and at $p \leq 0.05$ for flow adjusted trends.

A. Surface Trends for Raw Data for 1985-1996

The following sections describe surface trends for raw data for the 1985-1996 time period for the stations located in the mainstem, Piscataway Creek, Matawoman Creek, and Gunston Cove. Detailed information on these trends is presented in Section VI.

i. Tidal Fresh Zone

a. Mainstem Stations

Significant trends in TP were observed at two of the four tidal fresh mainstem stations (XFB2470 and XFB1433). Although no annual trends were detected, significant increasing seasonal trends were found for June-September, July-September, and April-October. These trends ranged from 36% to 45%. Despite the lack of significant annual trends at individual stations, a significant segment-wide trend was observed. The absence of significant annual trends in TP for this time period is not surprising because the management interventions to reduce phosphorus took place in the mid-1970s with upgrades to WWTPs. The observed seasonal increases may be related to

phytoplankton populations, since the significant trends occur during the warmer months. There were no significant annual or seasonal trends for PO_4W. A segment-wide significant PO_4W trend was detected; however, the null hypothesis of homogeneity for season was rejected (trends across the stations are decreasing in some months while in other months trends are increasing). This would indicate that a segment-wide statement about trends would not be appropriate. Since the seasons are heterogeneous and the stations are homogeneous, the focus of a segment-wide trend analysis should be on individual months and not annual trends. For PO_4F, there were no significant annual, seasonal, or segment-wide trends.

Significant annual trends in TN were detected at XFB1433 (-20%) and XEA6596 (-13%). A decrease of 19% was observed for the April-October season at XFB2470. The segment-wide TN trend was significant and homogeneous for station, season, and station-season interaction. Figures III-2a and III-3a for stations XFB1433 and XEA6596, respectively show that TN gradually increased from the mid-1970s until the late 1980s and then began to decline. Some of the decline in TN concentrations may have resulted from improvements to WWTPs, implementation of the Clean Air Act to reduce concentrations of atmospheric NOx, or possibly to higher stream flow during the 1990s. Others believe that nitrogen has merely been flushed to the lower estuary because of decreased uptake by phytoplankton associated with management efforts to reduce phosphorus. Despite the absence of annual and seasonal trends in DIN, a significant segment-wide trend was observed that was homogeneous for station, season, and station-season interaction.

No annual, seasonal, or segment-wide trends were detected for NO_{23}, a component of both TN and DIN. For NH_4, significant decreasing annual trends were observed at all four tidal fresh mainstem stations and significant decreasing seasonal trends were observed at three. The decreases ranged from 48% at XEA6596 to 70% at XFB2470 and XFB1433. Seasons with significant trends include March-May, April-June, April-October, and October-December. Of the 13 overall significant NH_4 trends, seven were associated with greater than 5% below detection limit data censoring. Although the direction of trend is unaffected by large numbers of censored data, the magnitude of the slope estimate is likely to be in error and therefore the percent change should be interpreted with caution (Hirsch, *et al.*, 1991). The large number of significant station trends resulted in a significant segment-wide trend that was homogeneous for season, station, and station-season interaction.

Five significant trends were detected for TSS in the tidal fresh mainstem, two at XFB2470 (June-September and July-September) and three at XFB1433 (annual, June-September, and April-October). The percent changes were all positive and ranged from 40% to 60%. There was a significant segment-wide annual trend, however seasonal heterogeneity was present. As a result, segment-wide trend analyses should be conducted across stations on a monthly as opposed to an annual basis. No significant trends in SECCHI were observed in the tidal fresh zone in spite of the significant increases in TSS.

There were numerous significant trends in CHLA, all of which were positive and some of which

were quite large. Annual and numerous seasonal trends were significant at the upper-most station (XFB2470), which had trends ranging from 120% (annual) to190% (October-December). Other significant seasonal trends at XFB2470 included: June-September, July-September, and April-October. An increase of 290% occurred during the October-December season at XFB1433. No significant trends were observed at the lower two stations (XEA6596 and XEA1840). The CHLA segment-wide trend was significant and homogeneous for season, station, and station-season interaction in the tidal fresh zone. It is not clear why trends in CHLA have increased in the tidal fresh zone considering the dramatic declines in phosphorus over the years. More research needs to be conducted into the potential reasons for the CHLA increases.

Significant increasing annual and seasonal trends of either 10% or 20% were observed in surface DO_FLD at the upper two tidal fresh stations. For XFB2470, the seasons in which DO_FLD trends were observed closely matched those of CHLA. Only the annual and March-May trends were significant at XFB1433. The segment-wide DO_FLD trend was significant and homogeneous for season, station, and station-season interaction.

Significant trends in PH_FLD were observed at the upper three tidal fresh stations. Increasing trends of 10% were detected at XFB2470 for the annual trend and all except one seasonal trend (October-December), which had a percent change of 0 due to rounding. Increasing trends of 10% were also observed at XFB1433 for the annual trend and all seasons except July-September and October-December. Trends at XEA6596 were significant but have a percent change of 0 due to rounding. The segment-wide annual trend was significant for PH_FLD; however, the null hypothesis of homogeneity was rejected for season. As a result, segment-wide trend analyses should be conducted across the stations on a monthly and not annual basis.

TALK increased seasonally at three stations and annually at one. The increases ranged from 10% to 60%. An increase of 10% occurred during April-October at XFB1433, which was the only significant change at that station. The only annual increase (20%) was observed at XEA6596. The largest increase (60%) occurred at XEA1840 during July-September. The segment-wide trend in TSS was significant and homogeneous for season, station, and station-season interaction.

b. Piscataway Creek

Only one significant TP trend was observed at Piscataway Creek, a 58% increase at XFB1986 for April-October. No significant trends were detected for PO_4W at either Piscataway Creek station; however, three significant seasonal trends were observed at PIS0033, the upper station, for PO_4F. The seasonal decreases, which occurred during June-September, July-September, and April-October, were 64%, 74%, and 50%, respectively. Segment trends were not significant for either whole or filtered PO_4.

Significant decreasing annual TN trends were detected at both Piscataway stations. Seasonal trends (June-September, July-September, and April-October) were only observed at XFB1986.

TN decreases in Piscataway Creek ranged from 25% to 33%. The significant annual segment-wide TN trend was homogeneous for season, station, and station-season interaction. Significant annual and seasonal DIN trends were observed at both stations. The seasonal trends were observed during June-September, July-September, and April-October at PIS0033 and XFB1986. The decreases in DIN ranged from 26% to 65%. The basin-wide trend was significant and homogeneous for season, station, and station-season interaction.

Significant annual and seasonal decreasing trends in NO_{23} ranging from 21% to 41% were observed only at XFB1986. Seasonal trends occurred during June-September, July-September, and April-October. The segment-wide trend statistic was also significant and homogeneous, despite having an annual trend at only one station. Both Piscataway Creek stations had significant annual and seasonal trends in NH_4. Decreases in NH_4 ranged from 39% to 88%. High numbers of censored data may have resulted in a biased slope estimate at one station (XFB1986) for April-October trends. Other seasons with significant trends include: April-June, June-September, and July-September. Segment-wide trends for NH_4 were significant and homogeneous for season, station, and station-season interaction.

Significant annual and seasonal trends in TSS were observed at XFB1986. TSS increased by 60% for annual and two seasonal (June-September and April-October) trends and by 70% for the July-September season. Annual segment-wide trends were also significant and homogeneous despite the absence of a significant annual trend at PIS0033 ($p = 0.02$). PIS0033 is located along a portion of Piscataway Creek that is too shallow to measure SECCHI. Although SECCHI decreased for annual and most seasonal trends at the remaining Piscataway Creek station (XFB1986) no significant trends, either annual or seasonal, were observed.

CHLA dramatically increased at XFB1986 (no trends were detected at PIS0033). The increases ranged from 140% for the annual trend to 260% for the April-October season. It is interesting to note that the time periods in which CHLA increased matched those where increasing TSS trends were found. The segment-wide CHLA trend was significant and homogeneous for season, station, and station-season interaction.

Conflicting significant trends were observed in Piscataway Creek for DO_FLD. DO_FLD decreased by 10% for annual, March-May, and April-June time periods at PIS0033. Conversely, DO_FLD increased by 20% to 40% at XFB1986. Increases in DO_FLD occurred during annual, June-September, July-September, and April-October time periods. PH_FLD increased by 10% for several time periods at XFB1986 (no significant trends were detected at PIS0033). In addition to increasing annual trends in PH_FLD at XFB1986, significant increases were also observed for the following seasons: April-June, June-September, July-September, April-October. Although the segment-wide trend for PH_FLD was significant, the null hypothesis of homogeneity across stations was rejected. As a result, annual trends should be interpreted for individual stations.

Significant increases of 60% for TALK were detected at PIS0033 for March-May and April-June. The segment-wide annual trend was also significant and homogeneous for season, station,

and station-season interaction despite the absence of any significant trends at XFB1986.

c. Mattawoman Creek

No significant annual or seasonal TP trends were observed at either Matawoman Creek station. A significant annual trend of 67% was detected for PO_4W at MAT0078. No other PO_4W trends were significant. PO_4F increased dramatically at MAT0016 for the annual trend (179%) and for the October-December season (417%). Please note that the number of censored data points for both PO_4F trends exceeded 5%. As a result, although the direction of trend is unaffected, the magnitude may be in error.

Significant annual decreases of 15% and 23% were observed in TN at MAT0016 and MAT0078, respectively. TN also decreased at MAT0078 for the July-September (34%) and April-October (22%) seasons. The segment-wide annual TN trend was significant and homogeneous for season, station, and station-season interaction. No significant annual or seasonal trends were detected for DIN or NO_{23} at either Matawoman Creek station.

Decreasing NH_4 trends of 30% and 35% were detected for the annual and April-October time periods at MAT0016. In spite of the absence of a significant annual trend for MAT0078, a significant homogeneous segment-wide trend was observed. No significant trends were observed at either station for the following variables: TSS, SECCHI, CHLA, DO_FLD, and PH_FLD.

Increasing TALK trends of 40% were detected at MAT0016 for the annual and April-October time periods. The basin-wide annual TALK trend was also significant and homogeneous, despite the absence of a significant annual trend for MAT0078.

d. Gunston Cove

Decreasing trends in TP were observed at Gunston 7 for all time periods except October-December. The TP decreases ranged from 24% to 60%. No significant TP trends were detected at Gunston 9, which is located at the mouth of the Cove, near the Potomac mainstem. Although the segment-wide TP trend was significant, the null hypothesis of homogeneity was rejected for station. Consequently, annual trends should interpreted for individual stations only. No significant trends in PO_4 were observed at either Gunston Cove station.

Significant TN decreases of 34% to 45% were observed at Gunston 7 for four time periods (annual, April-June, June-September, and April-October). Despite the absence of significant TN trends at Gunston 9, the overall segment-wide trend was significant and homogeneous. Significant decreasing annual DIN trends of 39% and 26% were detected at Gunston 7 and Gunston 9, respectively. The remaining significant decreasing trend of 56% occurred at Gunston 7 during the April-October time period. The segment-wide DIN trend was significant and homogeneous for station, season, and station-season interaction.

Significant NO_{23} trends were found only at Gunston 9, the near-mainstem station. NO_{23} trends for the annual and June-September time periods decreased by 19% and 31%, respectively. Significant decreasing NH_4 trends of 81% and 85% were detected at Gunston 9 for the March-May and April-June time periods, respectively. The magnitude of both NH_4 trends may be biased because the number of detection limited data exceeded 5%. No other significant NH_4 trends were observed.

A decreasing TSS trend of 30% was observed at Gunston 7 for the April-October season. No other significant TSS trends were found. A number of significant SECCHI trends were observed at Gunston 7 including an annual trend of 60% and several seasonal trends. The annual trend should be interpreted with caution since it is not homogeneous across all months (most months SECCHI increased, but for some it decreased). Increases ranging from 70% to 110% were observed for four living resources seasons (June-September, July-September, April-October, and October-December. Despite the absence of significant trends at Gunston 9, the segment-wide trend was significant, but heterogeneous for season. Rejection of the null hypothesis of homogeneity for season indicates that segment-wide trends should be analyzed for individual months.

Three increasing CHLA trends (annual, April-October, and October-December) were detected at Gunston 9; no CHLA trends were observed at Gunston 7. Increases ranged from 110% for annual and April-October to a large 590% increase during October-December. Although CHLA trends were absent at Gunston 7, the segment-wide trend was significant and homogeneous for season, station, and station-season interaction.

Three increasing trends were also observed for DO (annual, March-May, and April-June) at Gunston 9. DO increased by 10% for the annual trend and by 20% for the living resources seasons. The DO segment-wide trend was significant and homogeneous, despite the absence of significant DO trends at Gunston 7. No significant trends were detected for either pH or TALK at either Gunston Cove station.

ii. Oligohaline Zone

No significant trends were observed for TP at the oligohaline stations. PO_4W decreased for the annual and April-October time periods by 44% and 40%, respectively. Although significant PO_4W trends were observed only at one of three oligohaline zone stations, the segment-wide trend statistic was significant and homogeneous. No significant trends were observed for PO_4F at either oligohaline zone station where filtered samples are collected (sampling at XDB3321 ceased in September 1990, just prior to the analysis of filtered samples).

Significant TN trends were detected only at XDB3321 for the annual, March-May, July-September, and April-October time periods. TN increases over the approximately 5-year (1985-1990) period ranged from 19% to 62%. DIN also increased at XDB3321 for annual trend (69%), July-September (279%), and April-0ctober (125%). Note that the magnitude of the 279% DIN

increase may be biased because the number of censored data points exceeded 5%. NO_{23}, a major component of both TN and DIN, increased at XDB3321 for the same time periods described above for DIN. Increases ranged from 74% to 283%.

Significant decreasing annual trends of 45% and 30% in NH_4 occurred at XDA4238 and XDA1177, respectively. Decreasing seasonal trends ranging from 40% to 79% were observed at XDA4238 for July-September, April-October, and October-December. All significant trends had high numbers of censored data; therefore, although the trend direction is accurate, the magnitude of change may be biased. The basin-wide trend statistic for the oligohaline zone was significant, but non-homogeneous for station. Rejection of the null hypothesis of homogeneity for station indicates that trends should be interpreted for individual stations only. Non-homogeneity across stations probably resulted from the absence of data for XDB3321 after September 1990.

Significant annual and seasonal (April-October) trends were observed at both XDA4238 and XDA1177. The annual trends were 50% and 40% for XDA4238 and XDA1177, respectively. Both seasonal trends were increases of 50%. The segment-wide TSS trend was significant and homogeneous. Although significant increasing TSS trends were observed in the oligohaline zone, trends in SECCHI were not significant. A significant CHLA trend of 100% was observed for the July-September time period at XDA4238.

No significant trends in DO_FLD were found in the oligohaline zone. PH_FLD increased during the annual, July-September, and April-October time periods at both XDA4238 and XDA1177. The percent changes were either 0% (due to rounding) or 10%. The segment-wide trend statistic was significant; however, the trend was heterogeneous for season (some months increased and others decreased). As a result, segment-wide trends results should be examined on a monthly basis.

Time periods and stations with increasing TALK trends correspond to those with increasing PH_FLD trends. The annual TALK trends increased by 30% at both XDA4238 and XDA1177. The July-September trends increased by 70% and the April-October trends increased by 40%. The segment-wide statistic for annual trend was significant, but heterogeneous for station. Consequently, trends should be analyzed at individual sites.

iii. Mesohaline Zone

There are no significant trends in TP or PO_4W at any mesohaline zone station (note that PO_4W is not available at MLE2.3 because data for the1985-1996 time period were analyzed at CBL under the Bay Program sample analysis protocols which specified filtration). Only one significant PO_4F trend (-41%) was observed in the mesohaline zone at MLE2.3 for the October-December living resource season.

TN increased by 19% for March-November at MLE2.3. DIN decreased by 60% at MLE2.3 for the October-December season; however, the number of censored data (5.6%) may have resulted

in a slightly biased trend magnitude. No significant trends were detected for NO_{23} in the mesohaline zone. Three significant trends were detected for NH_4 in the mesohaline zone, all at MLE2.3. Decreases of 73% were observed for annual and March-November and a decrease of 67% occurred during October-December. All three trends were associated with high numbers of censored data, so the trend magnitudes may be biased.

Several significant TSS trends were observed at XDC1706 and MLE2.2; there were no significant TSS trends at MLE2.3. TSS changes at XDC1706 ranged from 90% for March-May to 110% for July-September. Significant trends were also observed for the annual and March-November time periods. At MLE2.2, TSS increases ranged from 70% for March-November to 170% for October-December. For annual trend, TSS increased at MLE2.2 by 90%. Two significant trends (annual and March-November) in SECCHI were observed in the mesohaline zone, both decreases of 20% at MLE2.3. There were no significant trends in CHLA in the mesohaline zone. The absence of CHLA trends and the prevalence of TSS trends could indicate that increased TSS concentrations may be attributable to the inorganic fraction.

A 10% decrease in DO_FLD was observed at MLE2.3 for the annual time period. Significant changes, of either 0% or 10% (due to rounding), in PH_FLD were detected at MLE2.2 (no other mesohaline zone station had significant PH_FLD trends). Time periods during which significant trends were observed include: annual, July-September, October-December, and March-November. Despite the absence of significant annual PH_FLD trends at the remaining mesohaline zone stations, the segment-wide trend statistic was significant, though not homogeneous for season. As a result, segment-wide trends should be considered for individual months.

TALK analyses were only performed at XDC1706, where significant trends of 20% and 30% were observed. Time periods with significant trends included annual, October-December, and March-November.

B. Bottom Trends for Raw Data for 1985-1996

The following sections describe bottom layer raw data trends for the 1985-1996 time period for stations located in the mainstem, Piscataway Creek, Matawoman Creek, and Gunston Cove. Detailed information on these trends is presented in Section VI.

i. Tidal Fresh Zone

a. Mainstem Stations

There are no significant annual or seasonal bottom trends for TP, PO_4W or PO_4F. Seasonal or annual TN trends were detected at three of the four tidal fresh mainstem stations (XFB2470, XFB1433, and XEA6596). Decreases ranged from 14% at XEA6596 (April-June) to 19% at XFB1433 (April-June). Annual decreases for XFB2470 and XFB1433 were 15% and 16%,

respectively. The remaining seasonal TN trend, a 16% decrease, occurred at XFB1433 during April-October. The segment-wide trend statistic was also significant and homogeneous for station and season. Although no DIN trends were significant at $p \leq 0.01$ (criterion for raw data trends), a significant, homogeneous segment-wide annual trend was observed.

No significant NO_{23} trends were found at any tidal fresh station; however, significant annual and seasonal trends for NH_4 were found at all tidal fresh stations. The decreases in NH_4 ranged from a 50% October-December trend to an 88% July-September trend, both at XEA1840. Additional significant trends were detected at XFB2470 (annual, March-May, April-June, and April-October); XFB1433 (annual, March-May, April-June, April-October); XEA6596 (annual, March-May, April-June, June-September, April-October, October-December); and, XEA1840 (annual, June-September, April-October). The segment-wide statistic for annual trend was also significant and homogeneous for station and season. Note that seven of the seasonal NH_4 trends, including the 88% decrease for July-September at XEA1840, were affected by censored data in excess of 5%.

Although no significant changes were observed for TSS in the tidal fresh zone, increases in CHLA, a component of TSS, were evident. The majority of the significant trends (annual, April-June, June-September, April-October), occurred at XFB2470, the upper-most tidal fresh station, where increases ranged from 110% to 130%. The remaining two significant trends occurred at XFB1433, which had increases of 100% (annual) and 190% (October-December). The segment-wide annual trend was also significant and homogeneous for season and for station, despite only two of the four stations exhibiting significant trends.

Significant trends were recorded for DO_FLD, PH_FLD, and TALK in the tidal fresh zone. DO_FLD trends were significant and homogeneous for segment-wide trend although on a station-by-station basis, trends were only observed at XFB2470 (annual, June-September, July-September, April-October) where increases of either 10% or 20% occurred. Numerous significant PH_FLD trends, all of which were 10% due to rounding, were observed at the tidal fresh zone stations. At XFB2470 and XFB1433, significant trends occurred for annual, March-May, April-June, June-September, July-September, and April-October. Annual, March-May, and April-October trends were observed at XEA6596 and XEA1840. Additional seasonal trends (June-September, July-September) were noted in XEA1840. The segment-wide trend for PH_FLD, was significant for trend and homogeneous for station, season, and station-season interaction. Fewer significant trends were found for TALK. One seasonal TALK trend (July-September) was observed at both XFB1433 and XEA6596, which had increases of 30% and 40%, respectively. Three seasonal trends (June-September, July-September, and April-October) ranging from 30% to 60% were detected at XEA1840. The segment-wide annual trend statistic for TALK was significant, but the null hypothesis of homogeneity for season was rejected. As a result, statements about segment-wide TALK trends would be misleading. Given the seasonal heterogeneity, segment-wide trend analyses should be performed across stations on a monthly as opposed to an annual basis.

b. Piscataway Creek

The only bottom data available for Piscataway Creek are for DO_FLD and PH_FLD at XFB1986 (PIS0033 is located in a very shallow area). No significant trends were found for either variable.

c. Mattawoman Creek

Mattawoman Creek also has only DO_FLD and PH_FLD data for the deeper of its two stations, MAT0016, where a 20% decreasing trend in DO_FLD was observed for the October-December season.

d. Gunston Cove

Significant decreasing trends in TP were observed at Gunston 7 for the annual, June-September, July-September, and April-October time periods. The decreases in TP ranged from 36% for the annual trend to 43% for the July-September trend. No TP trends were detected at Gunston 9. Despite of the absence of significant TP trends at Gunston 9, the segment-wide trend statistic was significant and homogeneous. No significant trends in PO_4 were detected at either Gunston Cove station.

Annual, June-September, and April-October TN trends were significant at Gunston 7, where decreasing TN trends ranged from 35% to 37%. Although no significant TN trends were observed at Gunston 9, the segment-wide trend statistic was significant and homogeneous. Significant decreasing trends in DIN were detected at both Gunston 7 and Gunston 9. For annual trends, DIN decreased by 38% and 27% at Gunston 7 and Gunston 9, respectively. Additional decreasing DIN trends were observed for the June-September (35%), July-September (33%), and April-October (28%) time periods at Gunston 9. The segment-wide trend statistic for DIN was significant and homogeneous.

Significant trends in NO_{23} were only observed at Gunston 9, where decreases ranged from 24% for the annual trend to 43% for the July-September season. Additional significant decreasing seasonal trends were detected for the June-September (37%) and April-October (27%) time periods. Three significant NH_4 trends were observed in Gunston Cove. NH_4 decreased by 60% at Gunston 7 for the annual trend and by 93% and 75% for March-May and April-June, respectively at Gunston 9. Note that all three trends may be biased due to the large number of below detection limit values. The segment-wide trend for NH_4 was also significant.

No significant TSS trends were observed at either Gunston Cove station. Significant DO trends were detected only at Gunston 9 for annual, April-June, June-September, July-September, and April-October. Due to rounding, trends of either 20% or 30% were observed. The segment-wide trend statistic for DO was significant and homogeneous.

Two significant trends in PH_FLD were observed at Gunston 9. The annual trend was slight and

rounded to 0. An increase of 10% was detected for the April-October season. No significant trends were observed for TALK at either Gunston Cove station.

ii. Oligohaline Zone

The only significant phosphorus trends in the oligohaline zone were decreasing annual trends for PO_4W of 38% and 30% at XDA4238 and XDA1177, respectively, indicating that orthophosphate decreased during the 1985 through September1990 period. The segment-wide annual trend statistic indicates that PO_4W trends were significant and homogeneous for station, season, and station-season interaction. No significant trends were observed for either TP or PO_4F.

One significant TN trend and three significant DIN trends were detected in the oligohaline zone. The significant TN trend (-22%) occurred at XDA4238 for the March-May season. The three increasing trends in DIN, which ranged from 72% to 155%, were observed at XDB3321 (data available through September 1990) for the annual, July-September, and April-October time periods.

Three increasing NO_{23} trends were observed at XDB3321. The NO_{23} trends, which were for the same seasons as those for DIN, ranged from 95% to 265%. Significant annual and seasonal NH_4 trends were observed at XDA4238 and XDA1177. Trends at XDA4238 ranged from -42% (annual and October-December) to -69% (April-October). A decreasing trend was also observed during July-September at XDA4238. Decreasing trends of 41% and 48% were found at XDA1177 for the annual and April-October time periods, respectively. Note that all NH_4 trend magnitudes may be biased as a result of having large numbers of censored data points. The segment-wide NH_4 trend was significant; however, the null hypothesis of homogeneity for station was rejected. As a result, it would be misleading to make segment-wide statements about trends. Trend results would have to be interpreted on a station-by-station basis.

Despite the absence of any TSS trends in the oligohaline zone, increasing trends in CHLA were observed at XDA4238 for the annual (60%), July-September (200%), and April-October (100%) time periods. The segment-wide trend was significant for CHLA, but was heterogeneous for season. Consequently, no segment-wide statements should be made about annual CHLA trends. There were no significant trends for DO_FLD in the oligohaline zone.

Increasing trends of 10% in PH_FLD were detected at XDA4238 and XDA1177 for the following time periods: annual, March-May, July-September, and April-October. Significant PH_FLD trends were also observed at XDB3321, but were so slight as to be rounded to zero. The segment-wide PH_FLD annual trend statistic was significant and homogeneous for season, station, and station-season interaction. Annual and seasonal (July-September and April-October) TALK trends ranging from 20% to 70% were detected at XDA4238 and XDA1177. The segment-wide statistic was significant, but not homogeneous for station. As a result, statements about segment-wide trends would be misleading. Trends should be examined on a station-by-station basis.

iii. Mesohaline Zone

One phosphorus trend, a 250% increase in PO_4F at MLE2.2 during October-December, was detected in the mesohaline zone; however, the trend magnitude is likely quite biased since one-half of the data were censored. No significant trends were observed for TP or PO_4W in the mesohaline zone.

An increasing TN trend of 50% was observed at MLE2.2 for the March-November season. DIN decreased by 61% at MLE2.3 during the October-December season. No significant NO_{23} trends were found in the mesohaline zone. For NH_4, decreasing trends of 29% and 83% were found at MLE2.3 for the annual and October-December time periods, respectively. The annual trend may be suspect because the trend is not homogeneous for season and because the number of censored data points exceeded 5%.

MLE2.2 is the only mesohaline zone station that had significant TSS trends, where percent changes ranged from 60% to 150% for the following time periods: annual, March-May, July-September, and March-November. Significant trends in CHLA were detected at XDC1706 for July-September (80%) and at MLE2.3 for October-December (180%). The segment-wide CHLA trend was also significant and homogeneous for season, station, and station-season interaction.

Two significant trends were observed for DO_FLD, both at XDC1706. The annual and March-November DO_FLD trends were both 20%. Two significant, though 0%, seasonal trends (July-September and March-November) were observed for PH_FLD at XDC1706. The segment-wide PH_FLD trend statistic was significant and homogeneous. There were no TALK trends for XDC1706, the only mesohaline zone station where TALK is analyzed.

C. Flow-Adjusted Surface Trends for 1985-1996

Unlike the previous two sections, where raw data trends were described for annual and a variety of living resources seasons, Sections C and D present only flow-adjusted annual trends. Since living resources are affected by in situ water quality, correcting for flow would distort the conditions that living resource are exposed to and thus be misleading. Annual flow-adjusted trends are summarized below to assess the impacts of management actions on water quality. Removing flow effects from the data is based on the assumption that flow is a major forcing function and source of inter-annual variability. Note that the criterion for statistical significance for flow adjusted trends is $p \leq 0.05$. The significance level was "relaxed" for flow-adjusted trends since the flow adjustment reduces a major source of variability in the data. Finally, only mainstem station trend results are presented in this and the next section because of uncertainty regarding the effect of flow on stations outside of the main channel. Detailed information on surface, flow adjusted trends for 1985-1996 is presented in Section VII.

i. Tidal Fresh Zone

There were no significant TP trends in the tidal fresh zone. PO_4W, which was significantly related to flow, decreased by 32% at XEA6596. No significant trends in PO_4F were observed.

Significant decreasing TN trends ranging from 9% to 23% occurred at XFB1433, XEA6596, and XEA1840. TN concentration was significantly related to flow at XFB1433 and XEA1840, and not related to flow at XEA6596. A significant segment-wide TN trend was observed. DIN was significantly related to flow at all four tidal fresh stations. Despite the significant DIN-flow relation at all tidal fresh stations, significant decreasing DIN trends of 12% and 21% were observed only at XEA6596 and XEA1840, respectively. A significant segment-wide, homogeneous DIN trend was observed for the tidal fresh zone.

NO_{23} was significantly related to flow at three tidal fresh stations; however, no significant time trends were observed. Significant NH_4 trends were detected at all four tidal fresh stations where decreases ranged from 43% to 62%. NH_4 was significantly related to flow at the lower three tidal fresh stations. Because of the high numbers of censored data for NH_4, trends at all four stations were analyzed using SAS PROC LIFEREG, which employs Tobit regression.

Significant flow adjustment models were found for TSS and SECCHI at all four tidal fresh stations; however, the time trends were not significant for either variable. Significant flow adjustment models were observed for CHLA at all four tidal fresh stations. CHLA increased at the upper three tidal fresh zone stations by between 80% and 260%. Although the segment-wide CHLA trend was significant, the trend was not homogeneous for station. As a result, segment-wide statements about trends would be misleading.

DO_FLD was significantly related to flow at all four tidal fresh stations; however, significant time trends were observed at only XFB2470 (10%) and XEA1840 (-10%). The segment-wide trend statistic for DO_FLD was not significant. Significant flow adjustment models were observed for PH_FLD at XFB2470 and XEA1840. Significant increases of 10% were observed for PH_FLD at XFB2470 and XFB1433. A significant trend in PH_FLD was also observed at XEA6596, but the change was so small as to be rounded to zero. The segment-wide trend statistic for PH_FLD was significant, but not homogeneous for season. As a result, segment-wide trends in PH_FLD should be examined on a monthly basis. Significant flow models and increasing TALK trends of 20% were observed at XFB2470, XFB1433, and XEA6596. The segment-wide TALK trend was significant and homogeneous.

ii. Oligohaline Zone

Significant flow models were found at two stations for TP in the oligohaline zone although the trends were not significant. Flow was significantly related to PO_4W at all three oligohaline zone stations. Significant decreasing PO_4W trends of 42% and 18% were found at XDA4238 and XDB3321, respectively. The segment-wide trend for PO_4W was also significant and

homogeneous for season, station, and station-season interaction. Flow models for PO_4F were significant, but the time trends were not.

Flow models were significant for TN at all three oligohaline stations. TN decreased by 22% and 12% at XDA4238 and XDA1177, respectively. Significant flow adjustment models were detected for DIN at all three oligohaline zone stations. Conflicting trends were found for DIN in the oligohaline zone. DIN decreased by 26% at XDA4238 and increased by 50% at XDB3321 (note that data collection at XDB3321 ceased in September 1990). The reversal in trends for these stations could indicate that reductions in DIN occurred after 1990. DIN flow adjustment models were significant at all three stations.

A pattern similar to that described for DIN also occurred for NO_{23}, where a decrease of 26% and an increase of 51% were observed for XDA4238 and XDB3321, respectively. NO_{23} flow adjustment models were significant at all three stations. For NH_4, the other component of DIN, two decreasing trends of 61% and 40% occurred at XDA4238 and XDA1177, respectively. Note that NH_4 trends were estimated using LIFEREG due to the high percentages of censored data. Flow models were significant at all three stations.

Although flow was significantly related to both TSS and to SECCHI, significant trends were not observed for either variable in the oligohaline zone. CHLA increased by 60% and 30% at XDA4238 and XDA1177, respectively. Neither the flow models nor the segment-wide trend were significant. Flow adjustment models at all three stations were significant for DO_FLD. Despite having a significant trend (a decrease of 10%) at only one oligohaline zone station (XDA1177), a significant, homogeneous segment-wide trend was observed.

Significant flow adjustment models were observed for PH_FLD at all three oligohaline zone stations. A significant PH_FLD time trend occurred only at XDA4238; however, the magnitude of change was negligible due to rounding. The segment-wide trend was significant but the null hypothesis of homogeneity for season was rejected; therefore, segment-wide trends should be interpreted on a monthly and not annual basis. TALK increased by 30% at both XDA4238 and XDA1177; however, flow adjustment was significant only at XDA4238. The segment-wide TALK trend was significant, but not homogeneous for station; consequently, segment-wide statements regarding trends would be misleading.

iii. Mesohaline Zone

As previously described, nutrient samples for the mesohaline zone were analyzed at two different laboratories; XDC1706 and MLE2.2 at DHMH and MLE2.3 at CBL. One of the consequences of using different labs is having different detection limits. The data for the mesohaline zone were not censored to the higher detection limits of the DHMH laboratory since this would have resulted in a great loss of information at MLE2.3. Because trend comparisons cannot be made across stations with different detection limits, homogeneity statistics are not provided for nutrients in the mesohaline zone.

Although significant flow models were observed in the mesohaline zone for TP, PO_4W, and PO_4F, the time trends were not significant.

Significant decreasing trends of 19% and 42% were detected for TN and DIN, respectively at XDC1706. A decreasing trend in DIN (29%) was also detected using the LIFEREG procedure at MLE2.3. Some of the TN and DIN decreases at XDC1706 can be attributed to a significant decrease of 41% in NO_{23}. A 75% decreasing trend in NH_4 was detected at MLE2.3 using the LIFEREG procedure. The strong effect of flow on nitrogen concentration in the mesohaline zone was apparent in that all of the flow adjustment models were significant for all four nitrogen species analyzed.

TSS increased by 60% and 80% at XDC1706 and MLE2.2, respectively, although TSS and flow were only significantly related at XDC1706. In view of the TSS trends, trends in SECCHI, which are significantly related to flow at XDC1706 and MLE2.2, are difficult to explain. There was no significant change in SECCHI at XDC1706, where TSS increased by 60%. SECCHI increased by 10% at MLE2.2, despite an 80% increase in TSS. SECCHI decreased by 20% at MLE2.3, although TSS was unchanged at that station. There were no significant changes in CHLA in the mesohaline zone, where CHLA was significantly related to flow at only MLE2.3.

Significant decreases in DO_FLD of 10% and 20% occurred at XDC1706 and MLE2.3, respectively. The segment-wide trend was significant and homogeneous despite a non-significant trend at MLE2.2. DO_FLD was significantly related to flow at all three mesohaline zone stations. A significant trend in PH_FLD was observed at MLE2.2; however, the slope was so small that the percent change was zero. Flow models were significant for PH_FLD at all three mesohaline zone stations. TALK increased by 20% at XDC1706, the only mesohaline zone station where it is measured. The flow model for TALK at XDC1706 was significant.

D. Flow-Adjusted Bottom Trends for 1985-1996

The following sections describe bottom, flow-adjusted trends for the 1985-1996 time period for the stations located in the mainstem. P-values, trend directions, and percent changes for annual trends are summarized for the mainstem stations in Figures III-4a (nutrients) and III-4b (non-nutrients). Detailed information on bottom, flow-adjusted trends for 1985-1996 is presented in Section VII.

i. Tidal Fresh Zone

Although flow models for TP were significant for all four tidal fresh stations none of the time trends achieved the $p \leq 0.05$ significance level. PO_4W decreased by 26% at XEA6596 for the 1985 - September 1990 time period. The segment-wide PO_4W trend was also significant and homogeneous, despite having a significant trend at only one station. PO_4W-flow models were significant at all four tidal fresh stations. PO_4F time trends were not significant at any tidal fresh station, although all four flow correction were significant at $p \leq 0.01$.

Reductions of 12% and 16% in TN were observed at XFB1433 and XEA1840, respectively. Despite having significant TN trends at only two of four tidal fresh stations, a significant, homogeneous segment-wide trend was observed. Flow models for TN were significant at XFB2470, XFB1433, and XEA1840. Flow models for DIN at all four stations and the segment-wide trend statistic were significant, although DIN trends at individual stations were not (p-values ranged from 0.05 to 0.07). For NO_{23}, flow models were significant at all tidal fresh stations; however, significant time trends were not observed.

All four tidal fresh stations had significant decreasing NH_4 trends, two of which were estimated using LIFEREG (LIFEREG was used at XFB1433 and XEA1840 where NH_4 decreased by 54% and 59%, respectively). Decreasing NH_4 trends of 48% at XFB2470 and 71% at XEA6596 were detected using the Seasonal Kendall test. Flow correction models for NH_4 were significant only at XFB1433 and XEA6596. Because not all NH_4 trends were estimated using the Seasonal Kendall test, on which the homogeneity statistics are based, segment-wide trends could not be assessed.

TSS was significantly related to flow at all four tidal fresh stations; however, neither individual station trends nor a segment-wide trend were detected. Significant increases in CHLA were observed at all four tidal fresh stations and for the segment overall. The increases ranged from 40% at XEA1840 to 220% at XFB2470, the upper-most tidal fresh station. Significant CHLA-flow models were observed at XFB2470, XFB1433, and XEA6596.

A significant decrease of 10% was observed in bottom DO_FLD at both XEA6596 and XEA1840. In addition, the flow adjustment models at all four stations and the segment-wide trend were also significant. Significant trends in PH_FLD were detected at all four stations, but at two stations (XEA6596 and XEA1840) the slopes were so small that the percent changes were rounded to zero. Increases of 10% were observed at XFB2470 and XFB1433, the upper two stations. The flow models for PH_FLD at all four stations and the segment-wide trend were also significant. Significant flow models and increases of 20% were observed for TALK at XFB2470, XFB1433, and XEA6596. The segment-wide trend was also significant and homogeneous.

ii. Oligohaline Zone

There were no significant TP trends in the oligohaline zone. One significant TP flow adjustment model was detected at XDA1177. Significant decreases of 38% and 25% in PO_4W were observed at XDA4238 and XDA1177, respectively. Significant PO_4W flow adjustment models were observed at all three oligohaline zone stations. The segment-wide trend statistic for PO_4W was also significant. PO_4F trends were not significant at either oligohaline zone station for which data are available; however, flow adjustment models at both stations were significant.

TN decreased by 14% at XDA4238, the only station with a significant trend. Flow adjustment models were significant at all three stations. A pattern similar to that observed for TN was also

found for DIN, which decreased by 32% at XDA4238. Flow adjustment models for DIN at all three stations were significant. Conflicting NO_{23} trends were observed in the oligohaline zone where a decrease of 30% was observed at XDA4238 and an increase of 68% was observed at XDB3321, where sampling stopped in September 1990. NO_{23} flow adjustment models at all three stations were significant. Significant decreasing trends in NH_4 of 60% and 53% were observed at XDA4238 and XDA1177, respectively. Both trends were estimated using the LIFEREG procedure due to the high numbers of censored data. Flow adjustment models for NH_4 were significant at all three oligohaline zone stations.

A significant decreasing trend of 60% was detected for TSS at XDB3321. Significant flow adjustment models for TSS were observed at XDA4238 and XDA1177. CHLA increased by 60% at XDA4238. The only significant flow adjustment model for CHLA was observed at XDB3321.

DO_FLD decreased by 10% at XDA4238, the only oligohaline zone station with a significant trend; however, DO_FLD flow adjustment models were significant at all three stations. Significant, though negligible changes in PH_FLD were observed at all three oligohaline zone stations. Although the slopes for PH_FLD were positive, they were so slight that rounding for the percent change calculation yielded a result of zero. Significant flow adjustment models were observed for PH_FLD at XDA4238 and XDA1177. The segment-wide trend was significant and homogeneous. Increases of 30% and 20% were found at XDA4238 and XDA1177, respectively for TALK. The flow adjustment models were not significant.

iii. Mesohaline Zone

TP increased by 38% at MLE2.3, which is also the only station with a significant flow adjustment model. PO_4W trends were not significant at either XDC1706 or MLE2.2, the only stations in the mesohaline zone for which whole water samples were analyzed (whole water samples were not analyzed at MLE2.3 during the study period). Flow adjustment models for PO_4W at both XDC1706 and MLE2.2 were significant. PO_4F increased by 119% at MLE2.2, the only mesohaline zone station with a significant time trend. Due to the large number of censored data points, the PO_4F trend at MLE2.2 was estimated using the LIFEREG procedure. PO_4F flow adjustment models were significant at all three stations.

A significant increasing TN trend (23%) was detected at only one mesohaline zone station (MLE2.2); however, flow adjustment models at all three stations were significant. Conflicting trends were observed for DIN in the mesohaline zone. DIN decreased by 33% at MLE2.3 and increased by 22% at MLE2.2. Two additional points should be made regarding the DIN trends for these two stations. First, the null hypothesis of seasonal homogeneity was rejected for DIN at MLE2.3, which indicates that for most months DIN decreased, but for some DIN increased. Second, the trend at MLE2.2 was estimated using the LIFEREG procedure. Flow adjustment models for DIN were significant at all three stations. Although flow adjustment models for NO_{23} were significant in the mesohaline zone, the trends were not significant. Significant decreases in

NH_4 were detected using the LIFEREG procedure at XDC1706 (49%) and MLE2.3 (45%). The only significant flow adjustment model for NH_4 was observed at MLE2.3.

TSS doubled (100% increasing trend) at MLE2.2, the only mesohaline zone station with a significant trend. Flow adjustment models for TSS were significant at all three stations. Flow adjustment models for CHLA were also significant at all three stations; however, no significant trends were observed. Bottom DO_FLD decreased by 20% at MLE2.2 and MLE2.3. The flow adjustment models were significant at all three stations. The segment-wide trend statistic was significant, but the null hypothesis of seasonal homogeneity was rejected, indicating that during most months DO_FLD is decreasing, but for some months, DO_FLD is increasing. As a result, any segment-wide trend analyses on DO_FLD should be conducted across stations on individual months. A significant PH_FLD trend was detected at XDC1706 although significant flow adjustment models were observed at the other two mesohaline zone stations. The change in PH_FLD at XDC1706 was positive, but so small that the trend was rounded to zero during the percent change calculation. TALK increased by 10% at XDC1706, the only mesohaline zone station where alkalinity is measured. The flow adjustment model was also significant.

E. Surface Trends for Raw Data for mid-1970s-1996

The next four sections describe trends that incorporate the "historic" data that was collected from the mid-1970s through the inception the Chesapeake Bay Program in July 1984. Data from the mid-1970s through July 1984 were collected under the State of Maryland's Basic Water Monitoring Program (BWMP) which was funded through the EPA Clean Water Act. Data were not collected on as regular a basis under the BWMP as they currently are under the Chesapeake Bay Program. As a result, the start dates are not as consistent for the BWMP data set as they are for the 1985-1996 data set. In addition, data for half of 1977 and all of 1978 are missing from the BWMP data set due to laboratory errors.

Long-term trends are not presented for MLE2.2 and MLE2.3, two of the mesohaline zone stations, because of large gaps in the data set (data were collected at those stations on an infrequent basis under the BWMP). In addition, only annual trends appear below since the living resources programs that would correlate with the seasonal trends in the water quality data were not in place until after the start of the Bay Program.

The following sections describe surface trends for raw data for the mid-1970s-1996 time period for the stations located in the mainstem. Detailed information on these trends is presented in Section VIII.

i. Tidal Fresh Zone

TP trends at all four tidal fresh stations were significant. Decreases ranged from 27% at XFB2470 to 39% at XEA1840. The segment-wide trend was significant and homogeneous for season, station, and station-season interaction. Decreasing trends were also observed for PO_4W

(data were not filtered under the BWMP so PO_4F trends are not available). Percent changes for PO_4W ranged from decreases of 40% at XEA1840 to 61% at XFB1433. It should be noted that all stations had greater than 5% censored data so the magnitudes of changes may be biased. The PO_4W segment-wide trend was significant and homogeneous across all stations and seasons.

Unlike TN trends for the 1985-1996 period, which for the most part were decreasing, TN trends for the longer time period are significantly increasing at all four tidal fresh stations. TN increases for the long-term data set ranged from 15% at XFB1433 to 38% at XEA1840. Although the TN segment-wide trend was significant, the null hypothesis of homogeneity for season was rejected. Consequently, any segment-wide trend analyses should be interpreted for monthly not annual data. Increasing trends were also observed for DIN, the species of nitrogen most readily used by living resources. Significant increases in DIN were observed at three of the tidal fresh stations; the trend at XFB2470 was not significant. DIN increases ranged from 20% at XFB1433 to 39% at XEA1840. The DIN segment-wide trend was significant and homogeneous across all stations and seasons.

Trends in NO_{23}, a component of both TN and DIN, increased significantly at all four tidal fresh stations. The increases ranged from 63% at XEA6596 to 75% at both XFB2470 and XEA1840. The segment-wide NO_{23} trend was significant; however, the null hypothesis of seasonal homogeneity was rejected. As a result, any segment-wide trends would have to be interpreted for individual months (seasons). Unlike the other nitrogen species, significant decreases in NH_4 occurred at three stations in the tidal fresh zone. Decreases in NH_4 ranged from 32% at XEA6596 to 65% at XFB2470. The magnitudes of the percent changes may be biased due to the high numbers of censored data points. Although the segment-wide trend for NH_4 was significant, the null hypothesis of homogeneity was rejected for season and station. Heterogeneity in station and season would indicate the only meaningful trends are for individual site-seasons.

TSS increased by 50% and 60% at XFB2470 and XFB1433, respectively. Despite having significant trends at only two stations, the segment-wide trend was significant for the tidal fresh zone. The null hypothesis of homogeneity was rejected for season, indicating that for most seasons (months) TSS was increasing, but for some TSS was decreasing. Segment-wide TSS trends should therefore be conducted on individual months. Even though significant increases were observed for TSS at two tidal fresh stations, there were no detectable effects on SECCHI, which remained unchanged (SECCHI slopes for the four stations are zero). A significant decreasing trend of 30% was detected at XEA1840 for CHLA.

Conflicting tends were detected for DO_FLD in the tidal fresh zone. A 10% increase was observed at XFB2470, the upper-most station, while a 10% decrease was observed at XEA1840, the lower-most station. Significant increases in PH_FLD were observed at three stations in the tidal fresh zone. Two stations, XFB2470 and XFB1433 had increases of 10%, while the slope at the remaining station, XEA6596, was so small that the percent change was rounded to zero. Although the segment-wide trend for PH_FLD was significant, the null hypothesis of homogeneity was rejected for station and season; therefore, segment-wide trends are

inappropriate and the only meaningful trend tests are for individual sites and seasons.

ii. Oligohaline Zone

Total phosphorus decreased by 22% at XDA4238, the only oligohaline zone station with a significant trend. Despite the lack of significant TP trends at the other two oligohaline zone stations, the segment-wide trend was significant and homogeneous for trend. There were no significant PO_4W trends at individual stations. Despite the absence of significant trends at individual stations, the segment-wide PO_4W trend was significant, but heterogeneous for season.

TN increased by 19% at XDA1177 and by 35% at XDB3321, where sampling stopped in September 1990. The increasing TN trend was significant and homogeneous for the segment. Significant increasing DIN trends were detected at all three oligohaline zone stations. DIN increases ranged from 24% at XDA4238 to 43% at XDB3321. The DIN trend was significant and homogeneous for the segment. NO_{23}, a major component of both TN and DIN, also had significant increasing trends at all three oligohaline zone stations. NO_{23} trends in the oligohaline zone, which ranged from 46% to 65% at XDA4238 and XDB3321, respectively were significant and homogeneous for the segment. NH_4, which is a minor component of DIN, decreased by 27% at XDA4238 and by 32% at XDA1177. The NH_4 trend magnitudes may be biased, since the numbers of censored data points greatly exceeded 5%. Despite the absence of a significant NH_4 trend at XDB3321, a significant and homogeneous segment trend was observed.

Increasing TSS trends were observed at XDA4238 (70%) and XDA1177 (30%). The segment-wide trend was significant, but heterogeneous for season. Therefore, segment-wide statements about annual trends would be misleading. Any trend analyses across stations should be conducted on a monthly basis. Although increasing TSS trends were observed at the upper two stations, significant changes in SECCHI were not detected. CHLA decreased by 20% and 30% at XDA4238 and XDB3321, respectively. The pattern in heterogeneity described for TSS also occurred for CHLA, in that the trend was significant for the segment, but the null hypothesis for homogeneity across season was rejected. It appears that the changes observed in TSS are probably a result of increases in the inorganic fraction that are capable of off-setting the decreasing trends in CHLA. Significant trends for DO_FLD and PH_FLD were not detected in the oligohaline zone.

iii. Mesohaline Zone

Trend analyses were only conducted for one station (XDC1706) in the mesohaline zone because data collection at MLE2.2 and MLE2.3 from the mid-1970s until the start of sampling under the Chesapeake Bay Program was sporadic at best. Only three significant trends were detected at XDC1706; NO_{23} increased by 35%, TSS increased by 30% and DO_FLD decreased by 10%.

F. Bottom Trends for Raw Data for mid-1970s-1996

The following sections describe bottom trends on raw data for the mid-1970s-1996 time period for the stations located in the mainstem. Detailed information on these trends is presented in Section VIII.

i. Tidal Fresh Zone

There were no significant TP trends at individual stations; however, the overall segment-wide trend was significant and homogeneous for season, station, and station-season interaction. Long-term trends in PO_4W were significant at all four tidal fresh stations. Changes ranged from decreases of 37% at XEA1840 to 57% at XFB2470. The number of censored data points exceeded 5% at XFB1433, XEA6596, and XEA1840, thus trend magnitudes at those stations may be biased. The segment-wide PO_4W trend was significant and homogeneous for station, season, and station-season interaction.

Bottom trends for TN were not significant at individual stations or segment-wide. Similarly, trends for DIN were not significant at individual stations or segment-wide. Despite the absence of trends in either TN or DIN, significant trends were detected in NO_{23}, a major component of both species. NO_{23} trends ranged from 41% at XEA1840 to 54% at XEA6596. The overall, segment-wide NO_{23} trend was significant and homogeneous for station, season, and station-season interaction. In contrast to the increasing NO_{23} trends observed in the tidal fresh zone, trends in NH_4 were decreasing (probably as a result of nitrification at sewage treatment plants). Decreasing NH_4 trends ranged from 30% at both XEA6596 and XEA1840 to 58% at XFB2470. Although the segment-wide NH_4 trend was significant, the null hypothesis of homogeneity for season was rejected, indicating that during most seasons NH_4 decreased, but during some seasons it increased. As a result, trend analyses for NH_4 across stations should be interpreted on monthly data.

XEA6596 is the only tidal fresh station that had a significant bottom trend for TSS. Although only one station had a significant trend (90% increase), the segment-wide trend was significant; however, the null hypothesis of homogeneity for season was rejected. CHLA increased by 20% at XFB2470, the only tidal fresh station with a significant CHLA trend.

Conflicting trends in bottom DO_FLD were detected in the tidal fresh zone. DO_FLD increased by 10% at XFB2470 and decreased by 10% at XEA1840. The null hypothesis of seasonal homogeneity at XFB2470 was rejected, which indicates that although DO_FLD increased during most months it decreased during others. Significant trends in PH_FLD were detected at three tidal fresh stations. PH_FLD increased by 10% at XFB2470 and XFB1433 and by 0% at XEA6596 (although the slope was positive at XEA6596, it was so slight that percent change was rounded to zero). The trend in PH_FLD was significant and homogeneous across all stations in the tidal fresh zone.

ii. Oligohaline Zone

TP trends in the oligohaline zone were not significant. Decreasing PO_4W trends of 34% and 36% were detected at XDA4238 and XDA1177, respectively. The magnitude of trend at XDA4238 may be biased due to the high number of censored data points. Although the PO_4W trend was significant for the segment, the null hypothesis of homogeneity for season was rejected.

Trends for both TN and DIN were not significant. Despite the absence of individual station trends for NO_{23} (p-values were in the 0.02-0.03 range), a significant, homogeneous segment-wide trend was detected. Significant decreasing trends in NH_4 were detected at XDA4238 (88%) and XDA1177 (46%); however, the magnitude of trend at both stations may biased due to the high number of censored data points. The NH_4 trend was significant for the segment, but the null hypothesis of homogeneity for station was rejected, probably as a result of the absence of significant decreasing trend at XDB3321. Consequently, analyzing NH_4 trends across stations would be misleading. Trends in TSS and CHLA were not significant in the oligohaline zone.

A 10% decreasing trend in DO_FLD was detected at XDB3321, where sampling stopped in September 1990. Although trends at the remaining two oligohaline zone stations were not significant, the segment-wide trend in DO_FLD was significant. Segment-wide DO_FLD trends should be analyzed on a monthly basis since the null hypothesis of homogeneity for season was rejected. Significant PH_FLD trends were observed at all three stations; however, the slopes were so slight that the percent changes were rounded to zero.

iii. Mesohaline Zone

Data for one station (XDC1706) was analyzed in the mesohaline zone due the lack of historical data at the remaining two stations. The only variable with a significant trend at XDC1706 is PH_FLD, where the slope was so small that the percent change was rounded to zero.

G. Flow-Adjusted Surface Trends for mid-1970s-1996

The following sections describe surface, flow-adjusted trends for the mid-1970s-1996 time period for the stations located in the mainstem. Detailed information on these trends is presented in Section IX.

i. Tidal Fresh Zone

TP trends and flow adjustment models were significant at all four tidal fresh zone stations. The decreasing TP trends ranged from 31% at XFB2470 to 39% at XEA1840. The trend in TP was significant and homogeneous for the segment. Trends in PO_4W were substantial and negative at all four tidal fresh zone stations. Due to the large numbers of censored data points, PO_4W trends at all four stations were estimated using the LIFEREG procedure. The trends, all of which were

decreasing, ranged from 49% at XEA1840 to 66% at XFB2470. Flow-adjustment models were significant at the upper three tidal fresh stations (XFB2470, XFB1433, and XEA6596).

TN trends and flow adjustment models were significant at all four tidal fresh zone stations. The trends, which were all increasing, ranged from 17% at XFB1433 to 38% at XEA1840. The TN trend was significant for the segment, although not homogeneous for season. As a result, segment-wide trends for TN should be conducted on a monthly basis. Trends and flow adjustment models were also significant at all four stations for DIN, where increases ranged from 20% at XFB2470 to 40% at XEA1840. The DIN trend was significant and homogeneous for the segment.

The increases in TN and DIN are in part attributable to increases in NO_{23}, a major component of both species. NO_{23} increases ranged from 62% at XEA6596 to 74% at both XFB1433 and XEA1840. The NO_{23} trend was significant and homogeneous for the segment. Flow adjustment models for NO_{23} were significant at three of the four stations. In contrast to the increasing NO_{23} trends, significant decreasing trends in NH_4 were detected in the tidal fresh zone. Decreasing trends of 79% were detected at both XFB2470 and XFB1433, while a decreasing trend of 63% was detected at XEA6596. Decreasing trends in NO_{23} and increases in NH_4 in the tidal fresh zone may have resulted from nitrification at the sewage treatment plants. The NH_4 trends were estimated using the LIFEREG procedure due to the high number of censored data points. NH_4 flow adjustment models were significant only at XEA6596 and XEA1840.

Increasing TSS trends were detected at XFB2470 (60%), XFB1433 (40%) and XEA6596 (50%). Flow adjustment models were significant at all four tidal fresh stations. The TSS segment-wide trend was significant; however, the null hypothesis of homogeneity for season was rejected. As a result, segment-wide trends should be conducted on a monthly basis. Despite significant increases in TSS, and significant flow-adjustment models for SECCHI, no significant SECCHI trends were observed. Significant flow adjustment models for CHLA were detected at all four tidal fresh stations; however, only one significant trend (30% decrease) was observed at XEA1840.

Conflicting DO_FLD trends were observed in the tidal fresh zone. DO_FLD increased by 10% at XFB2470 and decreased by 10% and 20% at XEA6596 and XEA1840, respectively. Flow adjustment models for DO_FLD were significant at all four stations. Significant trends in PH_FLD were detected at three tidal fresh zone stations. The upper two stations, XFB2470 and XFB1433 had increasing trends of 10%. The trend at XEA6596 was also significant; however, the slope was so negligible that the percent change was rounded to zero. The segment-wide trend for PH_FLD was significant; however, the null hypotheses for station and seasonal homogeneity were rejected. As a result, meaningful trend tests would be for individual stations-seasons.

ii. Oligohaline Zone

A significant TP decrease of 25% was detected at both XDA4238 and XDA1177. A significant

TP flow correction model was observed at XDA1177. Although the TP trend at XDB3321 was not significant, a significant, homogeneous segment-wide TP trend was observed. PO_4W decreased at all three stations; however, there were no significant PO_4W trends or flow correction models in the oligohaline zone. Despite the absence of significant PO_4W trends at individual stations, the segment-wide trend was significant and homogeneous.

Significant trends and flow adjustment models were detected for TN at all three stations, where increases ranged from 22% at XDA4238 to 46% at XDB3321. The segment-wide TN trend was also significant and homogeneous for season, station and station-season interaction. Significant trends and flow adjustment models were also observed for DIN at all three stations. DIN increases ranged from 27% at XDA4238 to 57% at XDB3321. The segment-wide trend statistic was significant, but the null hypothesis of homogeneity for season was rejected. Consequently, segment-wide statements about trends in DIN would be misleading.

Trends in NO_{23}, a major component of both TN and DIN increased significantly at all three stations. The increases ranged from 48% at XDA4238 to 65% at XDB3321. NO_{23} flow adjustment models were also significant at all three stations. Although a significant trend statistic was observed for the segment, the null hypothesis of homogeneity for season was rejected. NH_4 trends at all three stations were analyzed using the LIFEREG procedure due to the large number of censored data points. Significant trends in NH_4 were observed at XDA4238 and XDA177, where NH_4 decreased by 61% and 48%, respectively. Flow adjustment models for NH_4 were significant at all three stations. Homogeneity statistics are not available for NH_4 since the trends were not estimated using the Seasonal Kendall test.

Significant trends and flow adjustment models were observed in the oligohaline zone for TSS, where increases ranged from 30% at XDA1177 to 80% at XDA4238. The TSS segment-wide trend was significant and homogeneous for station, season, and station-season interaction. Despite sharp increases in TSS at all three stations in the oligohaline zone, and significant flow adjustment models for SECCHI, no significant SECCHI trends were observed. A significant 50% decrease in CHLA was observed at XDB3321, the only oligohaline zone station with a significant trend. Despite the absence of significant trends at the remaining two stations, the segment-wide trend was significant, but not homogeneous for season.

Although significant flow adjustment models were observed at all three oligohaline zone stations for DO_FLD, a significant trend was observed only at XDA1177, where DO_FLD decreased by 10%. Although only one station had a significant trend in DO_FLD, the segment-wide trend was significant and homogeneous for station, season, and station-season interaction. Flow adjustment models were significant at two stations for PH_FLD; however, no significant trends were observed.

iii. Mesohaline Zone

A trend of -23% was observed for TP at XDC1706. The flow adjustment model was not

significant. Due to the high number of censored data points for PO_4W at XDC1706, the trend, which was significant and decreasing (29%), was estimated using the LIFEREG procedure. The PO_4W flow adjustment model was also significant. A significant increasing trend of 23% and a significant flow adjustment model were observed for DIN at XDC1706. The TN trend was not significant. Part of the increase in DIN can be attributed to a significant 38% increase in NO_{23}, which also had a significant flow adjustment model. NH_4, a minor component of DIN, had a significant decrease of 38% at XDC1706. The NH_4 flow adjustment model was also significant. Significant flow adjustment models were observed for TSS and for SECCHI; however, the trends were not significant for either variable. Neither a significant flow adjustment model nor a significant trend were detected at XDC1706 for CHLA. Significant flow adjustment models were observed for DO_FLD and for PH_FLD; however, a significant decreasing trend of 20% was detected only for DO_FLD.

H. Flow-Adjusted Bottom Trends for mid-1970s-1996

The following sections describe bottom, flow-adjusted trends for the mid-1970s-1996 time period for the stations located in the mainstem. Detailed information on these trends is presented in Section IX.

i. Tidal Fresh Zone

Significant flow adjustment models were observed at XFB2470 and XFB1433 for TP. A significant decreasing trend of 38% was detected in TP at XFB1433. Although only one significant TP trend was observed in the segment, the segment-wide trend was significant and homogeneous for station and for season. Flow adjustment models for PO_4W were significant at the upper three stations in the tidal fresh zone. Trends in PO_4W were significant at all four stations, three of which were estimated using the LIFEREG procedure due to high numbers of censored data points. Decreasing trends of 66% were detected using LIFEREG at XFB1433 and XEA6596. A decreasing trend of 49% was detected at XEA1840, which was also evaluated with LIFEREG. The PO_4W trend at XFB2470, which was estimated using the Seasonal Kendall test and Sen's slope estimator, was decreasing by 48%.

Flow adjustment models for TN were significant at three tidal fresh stations. A significant increasing TN trend of 24% was observed at XEA1840. Although a significant trend was observed at only one station, the segment-wide trend was significant and the null hypotheses of homogeneity were not rejected. Significant flow adjustment models were observed at all four tidal fresh stations for DIN; however, only XFB2470 had a significant trend, where an increase of 18% was observed. Despite only one tidal fresh station having a significant trend in DIN, the segment-wide trend was significant and homogeneous.

Significant flow adjustment models and trends in NO_{23} were detected at all four tidal fresh stations. Changes in NO_{23} ranged from 32% at XFB1433 to 56% at XFB2470. In addition to significant trends at individual stations, a significant, homogeneous segment-wide trend in NO_{23}

was also observed. Significant flow adjustment models for NH_4 were detected at the two lower tidal fresh stations; however, significant trends were detected at all four stations. A significant decrease of 53% was detected in NH_4 at XFB2470 using the Seasonal Kendall test. NH_4 trends, which were estimated using the LIFEREG procedure, decreased 47% at XEA1840 and 76% at XFB1433.

Although significant flow adjustment models were observed for TSS at all four tidal fresh stations, the trends were not significant. Flow correction models for CHLA were significant for the upper three tidal fresh stations. Significant trends in CHLA of 30% and 20% were detected at XFB2470 and XFB1433, respectively. In addition to the significant trends at two stations, a significant, homogeneous segment-wide trend in CHLA was also observed.

Flow adjustment models for DO_FLD were significant at all four tidal fresh stations. The direction of DO_FLD trends in the tidal fresh zone differed between the upper station (XFB2470), which had an increasing trend of 10%, and the lower station (XEA1840), which had a decreasing trend of 20%. Significant flow adjustment models and trends for PH_FLD were observed at three tidal fresh stations. Significant trends were detected at the upper three stations, whereas significant flow adjustment models occurred at the upper two and the lower-most stations. The PH_FLD trends at XFB2470 and XFB1433 were both 10%. The trend at XEA6596 was so slight that the percent change was rounded to zero. In addition to the significant PH_FLD trends at individual stations, the segment-wide trend was significant, though the null hypothesis of homogeneity for season was rejected. Therefore, trends across stations should be analyzed on a monthly basis.

ii. Oligohaline Zone

A significant TP flow correction model was observed at one station in the oligohaline zone. No significant TP trends were detected. PO_4W trends were significant at all three stations. A decrease of 25% was detected at XDA1177 using the Seasonal Kendall test. Decreases of 34% and 30% were detected at XDA4238 and XDB3321, respectively using the LIFEREG procedure. PO_4W trends at two of the stations were estimated using LIFEREG due to the high number of censored data points. A significant flow adjustment model for PO_4W was observed only at XDA1177.

Significant flow adjustment models for TN were detected at all three stations; however, a significant trend was only observed at XDA1177, where TN increased by 15%. Significant flow adjustment models for DIN were also observed at all three stations. The only station with a significant DIN trend was XDB3321 (sampling stopped in September 1990), where DIN increased by 28%. NO_{23} also had significant flow adjustment models at all three stations and a significant trend of 49% at XDB3321. Despite only having one significant station trend, the overall segment-wide NO_{23} trend was significant and homogeneous. Trends and flow adjustment models for NH_4 were significant at all three oligohaline zone stations. Due to the large number of censored data points the NH_4 trends, which decreased from 39% at XDB3321 to 70% at

XDA4238, were estimated using LIFEREG.

A significant 50% increase in TSS was detected at XDA1177. Significant flow adjustment models were detected at XDA4238 and XDA1177. A significant trend (-70%) and flow adjustment model were observed for CHLA at XDB3321.

Significant flow adjustment models were observed at all three oligohaline zone stations for DO_FLD. Significant decreasing trends of 10% were detected at XDA1177 and XDB3321. The segment-wide DO_FLD trend was also significant; however, the null hypothesis of homogeneity for season was rejected. Trends in PH_FLD were significant at all three stations. At the upper two stations, the slopes were small and positive while at the lower station (XDB3321) the slope was small and negative. The slopes at all three stations were so small that the trends were rounded to zero during the calculation of percent change. Significant flow adjustment models were observed at only the upper two stations.

iii. Mesohaline Zone

Neither the trend nor the flow adjustment model for TP were significant at XDC1706. A significant flow adjustment model was observed for PO_4W; however, the trend, estimated using LIFEREG, was not significant. Similarly, for TN and DIN flow adjustment models were significant, but the trends were not. Trends and flow adjustment models for NO_{23} and NH_4 were significant at XDC1706. The trend directions for NO_{23} and NH_4 differed; NO_{23} increased by 32%, while NH_4, estimated using LIFEREG, decreased by 45%. The pattern of increasing NO_{23} and decreasing NH_4 may have resulted from the nitrification process at WWTPs to convert the potentially toxic NH_4 to NO_{23}.

Both the flow adjustment model and the trend (50%) in TSS were significant. Despite having a significant flow adjustment model, the trend in CHLA was not significant. A significant decreasing trend of 20% and a significant flow adjustment model were observed for DO_FLD. The change in PH_FLD was significant, but so slight that during the calculation of percent change the trend was rounded to zero. The flow adjustment model was not significant.

Table III-1. Potomac River Sampling Stations. River kilometer is defined as the distance from the river mouth. Fresh is defined as 10-year median salinity <0.5 ppt, oligohaline as salinity > 0.5 ppt and < 5.0 ppt., and mesohaline as salinity > 5.0 ppt. These correspond to the limnetic, oligohaline and mesohaline zones of the Venice System (Symposium, 1959).

Station/ CBP Segment	Latitude/ Longitude (NAD 27)	Location/Depth	River Km	Salinity Zone
XFB2470 POTF1	38°42'26" 77°02'57"	At FL buoy 77 off mouth of Piscataway Creek; 19m.	143.0 km	Tidal Fresh
XFB1433 POTTF1	38°41'26" 77°06'31"	Bouy 67 off mouth of Dogue Creek; 8m.	137.4 km	Tidal Fresh
XEA6596 POTTF1	38°36'29" 77°10'27"	Bouy N 54 mid-channel off Indianhead; 15m.	123.6 km	Tidal Fresh
XEA1840 POTTF1	38°31'47" 77°15'56"	Bouy 44 between Possum Pt. and Moss Pt.; 9m.	111.7 km	Tidal Fresh
PIS0033 POTTF3	38°41'54" 76°59'13"	At route 210 overpass; 0.5 m.	139.7 km	Tidal Fresh
XFB1986 POTTF3	38°41'51" 77°01'24"	Piscataway embayment, SE of buoy 6	142.9 km	Tidal Fresh
MAT0078 POTTF2	38°35'18" 77°07'08"	At route 225 overpass; 0.5 m.	113.3 km	Tidal Fresh
MAT0016 POTTF2	38°33'42" 77°13'09"	At FL buoy 5 in Mattawoman embayment.	113.3 km	Tidal Fresh
GUN07	38°39'22" 77°07'35"	Center of Gunston Cove.	133.7 km	Tidal Fresh
GUN09	38°39'22" 77°07'35"	Mouth of Gunston Cove at mainstem	133.7 km	Tidal Fresh
XDA4238 POTOH	38°24'12" 77°16'10"	Buoy 27 SW of Smith Pt.; 8m.	99.1 km	Oligohaline
XDA1177 POTOH	38°21'07" 77°12'17"	Bouy 19 mid-channel off Maryland Pt.; 11m.	88.5 km	Oligohaline
XDB3321 POTOH	38°23'17" 77°07'51"	Bouy 13 off mouth of Nanjemoy Creek; 9m.	78.5 km	Oligohaline
XDC1706 POTMH	38°21'45" 76°59'27"	Mid-channel at Morgantown Bridge (U.S. Rt. 301); 19m.	64.4 km	Mesohaline
MLE2.2 POTMH	38°10'00" 76°44'00"	Potomac River off Ragged Pt. at bouy 51B; 10m.	19.1 km	Mesohaline
MLE2.3 POTMH	38°01'18" 76°21'00"	Mouth of Potomac River; 19.8m.	0 km	Mesohaline

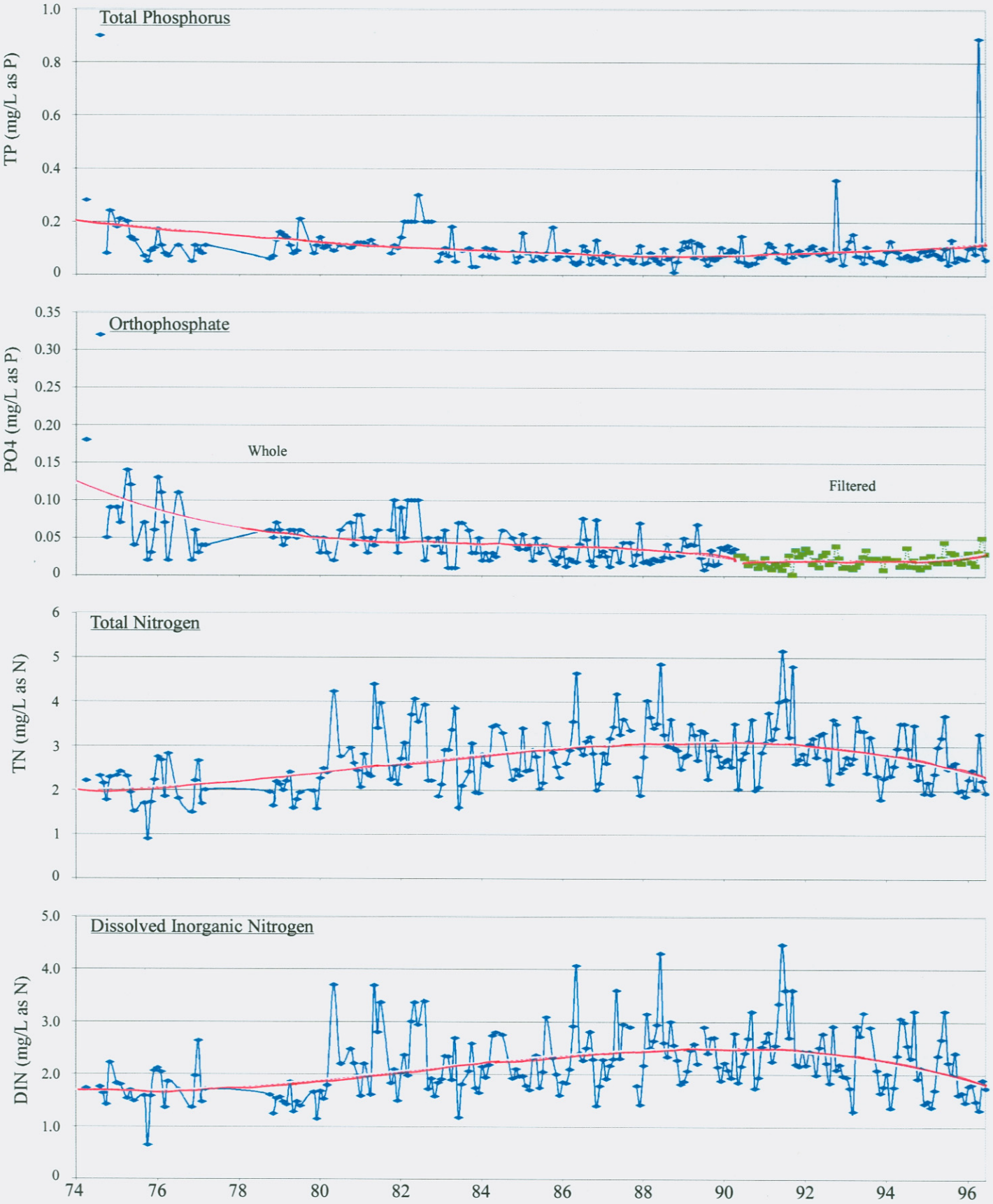


Figure III-1a. Monthly medians of surface nutrient water quality variables for XFB2470. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB2470.CDR

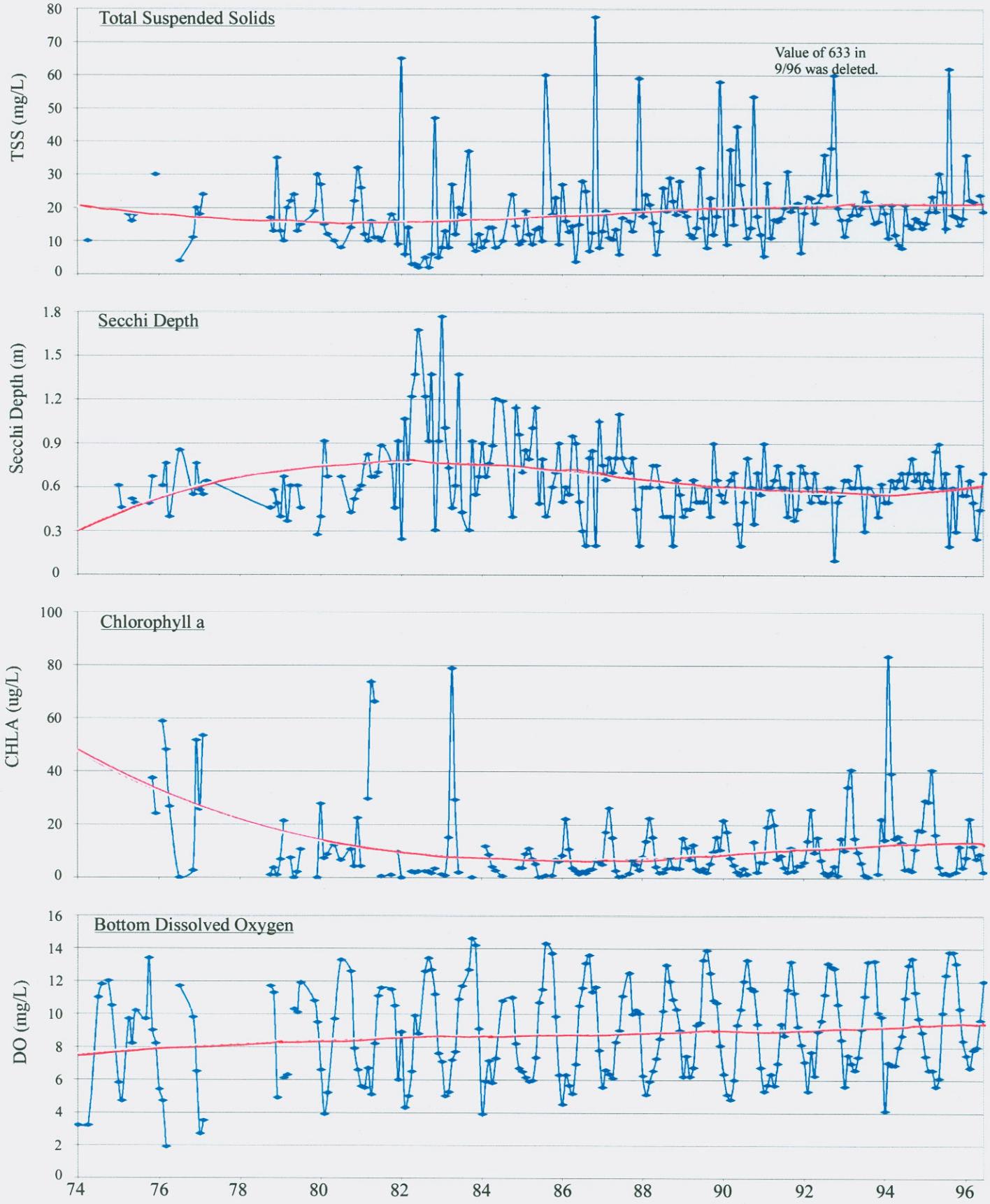


Figure III-1b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB2470. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB2470.CDR

Figure III-2a. Monthly medians of surface nutrient water quality variables for XFB1433. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB1433.CDR

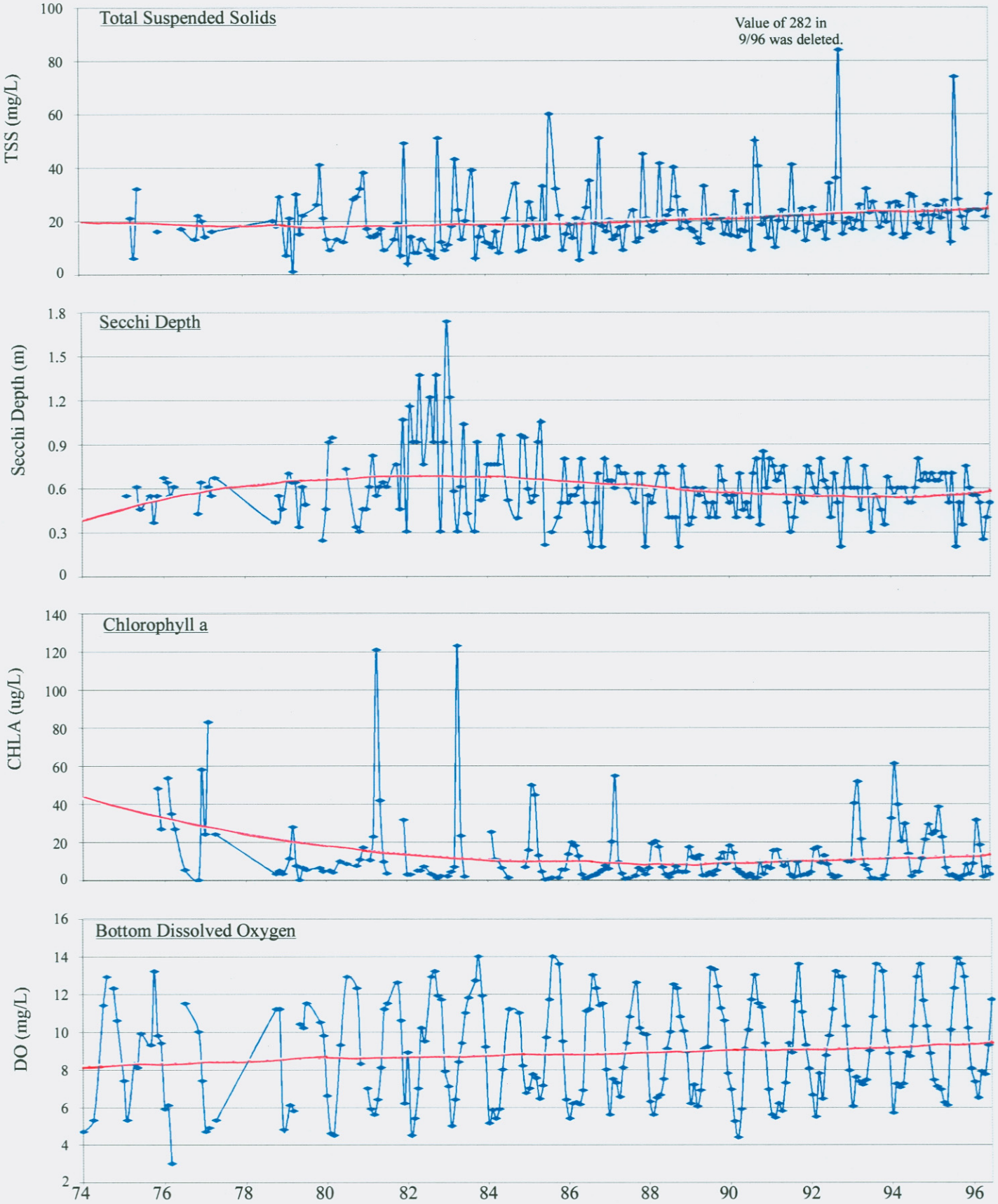


Figure III-2b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB1433. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB1433.CDR

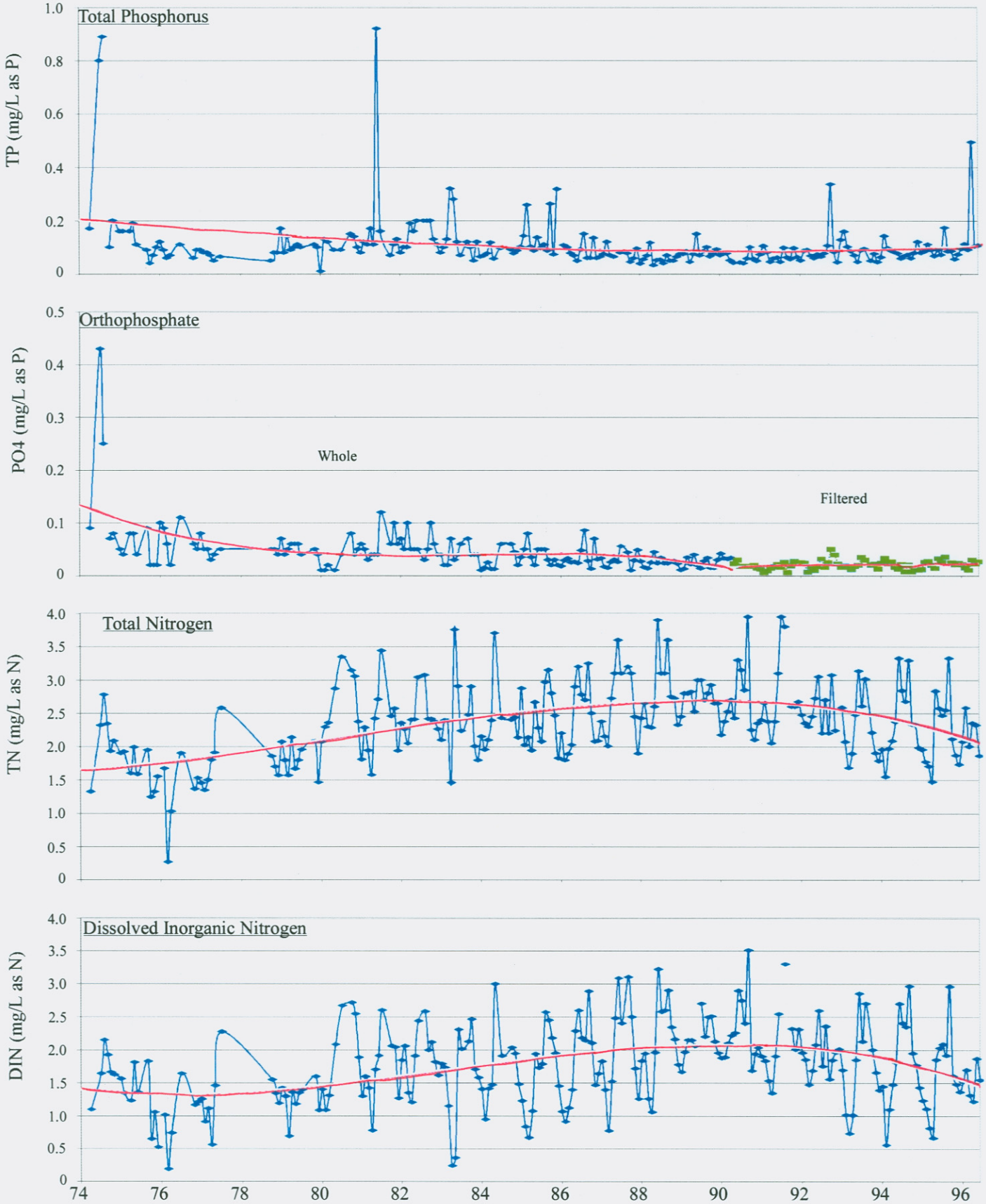


Figure III-3a. Monthly medians of surface nutrient water quality variables for XEA6596. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XEA6596.CDR

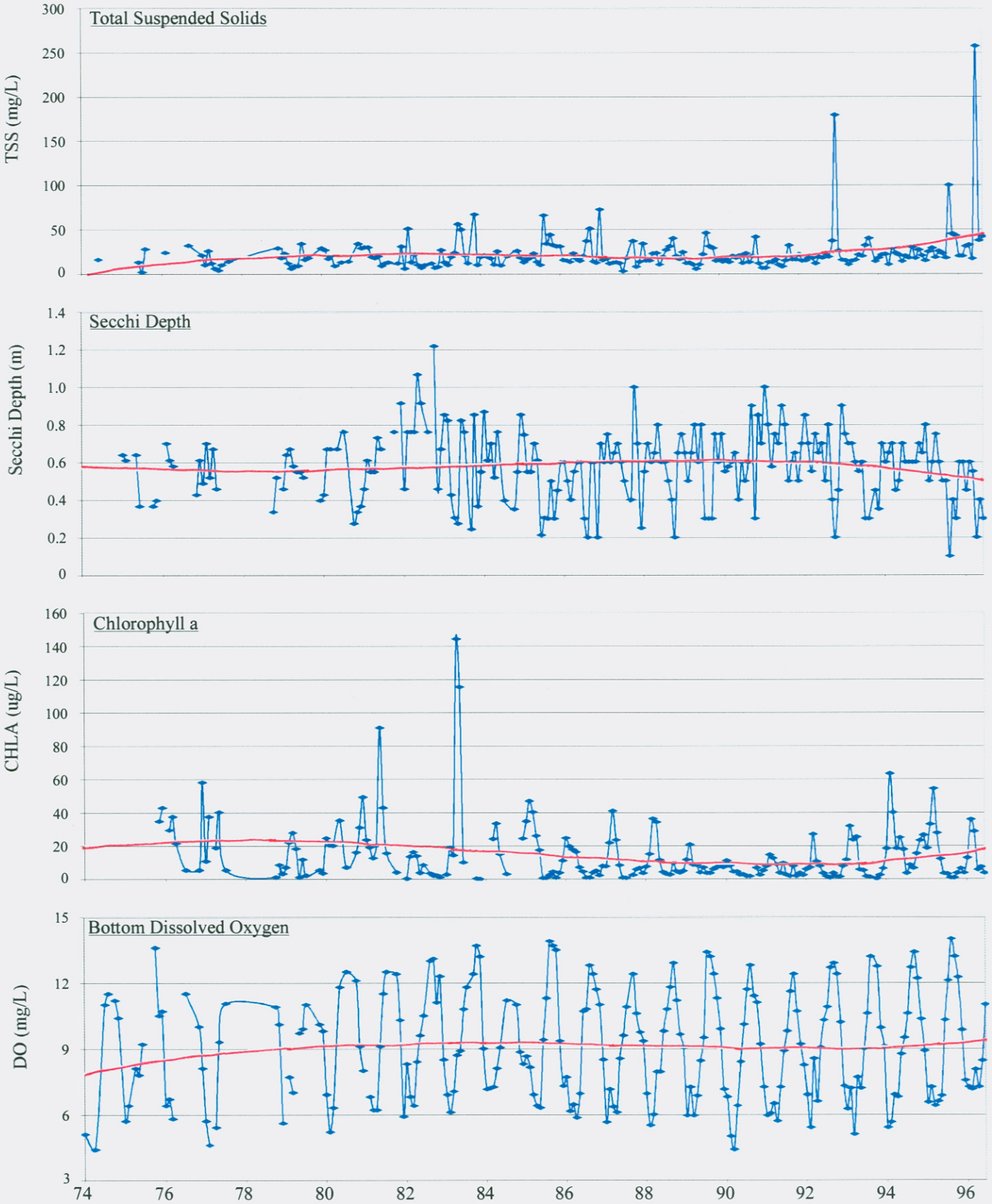


Figure III-3b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XEA6596. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XEA6596.CDR

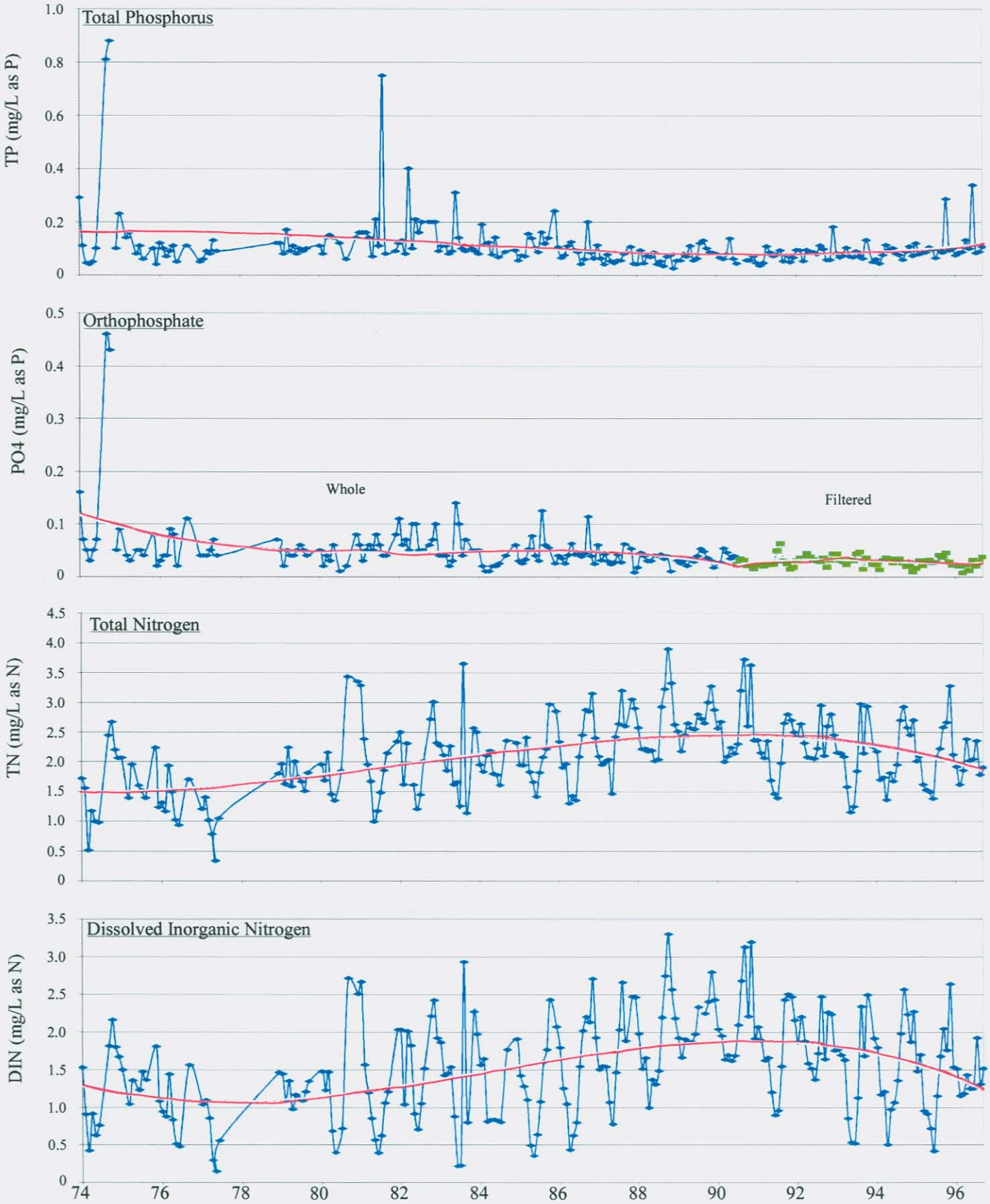


Figure III-4a. Monthly medians of surface nutrient water quality variables for XEA1840. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XEA1840.CDR

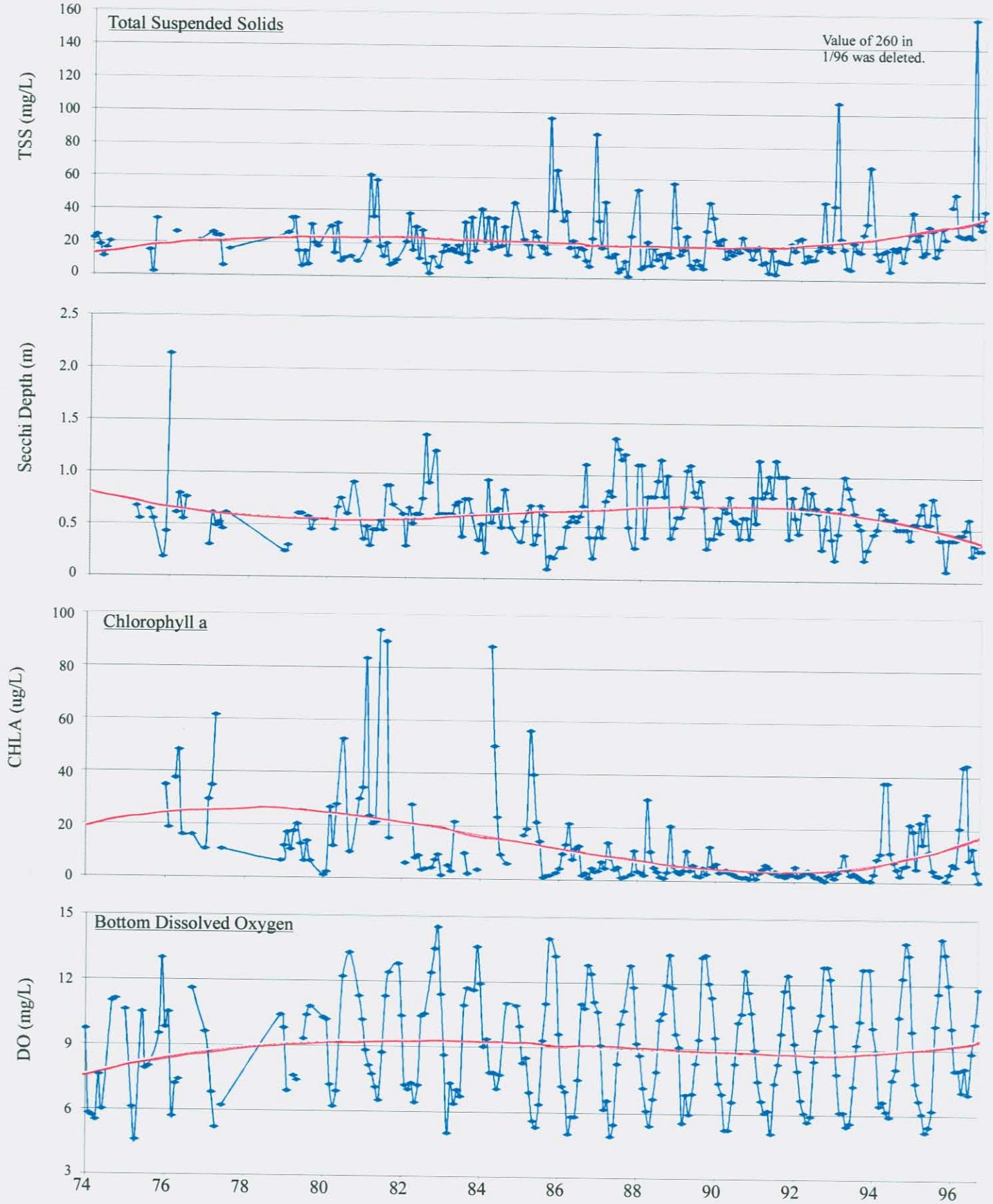


Figure III-4b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XEA1840. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XEA1840.CDR

Figure III-5a. Monthly medians of surface nutrient water quality variables for XFB1986. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB1986.CDR

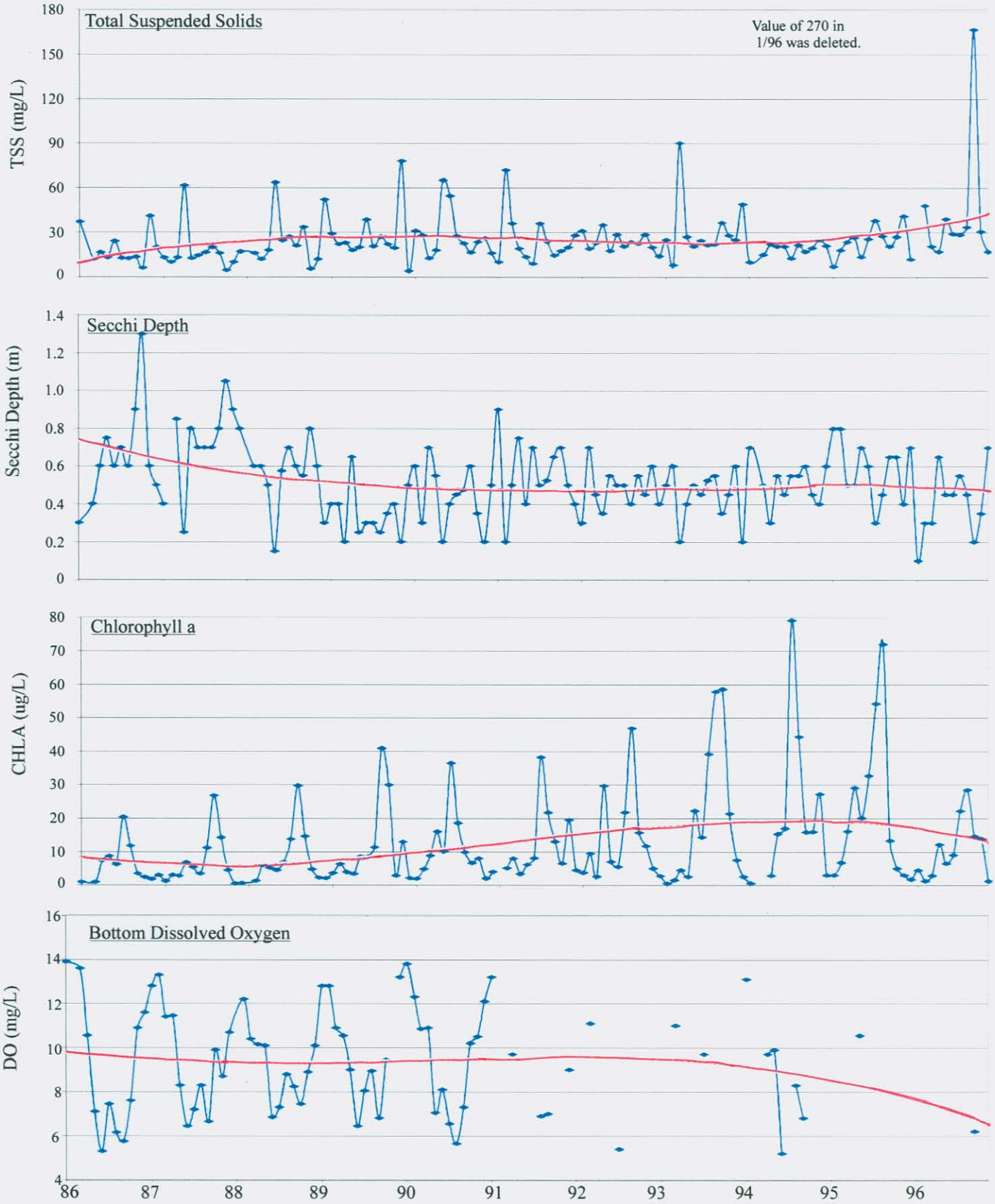


Figure III-5b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XFB1986. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XFB1986.CDR

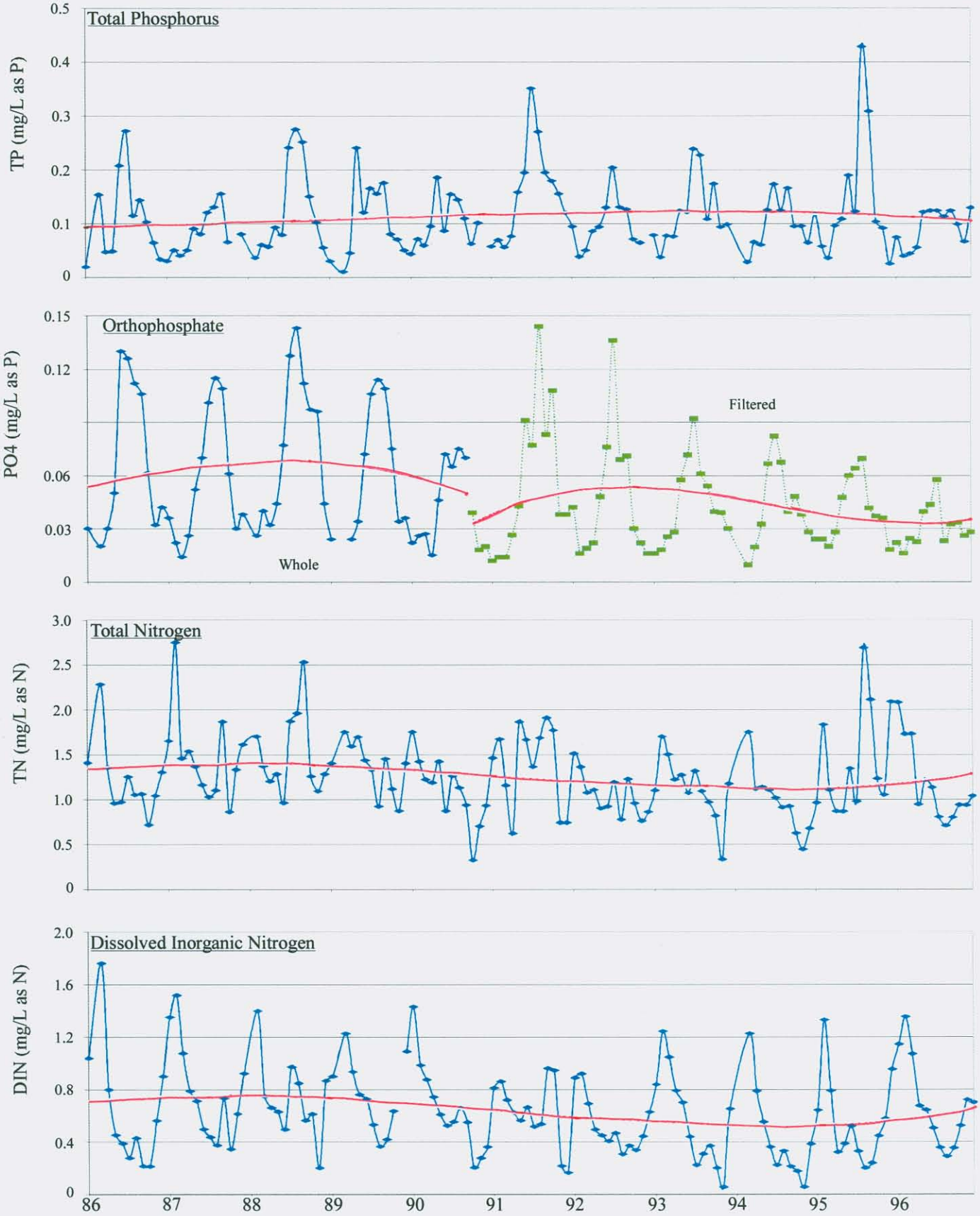
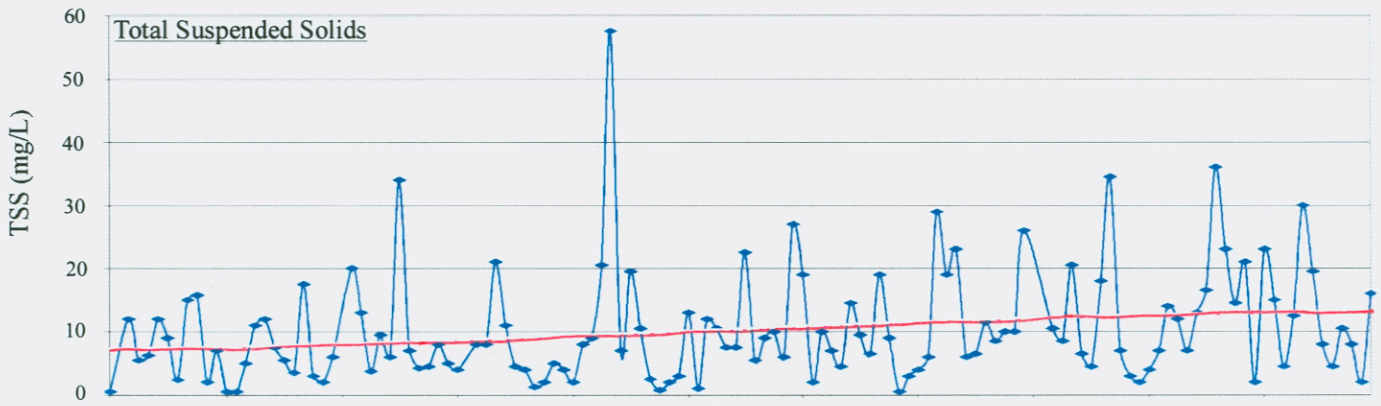


Figure III-6a. Monthly medians of surface nutrient water quality variables for PIS0033. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

PIS0033.CDR



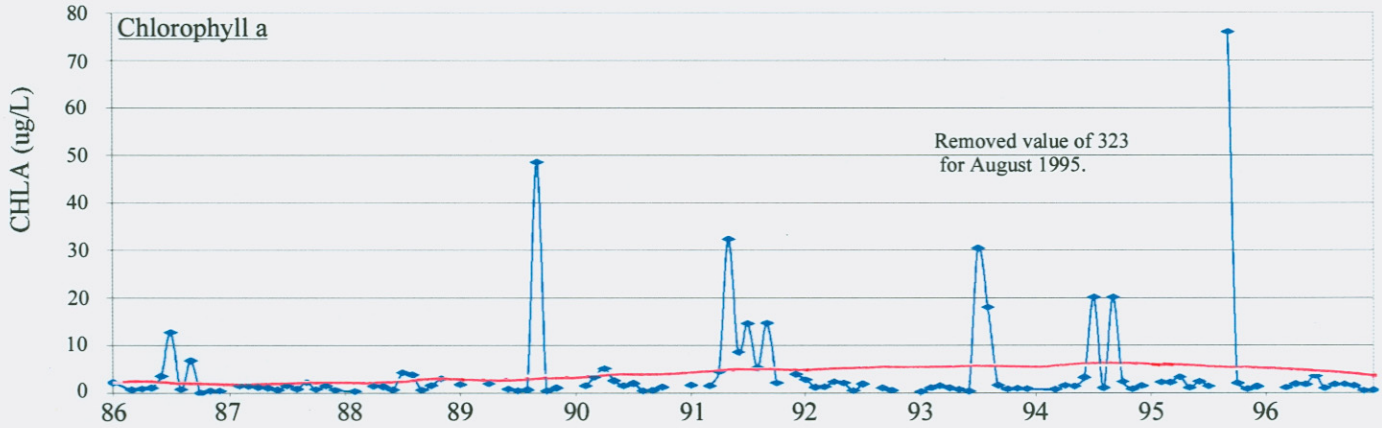


Figure III-6b. Monthly medians of surface non-nutrient water quality variables for PIS0033. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Station too shallow to monitor Secchi depth or bottom dissolved oxygen.

PIS0033.CDR

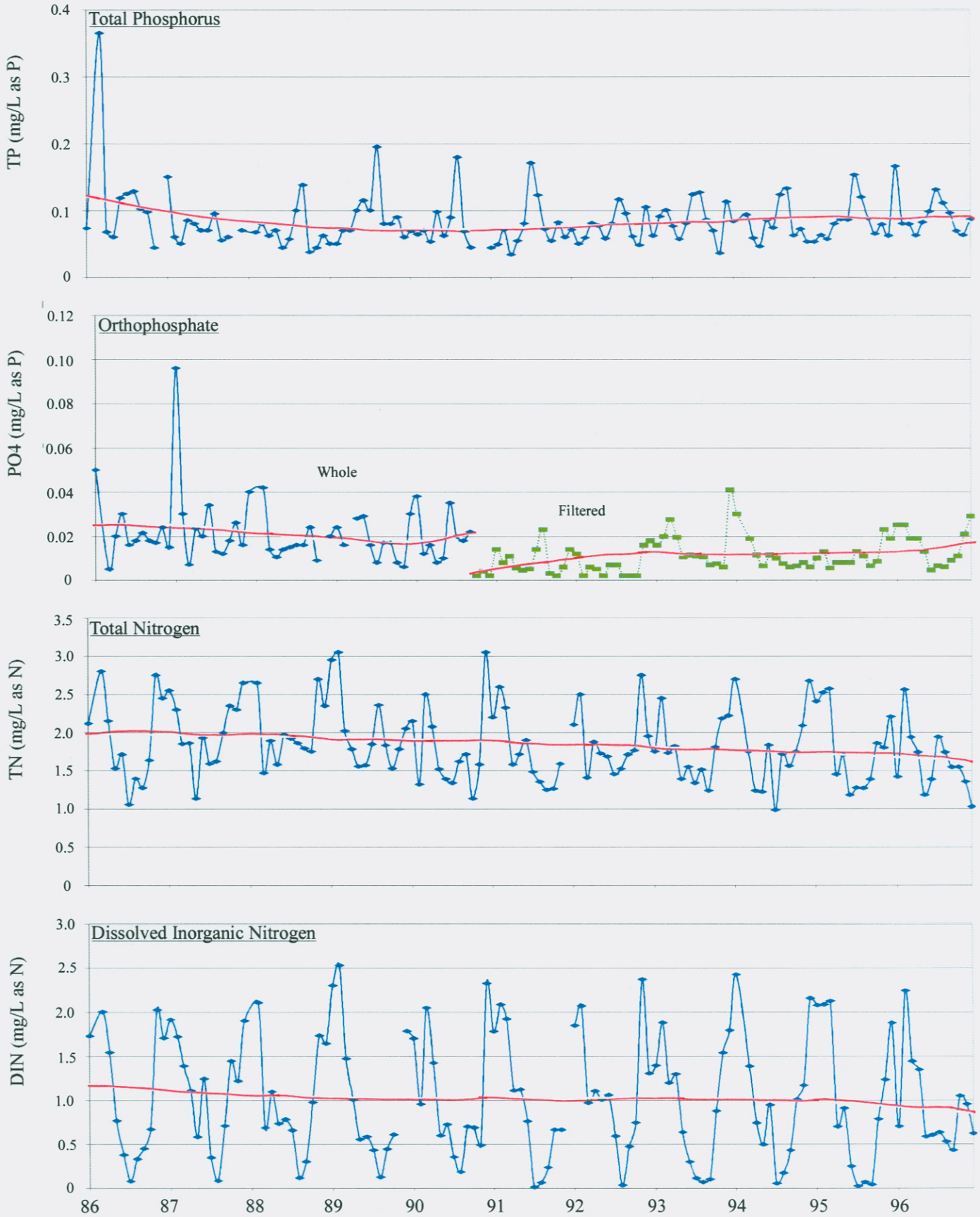


Figure III-7a. Monthly medians of surface nutrient water quality variables for MAT0016. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MAT0016.CDR

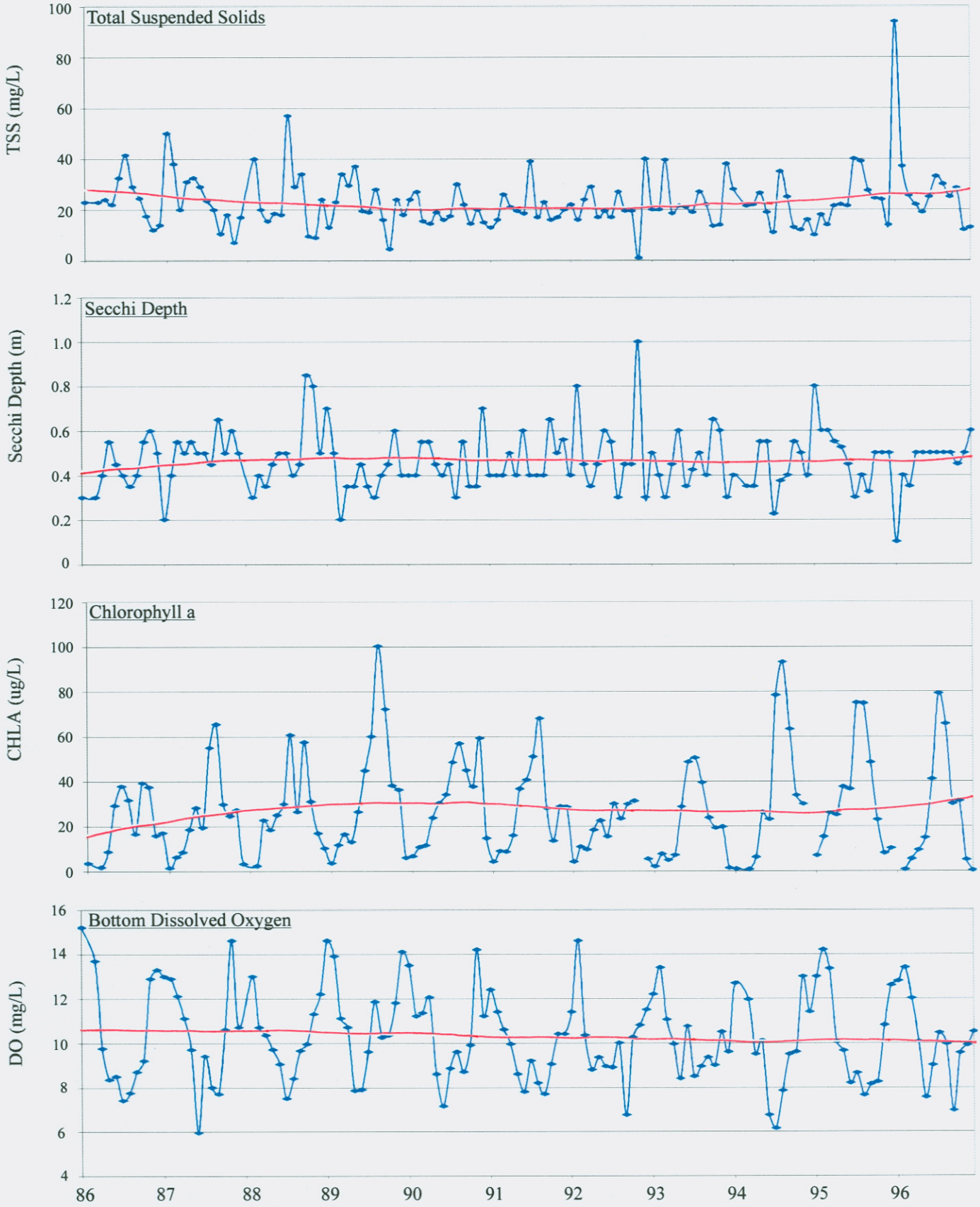
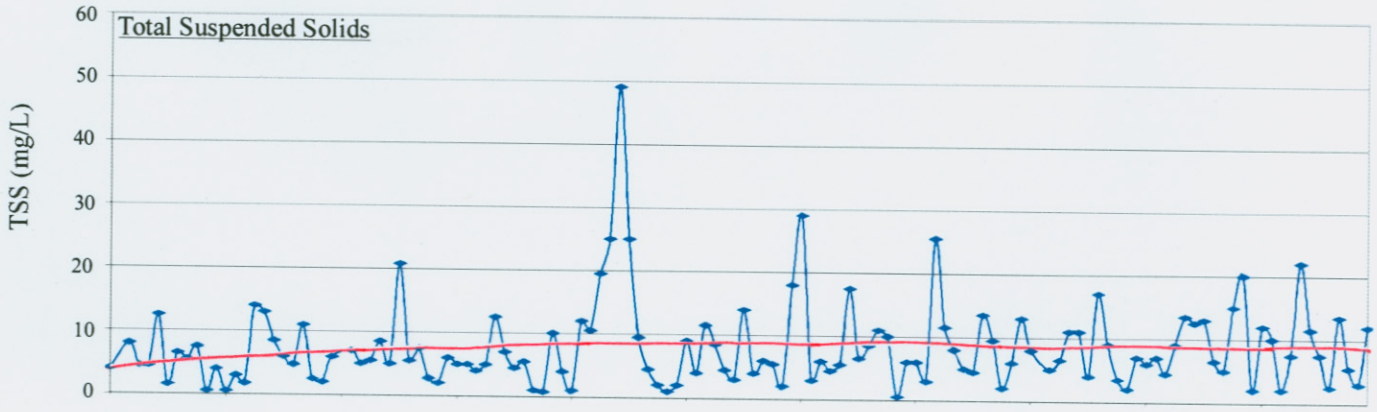


Figure III-7b. Monthly medians of surface non-nutrient water quality variables and bottom DO for MAT0016. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MAT0016.CDR

Figure III-8a. Monthly medians of surface nutrient water quality variables for MAT0078. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MAT0078.CDR



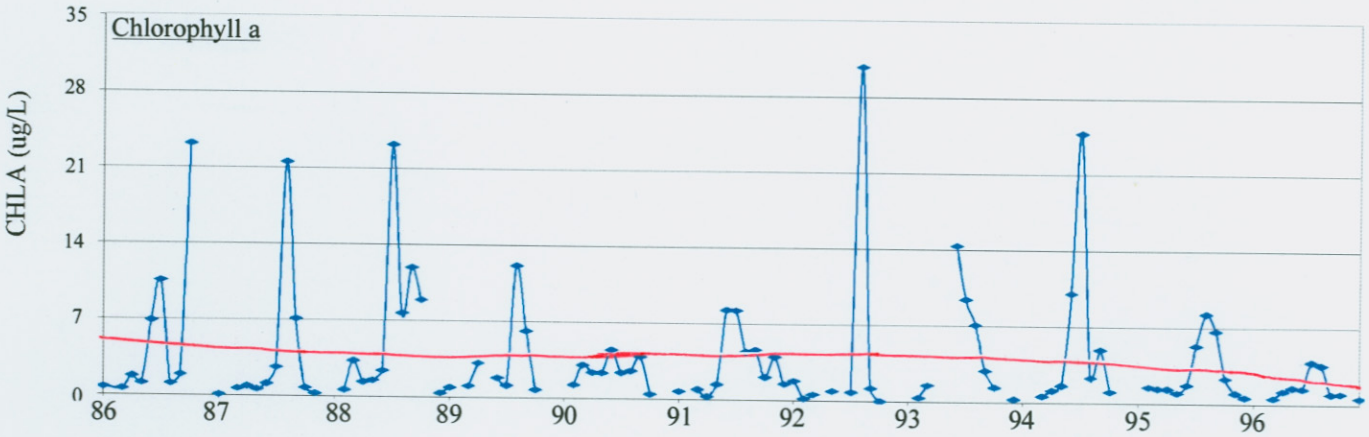


Figure III-8b. Monthly medians of surface non-nutrient water quality variables for MAT0078. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Station too shallow to monitor Secchi depth or bottom dissolved oxygen.

MAT0078.CDR

Figure III-9a. Monthly medians of surface nutrient water quality variables for Gunston 7. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Laboratory data were censored to highest detection limit of the time period.

GUN7.CDR

Figure III-9b. Monthly medians of surface non-nutrient water quality variables and bottom DO for Gunston 7. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Laboratory data were censored to highest detection limit of the time period.

GUN7.CDR

Figure III-10a. Monthly medians of surface nutrient water quality variables for Gunston 9. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Laboratory data were censored to highest detection limit of the time period.

GUN9.CDR

Figure III-10b. Monthly medians of surface non-nutrient water quality variables and bottom DO for Gunston 9. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change. Laboratory data were censored to highest detection limit of the time period.

GUN9.CDR

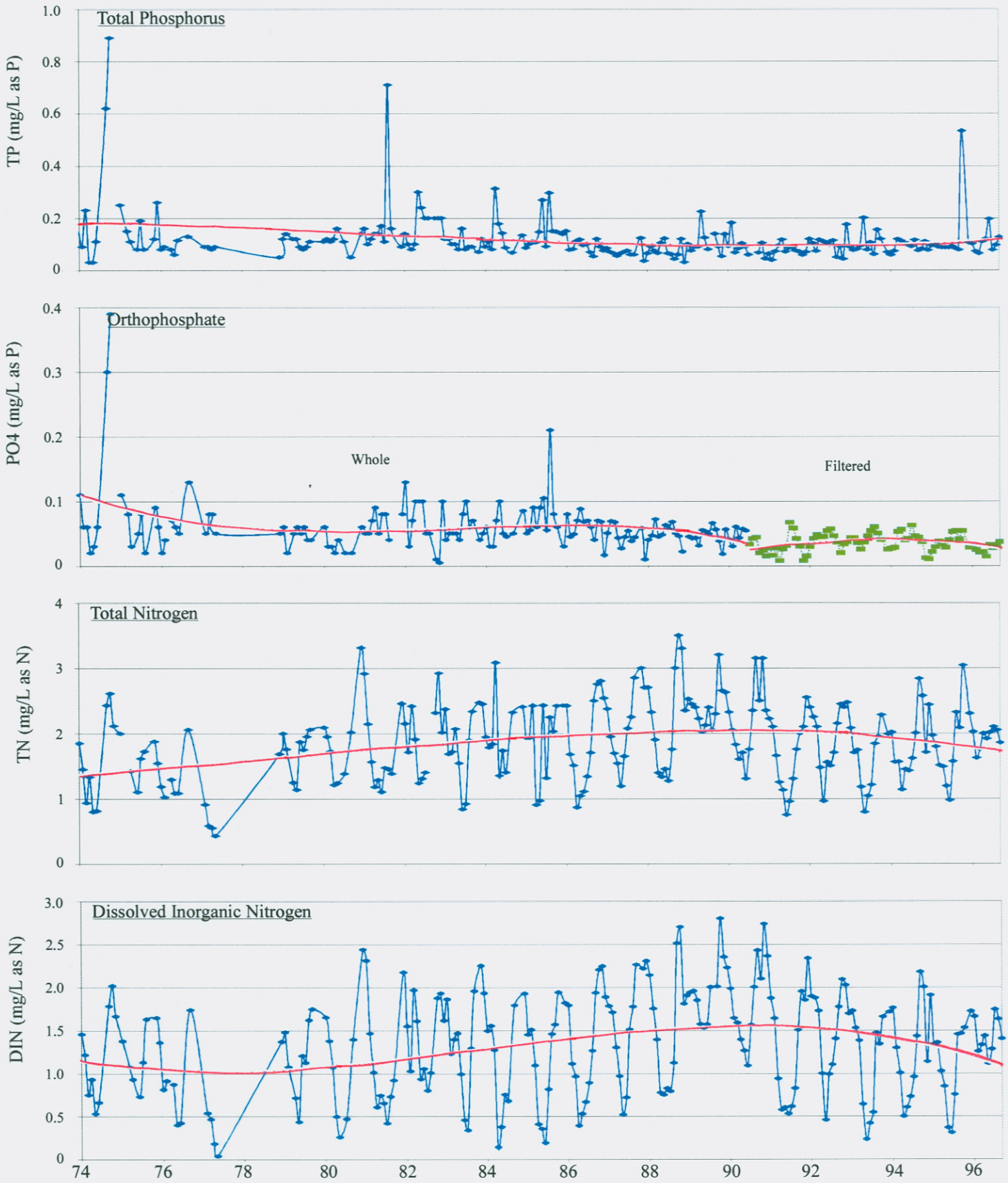


Figure III-11a. Monthly medians of surface nutrient water quality variables for XDA4238. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDA4238.CDR

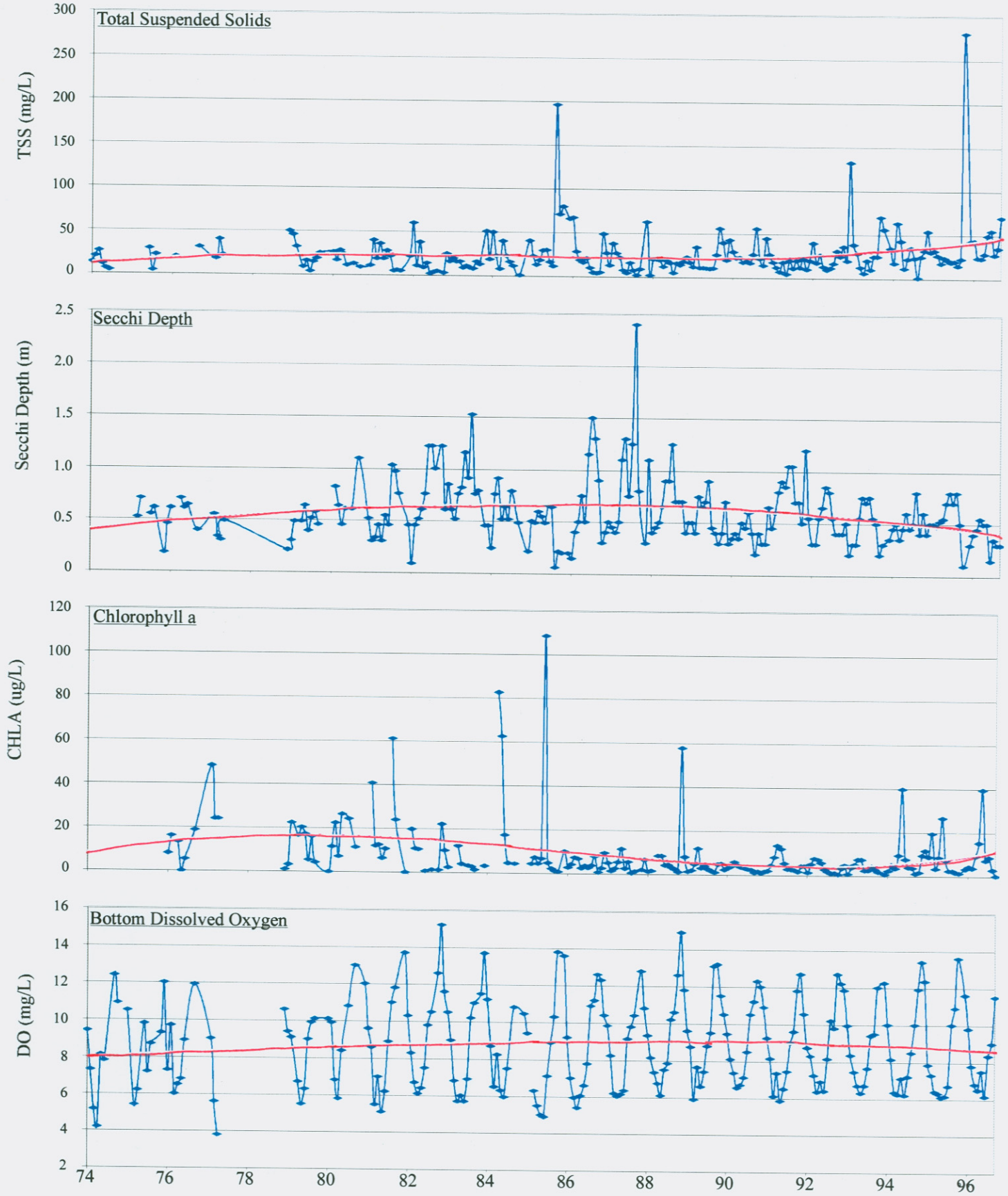


Figure III-11b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XDA4238. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDA4238.CDR

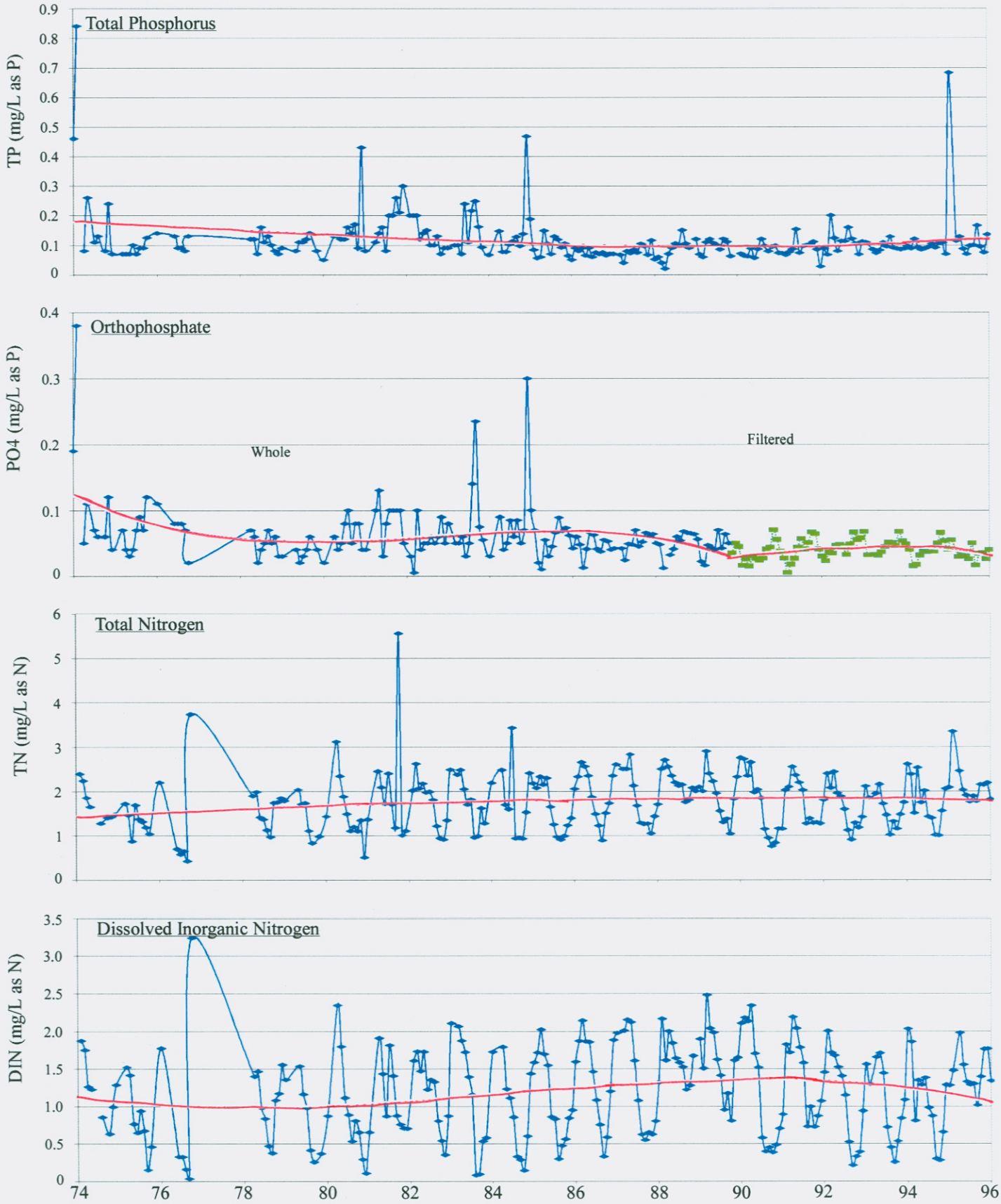


Figure III-12a. Monthly medians of surface nutrient water quality variables for XDA1177. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDA1177.CDR

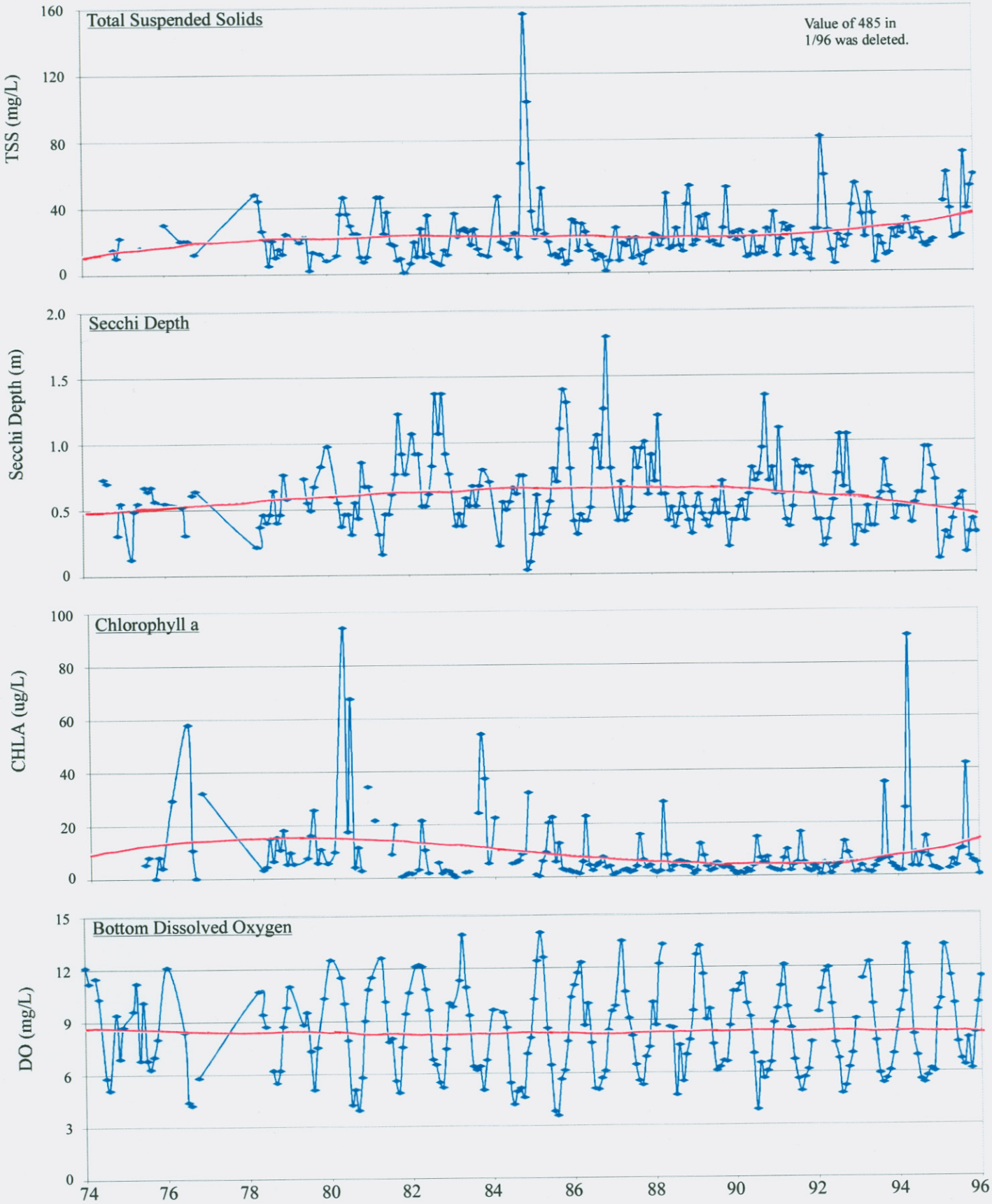


Figure III-12b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XDA1177. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDA1177.CDR

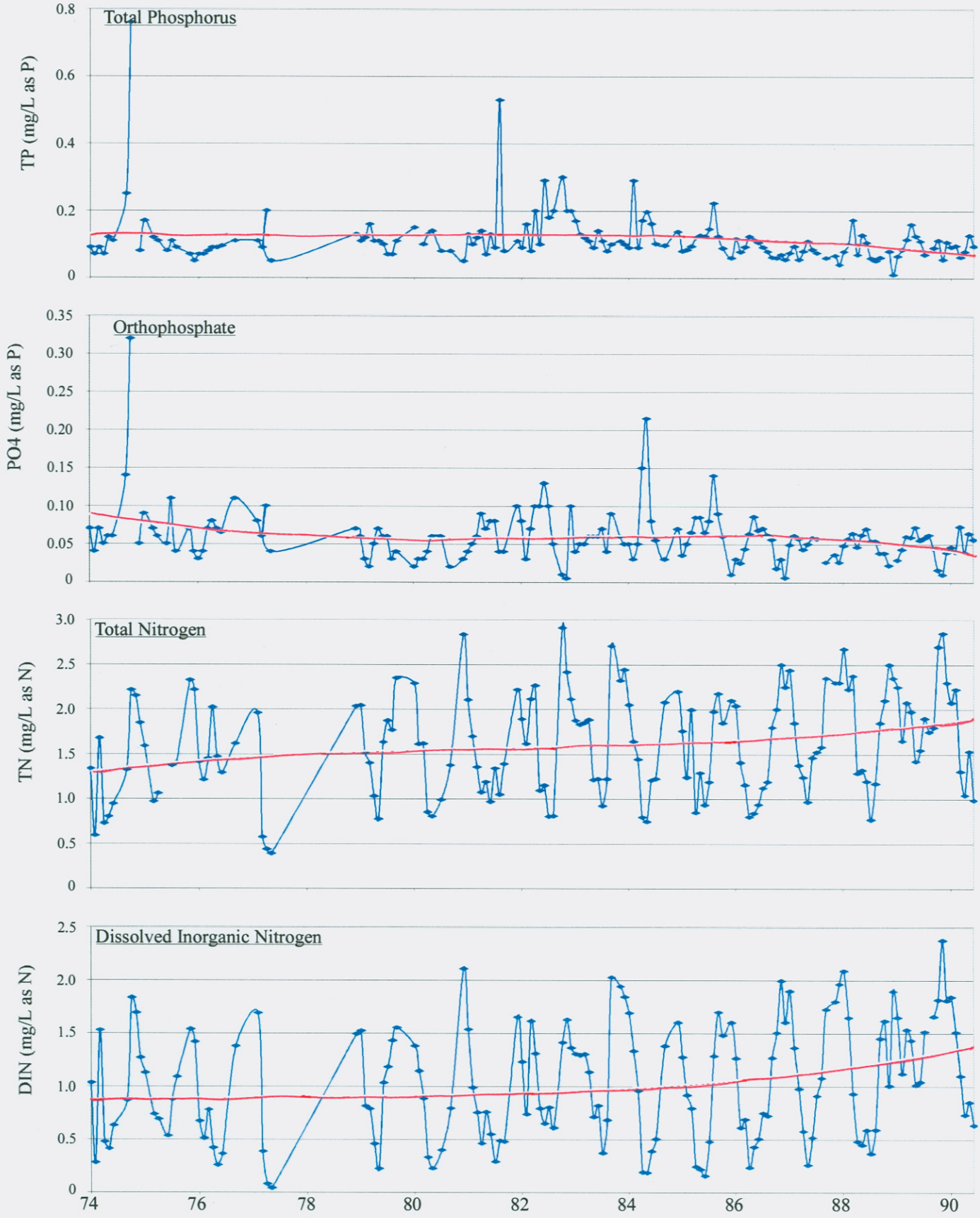


Figure III-13a. Monthly medians of surface nutrient water quality variables for XDB3321. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDB3321.CDR

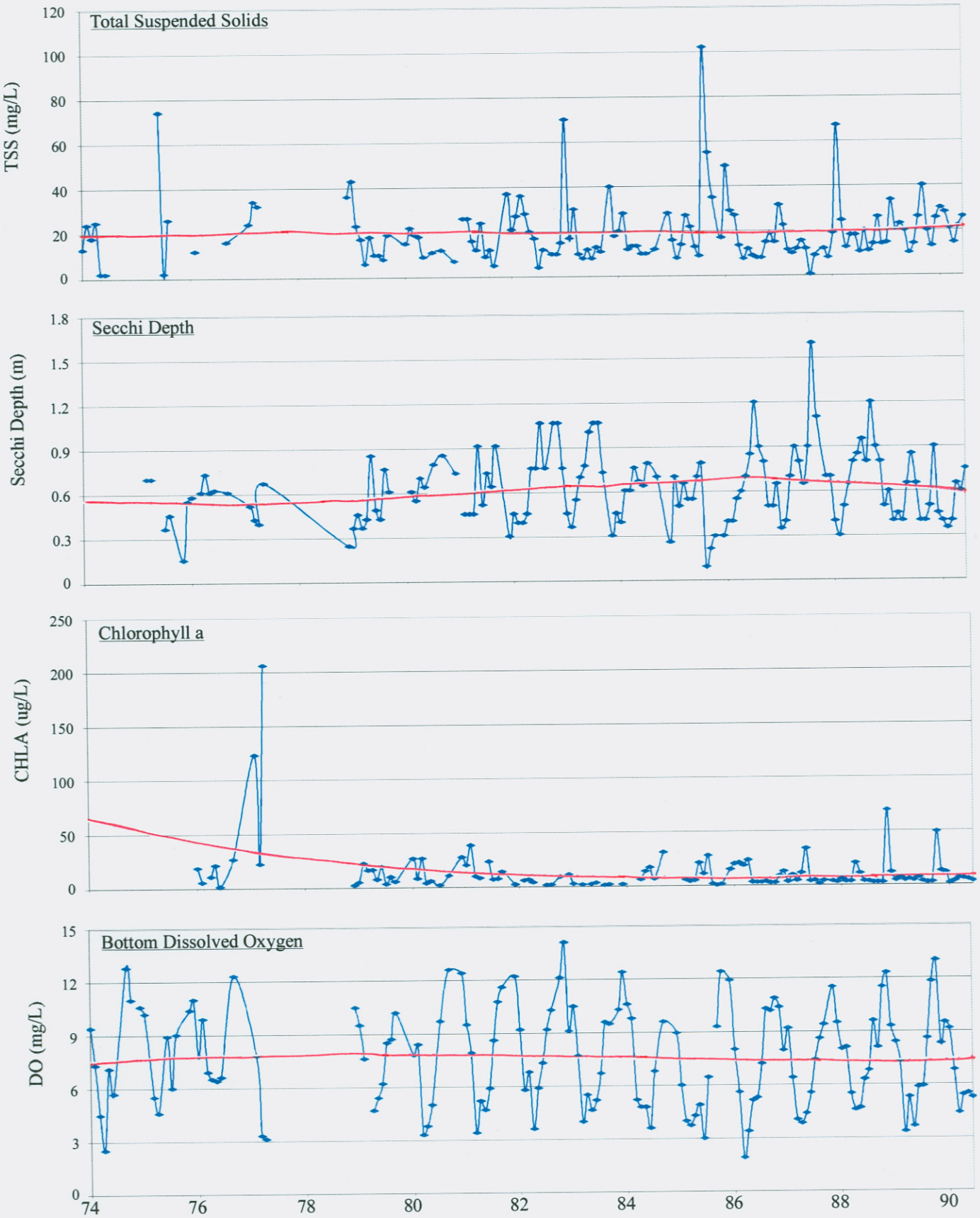


Figure III-13b. Monthly medians of surface non-nutrient water quality variables and bottom DO for XDB3321. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDB3321.CDR

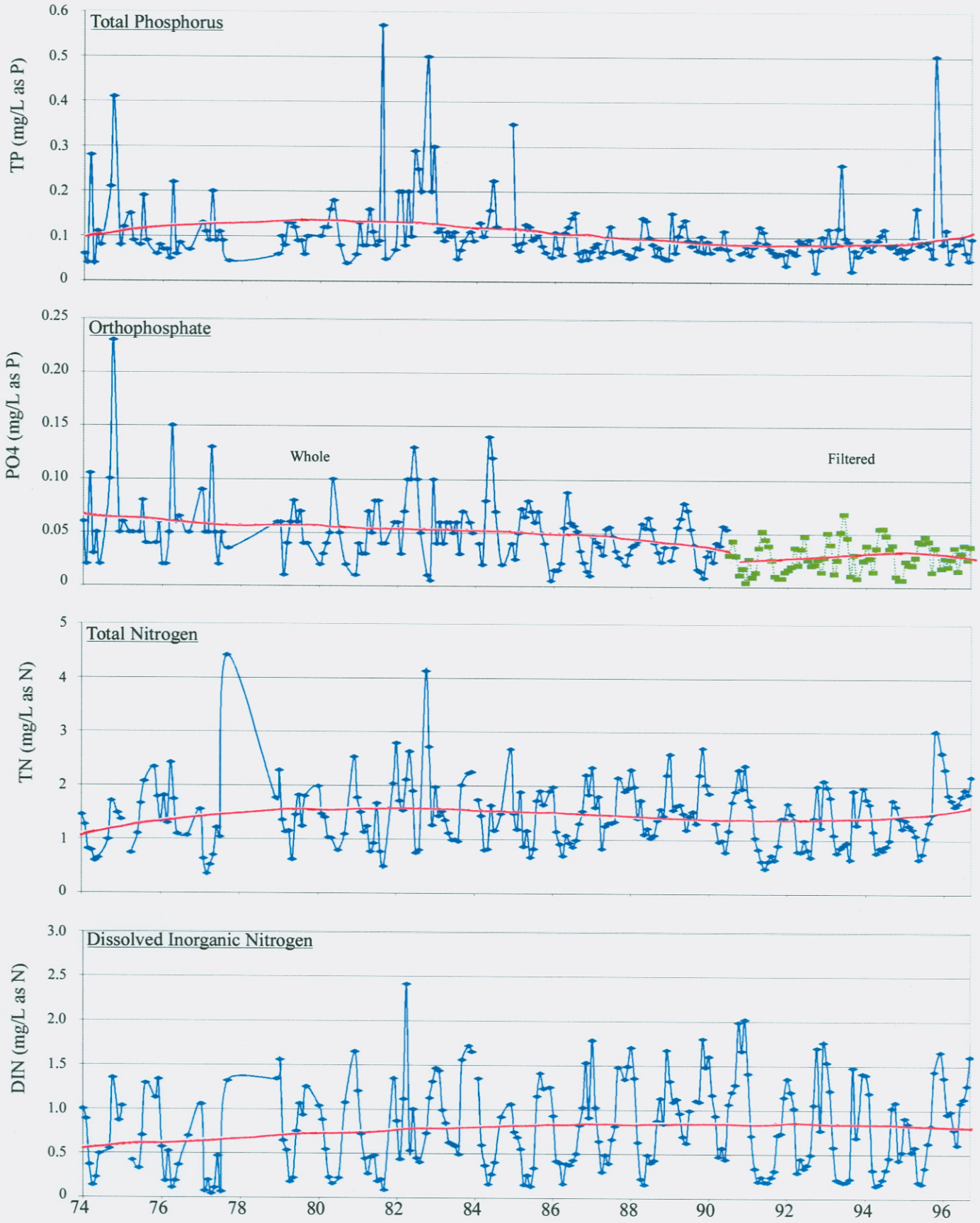


Figure III-14a. Monthly medians of surface nutrient water quality variables for XDC1706. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDC1706.CDR

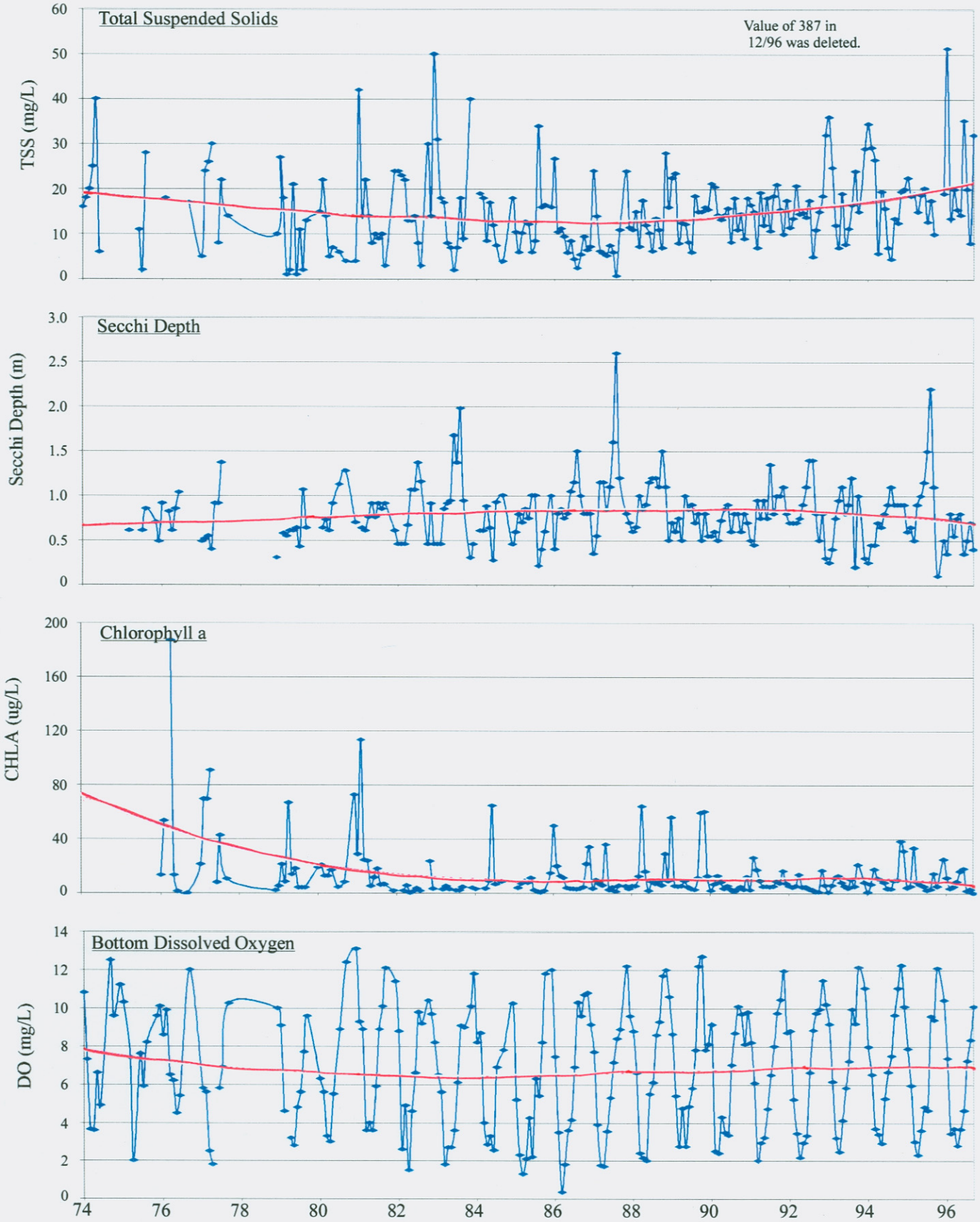


Figure III-14b. Monthly medians of surface nutrient water quality variables and bottom DO for XDC1706. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

XDC1706.CDR

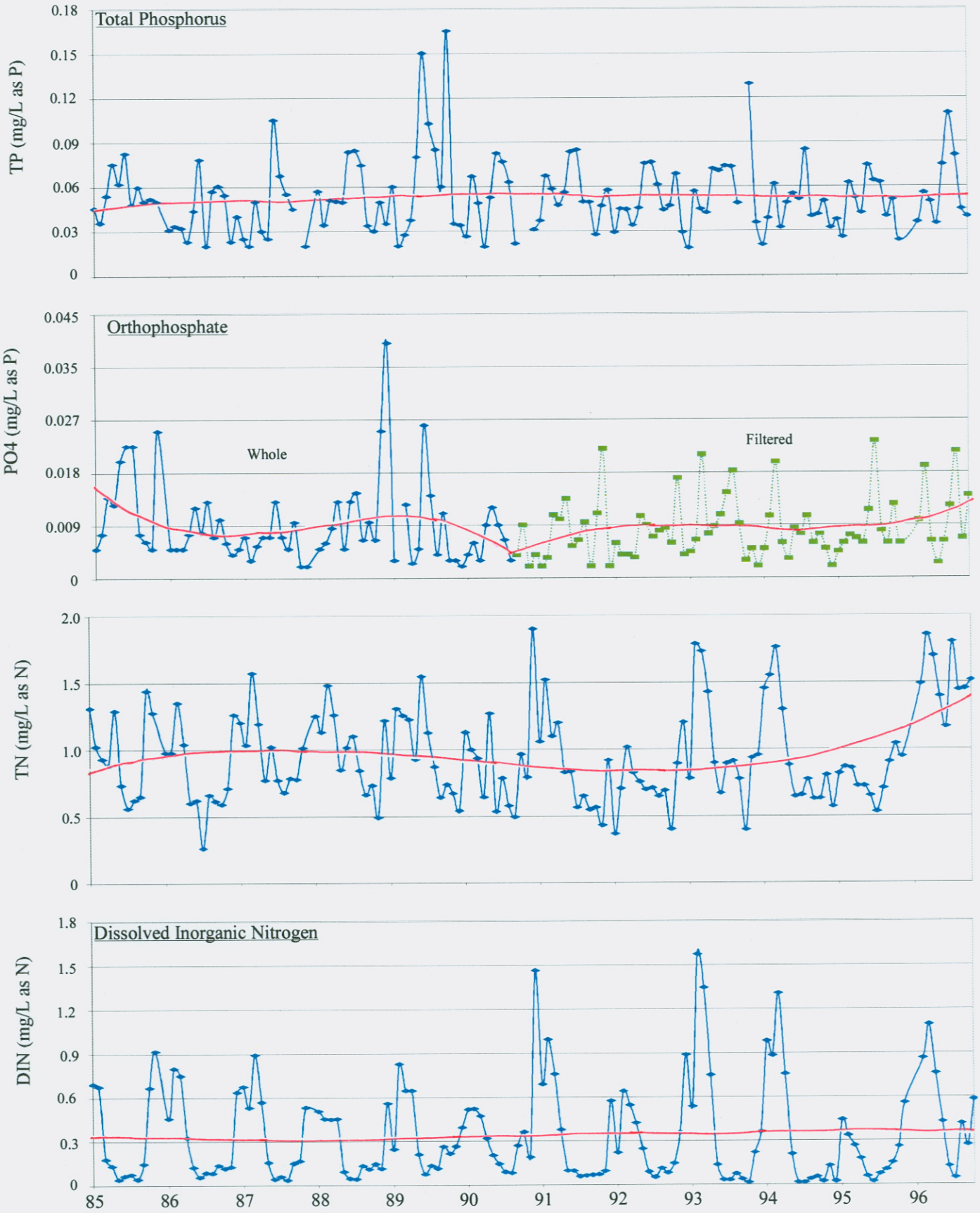


Figure III-15a. Monthly medians of surface nutrient water quality variables for MLE2.2. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MLE22.CDR

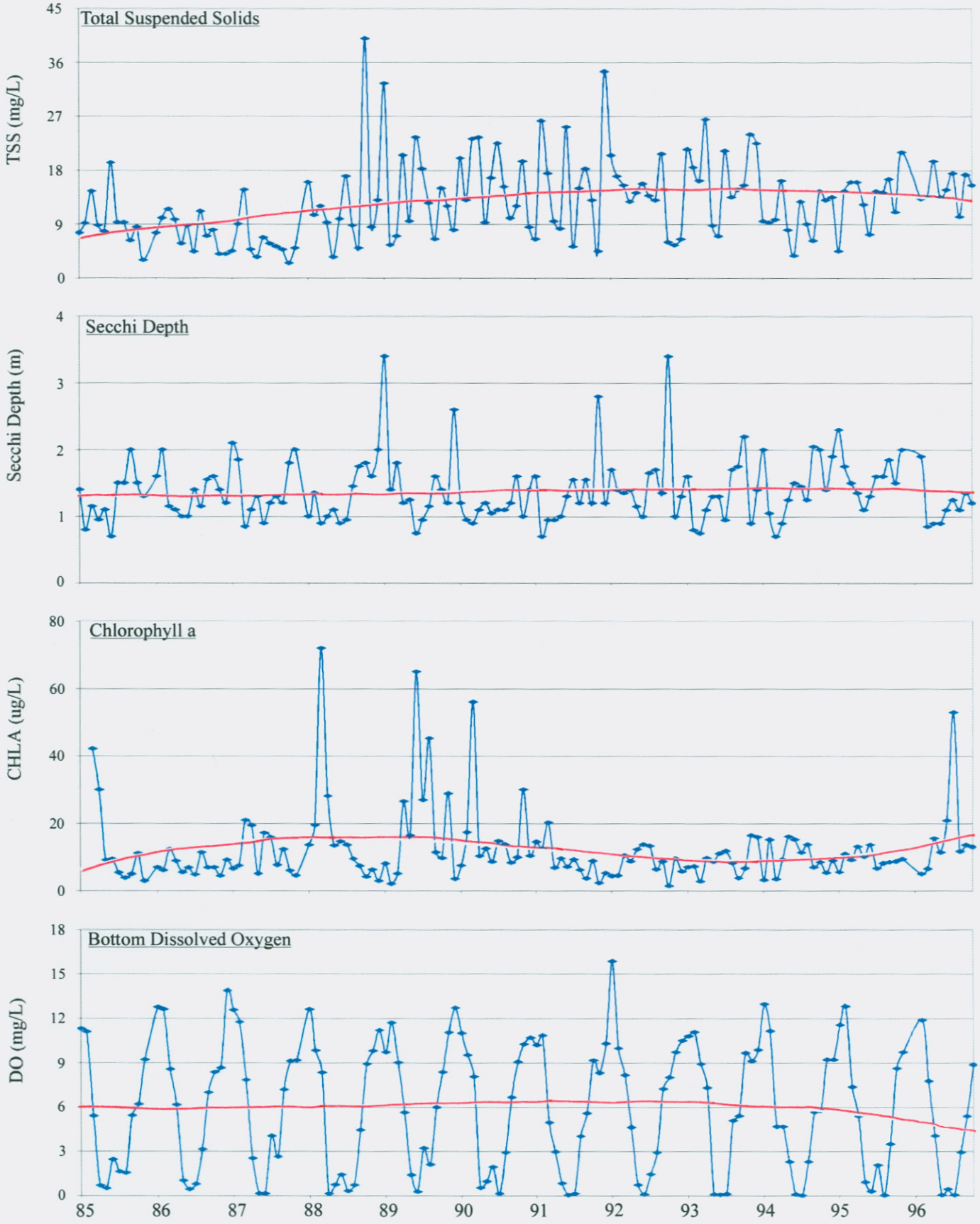


Figure III-15b. Monthly medians of surface non-nutrient water quality variables and bottom DO for MLE2.2. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MLE22.CDR

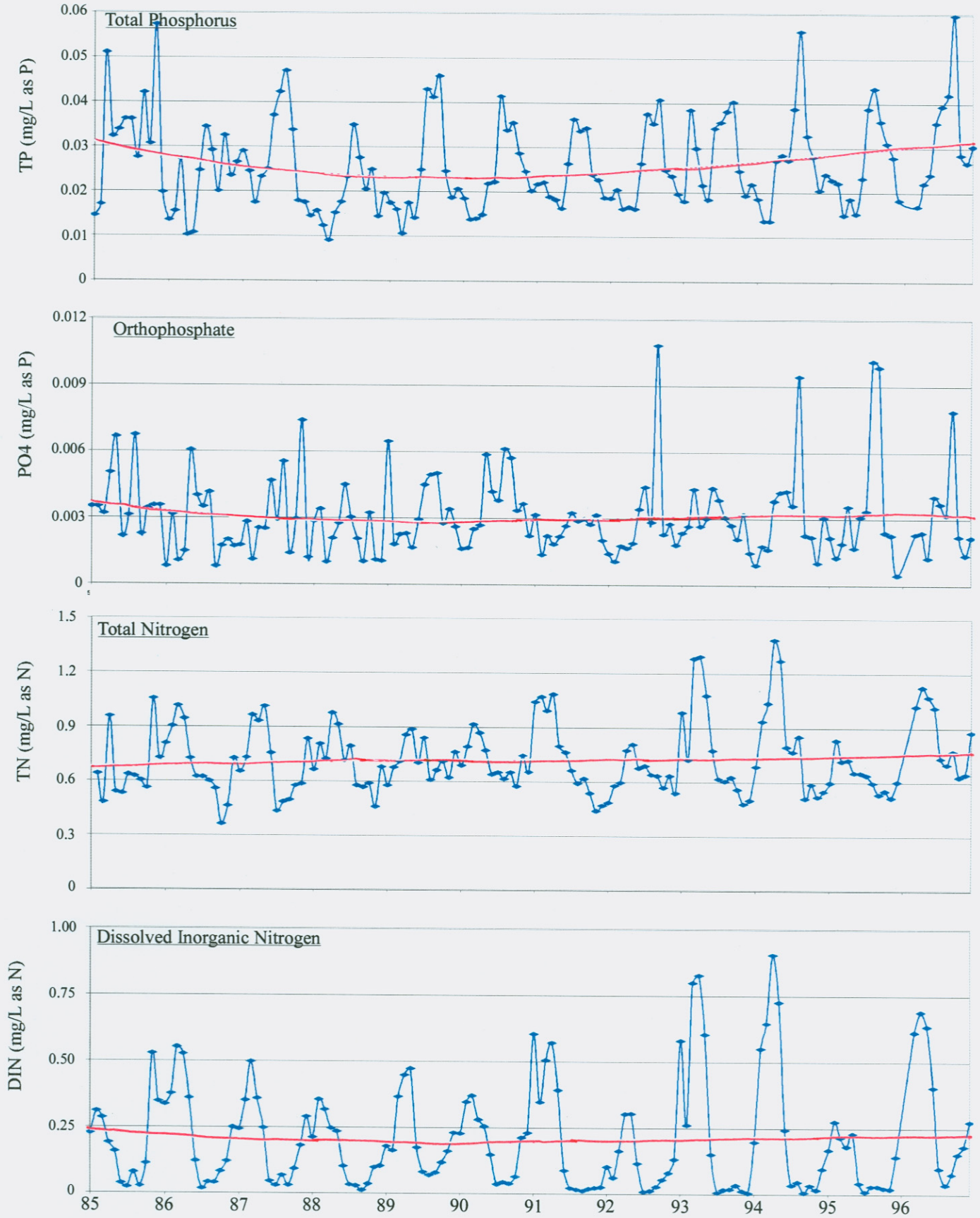


Figure III-16a. Monthly medians of surface nutrient water quality variables for MLE2.3. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MLE23.CDR

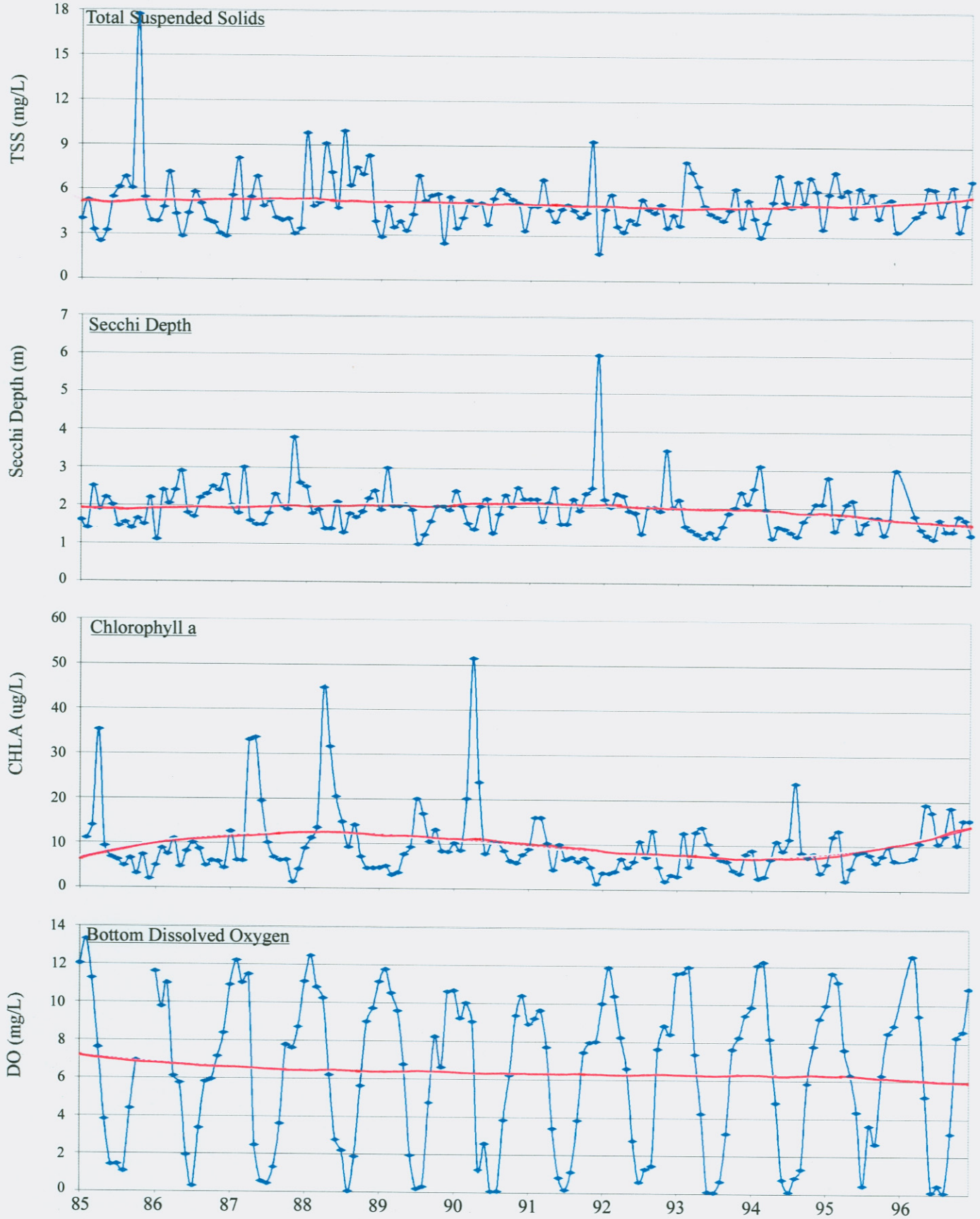


Figure III-16b. Monthly medians of surface non-nutrient water quality variables and bottom DO for MLE2.3. The trend line, fitted using third order polynomial regression, is presented only as an aid to visualization and is not the trend line used to calculate percent change.

MLE23.CDR

IV. CHANGES IN LOADINGS AND FLOW AT THE WWPTs AND THE FALL-LINE

A. Wastewater Treatment Plant Loadings and Flow

i. Historical Perspective on WWTPs

In the 1860s, well before the construction of the first WWTPs in the Washington, D.C., area, raw sewage was dumped into canals that led from the city to the Potomac River. In 1870, the first sewers were constructed to convey sanitary wastes to the Potomac downstream of Washington, D.C. A 1913 U.S. Public Health Service survey of the bacterial quality of the Potomac River concluded that "(1) at no point below Washington, D.C., is the water of the Potomac River safe for use as a public water supply without reasonable treatment; (2) the portions of the main of Georgetown Channel between Chain Bridge and the junction of the main Channel with the Anacostia River and the Washington Channel are so heavily polluted that the water is unsafe for bathing purposes; (3) the conditions of the areas in the Anacostia River in the neighborhood of the sewage pumping stations and at the junction of the three channels are poor during hot summer weather and at times constitute a public health nuisance" (Jaworski, 1990).

In 1920, Washington, D.C., city officials agreed that sewage should be treated before being discharged to the Potomac River. In 1938 the Blue Plains WWTP came on-line with primary treatment, which removed a portion of the suspended solids and organic matter. Primary treatment, the most rudimentary level of treatment, was achieved with physical operations such as screening and sedimentation. Treated effluent still contained a substantial amount of organic matter and would have had a comparatively high biochemical oxygen demand (BOD) (Tchobanoglous and Schroeder, 1985).

Despite the primary treatment of 5.7 m^3/sec (130 millions-of-gallons per day) of effluent at the Blue Plains WWTP (the 1938 plant capacity), water quality of the Potomac River continued to deteriorate. In 1957, the Potomac Washington Metropolitan Area Enforcement Conference was convened in response to the continued degrading water quality conditions. The Conference, which initially met in 1957 and again in 1958, developed a program requiring a minimum wastewater treatment of 80% BOD removal, effluent disinfection, and storm water overflow control by 1966. Secondary treatment of effluent, to remove residual organic matter and suspended material, was initiated at Blue Plains in 1958 in response to the 1957 Conference.

A third session of the Conference was convened in 1969 in response to the continued degradation of water quality conditions in the Potomac River. Several conclusions were reached at the 1969 Conference, among the more important: (1) waste water discharges to the Potomac should be based on specific loads as opposed to percent removal limits; (2) 96% of BOD and phosphorus and 95% of nitrogen should be removed; (3) the technology existed for a high degree of BOD, phosphorus, and nitrogen removal; (4) construction should be completed by 1977 (Jaworski, 1990).

The third Conference was reconvened in 1970 and a Memorandum of Understanding (MOU) between Maryland, Virginia, and Washington, D.C., was adopted. The MOU set specific loadings limits for the upper Potomac estuary for ultimate oxygen demand, nitrogen, and phosphorus, which essentially set limits on the capacity of Blue Plains. Limiting the capacity of Blue Plains resulted in the need to site several smaller regional plants to accommodate the needs of a growing population.

Water quality improvements in the Potomac River occurred following the signing of the Clean Water Act in 1972 and the creation of the National Pollutant Discharge Elimination System (NPDES). By 1974, permits limiting the discharge of BOD, suspended solids, phosphorus, and nitrogen were issued to dischargers in the Potomac Estuary. The Clean Water Act resulted in funding by the U.S. Environmental Protection Agency and state and local governments to implement the guidelines of the second Potomac Enforcement Conference. Upgrades to the WWTPs included the addition of secondary treatment and advanced treatment to further reduce nutrient discharges (Michael, 1989).

An Adjudicatory Hearing was held in 1976 to reconsider the limits on nitrogen discharges at Blue Plains. Based on the cost of energy in the mid-1970s and the lack of nitrogen removal technology, the nitrogen removal requirements were relaxed. Phosphorus removal and nitrification of wastewater to reduce nitrogenous BOD continued at Blue Plains, but nitrogen removal was not required.

In a continuing effort to reduce phosphorus loads to Maryland waters, including the Potomac River, the Maryland legislature passed a law in 1985 banning phosphates in detergents. The Maryland phosphate detergent ban went into effect the following year. Washington, D.C., initiated a phosphate detergent ban in 1986 and the Commonwealth of Virginia followed suit in 1987. In September 1996 a pilot program was initiated at Blue Plains to denitrify the effluent in the hope of reducing ambient nitrogen concentrations in the Potomac River.

Currently, there are 13 major (permitted flow level of 0.02 m^3/sec or greater) WWTPs and one major industrial discharger located in the Washington, D.C., metropolitan area. The largest WWTP, Blue Plains, is located in Washington, D.C.; two WWTPs (Mattawoman and Piscataway) and the large industrial discharger (Indian Head Naval Warfare Center) are located in Maryland and the remaining ten WWTPs (Alexandria, Arlington, Aquia, Dale City #1, Dale City #8, Little Hunting Creek, Lower Potomac, Mooney, Quantico, Upper Occoquan) are located in Virginia (Fig. IV-1) (Note that Little Hunting Creek went off-line in early 1992. Subsequent to the plant closure, wastewater was sent to the Lower Potomac Plant, which has since been renamed the Noman M. Cole Water Pollution Center). Because of the population density, point source loads from WWTPs have historically been the primary source of nutrient pollution. During the 1970s and 1980s, aggressive pollution abatement programs described above resulted in substantial up-grades to the major plants. The plant names, year when the plant went on-line, the receiving stream, and the salinity zone of the Potomac River into which the receiving stream flows are presented in Table IV-1.

ii. Changes in TN Loads and Flows

Figure IV-1 shows the total nitrogen loads and flows from 1913 to 1996. For that time period, the lowest (estimated) TN load of 2900 kg/day and the lowest flow of 1.8 m^3/sec occurred in 1913. The maximum TN load of 31043 kg/day in occurred 1990 and the maximum flow of 23.2 m^3/sec was reached in 1996.

For the period of record, TN loads increased from 2900 kg/day to 25289 kg/day, an increase of 772%. During that period, flow increased from 1.8 m^3/sec to 23.2 m^3/sec, or by 1167%. From 1970 to 1996, TN loads increased from 23449 kg/day to 25289 kg/day, or by 8%. For the same period, flow increased from 13.7 m^3/sec to 23.2 m^3/sec, or by 70%. Between 1985 and 1996, TN loads actually decreased from 27004 kg/day to 25289 kg/day, or by 6%. The decrease in TN loads occurred despite an increase in flow from 19.2 m^3/sec to 23.2 m^3/sec or 21%. The disconnect between TN load and flow occurred in 1990, when TN load reached a maximum of 31043 kg/day and flow was 21.4 m^3/sec. Between 1990 and 1996 TN loads decreased from 31043 kg/day to 25289 kg/day or by 19%; however, flow increased from 21.4 m^3/sec to 23.2 m^3/sec, or by 8% during that period.

Between 1995 and 1996 flow increased by 11%, but TN loads dropped by 14.6%. As stated above, a pilot program to denitrify effluent at Blue Plains was initiated in September 1996. It would be interesting if the drop in TN load could be attributed to the Blue Plains pilot denitrification program. However, a comparison of TN concentrations for the major plants indicated that the change resulted from a sharp reduction in TN effluent concentrations between 1995 and 1996 at the Indian Head Naval Warfare Center following the implementation of improvements to their system.

iii. Changes in TP Loads and Flows

TP loads and flows from 1913 to 1996 are also presented in Figure IV-1. As shown in the figure, the total phosphorus story is quite different from that described above for total nitrogen, since phosphorus control was historically the focus of the WWTP upgrades. TP loads increased from 500 kg/day in 1913 (estimated) to a maximum of 9825 kg/day in 1970, an increase of over 1800%. For the same period, flow increased from 1.8 m^3/sec to 13.7 m^3/sec, or by approximately 648%. Between 1970 and 1996 TP loads decreased by 98%, or from 9825 kg/day to 187 kg/day, despite an increase in flow of 70%. For the 1985 through 1996 time period, TP loads declined, from 332 kg/day to187 kg/day, probably as a result of the phosphate detergent ban, even though flow continued to increase.

iv. Changes in PO_4 Loads and Flows

Orthophosphate loads for 1985-1996 are provided in Figure IV-2. Unlike TN and TP, earlier data for PO_4 are not available. In addition, the plant records for PO_4 are not complete. Data for Blue Plains, Lower Potomac, Mattawoman, Piscataway, and Upper Occoquan are available for

1985 through 1996. No PO_4 data are available for Quantico. Limited data are available for the remaining plants.

To obtain a reasonable estimate of the 1985 PO_4 load, data for Blue Plains, the largest plant in the estuary, were reviewed. It was observed that PO_4 data were reported for six months in 1985. The six months of available data were averaged and the average concentration was used with the reported flow to calculate loads for the missing six months of data. Only Blue Plains data for 1985 were estimated because the plant accounts for approximately 70% of the total flow for the major plants. PO_4 data for Blue Plains were also missing for one month in 1986, 1988, and 1992.

The highest (estimated) PO_4 load (200 kg/day) for the 1985-1996 time period occurred in 1985 although the highest flow rate (23 m^3/sec) was not recorded until 1996. PO_4 loads decreased in 1988 and 1989, following the implementation of the phosphate detergent ban. Loads increased slightly to 164 kg/day in the following year and then gradually decreased through 1996. For the 1985 to 1996 period, PO_4 loads decreased by an estimated 55% despite an increase in flow of 20%.

v. Loads Contributed by Individual Plants

Figure IV-3 shows the percent of the TN load contributed by each plant for the 1985-1996 period. The highest percentage of the TN load (60%) comes from Blue Plains, with Alexandria a distant second at 11%. Lower Potomac contributes 10%, with Arlington and Upper Occoquan contributing 5% and 4%, respectively. Indian Head Naval Warfare Center, and Piscataway each contribute 3%.

Blue Plains also contributes the highest percentage (57%) of the TP load (see Figure IV-4). Indian Head Naval Warfare Center and Mattawoman each contribute 8% of the TP load, and Arlington and Lower Potomac contribute 7% and 6%, respectively.

The percent of the PO_4 load contributed by each plant is presented in Figure IV-5. As discussed above, the PO_4 data set is not as complete as the TN and TP data sets. Consequently, the plant contributions described herein may not be entirely accurate. As in the case of both TN and TP, Blue Plains contributes the highest percentage of PO_4 at 57%. The Mattawoman and Lower Potomac Plants contribute 11% and 10%, respectively.

The percent contribution of the total WWTP flow on a plant-by-plant basis is presented in Figure IV-6. As expected, at 66% Blue Plains contributes the highest flow of all the plants. Alexandria contributes the second highest amount at 9% of the total. Lower Potomac and Arlington contribute 8% and 6%, respectively and the remaining plants contribute 4% or less.

The importance of WWTP flow, and hence load, in the upper Potomac Estuary is depicted in Figure IV-7, which shows WWTP flow as a percentage of total river flow. Although WWTP flow is relatively constant throughout the year, river flow varies seasonally, thus accounting for

the changes in the percentages. As expected, during the spring when river flow is highest, WWTP flow makes up a relatively small percentage of the total river flow. On average, during the month of March WWTP flow comprises the smallest percentage of total river flow at 4% and has one of the smallest ranges (from 1% to 9%). However, during the summer months, when precipitation and therefore river flow have decreased and are more variable, WWTP comprises a greater percentage of the total river flow. During the month of September WWTP flow averages 22% of the total river flow and ranges from 2% to 39%. The link between WWTP flow and population is clearly shown in Figure IV-8. Although the data record is incomplete, the figure shows that population and WWTP flow are highly and directly related.

B. Changes in Loads and Concentrations at the Fall-line

i. Changes in Loads for 1978-1996

Water quality in the upper Potomac estuary is influenced by nutrient inputs from above the fall-line. Fall-line loads represent the sum of point source loads from the WWTPs and industries along the riverine section plus non-point source loads from the surrounding farm fields and forests located above the fall-line. Monitoring water quality at the fall-line is important because 30,562 km^2 (11,800 mi^2) of the 37,995 km^2 (14,670 mi^2) of the drainage basin, roughly 80%, lies above the fall-line.

The fall-line monitoring program is conducted by the U.S. Geological Survey (USGS), which began collecting water samples at Chain Bridge in Washington, D.C., in 1978 and the Metropolitan Washington Council of Governments (MWCOG). USGS collects base-flow water samples bi-weekly and collects samples during storm-flow conditions on a seasonal basis (generally three storms per season). The USGS monitoring program emphasizes collecting samples during periods of high flow, since most of the nutrient and sediment load is delivered during storm events. USGS estimates nutrient and sediment loads using a 7-parameter linear regression model. Trends in the concentration data are taken directly from the model coefficients (USGS, 1993b).

Fall-line loadings and flow data for the period 1978 through 1996 are presented in Figure IV-9 for TN and TP, Figure IV-10 for NH_4 and PO_4, and Figure IV-11 for TSS and NO_{23}. Given that fall-line nutrient and suspended solids concentrations are comparatively low and that loads are a function of concentration and flow, it is no surprise that the loads presented in Figures IV-9 through IV-11 closely match the flow data. Unlike the TP loads presented in Figure IV-1 for the WWTPs, TP as well as other fall-line loads, are not distinctly different from flows. That fall-line loads are so similar to flows could be interpreted to as an indication that non-point loads are much more difficult to control than point source loads.

ii. Trends in Concentrations at the Fall-line for 1985-1996

Only flow adjusted trends in concentration are analyzed under the river input program since flow

is accounted for in the 7-parameter linear regression model that is used to predict concentrations. Unlike many tidal fresh monitoring stations, the TN trend at the river input station was not statistically significant, despite a 10% decrease in point sources of TN above Chain Bridge. The absence of a significant trend (significant is defined as $p \leq 0.05$) in TN at the river input station may have been the result of conflicting trends in total Kjeldahl nitrogen (TKNW) and NO_{23}, the constituents of TN. Trends in TKNW, which is comprised of NH_4 and organic nitrogen species, decreased significantly by approximately 48%, whereas NO_{23} increased significantly by approximately 71%. The decreases in TKNW may have resulted from nitrification (conversion of NH_4 to NO_{23}) at WWTPs or from the implementation of best management practices (BMPs) above the fall-line, which would have lowered the concentrations of both NH_4 and organic forms of nitrogen. The upward trend in NO_{23} may have been the result of increased NO_3 in discharges from groundwater, atmospheric deposition, and from nitrification at WWTPs, which led to decreases in NH_4.

Flow adjusted trends in TP and PO_4 decreased by 50% and 36%, respectively between 1985 and 1996. The decreasing TP trend coincides with a 33% decrease in TP from point sources above Chain Bridge, which is believed to have resulted from the phosphate detergent ban. Suspended sediment, which is not to be confused with TSS, decreased by 65% (USGS, 1998).

Table IV-1. Year On-Line, Receiving Stream, and Salinity Zone for the Major Wastewater Treatment Plants Discharging on the Potomac River.

Plant	Year On Line	Receiving Stream	Salinity Zone
Alexandria	1956	Hunting Creek	Tidal Fresh
Aquia	1980	Aquia Creek	Oligohaline
Arlington	1936	Fourmile Run	Tidal Fresh
Blue Plains	1938	Potomac River	Tidal Fresh
Dale City #1	1975	Neabsco Creek	Tidal Fresh
Dale City #8	1980	Neabsco Creek	Tidal Fresh
Indian Head NOS	1978	Mattawoman Creek	Tidal Fresh
Little Hunting Creek	1959	Little Hunting Creek	Tidal Fresh
Lower Potomac	1970	Powhick Creek	Tidal Fresh
Mattawoman	1979	Mattawoman Creek	Tidal Fresh
Mooney	1981	Neabsco Creek	Tidal Fresh
Piscataway	1967	Piscataway Creek	Tidal Fresh
Quantico	1975	Chopawamsic Creek	Oligohaline
Upper Occoquan	1978	Occoquan Creek	Tidal Fresh

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Figure IV-1. Historic total nitrogen and total phosphorus loads for the major wastewater treatment plants (permitted flow of 0.5 MGD or greater) on the Potomac River for 1913-1996. Data for 1913, 1932, and 1944 from Jaworski, 1990. Data for 1950 through 1980 from EPA Chesapeake Bay Program. Data from 1984 through 1996 from Metropolitan Washington Council of Governments.

WWTPs.CDR

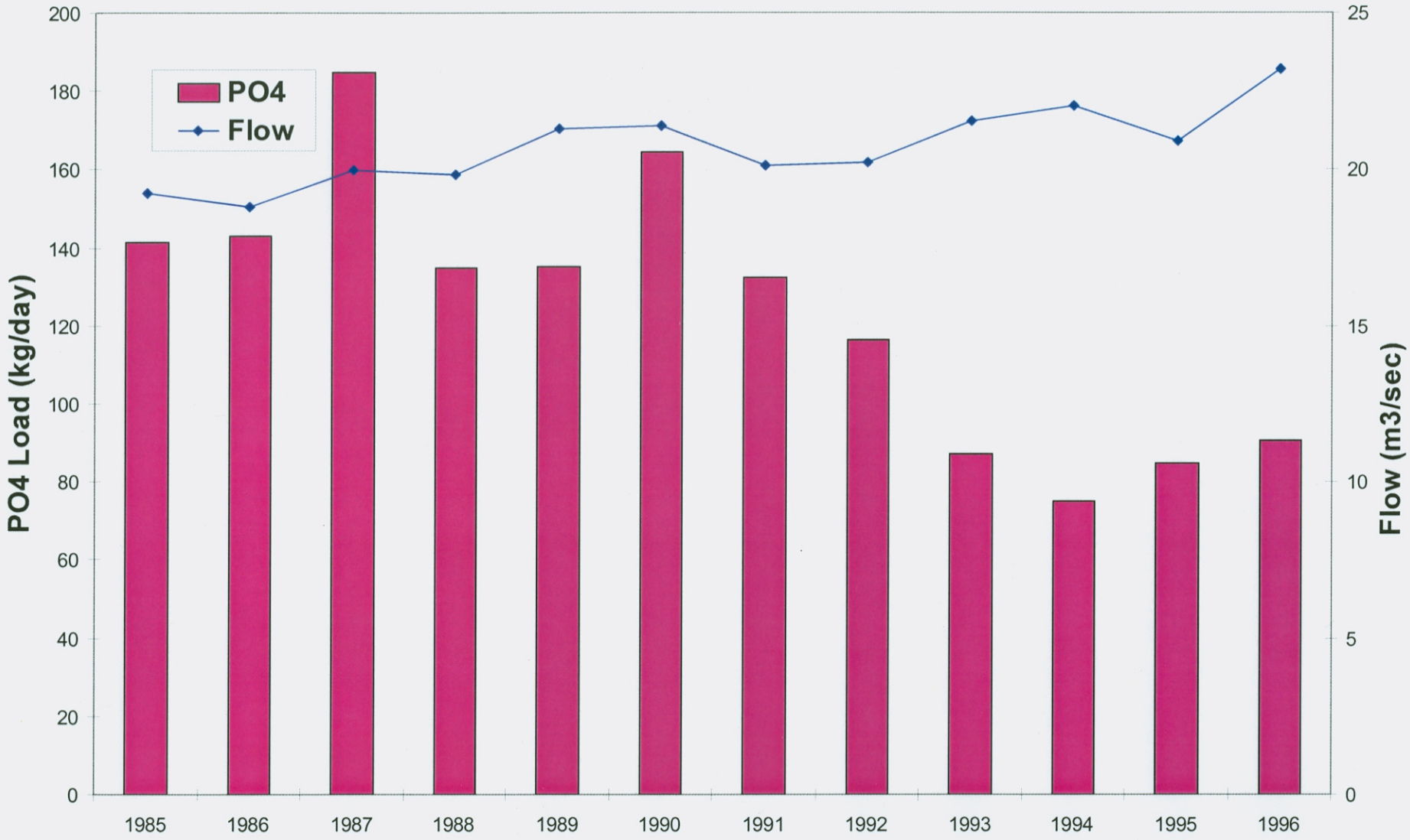

Figure IV-2. Recent orthophosphate loads for the major wastewater treatment plants (permitted flow of 0.5 MGD or greater) on the Potomac River for 1985 through 1996. Orthophosphate data are not as complete as those for TN and TP. The data record is complete for Blue Plains, Lower Potomac, Mattowoman Creek, Piscataway Creek, and Upper Occoquan. No data are available for Quantico. Data for the remaining plants are intermittent.

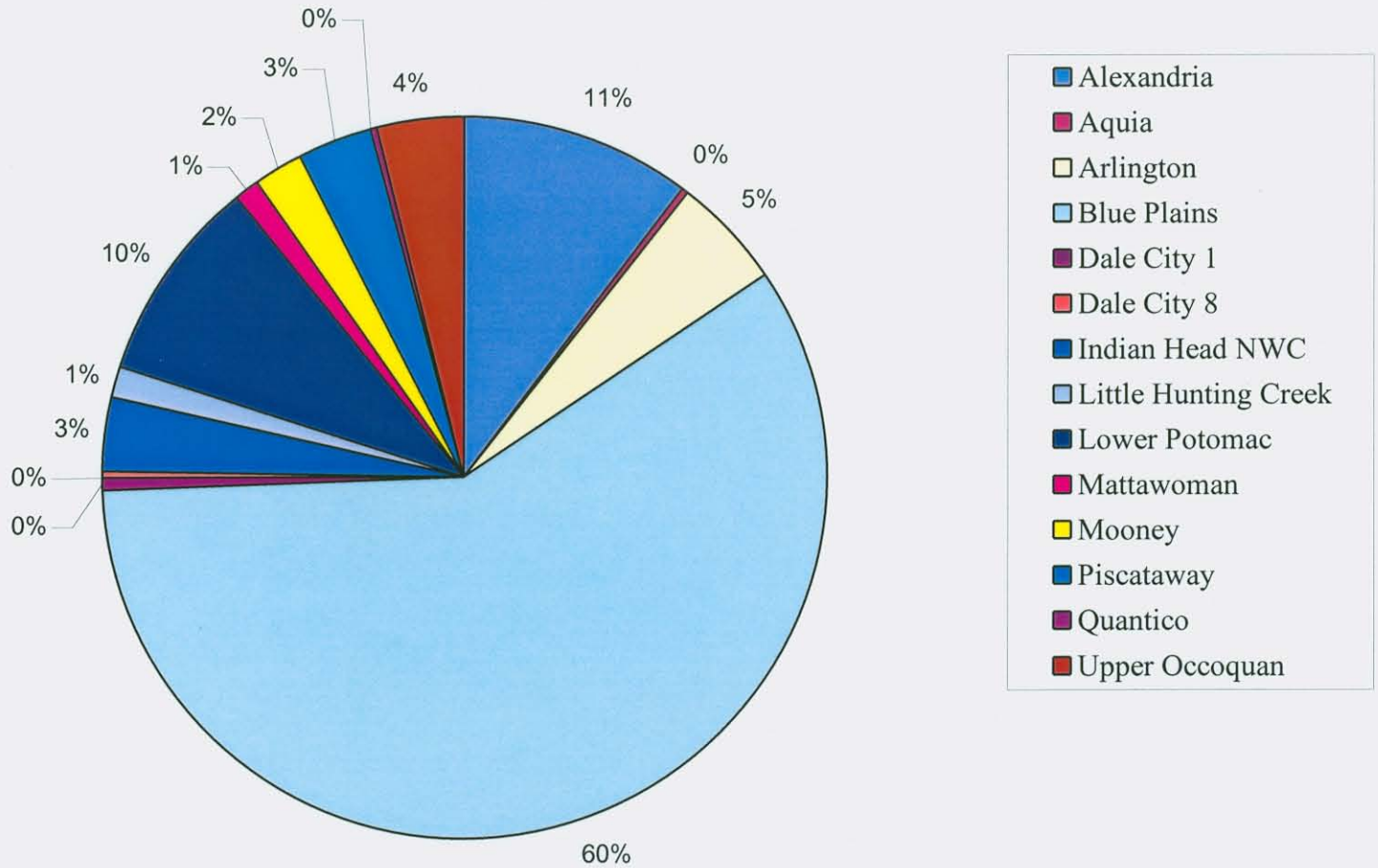

Figure IV-3. Percent of average daily total nitrogen load contributed by the major wastewater treatment plants on the Potomac River (1985-1996). Data were obtained from the Metropolitan Washingon Council of Governments.

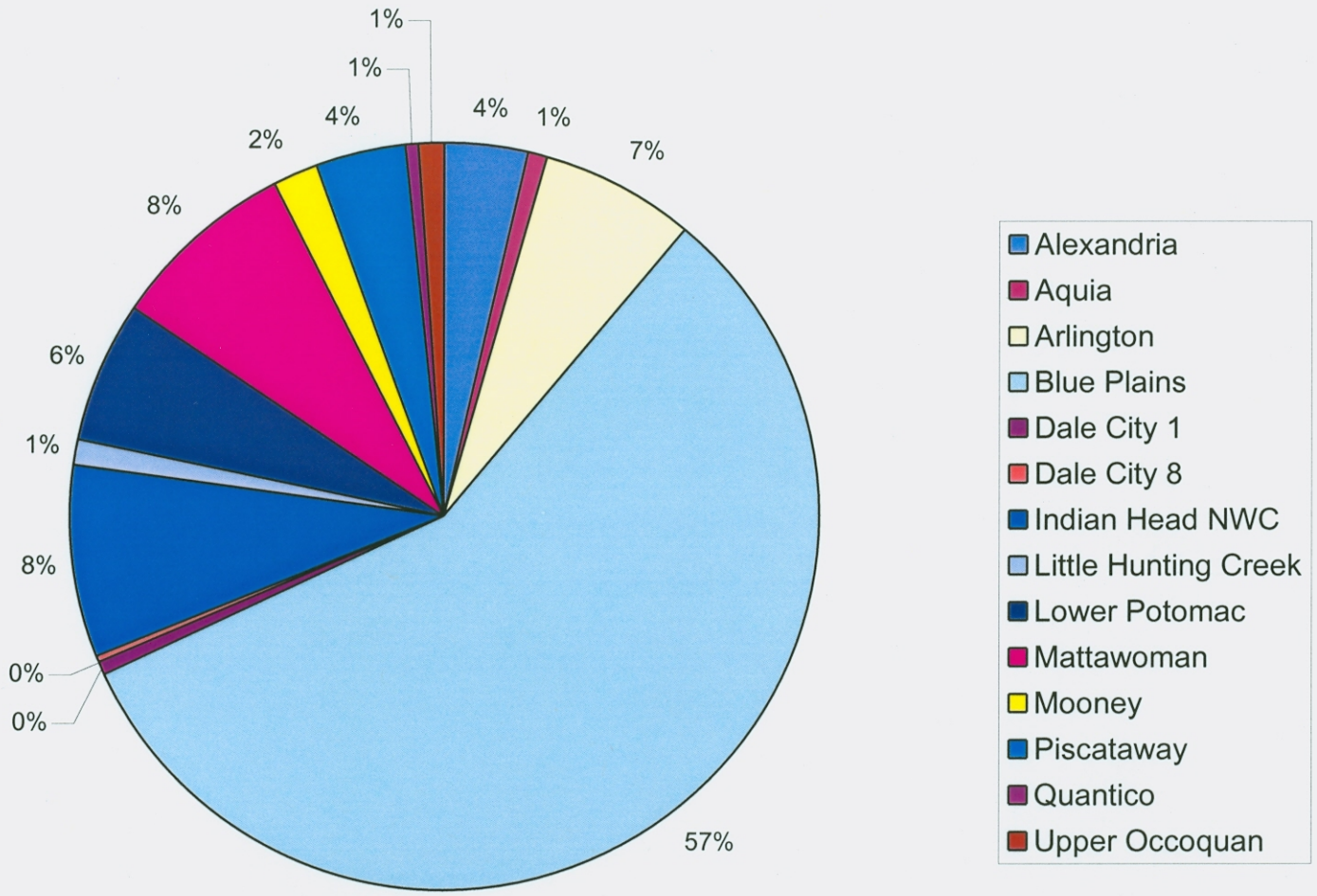

Figure IV-4. Percent of average daily total phosphorus load contributed by the major wastewater treatment plants on the Potomac River (1985-1996). Data were obtained from the Metropolitan Washington Council of Governments.

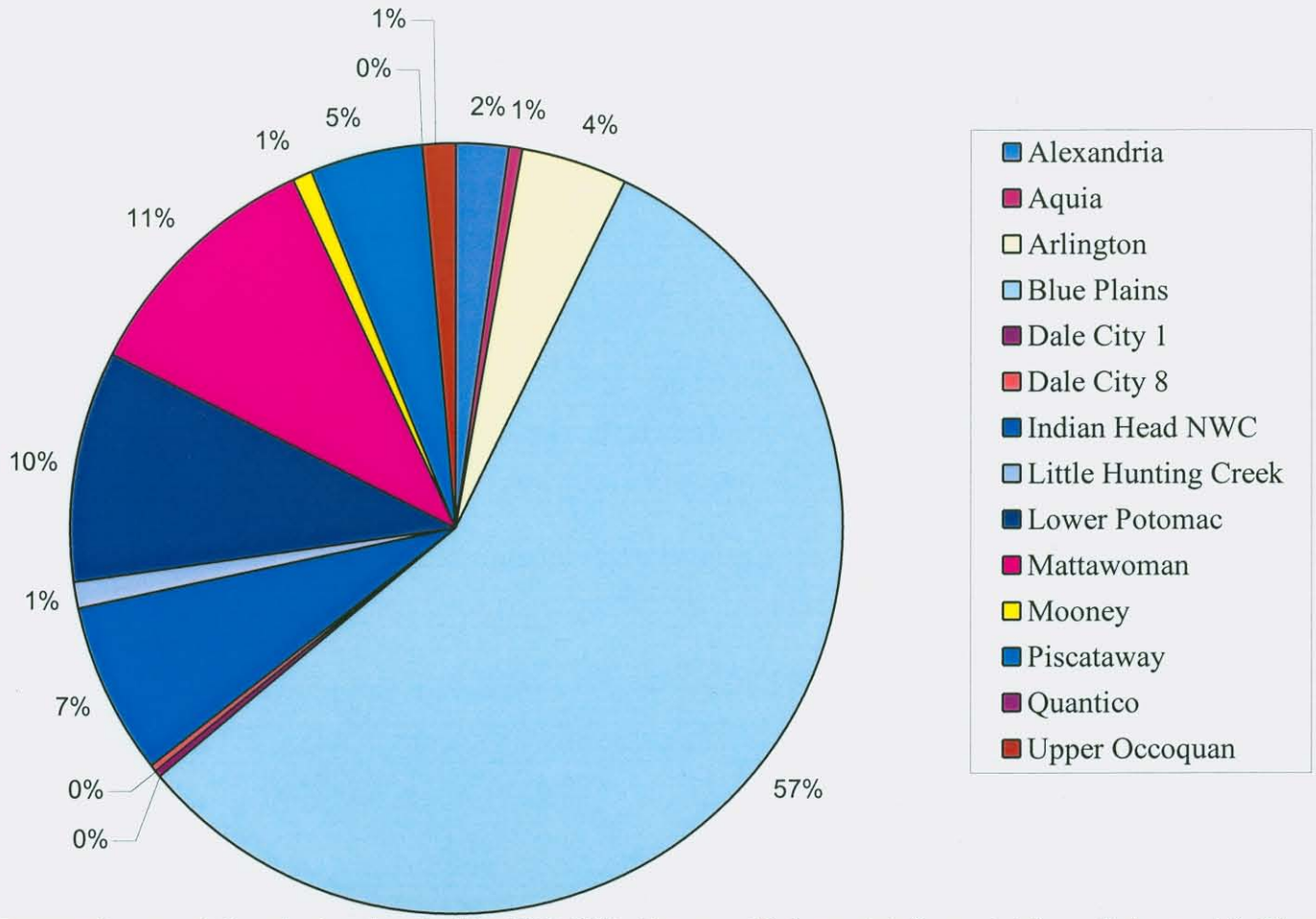

Figure IV-5. Percent of average daily orthophosphate load for 1985-1996. Data record is incomplete for most stations. Data record for Blue Plains, Lower Potomac, Matawoman Creek, Piscataway Creek, and Upper Occoquan is complete. No data available for Quantico. Incomplted data records for the remaining plants. Data were obtained from the Metropolitan Washington Council of Governments.

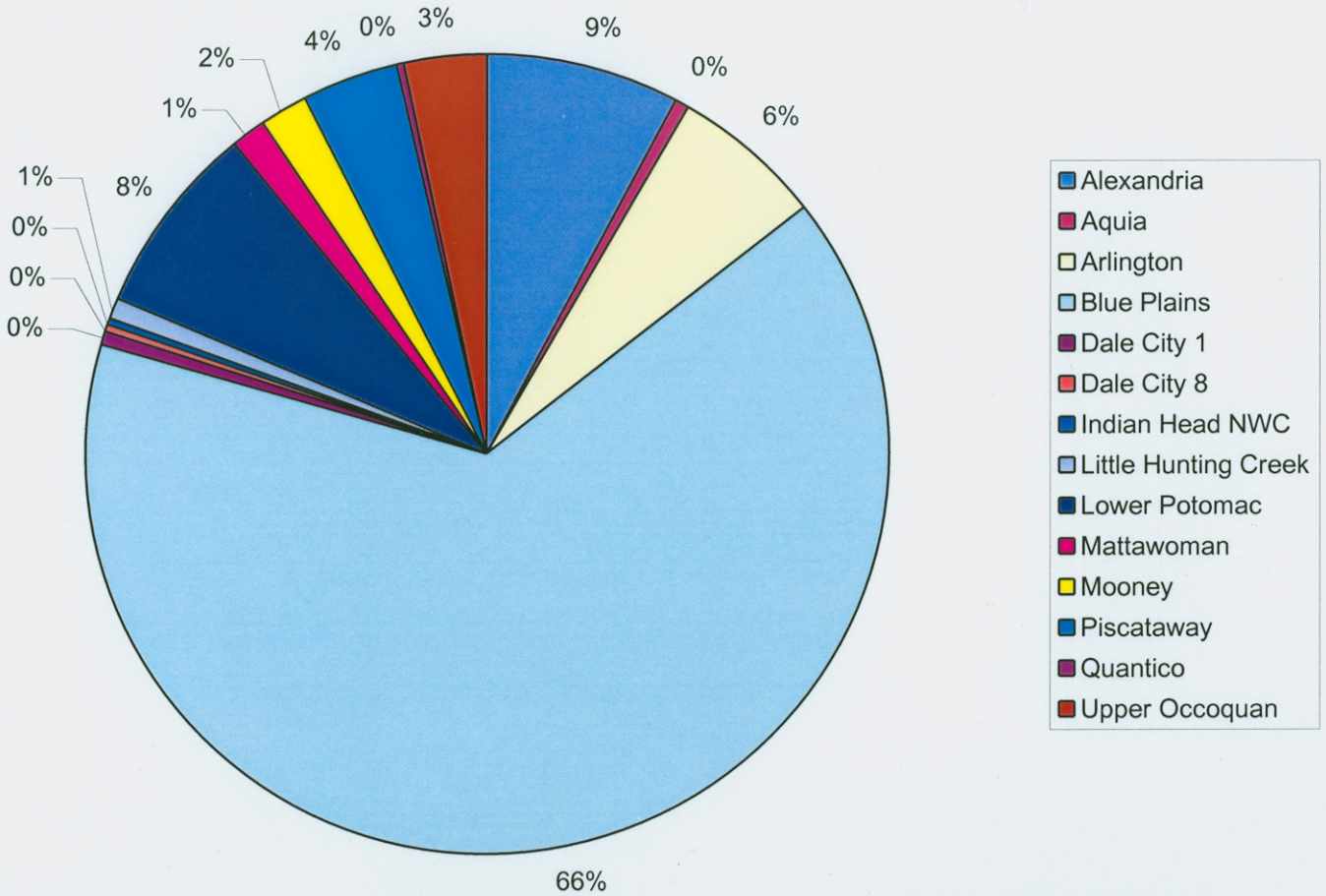

Figure IV-6. Percent of total wastewater treatment plant flow contributed by major individual plants on the Potomac River (1985-1996). Data were obtained from the Metropolitan Washington Council of Governments.

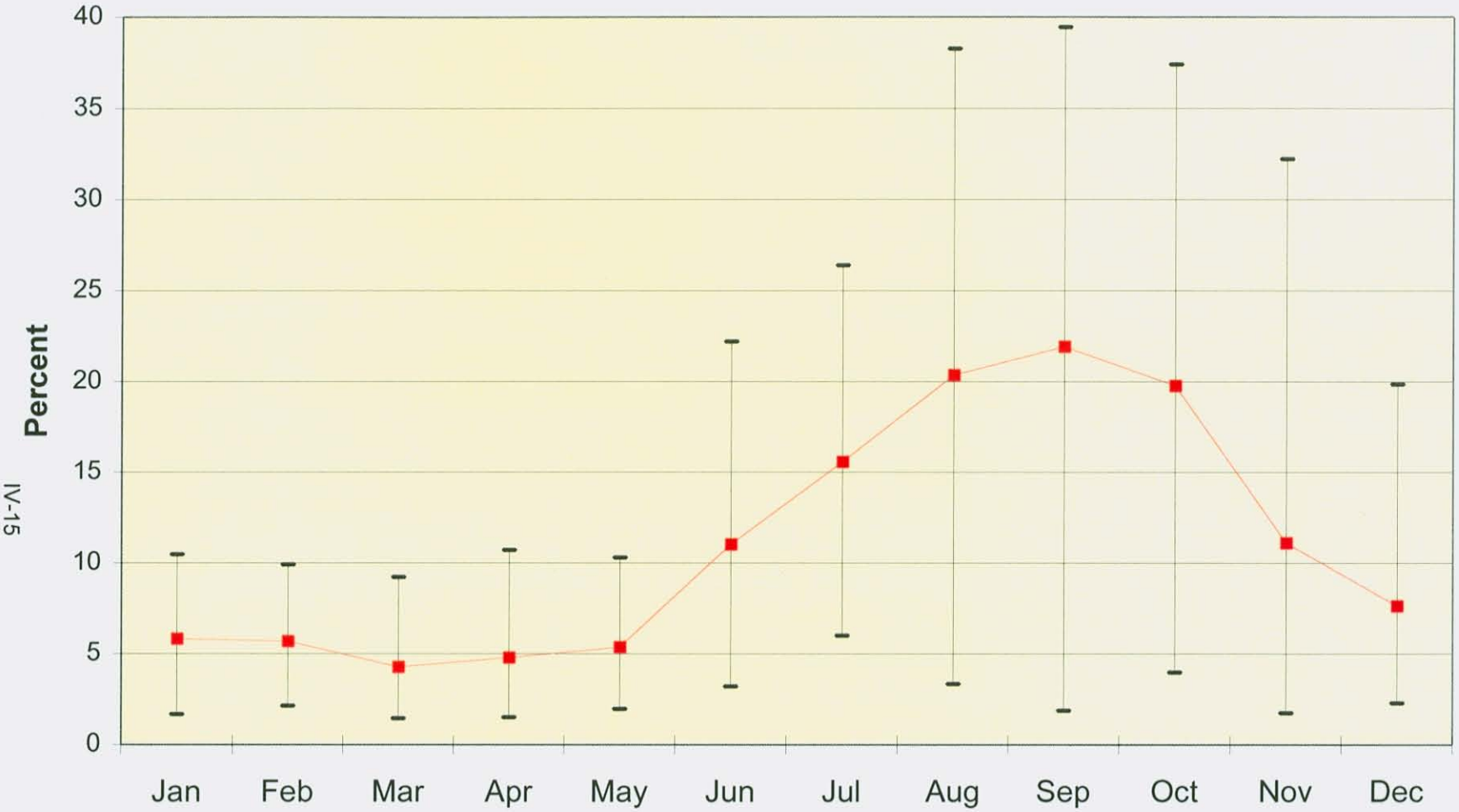

Figure IV-7. Minimum, average, and maximum wastewater treatment plant flow as a percentage of total (river plus treatment plant) flow for 1985-1996. Data were obtained from the Metropolitan Washington Council of Governments.

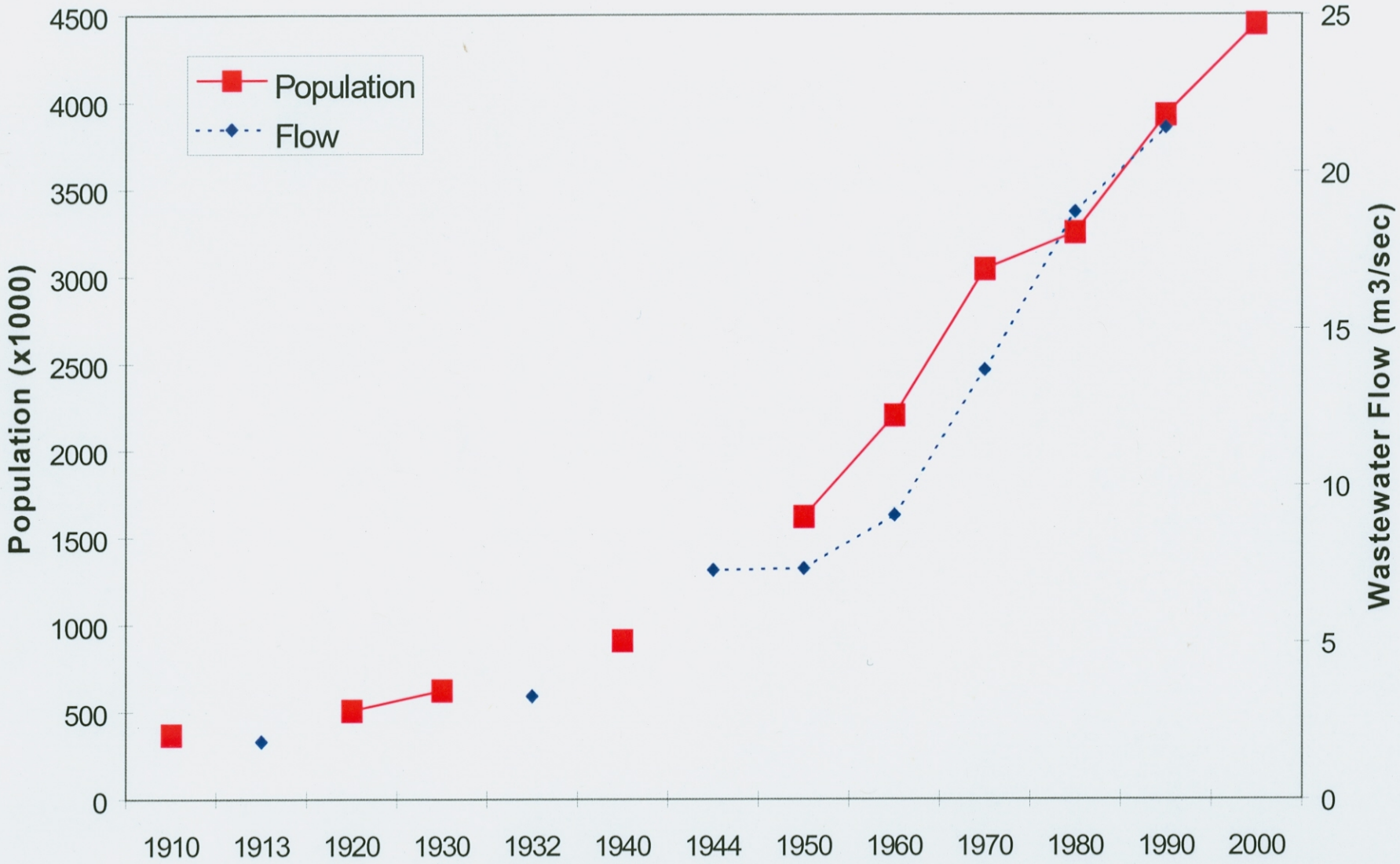

Figure IV-8. Increases in population and wastewater treatment plant flow for the Washington, D.C., Metropolitan area. Population data for 1910 through 1940 are from U.S. Census Bureau, 1998. Population data from 1950 through 2000 are from Metropolitan Washington Council of Governments (year 2000 was projected). Flow data from 1913 through 1980 were from Jaworski, 1990. Flow for 1990 was from Metropolitan Washington Council of Governments.

WWTPs.CDR

Figure IV-9. Total nitrogen and total phosphorus loads for the fall-line monitoring station at Chain Bridge in Washington, D.C., for 1978-1996. Data obtained from the U.S. Geological Survey.

Figure IV-10. Ammonium and orthophosphate loads for the fall-line river input monitoring station at Chain Bridge in Washington, D.C., for 1978-1996. Data obtained from the U.S. Geological Survey.

POTLOAD.CDR

Figure IV-11. Total suspended solids and nitrite plus nitrate loads for the fall-line river input monitoring station at Chain Bridge in Washington, D.C., for 1978-1996. Data obtained from the U.S. Geological Survey. Note that TSS loads may be underestimated since they do not include base flow samples.

V. LINKS BETWEEN TIDAL FRESH WATER QUALITY, THE WWTPs, AND THE FALL-LINE

A. Total Nitrogen

The direction and significance of TN trends depend on the time period of interest. Significant annual TN trends were not detected for either raw or flow-adjusted data at XFB2470 for 1985-1996. Decreasing annual trends in raw data of 20% and 13% were detected at XFB1433 and XEA6596, respectively for 1985-1996. Significant decreasing trends in flow adjusted data ranged from 9% to 23% for the lower three tidal fresh stations. TN loads at the WWTPs decreased by 6% between 1985-1996, which may explain the source of the decreasing trends in the tidal fresh concentrations at the ambient monitoring stations. The fall-line TN trend was not significant for 1985-1996.

TN trends at the monitoring stations were significant and positive for raw and flow-adjusted data for the mid-1970s-1996 time period. Trends in the raw data ranged from 15% to 38%. Flow-adjusted trends ranged from 17% to 38%. WWTP TN loads increased by 8% from the 1970s to 1996. Long-term trends at the fall-line are not available.

TN concentrations for the fall-line, the WWTPs, and the tidal fresh ambient monitoring stations are presented with river flow in Figure V-1. The WWTP concentration data were averaged by year and month across the plants listed in Table V-1. The ambient monitoring station data were similarly averaged across the four stations located in the tidal fresh zone. Although the WWTP data begin in 1983, most of the early data were "estimated" and are clearly higher than the actual concentrations that have been measured since late 1989.

As seen in Figure V-1, TN effluent concentrations from mid-1992 through 1995 are highly variable then drop quite sharply in 1996. The 1996 decrease is apparently a result of the sharp decline in TN concentrations at the Indian Head Naval Warfare Center described in Section VI. Similar variability and a similar decline in the 1996 data can also be observed at the monitoring stations, which suggests that two may be linked. The figure also shows that TN effluent concentrations are roughly 10-fold higher than the those of the river. It would therefore appear that substantial improvements to ambient water quality should result from decreased TN effluent loads.

Fall-line TN concentrations are somewhat similar to the ambient concentrations for most of the record. It is interesting to note the break in the pattern that occurs during the high flow year of 1996. Note that flows were quite high for all of 1996 as were the fall-line concentrations, but that TN for the monitoring stations decreased. This might suggest that TN concentrations in the tidal fresh zone are controlled more by the WWTPs than by non-point sources above the fall-line.

B. Total Phosphorus

Total phosphorus concentrations for the fall-line, the WWTPs, and the tidal fresh stations and river flow are presented in Figure V-2. For 1985-1996, there were no significant trends in TP at any tidal fresh station for either raw or flow-adjusted data. This result is difficult to explain because a decrease of 44% was observed in the TP loads from the WWTPs and a 50% decrease in flow-adjusted concentrations was detected at the fall-line. With such large decreases from the WWTPs and at the fall-line, one might have expected to see some decreases in the tidal fresh zone stations during the 1985-1996 time period.

Links between the tidal fresh ambient monitoring stations, the fall-line, and the WWTPs are more difficult to make for the longer-term (mid-1970s through 1996) data, because long-term trends are not available for the fall-line, and the WWTP and ambient monitoring data start times do not exactly match those of the monitoring program. Nevertheless, it is interesting to note that significant trends were detected in both raw and flow-adjusted data at all four tidal fresh stations for TP. For raw data, the decreasing trends ranged from 31% at XFB2470 to 39% at XEA1840. For the flow-adjusted data, the decreasing trends ranged from 27% at XFB2470 to 39% at XEA1840. Significant decreasing trends in TP in the tidal fresh zone may be explained by the large decreases in historical TP loads from the WWTPs, which declined by approximately 98% from the 1970s to the present.

C. Orthophosphate

PO_4 concentration and flow data are presented in Figure V-3. Trends in PO_4 are difficult to analyze in the Potomac River because of the 1990 change in methodology. The only significant PO_4 trend in the tidal fresh zone for 1985-1990 was a 32% decrease in flow-adjusted data at XEA6596. For 1985-1996, WWTP PO_4 loads decreased by 36%. Flow-adjusted PO_4 concentrations at the fall-line also decreased by 36%. Perhaps more significant trends would have been detected at the tidal fresh monitoring stations if the entire record could have been used, instead of only through September 1990.

Unfortunately, long term WWTP loadings and fall-line concentration data for PO_4 are not available. As a result, it is not possible to directly explain the dramatic decreases in PO_4 that were observed at the tidal fresh zone monitoring stations between 1970 and 1990. For 1970-1990, significant trends in raw and flow-adjusted data were detected at all four tidal fresh stations. Decreases in raw data ranged from 49% at XEA1840 to 66% at XFB2470, while decreases in flow-adjusted data ranged from 40% at XEA1840 to 58% at XFB2470.

Although it cannot be demonstrated statistically, it is difficult to believe that the management activities from the mid-1970s through the phosphate detergent ban in the mid-1980s to implementation of tertiary treatment in the 1990s have not had a direct effect on improving PO_4 trends in the Potomac River.

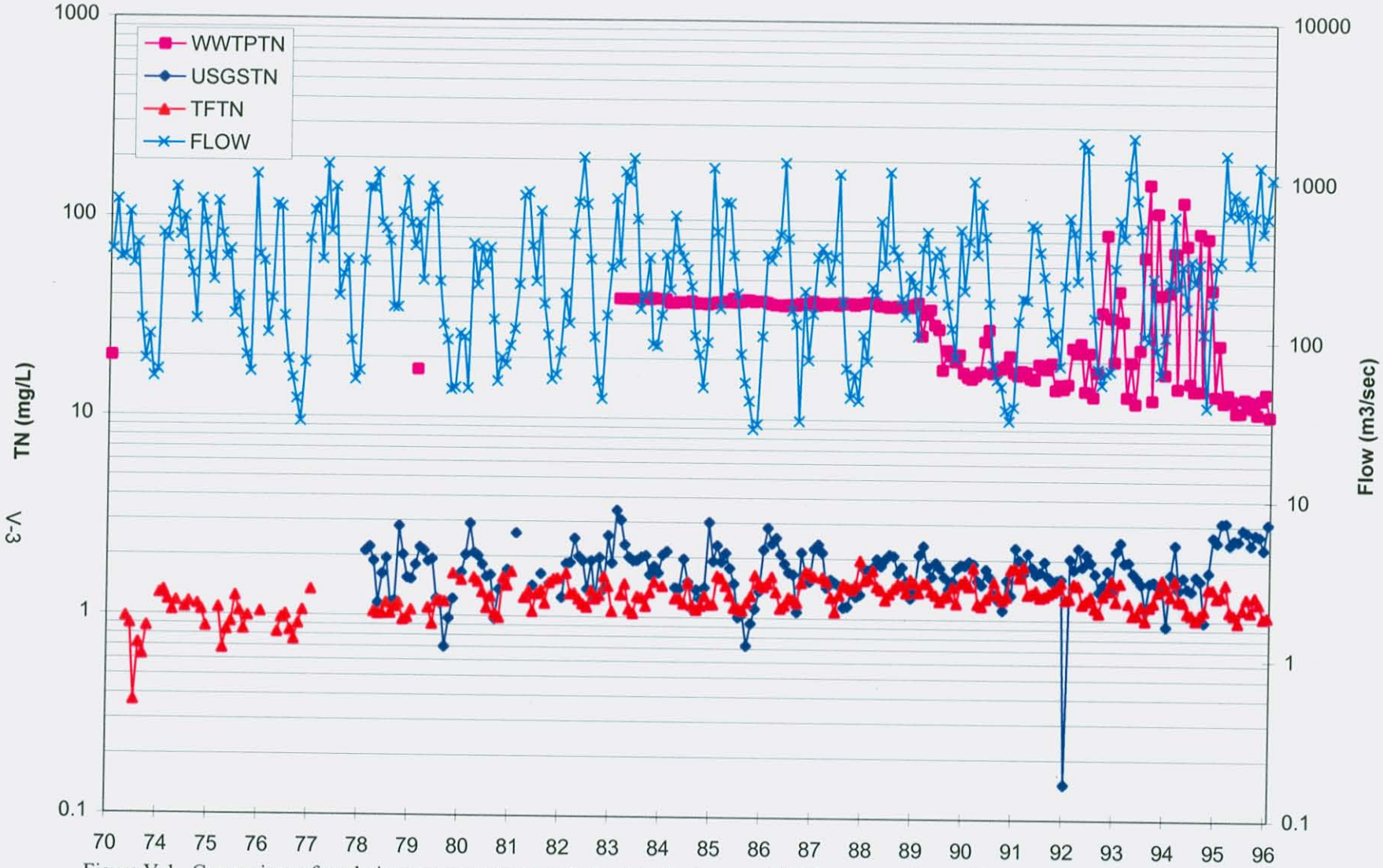

Figure V-1. Comparison of total nitrogen concentrations in the tidal fresh zone. USGS concentration and flow data were measured at Chain Bridge. WWTP data are monthly average concentrations for the major plants. Tidal fresh TN concentrations were averaged across the four tidal fresh zone stations.

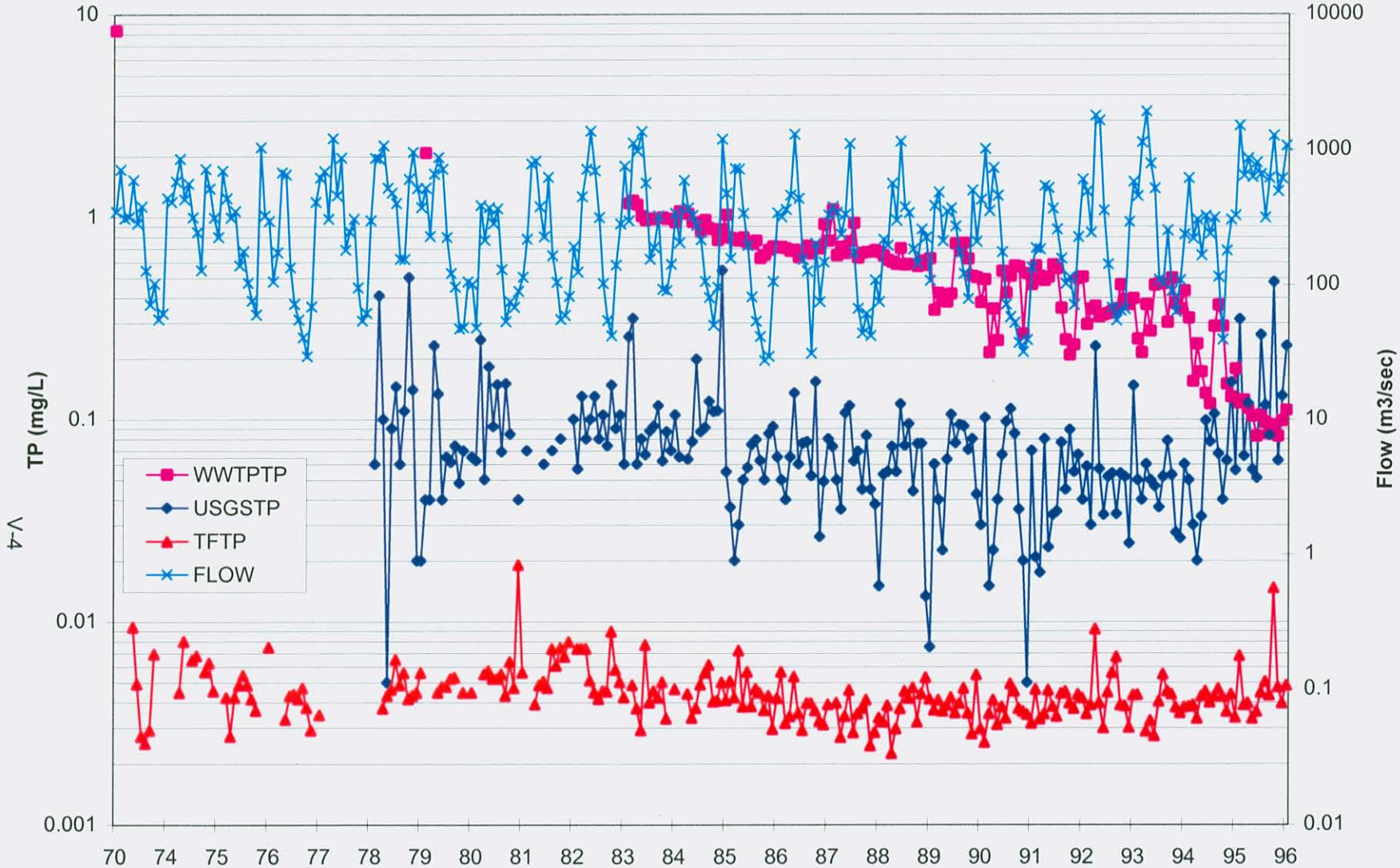

Figure V-2. Comparison of total phosphorus concentrations in the tidal fresh zone. USGS concentration and flow data were measured at Chain Bridge. WWTP data are monthly average concentrations for the major plants. Tidal fresh TP concentrations were averaged across the four tidal fresh zone stations.

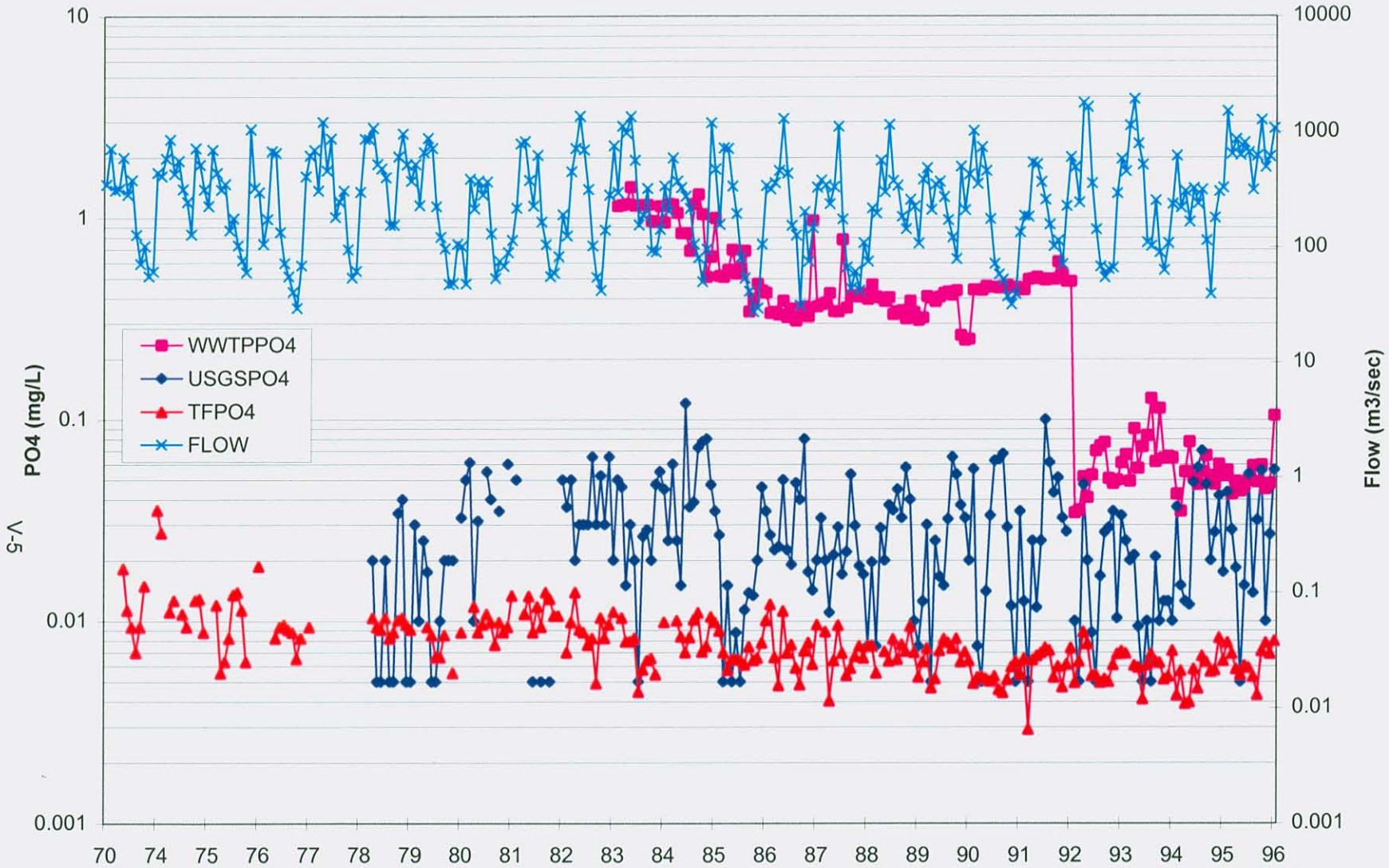

Figure V-3. Comparison of orthophosphate concentrations in the tidal fresh zone. USGS concentrations and flow data were measured at Chain Bridge. WWTP data are monthly average concentrations for the major plants. Tidal fresh PO4 concentrations were averaged across the tidal fresh zone stations.

References

Alden, R.W. III, C.M. Jones and J.C. Seibel. 1992. An Analysis of the Chesapeake Bay Program Monitoring Design for Detecting Water Quality Trends. Final Report to the Virginia State Water Control Board. 101 pp.

Alden, R.W. III, L. Haas, M. Lane, and E. Perry. Unpublished. Recommendations for a Unified Approach to Flow Corrections in the Maryland and Virginia Tributaries (Draft).

American Public Health Association (APHA). 1981. Standard Methods for the Examination of Water and Wastewater, 15th ed.

Aspila, I., H. Agemian and A.S.Y. Chau. 1976. A semi-automated method for the determination of inorganic, organic and total phosphate in sediments. Analyst. 101:187-197.

Boynton, W.R., J.H. Garber, R. Summers, and W.M. Kemp, 1995. Inputs, transformations, and transport of nitrogen and phosphorus in Chesapeake Bay and selected tributaries. Estuaries 18:285-314.

Day, J.W., C.A.S. Hall, W.M. Kemp, and A. Yanez-Aranciia, 1989. Estuarine Ecology. Wiley Interscience, New York. 558 pp.

D'Elia, C.F., P.A. Steudler and N. Corwin. 1977. Determination of total nitrogen in aqueous samples using persulfate digestion. Limnol. Oceanogr. 9:138-142.

Dennison, W.C., R.J. Orth, K.A. Moore, J.C. Stevenson, V. Carter, S. Kollar, P.W. Bergstrom, and R.A Batiuk. 1993. Assessing Water Quality with Submersed Aquatic Vegetation: Habitat requirements as barometers of Chesapeake Bay health. BioScience 43:86-94.

Gibson C., personal communication. U.S. Census Bureau, Washington, D.C.

Gilbert, R.O., 1987. Statistical methods for environmental pollution monitoring. Van Nostrand Reihold, New York. 320.

Helsel, D.R. and R.M. Hirsch. 1992. Statistical Methods in Water Resources. Elsevier Publ., Amsterdam. 522 pp.

Hirsch, R.M. and J.R. Slack. 1984. A nonparametric trend test for seasonal data with serial dependence. Water Resources Research, 20:727-732.

Hirsch, R.M., R.B. Alexander, and R.A. Smith. 1991. Selection of methods for the detection and estimation of trends in water quality. Water Resources Research, 27: 803-813.

Hydrolab System Water Quality Instrumentation Manual (HSWQIM), 1984. Product documentation.

Jaworski, N.A., 1990. Retrospective study of the water quality issues of the Upper Potomac Estuary. Reviews in Aquatic Sciences 3:11-40.

Jordan, S., C. Stenger, M. Olson, R. Batiuk, and K. Mountford, 1993. Chesapeake Bay dissolved oxygen goal for restoration of living resource habitats. Chesapeake Bay Program Re-evaluation Report #7c, CBP/TRS 88/93. 81 pp.

Leeman Labs Inc.. 1988. The automated and advanced Model 240X-A Elemental Analyzer.

Maryland Department of the Environment (MDE). 1993a. Guidance for the Analysis of Water Quality Trends in Chesapeake Bay.

Maryland Department of the Environment (MDE). 1993b. Maryland Department of the Environment Chesapeake Bay Water Quality Monitoring River Input Monitoring Component: Level 1 Data Summary Report: 1993. Technical Report #95-002.

Metropolitan Washington Council of Governments (MWCOG). 1989. Potomac River Water Quality 1982-1986; trends and Issues in the Metropolitan Washington Area. Department of Environmental Programs, Metropolitan Washington Council of Governments, Water Resources Planning Board. 107 pp + appendix.

Perry E., personal communication. Consulting statistician, Huntingtown, MD.

Reckhow, K.H., K. Kepford, and W. Warren-Hicks. 1992. Methods for the Analysis of Lake Water Quality Trends. Prepared for the U.S. Environmental Protection Agency.

Smith, R.A., R.M. Hirsch and J.R. Slack. 1982. A study of trends in total phosphorus measurements at NASQAN stations. U.S. Dept. Geological Survey, U.S. Geological Survey Water Supply Paper 2190, Supt. of Documents No. 1/19.13:2190, Washington, D.C. 34 pp.

Symposium on the Classification of Brackish Waters. 1959. Venice 8-14th April 1958. Archives of Oceanography and Limnology. 11 Supplement.

Tobin, J. 1958. Estimation of relationships for limited dependent variables. Econometrica, 26:24-36.

Tchobanoglous, G., and Edward D. Schroeder. 1985. Water Quality, Addison-Wesley Publishing Co., Reading, Massachusetts.

United States Environmental Protection Agency (EPA). 1979. Chemical Analysis of Water and

Wastes. USEPA-600/4-79-020.

Unites States Environmental Protection Agency (EPA). 1982. Chesapeake Bay Program Technical Studies: A Synthesis. Washington, D.C.635 pp.

United States Environmental Protection Agency (EPA). 1992. Chesapeake Bay Submerged Aquatic Vegetation Habitat Requirements and Restoration Targets: A Technical Synthesis.

United States Environmental Protection Agency (EPA). 1993. Volunteer Estuary Monitoring: A Methods Manual. Office of Water. EPA 842-B-93-004.

United States Geological Survey (USGS) 1993a. National Water Summary 1990-91. USGS Water-Supply Paper 2400, Washington DC. ISBN 0892-3469. 590 pp.

United States Geological Survey (USGS) 1993b. Maryland Department of the Environment Chesapeake Bay Water Quality Monitoring River Input Monitoring Component: Level 1 Data Summary Report. Technical Report #95-002.

United States Geological Survey (USGS) 1998. Chesapeake Bay: Monitoring River Nutrient Loads and Trends. Fact Sheet #036-97.

van Belle, G., and J.P. Hughes. 1984. Nonparametric tests for trend in water quality. Water Resources Research, 20:127-136.

Wetzel, R.G., 1983. Limnology, 2nd edition. Saunders Publ., Philadelphia. 767 pp plus indices.

SECTION VI

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0000**	0.6703	-0.0100	0.2300	11.83	**-51%**	**8/135**
XFB2470	NH4	Mar-May	**0.0005**	0.8564	-0.0163	0.3025	11.25	**-61%**	0/35
XFB2470	NH4	Apr-Jun	**0.0001**	0.8234	-0.0187	0.3025	11.25	**-70%**	0/36
XFB2470	NH4	Jun-Sep	0.0690	0.1653	-0.0046	0.1080	11.33	-48%	8/48
XFB2470	NH4	Jul-Sep	0.5523	0.5351	-0.0017	0.0875	11.25	-22%	8/36
XFB2470	NH4	Apr-Oct	**0.0003**	0.2779	-0.0089	0.1800	11.58	**-57%**	**8/84**
XFB2470	NH4	Oct-Dec	0.0228	0.6566	-0.0093	0.2230	11.25	-47%	0/33
XFB1433	NH4	Annual	**0.0000**	0.1661	-0.0101	0.2200	11.83	**-54%**	**17/137**
XFB1433	NH4	Mar-May	**0.0000**	0.9814	-0.0175	0.2875	11.25	**-68%**	0/36
XFB1433	NH4	Apr-Jun	**0.0000**	0.9752	-0.0159	0.2550	11.25	**-70%**	1/36
XFB1433	NH4	Jun-Sep	0.1294	0.0874	-0.0025	0.0375	11.33	-76%	17/48
XFB1433	NH4	Jul-Sep	0.9365	0.7627	0.0000	0.0330	11.25	0%	16/36
XFB1433	NH4	Apr-Oct	**0.0001**	0.0574	-0.0084	0.1485	11.58	**-66%**	**17/84**
XFB1433	NH4	Oct-Dec	0.0315	0.5270	-0.0077	0.1700	11.25	-51%	0/34
XEA6596	NH4	Annual	**0.0000**	0.9482	-0.0070	0.1500	11.83	**-55%**	**21/137**
XEA6596	NH4	Mar-May	**0.0009**	0.4997	-0.0104	0.1925	11.25	**-61%**	1/36
XEA6596	NH4	Apr-Jun	0.0112	0.3209	-0.0062	0.1070	11.25	-65%	4/36
XEA6596	NH4	Jun-Sep	0.0194	0.7933	-0.0030	0.0985	11.33	-35%	20/48
XEA6596	NH4	Jul-Sep	0.0213	0.6972	-0.0033	0.1030	11.25	-36%	17/36
XEA6596	NH4	Apr-Oct	**0.0001**	0.7949	-0.0043	0.1030	11.58	**-48%**	**21/84**
XEA6596	NH4	Oct-Dec	**0.0036**	0.9966	-0.0088	0.1480	11.25	**-67%**	0/33
XEA1840	NH4	Annual	**0.0001**	0.8894	-0.0064	0.1400	11.83	**-54%**	**12/138**
XEA1840	NH4	Mar-May	0.0964	0.2440	-0.0068	0.1225	11.25	-62%	1/36
XEA1840	NH4	Apr-Jun	0.2349	0.3423	-0.0054	0.0500	11.25	-122%	6/36
XEA1840	NH4	Jun-Sep	0.0503	0.6548	-0.0037	0.0545	11.33	-77%	11/48
XEA1840	NH4	Jul-Sep	0.0741	0.4520	-0.0036	0.0713	11.25	-57%	6/36
XEA1840	NH4	Apr-Oct	0.0240	0.6887	-0.0044	0.0700	11.58	-73%	12/84
XEA1840	NH4	Oct-Dec	0.0150	0.7602	-0.0080	0.1467	11.25	-61%	0/35

POTTF1 - NH4

Total	0.000000
Homogeneity	0.902957
Season	0.244793
Station	0.866319
Station-Season	0.957222
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	0.2858	0.6026	-0.0167	1.8140	11.83	-11%	0/138
XFB2470	NO23	Mar-May	0.9683	0.2618	0.0000	1.6793	11.25	0%	0/36
XFB2470	NO23	Apr-Jun	0.4999	0.7627	0.0064	1.6793	11.25	4%	0/36
XFB2470	NO23	Jun-Sep	0.0928	0.8910	-0.0318	1.7553	11.33	-21%	0/48
XFB2470	NO23	Jul-Sep	0.0686	0.9571	-0.0431	1.9250	11.25	-25%	0/36
XFB2470	NO23	Apr-Oct	0.2430	0.6433	-0.0222	1.7553	11.58	-15%	0/84
XFB2470	NO23	Oct-Dec	0.8363	0.2335	0.0007	2.0000	11.25	0%	0/35
XFB1433	NO23	Annual	0.3793	0.9051	-0.0056	1.7625	11.83	-4%	0/138
XFB1433	NO23	Mar-May	0.7210	0.6319	-0.0069	1.7095	11.25	-5%	0/36
XFB1433	NO23	Apr-Jun	0.8430	0.7892	0.0035	1.5978	11.25	2%	0/36
XFB1433	NO23	Jun-Sep	0.5898	0.9121	-0.0121	1.4695	11.33	-9%	0/48
XFB1433	NO23	Jul-Sep	0.4285	0.9046	-0.0250	1.5750	11.25	-18%	0/36
XFB1433	NO23	Apr-Oct	0.4216	0.9288	-0.0143	1.6528	11.58	-10%	0/84
XFB1433	NO23	Oct-Dec	0.9342	0.3673	0.0000	1.8615	11.25	0%	0/35
XEA6596	NO23	Annual	0.6604	0.8083	-0.0028	1.6690	11.83	-2%	0/138
XEA6596	NO23	Mar-May	0.5788	0.5942	-0.0088	1.7190	11.25	-6%	0/36
XEA6596	NO23	Apr-Jun	0.8119	0.8398	0.0032	1.3590	11.25	3%	0/36
XEA6596	NO23	Jun-Sep	0.8100	0.9643	0.0026	0.9830	11.33	3%	0/48
XEA6596	NO23	Jul-Sep	0.9368	0.9002	0.0006	0.8938	11.25	1%	0/36
XEA6596	NO23	Apr-Oct	0.6035	0.6671	-0.0075	1.2423	11.58	-7%	0/84
XEA6596	NO23	Oct-Dec	0.3858	0.1149	-0.0115	1.9387	11.25	-7%	0/35
XEA1840	NO23	Annual	0.7589	0.9723	-0.0020	1.3680	11.83	-2%	0/139
XEA1840	NO23	Mar-May	0.9367	0.7157	0.0000	1.4903	11.25	0%	0/36
XEA1840	NO23	Apr-Jun	0.5788	0.9891	0.0072	1.2003	11.25	7%	0/36
XEA1840	NO23	Jun-Sep	0.5145	0.8800	0.0118	0.5098	11.33	26%	0/48
XEA1840	NO23	Jul-Sep	0.5264	0.7218	0.0178	0.4739	11.25	42%	0/36
XEA1840	NO23	Apr-Oct	0.4677	0.9899	0.0078	1.0501	11.58	9%	0/84
XEA1840	NO23	Oct-Dec	0.3018	0.8534	-0.0171	1.5375	11.25	-13%	0/36

POTTF1 - NO23

Total	0.991390
Homogeneity	0.994690
Season	0.479364
Station	0.939047
Station-Season	0.997116
Trend	0.169164

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.0210	0.4081	0.0016	0.071	11.83	27%	0/136
XFB2470	TP	Mar-May	1.0000	0.5343	0.0000	0.069	11.25	0%	0/36
XFB2470	TP	Apr-Jun	0.7417	0.4914	0.0008	0.067	11.25	13%	0/35
XFB2470	TP	Jun-Sep	**0.0017**	0.3953	0.0030	0.082	11.33	**42%**	0/47
XFB2470	TP	Jul-Sep	**0.0011**	0.4392	0.0031	0.077	11.25	**45%**	0/36
XFB2470	TP	Apr-Oct	**0.0040**	0.2917	0.0023	0.070	11.58	**38%**	0/83
XFB2470	TP	Oct-Dec	0.6045	0.3614	0.0010	0.062	11.25	18%	0/34
XFB1433	TP	Annual	0.2402	0.2547	0.0007	0.087	11.83	10%	0/136
XFB1433	TP	Mar-May	0.1534	0.9678	-0.0021	0.077	11.25	-31%	0/36
XFB1433	TP	Apr-Jun	0.5641	0.2853	-0.0008	0.066	11.25	-14%	0/35
XFB1433	TP	Jun-Sep	**0.0034**	0.4318	0.0030	0.096	11.33	**36%**	0/47
XFB1433	TP	Jul-Sep	**0.0055**	0.2880	0.0028	0.089	11.25	**36%**	0/36
XFB1433	TP	Apr-Oct	0.1196	0.1056	0.0014	0.087	11.58	19%	0/83
XFB1433	TP	Oct-Dec	0.6984	0.4780	0.0004	0.086	11.25	5%	0/34
XEA6596	TP	Annual	0.6079	0.8717	0.0004	0.097	11.83	5%	0/136
XEA6596	TP	Mar-May	0.3830	0.7531	-0.0013	0.090	11.25	-16%	0/36
XEA6596	TP	Apr-Jun	0.6211	0.4426	-0.0004	0.087	11.25	-5%	0/35
XEA6596	TP	Jun-Sep	0.2037	0.9010	0.0017	0.102	11.33	19%	0/47
XEA6596	TP	Jul-Sep	0.2847	0.7502	0.0014	0.105	11.25	15%	0/36
XEA6596	TP	Apr-Oct	0.4929	0.7299	0.0007	0.100	11.58	8%	0/83
XEA6596	TP	Oct-Dec	0.8234	0.2820	0.0004	0.086	11.25	5%	0/33
XEA1840	TP	Annual	0.0632	0.9532	0.0012	0.094	11.83	15%	0/137
XEA1840	TP	Mar-May	0.5006	0.9433	0.0006	0.084	11.25	8%	0/36
XEA1840	TP	Apr-Jun	0.0746	0.4478	0.0015	0.072	11.25	23%	0/36
XEA1840	TP	Jun-Sep	0.0798	0.3657	0.0021	0.104	11.33	23%	0/48
XEA1840	TP	Jul-Sep	0.4046	0.5188	0.0018	0.117	11.25	17%	0/36
XEA1840	TP	Apr-Oct	0.0429	0.7609	0.0015	0.090	11.58	19%	0/84
XEA1840	TP	Oct-Dec	0.3906	0.9110	0.0013	0.085	11.25	17%	0/34

POTTF1 - TP

Total	0.580111
Homogeneity	0.846256
Season	0.030750
Station	0.651166
Station-Season	0.998102
Trend	**0.004204**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.0190	0.1993	0.5000	14.5	11.83	40%	1/138
XFB2470	TSS	Mar-May	0.5517	0.2688	-0.3000	16.3	11.25	-20%	0/36
XFB2470	TSS	Apr-Jun	0.7507	0.1973	-0.2083	12.3	11.25	-20%	0/36
XFB2470	TSS	Jun-Sep	**0.0088**	0.2154	0.6821	13.7	11.33	**60%**	0/48
XFB2470	TSS	Jul-Sep	**0.0076**	0.1472	0.7286	13.7	11.25	**60%**	0/36
XFB2470	TSS	Apr-Oct	0.0191	0.0379	0.5000	13.2	11.58	40%	1/84
XFB2470	TSS	Oct-Dec	0.0476	0.4403	0.7500	13.8	11.25	60%	1/35
XFB1433	TSS	Annual	**0.0058**	0.6038	0.6000	18.5	11.83	**40%**	1/138
XFB1433	TSS	Mar-May	0.4046	0.2758	0.4271	15.5	11.25	30%	0/36
XFB1433	TSS	Apr-Jun	0.0427	0.7427	0.5955	12.0	11.25	60%	0/36
XFB1433	TSS	Jun-Sep	**0.0099**	0.3111	0.6833	18.3	11.33	**40%**	0/48
XFB1433	TSS	Jul-Sep	0.0291	0.1682	0.7143	19.8	11.25	40%	0/36
XFB1433	TSS	Apr-Oct	**0.0012**	0.6524	0.7000	14.3	11.58	**60%**	1/84
XFB1433	TSS	Oct-Dec	0.2158	0.5117	0.7000	17.0	11.25	50%	1/35
XEA6596	TSS	Annual	0.0429	0.4133	0.5000	19.3	11.83	30%	0/139
XEA6596	TSS	Mar-May	0.2837	0.9137	0.5000	22.3	11.25	30%	0/36
XEA6596	TSS	Apr-Jun	0.3547	0.9416	0.2750	15.8	11.25	20%	0/36
XEA6596	TSS	Jun-Sep	0.1988	0.8216	0.3958	16.5	11.33	30%	0/48
XEA6596	TSS	Jul-Sep	0.2491	0.6347	0.5000	17.8	11.25	30%	0/36
XEA6596	TSS	Apr-Oct	0.0149	0.5032	0.5000	15.8	11.58	40%	0/84
XEA6596	TSS	Oct-Dec	0.2303	0.0093	0.7500	27.0	11.25	30%	0/35
XEA1840	TSS	Annual	0.0214	0.8259	0.5833	22.5	11.83	30%	1/139
XEA1840	TSS	Mar-May	0.1783	0.8390	0.5774	21.5	11.25	30%	0/36
XEA1840	TSS	Apr-Jun	0.5523	0.8643	0.2781	21.3	11.25	10%	0/36
XEA1840	TSS	Jun-Sep	0.1776	0.3517	0.4188	18.5	11.33	30%	0/48
XEA1840	TSS	Jul-Sep	0.1097	0.2827	0.5663	18.0	11.25	40%	0/36
XEA1840	TSS	Apr-Oct	0.0349	0.6147	0.5670	18.4	11.58	40%	0/84
XEA1840	TSS	Oct-Dec	0.0884	0.5369	1.1927	18.6	11.25	70%	1/36

POTTF1 - TSS

Total	0.070275
Homogeneity	0.670528
Season	**0.007709**
Station	0.949401
Station-Season	0.993135
Trend	**0.000005**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	Secchi	Annual	0.1521	0.2416	0.0000	0.7	11.83	0%	NA
XFB2470	Secchi	Mar-May	0.3137	0.7199	-0.0094	0.8	11.25	-10%	NA
XFB2470	Secchi	Apr-Jun	0.4916	0.7425	0.0000	0.8	11.25	0%	NA
XFB2470	Secchi	Jun-Sep	0.0525	0.2630	-0.0106	0.7	11.33	-20%	NA
XFB2470	Secchi	Jul-Sep	0.0368	0.1857	-0.0125	0.8	11.25	-20%	NA
XFB2470	Secchi	Apr-Oct	0.0145	0.4777	-0.0125	0.9	11.58	-20%	NA
XFB2470	Secchi	Oct-Dec	0.9330	0.0713	0.0000	0.6	11.25	0%	NA
XFB1433	Secchi	Annual	0.8621	0.2761	0.0000	0.5	11.83	0%	NA
XFB1433	Secchi	Mar-May	0.4236	0.8052	-0.0074	0.7	11.25	-10%	NA
XFB1433	Secchi	Apr-Jun	0.9044	0.4418	0.0000	0.7	11.25	0%	NA
XFB1433	Secchi	Jun-Sep	0.5976	0.1930	0.0000	0.6	11.33	0%	NA
XFB1433	Secchi	Jul-Sep	0.9024	0.1165	0.0000	0.6	11.25	0%	NA
XFB1433	Secchi	Apr-Oct	0.4123	0.1264	0.0000	0.6	11.58	0%	NA
XFB1433	Secchi	Oct-Dec	0.2763	0.1060	0.0000	0.5	11.25	0%	NA
XEA6596	Secchi	Annual	0.7185	0.8599	0.0000	0.5	11.83	0%	NA
XEA6596	Secchi	Mar-May	0.6295	0.8100	0.0000	0.5	11.25	0%	NA
XEA6596	Secchi	Apr-Jun	0.7786	0.7962	0.0000	0.6	11.25	0%	NA
XEA6596	Secchi	Jun-Sep	0.8890	0.6970	0.0000	0.5	11.33	0%	NA
XEA6596	Secchi	Jul-Sep	0.8716	0.4892	0.0000	0.5	11.25	0%	NA
XEA6596	Secchi	Apr-Oct	0.4605	0.6129	0.0000	0.5	11.58	0%	NA
XEA6596	Secchi	Oct-Dec	0.5806	0.1634	0.0000	0.4	11.25	0%	NA
XEA1840	Secchi	Annual	0.0848	0.7471	-0.0071	0.5	11.83	-20%	NA
XEA1840	Secchi	Mar-May	0.8715	0.9559	0.0000	0.4	11.25	0%	NA
XEA1840	Secchi	Apr-Jun	0.9357	0.9744	0.0000	0.5	11.25	0%	NA
XEA1840	Secchi	Jun-Sep	0.2682	0.7954	-0.0107	0.6	11.33	-20%	NA
XEA1840	Secchi	Jul-Sep	0.2300	0.6721	-0.0232	0.6	11.25	-50%	NA
XEA1840	Secchi	Apr-Oct	0.1277	0.7832	-0.0083	0.6	11.58	-20%	NA
XEA1840	Secchi	Oct-Dec	0.0206	0.4324	-0.0400	0.5	11.25	-100%	NA

POTTF1 - Secchi

Total	0.592830
Homogeneity	0.650085
Season	0.003553
Station	0.615828
Station-Season	0.999168
Trend	0.124236

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0001**	0.6170	0.3844	3.7	11.67	**120%**	NA
XFB2470	CHAA	Mar-May	0.3265	0.3793	0.3407	5.0	11.08	80%	NA
XFB2470	CHAA	Apr-Jun	0.1278	0.2406	0.4834	6.5	11.17	80%	NA
XFB2470	CHAA	Jun-Sep	**0.0013**	0.8332	0.9011	8.7	11.33	**120%**	NA
XFB2470	CHAA	Jul-Sep	**0.0055**	0.6485	1.0314	9.9	11.25	**120%**	NA
XFB2470	CHAA	Apr-Oct	**0.0004**	0.5372	0.7393	6.8	11.50	**130%**	NA
XFB2470	CHAA	Oct-Dec	**0.0057**	0.5747	0.3243	1.9	11.25	**190%**	NA
XFB1433	CHAA	Annual	0.0409	0.5824	0.2227	5.0	11.67	50%	NA
XFB1433	CHAA	Mar-May	0.5769	0.4758	0.2326	5.2	11.08	50%	NA
XFB1433	CHAA	Apr-Jun	0.4687	0.4607	0.3180	6.1	11.17	60%	NA
XFB1433	CHAA	Jun-Sep	0.4929	0.9413	0.3706	16.9	11.33	20%	NA
XFB1433	CHAA	Jul-Sep	0.6347	0.8443	0.4106	18.9	11.25	20%	NA
XFB1433	CHAA	Apr-Oct	0.1417	0.7088	0.3744	12.7	11.50	30%	NA
XFB1433	CHAA	Oct-Dec	**0.0025**	0.7689	0.3059	1.2	11.25	**290%**	NA
XEA6596	CHAA	Annual	0.6697	0.8798	0.0734	6.0	11.67	10%	NA
XEA6596	CHAA	Mar-May	0.6065	0.6816	-0.0800	4.3	11.08	-20%	NA
XEA6596	CHAA	Apr-Jun	0.6507	0.6702	-0.0790	17.7	11.17	0%	NA
XEA6596	CHAA	Jun-Sep	0.7839	0.9046	0.1597	25.3	11.33	10%	NA
XEA6596	CHAA	Jul-Sep	0.7515	0.7637	0.2749	22.8	11.25	10%	NA
XEA6596	CHAA	Apr-Oct	0.9370	0.9518	-0.0353	18.6	11.50	0%	NA
XEA6596	CHAA	Oct-Dec	0.1272	0.5306	0.1988	2.7	11.25	80%	NA
XEA1840	CHAA	Annual	0.5376	0.1473	0.0517	7.7	11.67	10%	NA
XEA1840	CHAA	Mar-May	0.8637	0.6298	-0.0237	3.9	11.08	-10%	NA
XEA1840	CHAA	Apr-Jun	0.5370	0.5217	0.1351	11.5	11.17	10%	NA
XEA1840	CHAA	Jun-Sep	0.8909	0.5621	0.0497	20.2	11.33	0%	NA
XEA1840	CHAA	Jul-Sep	0.6922	0.6094	-0.2179	21.5	11.25	-10%	NA
XEA1840	CHAA	Apr-Oct	0.9790	0.8051	-0.0247	13.9	11.50	0%	NA
XEA1840	CHAA	Oct-Dec	0.1043	0.0094	0.1150	2.1	11.25	60%	NA

POTTF1 - CHAA

Total	0.165946
Homogeneity	0.460947
Season	0.016391
Station	0.069889
Station-Season	0.990430
Trend	**0.001468**

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.0431	0.7846	-0.0279	2.0930	11.83	-16%	0/135
XFB2470	DIN	Mar-May	0.2842	0.4267	-0.0208	1.9793	11.25	-12%	0/35
XFB2470	DIN	Apr-Jun	0.4761	0.7831	-0.0143	1.9620	11.25	-8%	0/36
XFB2470	DIN	Jun-Sep	0.0467	0.9831	-0.0403	1.9078	11.33	-24%	0/48
XFB2470	DIN	Jul-Sep	0.0815	0.9217	-0.0434	1.9625	11.25	-25%	0/36
XFB2470	DIN	Apr-Oct	0.0432	0.9710	-0.0335	1.9828	11.58	-20%	0/84
XFB2470	DIN	Oct-Dec	0.8584	0.3796	-0.0077	2.3108	11.25	-4%	0/33
XFB1433	DIN	Annual	0.0875	0.9614	-0.0210	1.9590	11.83	-13%	0/137
XFB1433	DIN	Mar-May	0.1655	0.8198	-0.0295	1.9770	11.25	-17%	0/36
XFB1433	DIN	Apr-Jun	0.4516	0.8836	-0.0091	1.8418	11.25	-6%	0/36
XFB1433	DIN	Jun-Sep	0.5371	0.9498	-0.0147	1.7255	11.33	-10%	0/48
XFB1433	DIN	Jul-Sep	0.5264	0.8549	-0.0195	1.5990	11.25	-14%	0/36
XFB1433	DIN	Apr-Oct	0.1861	0.9862	-0.0167	1.7875	11.58	-11%	0/84
XFB1433	DIN	Oct-Dec	0.6065	0.4403	-0.0135	2.0955	11.25	-7%	0/34
XEA6596	DIN	Annual	0.1153	0.7321	-0.0140	1.8643	11.83	-9%	0/136
XEA6596	DIN	Mar-May	0.2052	0.5049	-0.0171	1.9468	11.25	-10%	0/36
XEA6596	DIN	Apr-Jun	0.8742	0.6570	-0.0027	1.4640	11.25	-2%	0/36
XEA6596	DIN	Jun-Sep	0.9453	0.8664	-0.0035	1.0675	11.33	-4%	0/48
XEA6596	DIN	Jul-Sep	0.7515	0.7930	-0.0074	0.9895	11.25	-8%	0/36
XEA6596	DIN	Apr-Oct	0.2763	0.6125	-0.0104	1.3093	11.58	-9%	0/84
XEA6596	DIN	Oct-Dec	0.0610	0.2524	-0.0264	2.1687	11.25	-14%	0/33
XEA1840	DIN	Annual	0.2872	0.9808	-0.0118	1.4180	11.83	-10%	0/138
XEA1840	DIN	Mar-May	0.8122	0.6737	-0.0030	1.6053	11.25	-2%	0/36
XEA1840	DIN	Apr-Jun	0.9369	0.7637	-0.0015	1.2628	11.25	-1%	0/36
XEA1840	DIN	Jun-Sep	0.9453	0.8395	-0.0041	0.6348	11.33	-7%	0/48
XEA1840	DIN	Jul-Sep	0.8742	0.7218	0.0097	0.5406	11.25	20%	0/36
XEA1840	DIN	Apr-Oct	1.0000	0.9748	0.0003	1.0644	11.58	0%	0/84
XEA1840	DIN	Oct-Dec	0.3438	0.8256	-0.0290	1.6825	11.25	-19%	0/35

POTTF1 - DIN

Total	0.949968
Homogeneity	0.998730
Season	0.590869
Station	0.966260
Station-Season	0.999000
Trend	**0.001510**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	0.0116	0.8130	-0.0385	2.776	11.83	-16%	0/136
XFB2470	TN	Mar-May	0.2326	0.9765	-0.0343	2.397	11.25	-16%	0/35
XFB2470	TN	Apr-Jun	0.0575	0.4298	-0.0400	2.465	11.25	-18%	0/35
XFB2470	TN	Jun-Sep	0.0106	0.6855	-0.0500	2.900	11.33	-20%	0/47
XFB2470	TN	Jul-Sep	0.0804	0.8130	-0.0381	2.750	11.25	-16%	0/36
XFB2470	TN	Apr-Oct	**0.0043**	0.9052	-0.0425	2.600	11.58	**-19%**	0/83
XFB2470	TN	Oct-Dec	0.7111	0.2938	-0.0190	2.776	11.25	-8%	0/35
XFB1433	TN	Annual	**0.0021**	0.9614	-0.0417	2.495	11.83	**-20%**	0/136
XFB1433	TN	Mar-May	0.2193	0.6647	-0.0321	2.417	11.25	-15%	0/36
XFB1433	TN	Apr-Jun	0.1497	0.4225	-0.0313	2.465	11.25	-14%	0/35
XFB1433	TN	Jun-Sep	0.0149	0.7886	-0.0457	2.497	11.33	-21%	0/47
XFB1433	TN	Jul-Sep	0.0815	0.8234	-0.0424	2.494	11.25	-19%	0/36
XFB1433	TN	Apr-Oct	0.0106	0.8994	-0.0395	2.492	11.58	-18%	0/83
XFB1433	TN	Oct-Dec	0.2294	0.7882	-0.0418	2.517	11.25	-19%	0/34
XEA6596	TN	Annual	**0.0038**	0.8726	-0.0262	2.421	11.83	**-13%**	0/137
XEA6596	TN	Mar-May	0.0768	0.6495	-0.0250	2.421	11.25	-12%	0/35
XEA6596	TN	Apr-Jun	0.0915	0.6799	-0.0250	2.319	11.25	-12%	0/35
XEA6596	TN	Jun-Sep	0.1402	0.9142	-0.0262	2.023	11.33	-15%	0/48
XEA6596	TN	Jul-Sep	0.3219	0.9082	-0.0197	1.981	11.25	-11%	0/36
XEA6596	TN	Apr-Oct	0.0114	0.8550	-0.0260	2.135	11.58	-14%	0/83
XEA6596	TN	Oct-Dec	0.0699	0.3466	-0.0346	2.779	11.25	-14%	0/35
XEA1840	TN	Annual	0.0206	0.9569	-0.0255	2.077	11.83	-15%	0/139
XEA1840	TN	Mar-May	0.1133	0.9046	-0.0228	2.129	11.25	-12%	0/36
XEA1840	TN	Apr-Jun	0.0746	0.8158	-0.0276	1.952	11.25	-16%	0/36
XEA1840	TN	Jun-Sep	0.4301	0.6446	-0.0203	1.528	11.33	-15%	0/48
XEA1840	TN	Jul-Sep	0.9369	0.9046	-0.0027	1.429	11.25	-2%	0/36
XEA1840	TN	Apr-Oct	0.2433	0.8740	-0.0168	1.920	11.58	-10%	0/84
XEA1840	TN	Oct-Dec	0.3413	0.6887	-0.0240	2.148	11.25	-13%	0/36

POTTF1 - TN

Total	0.361375
Homogeneity	0.999401
Season	0.423714
Station	0.970219
Station-Season	0.999949
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0000**	0.9418	0.1200	7.7	11.83	**20%**	NA
XFB2470	DO_FLD	Mar-May	0.0194	0.6171	0.1500	9.3	11.25	20%	NA
XFB2470	DO_FLD	Apr-Jun	0.0395	0.6822	0.1279	7.4	11.25	20%	NA
XFB2470	DO_FLD	Jun-Sep	**0.0025**	0.8289	0.1250	6.4	11.33	**20%**	NA
XFB2470	DO_FLD	Jul-Sep	**0.0054**	0.6762	0.1306	6.4	11.25	**20%**	NA
XFB2470	DO_FLD	Apr-Oct	**0.0003**	0.9359	0.1306	6.8	11.58	**20%**	NA
XFB2470	DO_FLD	Oct-Dec	0.1857	0.6404	0.1000	10.1	11.25	10%	NA
XFB1433	DO_FLD	Annual	**0.0021**	0.8777	0.0750	9.1	11.83	**10%**	NA
XFB1433	DO_FLD	Mar-May	**0.0062**	0.9072	0.1293	9.0	11.25	**20%**	NA
XFB1433	DO_FLD	Apr-Jun	0.0215	0.7125	0.1000	7.6	11.25	10%	NA
XFB1433	DO_FLD	Jun-Sep	0.4501	0.8321	0.0225	7.6	11.33	0%	NA
XFB1433	DO_FLD	Jul-Sep	0.6630	0.7113	0.0191	7.6	11.25	0%	NA
XFB1433	DO_FLD	Apr-Oct	0.0170	0.7261	0.0732	7.5	11.58	10%	NA
XFB1433	DO_FLD	Oct-Dec	0.1859	0.3988	0.0700	9.9	11.25	10%	NA
XEA6596	DO_FLD	Annual	0.0166	0.9678	0.0500	9.5	11.83	10%	NA
XEA6596	DO_FLD	Mar-May	0.1032	0.5319	0.0775	9.7	11.25	10%	NA
XEA6596	DO_FLD	Apr-Jun	0.2172	0.4608	0.0317	9.3	11.25	0%	NA
XEA6596	DO_FLD	Jun-Sep	0.2870	0.8105	0.0528	7.8	11.33	10%	NA
XEA6596	DO_FLD	Jul-Sep	0.2847	0.6459	0.0606	7.4	11.25	10%	NA
XEA6596	DO_FLD	Apr-Oct	0.1317	0.8315	0.0437	7.9	11.58	10%	NA
XEA6596	DO_FLD	Oct-Dec	0.1695	0.4983	0.0400	9.7	11.25	0%	NA
XEA1840	DO_FLD	Annual	0.7714	0.8465	0.0000	9.6	11.83	0%	NA
XEA1840	DO_FLD	Mar-May	0.6625	0.5346	0.0158	10.3	11.25	0%	NA
XEA1840	DO_FLD	Apr-Jun	0.9050	0.8313	0.0000	9.4	11.25	0%	NA
XEA1840	DO_FLD	Jun-Sep	0.3895	0.8450	-0.0333	7.9	11.33	0%	NA
XEA1840	DO_FLD	Jul-Sep	0.2840	0.7930	-0.0402	7.5	11.25	-10%	NA
XEA1840	DO_FLD	Apr-Oct	0.2864	0.9639	-0.0264	8.0	11.58	0%	NA
XEA1840	DO_FLD	Oct-Dec	0.4485	0.8218	-0.0134	9.8	11.25	0%	NA

POTTF1 - DO_FLD

Total	0.232376
Homogeneity	0.959710
Season	0.778244
Station	0.015865
Station-Season	0.998571
Trend	**0.000001**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.2238	0.0375	7.5	11.83	**10%**	NA
XFB2470	pH_FLD	Mar-May	**0.0008**	0.9238	0.0396	7.6	11.25	**10%**	NA
XFB2470	pH_FLD	Apr-Jun	**0.0000**	0.7092	0.0667	7.4	11.25	**10%**	NA
XFB2470	pH_FLD	Jun-Sep	**0.0000**	0.7354	0.0563	7.3	11.33	**10%**	NA
XFB2470	pH_FLD	Jul-Sep	**0.0004**	0.8101	0.0500	7.2	11.25	**10%**	NA
XFB2470	pH_FLD	Apr-Oct	**0.0000**	0.9618	0.0500	7.3	11.58	**10%**	NA
XFB2470	pH_FLD	Oct-Dec	**0.0039**	0.9441	0.0333	7.6	11.25	**0%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.7767	0.0333	7.5	11.83	**10%**	NA
XFB1433	pH_FLD	Mar-May	**0.0010**	0.9788	0.0500	7.5	11.25	**10%**	NA
XFB1433	pH_FLD	Apr-Jun	**0.0010**	0.7710	0.0500	7.5	11.25	**10%**	NA
XFB1433	pH_FLD	Jun-Sep	**0.0039**	0.4192	0.0342	7.5	11.33	**10%**	NA
XFB1433	pH_FLD	Jul-Sep	0.0911	0.8839	0.0333	7.5	11.25	0%	NA
XFB1433	pH_FLD	Apr-Oct	**0.0000**	0.7664	0.0417	7.5	11.58	**10%**	NA
XFB1433	pH_FLD	Oct-Dec	0.0219	0.8545	0.0286	7.5	11.25	0%	NA
XEA6596	pH_FLD	Annual	**0.0004**	0.7699	0.0273	7.7	11.83	**0%**	NA
XEA6596	pH_FLD	Mar-May	**0.0084**	0.4840	0.0293	7.7	11.25	**0%**	NA
XEA6596	pH_FLD	Apr-Jun	0.0511	0.4604	0.0264	7.9	11.25	0%	NA
XEA6596	pH_FLD	Jun-Sep	0.0627	0.9222	0.0366	8.2	11.33	10%	NA
XEA6596	pH_FLD	Jul-Sep	0.0799	0.8159	0.0500	7.9	11.25	10%	NA
XEA6596	pH_FLD	Apr-Oct	**0.0045**	0.9216	0.0326	7.7	11.58	**0%**	NA
XEA6596	pH_FLD	Oct-Dec	0.0492	0.9845	0.0333	7.6	11.25	0%	NA
XEA1840	pH_FLD	Annual	0.0567	0.4706	0.0143	7.7	11.83	0%	NA
XEA1840	pH_FLD	Mar-May	0.1737	0.1088	0.0218	7.8	11.25	0%	NA
XEA1840	pH_FLD	Apr-Jun	0.4243	0.2406	0.0177	8.0	11.25	0%	NA
XEA1840	pH_FLD	Jun-Sep	0.1056	0.5307	0.0345	7.9	11.33	0%	NA
XEA1840	pH_FLD	Jul-Sep	0.1889	0.3369	0.0333	7.8	11.25	0%	NA
XEA1840	pH_FLD	Apr-Oct	0.1111	0.5237	0.0214	7.9	11.58	0%	NA
XEA1840	pH_FLD	Oct-Dec	0.5689	0.7502	0.0000	7.6	11.25	0%	NA

POTTF1 - pH_FLD

Total	0.000003
Homogeneity	0.475790
Season	**0.007699**
Station	0.058837
Station-Season	0.998503
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TALK	Annual	0.0632	0.8743	0.6667	74.0	11.00	10%	NA
XFB2470	TALK	Mar-May	0.7499	0.5274	0.0000	68.5	10.25	0%	NA
XFB2470	TALK	Apr-Jun	0.4129	0.7777	0.5000	74.5	10.25	10%	NA
XFB2470	TALK	Jun-Sep	0.0608	0.7847	0.8661	72.8	10.33	10%	NA
XFB2470	TALK	Jul-Sep	0.0471	0.7612	0.9444	70.5	10.25	10%	NA
XFB2470	TALK	Apr-Oct	0.0193	0.9245	0.8571	74.3	10.58	10%	NA
XFB2470	TALK	Oct-Dec	0.3249	0.5443	0.7500	81.0	10.25	10%	NA
XFB1433	TALK	Annual	0.0147	0.8899	0.6667	72.0	11.00	10%	NA
XFB1433	TALK	Mar-May	0.4707	0.5800	0.3125	66.5	10.25	0%	NA
XFB1433	TALK	Apr-Jun	0.1762	0.7283	0.5000	71.3	10.25	10%	NA
XFB1433	TALK	Jun-Sep	0.0141	0.9294	1.0500	66.0	10.33	20%	NA
XFB1433	TALK	Jul-Sep	0.0219	0.8439	1.4000	63.0	10.25	20%	NA
XFB1433	TALK	Apr-Oct	**0.0042**	0.9628	1.0000	70.8	10.58	**10%**	NA
XFB1433	TALK	Oct-Dec	0.4234	0.5723	0.6000	76.8	10.25	10%	NA
XEA6596	TALK	Annual	**0.0076**	0.9060	1.0000	67.0	11.00	**20%**	NA
XEA6596	TALK	Mar-May	0.4439	0.9921	0.6250	64.3	10.25	10%	NA
XEA6596	TALK	Apr-Jun	0.4993	1.0000	0.4286	69.8	10.25	10%	NA
XEA6596	TALK	Jun-Sep	0.0141	0.4825	1.5000	65.8	10.33	20%	NA
XEA6596	TALK	Jul-Sep	**0.0091**	0.4672	2.0000	63.0	10.25	**30%**	NA
XEA6596	TALK	Apr-Oct	**0.0067**	0.7257	1.3125	66.3	10.58	**20%**	NA
XEA6596	TALK	Oct-Dec	0.1730	0.5784	0.8333	71.8	10.25	10%	NA
XEA1840	TALK	Annual	0.0572	0.5648	0.7500	64.3	11.00	10%	NA
XEA1840	TALK	Mar-May	0.7189	0.9623	0.2500	65.4	10.25	0%	NA
XEA1840	TALK	Apr-Jun	0.7526	0.9449	0.0625	68.4	10.25	0%	NA
XEA1840	TALK	Jun-Sep	0.0173	0.4612	1.8368	61.5	10.33	30%	NA
XEA1840	TALK	Jul-Sep	**0.0053**	0.8025	3.3000	61.5	10.25	**60%**	NA
XEA1840	TALK	Apr-Oct	0.0216	0.7240	1.2188	63.1	10.58	20%	NA
XEA1840	TALK	Oct-Dec	0.4707	0.2164	0.3750	61.6	10.25	10%	NA

POTTF1 - TALK

Total	0.514354
Homogeneity	0.990552
Season	0.050325
Station	0.930135
Station-Season	0.999999
Trend	**0.000009**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	0.9498	0.4067	0.0002	0.0350	5.58	3%	4/64
XFB2470	PO4W	Mar-May	0.8141	0.2818	-0.0018	0.0300	5.25	-32%	2/17
XFB2470	PO4W	Apr-Jun	0.8283	0.3722	-0.0012	0.0355	5.25	-18%	1/18
XFB2470	PO4W	Jun-Sep	0.3454	0.2610	0.0011	0.0288	5.33	20%	1/24
XFB2470	PO4W	Jul-Sep	0.1017	0.5604	0.0030	0.0213	5.25	74%	1/18
XFB2470	PO4W	Apr-Oct	0.3042	0.5074	0.0008	0.0300	5.50	15%	2/41
XFB2470	PO4W	Oct-Dec	0.4795	0.3829	-0.0055	0.0410	4.25	-57%	1/15
XFB1433	PO4W	Annual	0.2842	0.2430	-0.0020	0.0400	5.58	-28%	3/64
XFB1433	PO4W	Mar-May	0.1990	0.6604	-0.0028	0.0325	5.25	-45%	1/17
XFB1433	PO4W	Apr-Jun	0.5152	0.8284	-0.0020	0.0330	5.25	-32%	0/18
XFB1433	PO4W	Jun-Sep	0.3979	0.5555	0.0018	0.0230	5.33	42%	1/24
XFB1433	PO4W	Jul-Sep	0.2781	0.4710	0.0035	0.0188	5.25	98%	1/18
XFB1433	PO4W	Apr-Oct	0.7144	0.6899	0.0010	0.0255	5.50	22%	1/41
XFB1433	PO4W	Oct-Dec	0.0865	0.1123	-0.0055	0.0410	4.25	-57%	1/15
XEA6596	PO4W	Annual	0.0346	0.1482	-0.0020	0.0313	5.58	-36%	2/65
XEA6596	PO4W	Mar-May	0.2397	0.0538	-0.0021	0.0250	5.25	-44%	2/17
XEA6596	PO4W	Apr-Jun	0.5854	0.0737	-0.0007	0.0250	5.25	-15%	1/18
XEA6596	PO4W	Jun-Sep	0.1311	0.8824	-0.0020	0.0338	5.33	-32%	0/24
XEA6596	PO4W	Jul-Sep	0.1017	0.9240	-0.0020	0.0338	5.25	-31%	0/18
XEA6596	PO4W	Apr-Oct	0.3387	0.0622	-0.0010	0.0295	5.50	-19%	1/41
XEA6596	PO4W	Oct-Dec	0.5677	0.0137	-0.0020	0.0370	4.25	-23%	0/15
XEA1840	PO4W	Annual	0.1627	0.8630	-0.0015	0.0417	5.58	-20%	2/64
XEA1840	PO4W	Mar-May	0.2933	0.3050	-0.0020	0.0325	5.25	-32%	2/17
XEA1840	PO4W	Apr-Jun	0.8283	0.5685	0.0003	0.0313	5.25	5%	0/18
XEA1840	PO4W	Jun-Sep	0.7025	0.5701	-0.0004	0.0418	5.33	-5%	0/24
XEA1840	PO4W	Jul-Sep	0.3183	0.9270	-0.0028	0.0524	5.25	-28%	0/18
XEA1840	PO4W	Apr-Oct	0.6556	0.8859	-0.0004	0.0405	5.50	-5%	0/41
XEA1840	PO4W	Oct-Dec	0.8852	0.9231	-0.0003	0.0430	4.25	-3%	0/15

POTTF1 - PO4W

Total	0.178472
Homogeneity	0.367739
Season	**0.003823**
Station	0.489148
Station-Season	0.967339
Trend	**0.007284**

(Oct 1990 - Dec 1996) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4F	Annual	0.0717	0.7945	0.0013	0.0185	6.25	44%	3/73
XFB2470	PO4F	Mar-May	0.5152	0.7193	-0.0020	0.0225	5.25	-47%	0/18
XFB2470	PO4F	Apr-Jun	0.7434	0.6944	-0.0010	0.0250	5.25	-21%	0/18
XFB2470	PO4F	Jun-Sep	0.2179	0.7965	0.0014	0.0195	5.33	38%	1/24
XFB2470	PO4F	Jul-Sep	0.1561	0.8024	0.0015	0.0165	5.25	48%	1/18
XFB2470	PO4F	Apr-Oct	0.3022	0.7587	0.0013	0.0195	6.08	41%	2/43
XFB2470	PO4F	Oct-Dec	0.1357	0.9997	0.0030	0.0200	6.25	94%	1/20
XFB1433	PO4F	Annual	0.1001	0.5713	0.0013	0.0178	6.25	46%	1/73
XFB1433	PO4F	Mar-May	0.4450	0.4182	-0.0015	0.0250	5.25	-32%	0/18
XFB1433	PO4F	Apr-Jun	0.5854	0.4692	-0.0010	0.0230	5.25	-23%	0/18
XFB1433	PO4F	Jun-Sep	0.1277	0.3863	0.0010	0.0165	5.33	32%	0/24
XFB1433	PO4F	Jul-Sep	0.0359	0.7824	0.0020	0.0145	5.25	72%	0/18
XFB1433	PO4F	Apr-Oct	0.2699	0.4077	0.0010	0.0178	6.08	34%	1/43
XFB1433	PO4F	Oct-Dec	0.2673	0.9031	0.0027	0.0205	6.25	82%	1/15
XEA6596	PO4F	Annual	0.1985	0.8811	0.0010	0.0180	6.25	35%	0/72
XEA6596	PO4F	Mar-May	0.9131	0.6932	-0.0010	0.0195	5.25	-27%	0/18
XEA6596	PO4F	Apr-Jun	0.6606	0.9205	-0.0010	0.0220	5.25	-24%	0/18
XEA6596	PO4F	Jun-Sep	0.0718	0.5856	0.0023	0.0135	5.33	91%	0/24
XEA6596	PO4F	Jul-Sep	0.0382	0.6895	0.0034	0.0115	5.25	155%	0/18
XEA6596	PO4F	Apr-Oct	0.4080	0.5239	0.0007	0.0170	6.08	25%	0/43
XEA6596	PO4F	Oct-Dec	0.9260	0.6317	0.0005	0.0200	6.25	16%	0/20
XEA1840	PO4F	Annual	0.3764	0.6675	-0.0005	0.0253	6.25	-12%	0/74
XEA1840	PO4F	Mar-May	0.3261	0.5967	-0.0010	0.0231	5.25	-23%	0/18
XEA1840	PO4F	Apr-Jun	0.0790	0.9856	-0.0030	0.0274	5.25	-58%	0/18
XEA1840	PO4F	Jun-Sep	0.3411	0.6396	-0.0020	0.0290	5.33	-37%	0/24
XEA1840	PO4F	Jul-Sep	0.6606	0.5552	-0.0006	0.0290	5.25	-11%	0/18
XEA1840	PO4F	Apr-Oct	0.0535	0.9035	-0.0020	0.0283	6.08	-43%	0/43
XEA1840	PO4F	Oct-Dec	0.7267	0.2720	-0.0008	0.0330	6.25	-15%	0/21

POTTF1 - PO4F

Total	0.764690
Homogeneity	0.874339
Season	0.039095
Station	0.159789
Station-Season	0.999933
Trend	0.033852

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	NH4	Annual	**0.0009**	0.7036	-0.0014	0.0500	10.58	**-30%**	**20/124**
MAT0016	NH4	Mar-May	0.3775	0.8683	-0.0010	0.0325	9.25	-28%	1/30
MAT0016	NH4	Apr-Jun	0.3487	0.9163	-0.0005	0.0390	10.08	-13%	3/31
MAT0016	NH4	Jun-Sep	0.0282	0.6305	-0.0009	0.0235	10.33	-40%	13/44
MAT0016	NH4	Jul-Sep	0.0162	0.6947	-0.0010	0.0235	10.25	-44%	11/33
MAT0016	NH4	Apr-Oct	**0.0021**	0.7801	-0.0012	0.0360	10.42	**-35%**	**19/75**
MAT0016	NH4	Oct-Dec	0.0126	0.1072	-0.0044	0.0920	10.25	-49%	6/32
MAT0078	NH4	Annual	0.1615	0.5671	-0.0008	0.0280	10.58	-30%	14/124
MAT0078	NH4	Mar-May	0.2769	0.9920	0.0010	0.0300	9.25	31%	2/30
MAT0078	NH4	Apr-Jun	0.8826	0.2366	-0.0002	0.1070	10.08	-2%	0/31
MAT0078	NH4	Jun-Sep	0.0387	0.9756	-0.0027	0.0570	10.33	-49%	4/44
MAT0078	NH4	Jul-Sep	0.1150	0.9862	-0.0026	0.0435	10.25	-61%	4/33
MAT0078	NH4	Apr-Oct	0.0540	0.4223	-0.0019	0.0435	10.42	-46%	9/75
MAT0078	NH4	Oct-Dec	0.2367	0.2746	-0.0009	0.0170	10.25	-54%	8/32

POTTF2 - NH4

Total	0.202906
Homogeneity	0.664798
Season	0.345558
Station	0.166459
Station-Season	0.906882
Trend	**0.001696**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	NO23	Annual	0.6415	0.8688	-0.0010	1.0150	10.58	-1%	8/124
MAT0016	NO23	Mar-May	0.7564	0.7798	0.0010	0.8600	9.25	1%	0/30
MAT0016	NO23	Apr-Jun	0.6231	0.7854	-0.0067	0.8600	10.08	-8%	0/31
MAT0016	NO23	Jun-Sep	0.2122	0.9090	-0.0090	0.3425	10.33	-27%	8/44
MAT0016	NO23	Jul-Sep	0.3003	0.7647	-0.0067	0.3225	10.25	-21%	8/33
MAT0016	NO23	Apr-Oct	0.6251	0.7005	-0.0010	0.5700	10.42	-2%	8/75
MAT0016	NO23	Oct-Dec	0.7776	0.2994	0.0060	1.4500	10.25	4%	0/32
MAT0078	NO23	Annual	0.7710	0.6125	0.0001	0.1400	10.58	1%	13/125
MAT0078	NO23	Mar-May	0.6041	0.9061	-0.0011	0.1500	9.25	-7%	0/30
MAT0078	NO23	Apr-Jun	0.5544	0.9048	-0.0016	0.1500	10.08	-11%	0/31
MAT0078	NO23	Jun-Sep	0.2922	0.2992	0.0024	0.0675	10.33	37%	4/44
MAT0078	NO23	Jul-Sep	0.1499	0.2792	0.0055	0.0375	10.25	150%	4/33
MAT0078	NO23	Apr-Oct	0.2582	0.4461	0.0023	0.1050	10.42	23%	11/75
MAT0078	NO23	Oct-Dec	0.6846	0.2491	0.0008	0.0650	10.25	13%	9/33

POTTF2 - NO23

Total	0.909200
Homogeneity	0.882046
Season	0.780662
Station	0.680202
Station-Season	0.718152
Trend	0.844828

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	TP	Annual	0.2054	0.9831	0.0010	0.070	10.58	15%	0/121
MAT0016	TP	Mar-May	0.9587	0.5711	0.0000	0.075	9.25	0%	0/30
MAT0016	TP	Apr-Jun	0.9608	0.6222	0.0000	0.075	10.08	0%	0/31
MAT0016	TP	Jun-Sep	0.3294	0.6882	0.0018	0.099	10.33	19%	0/44
MAT0016	TP	Jul-Sep	0.4716	0.4937	0.0015	0.099	10.25	16%	0/33
MAT0016	TP	Apr-Oct	0.4635	0.8162	0.0010	0.083	10.42	13%	0/75
MAT0016	TP	Oct-Dec	0.4846	0.9355	0.0007	0.065	10.25	11%	0/29
MAT0078	TP	Annual	0.5280	0.7230	-0.0003	0.050	10.58	-6%	2/121
MAT0078	TP	Mar-May	0.9587	0.2755	0.0000	0.048	9.25	0%	0/30
MAT0078	TP	Apr-Jun	0.2370	0.5661	0.0014	0.078	10.08	18%	0/31
MAT0078	TP	Jun-Sep	0.3495	0.3101	-0.0011	0.095	10.33	-12%	0/44
MAT0078	TP	Jul-Sep	0.1053	0.6198	-0.0024	0.095	10.25	-26%	0/33
MAT0078	TP	Apr-Oct	0.6034	0.4209	-0.0004	0.091	10.42	-5%	0/75
MAT0078	TP	Oct-Dec	1.0000	0.7186	0.0002	0.027	10.25	8%	1/29

POTTF2 - TP

Total	0.961159
Homogeneity	0.951972
Season	0.946606
Station	0.199055
Station-Season	0.823305
Trend	0.592920

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	TSS	Annual	0.5601	0.7496	0.1125	20.0	10.58	10%	0/125
MAT0016	TSS	Mar-May	0.9174	0.9579	0.0000	20.0	9.25	0%	0/30
MAT0016	TSS	Apr-Jun	1.0000	0.9225	0.0000	30.0	10.08	0%	0/31
MAT0016	TSS	Jun-Sep	0.3681	0.2805	0.2500	26.8	10.33	10%	0/44
MAT0016	TSS	Jul-Sep	0.3902	0.1493	0.2857	24.0	10.25	10%	0/33
MAT0016	TSS	Apr-Oct	0.2977	0.5315	0.2500	24.0	10.42	10%	0/75
MAT0016	TSS	Oct-Dec	0.5268	0.5117	0.3000	15.5	10.25	20%	0/33
MAT0078	TSS	Annual	0.0266	0.9781	0.2500	5.5	10.58	50%	7/125
MAT0078	TSS	Mar-May	0.7564	0.8187	0.0833	7.0	9.25	10%	1/30
MAT0078	TSS	Apr-Jun	0.7305	0.8179	0.1667	10.5	10.08	20%	0/31
MAT0078	TSS	Jun-Sep	0.3480	0.9448	0.2500	6.3	10.33	40%	1/44
MAT0078	TSS	Jul-Sep	0.3433	0.8586	0.2500	5.8	10.25	40%	1/33
MAT0078	TSS	Apr-Oct	0.2094	0.9745	0.2500	7.0	10.42	40%	3/75
MAT0078	TSS	Oct-Dec	0.0607	0.8962	0.3125	3.3	10.25	100%	4/33

POTTF2 - TSS

Total	0.861731
Homogeneity	0.954459
Season	0.763273
Station	0.205324
Station-Season	0.974101
Trend	0.051185

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	Secchi	Annual	0.8217	0.8609	0.0000	0.5	10.58	0%	NA
MAT0016	Secchi	Mar-May	0.5951	0.6911	0.0000	0.5	9.25	0%	NA
MAT0016	Secchi	Apr-Jun	0.4170	0.8965	0.0000	0.5	10.08	0%	NA
MAT0016	Secchi	Jun-Sep	0.8410	0.5353	0.0000	0.5	10.33	0%	NA
MAT0016	Secchi	Jul-Sep	0.7453	0.3519	0.0000	0.4	10.25	0%	NA
MAT0016	Secchi	Apr-Oct	1.0000	0.7262	0.0000	0.5	10.42	0%	NA
MAT0016	Secchi	Oct-Dec	0.2439	0.7161	0.0000	0.5	10.25	0%	NA
MAT0078	Secchi	Annual	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Mar-May	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Apr-Jun	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Jun-Sep	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Apr-Oct	NM	NM	NM	NM	NM	NM	NM
MAT0078	Secchi	Oct-Dec	NM	NM	NM	NM	NM	NM	NM

POTTF2 - Secchi

Total	0.905927
Homogeneity	0.860875
Season	0.860875
Station	-
Station-Season	-
Trend	0.912468

NA - Not applicable, measured in the field.
NM - Not measured at this station.
- Only one station analyzed.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	CHAA	Annual	0.8223	0.6457	-0.1101	22.7	10.58	-10%	NA
MAT0016	CHAA	Mar-May	0.1788	0.7005	-0.8785	20.6	9.25	-40%	NA
MAT0016	CHAA	Apr-Jun	0.8441	0.4521	-0.0598	22.2	10.08	0%	NA
MAT0016	CHAA	Jun-Sep	0.1195	0.6430	1.1493	34.8	10.33	30%	NA
MAT0016	CHAA	Jul-Sep	0.1635	0.4350	1.6322	35.4	10.25	50%	NA
MAT0016	CHAA	Apr-Oct	0.5619	0.4928	0.0830	29.0	10.42	0%	NA
MAT0016	CHAA	Oct-Dec	0.1688	0.9082	-0.8972	20.8	10.25	-40%	NA
MAT0078	CHAA	Annual	0.3956	0.8670	-0.0392	1.4	10.58	-30%	NA
MAT0078	CHAA	Mar-May	0.4530	0.4259	-0.0240	1.1	9.25	-20%	NA
MAT0078	CHAA	Apr-Jun	0.8025	0.8653	0.0226	1.2	10.08	20%	NA
MAT0078	CHAA	Jun-Sep	0.5739	0.8306	-0.0969	4.7	10.33	-20%	NA
MAT0078	CHAA	Jul-Sep	0.4448	0.7784	-0.1633	4.9	10.25	-30%	NA
MAT0078	CHAA	Apr-Oct	0.5087	0.9505	-0.0613	1.7	10.42	-40%	NA
MAT0078	CHAA	Oct-Dec	0.6071	0.6863	-0.0704	0.8	10.25	-100%	NA

POTTF2 - CHAA

Total	0.921634
Homogeneity	0.899714
Season	0.553993
Station	0.887295
Station-Season	0.926380
Trend	0.735873

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	DIN	Annual	0.5039	0.8380	-0.0030	1.0950	10.58	-3%	9/123
MAT0016	DIN	Mar-May	0.7177	0.7418	0.0046	0.9140	9.25	5%	0/30
MAT0016	DIN	Apr-Jun	0.5892	0.8551	-0.0113	0.9140	10.08	-12%	0/31
MAT0016	DIN	Jun-Sep	0.1385	0.7004	-0.0103	0.3640	10.33	-29%	9/44
MAT0016	DIN	Jul-Sep	0.1915	0.4918	-0.0070	0.3400	10.25	-21%	9/33
MAT0016	DIN	Apr-Oct	0.4453	0.6088	-0.0030	0.6260	10.42	-5%	9/75
MAT0016	DIN	Oct-Dec	0.8061	0.3688	0.0047	1.5740	10.25	3%	0/31
MAT0078	DIN	Annual	0.5569	0.7335	-0.0013	0.1820	10.58	-8%	16/124
MAT0078	DIN	Mar-May	0.6051	0.8489	-0.0032	0.2280	9.25	-13%	0/30
MAT0078	DIN	Apr-Jun	0.1688	0.4751	-0.0062	0.2720	10.08	-23%	0/31
MAT0078	DIN	Jun-Sep	0.7259	0.1192	-0.0015	0.1380	10.33	-11%	6/44
MAT0078	DIN	Jul-Sep	0.5893	0.2228	0.0015	0.0775	10.25	20%	6/33
MAT0078	DIN	Apr-Oct	0.8070	0.3384	-0.0007	0.1630	10.42	-4%	13/75
MAT0078	DIN	Oct-Dec	0.8143	0.6332	0.0008	0.0790	10.25	10%	10/32

POTTF2 - DIN

Total	0.916502
Homogeneity	0.918781
Season	0.858400
Station	0.996240
Station-Season	0.708393
Trend	0.350979

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	TN	Annual	**0.0033**	0.6533	-0.0270	1.860	10.58	**-15%**	0/124
MAT0016	TN	Mar-May	0.4386	0.2526	-0.0140	1.715	9.25	-8%	0/30
MAT0016	TN	Apr-Jun	0.0210	0.4401	-0.0323	1.785	10.08	-18%	0/31
MAT0016	TN	Jun-Sep	0.0238	0.6052	-0.0277	1.605	10.33	-18%	0/44
MAT0016	TN	Jul-Sep	0.1372	0.6201	-0.0235	1.493	10.25	-16%	0/33
MAT0016	TN	Apr-Oct	0.0187	0.6256	-0.0250	1.628	10.42	-16%	0/75
MAT0016	TN	Oct-Dec	0.1106	0.3424	-0.0500	2.400	10.25	-21%	0/32
MAT0078	TN	Annual	**0.0004**	0.9839	-0.0188	0.855	10.58	**-23%**	0/124
MAT0078	TN	Mar-May	0.0152	0.7418	-0.0245	0.818	9.25	-28%	0/30
MAT0078	TN	Apr-Jun	0.1850	0.5943	-0.0150	0.990	10.08	-15%	0/31
MAT0078	TN	Jun-Sep	0.0195	0.6484	-0.0212	1.013	10.33	-22%	0/44
MAT0078	TN	Jul-Sep	**0.0080**	0.9682	-0.0335	1.010	10.25	**-34%**	0/33
MAT0078	TN	Apr-Oct	**0.0034**	0.9168	-0.0200	0.948	10.42	**-22%**	0/75
MAT0078	TN	Oct-Dec	0.2600	0.9470	-0.0080	0.630	10.25	-13%	0/32

POTTF2 - TN

Total	0.089860
Homogeneity	0.965337
Season	0.969462
Station	0.628164
Station-Season	0.707569
Trend	**0.000004**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	DO_FLD	Annual	0.7713	0.2585	-0.0077	10.8	10.58	0%	NA
MAT0016	DO_FLD	Mar-May	0.9176	0.1122	0.0143	10.9	9.25	0%	NA
MAT0016	DO_FLD	Apr-Jun	0.3763	0.5236	-0.0500	10.6	10.08	0%	NA
MAT0016	DO_FLD	Jun-Sep	0.4356	0.9029	0.0289	9.1	10.33	0%	NA
MAT0016	DO_FLD	Jul-Sep	0.3003	0.9738	0.0400	9.1	10.25	0%	NA
MAT0016	DO_FLD	Apr-Oct	0.8306	0.6690	-0.0071	10.4	10.42	0%	NA
MAT0016	DO_FLD	Oct-Dec	0.0270	0.5300	-0.1100	11.4	10.25	-10%	NA
MAT0078	DO_FLD	Annual	0.1155	0.6319	-0.0683	9.4	10.58	-10%	NA
MAT0078	DO_FLD	Mar-May	0.1072	0.3130	-0.1111	9.9	9.25	-10%	NA
MAT0078	DO_FLD	Apr-Jun	0.0430	0.3993	-0.1333	8.0	10.08	-20%	NA
MAT0078	DO_FLD	Jun-Sep	0.7551	0.5760	-0.0232	5.9	10.33	0%	NA
MAT0078	DO_FLD	Jul-Sep	0.7872	0.6662	0.0400	5.9	10.25	10%	NA
MAT0078	DO_FLD	Apr-Oct	0.4266	0.3607	-0.0375	7.0	10.42	-10%	NA
MAT0078	DO_FLD	Oct-Dec	0.9641	0.4988	0.0000	11.0	10.25	0%	NA

POTTF2 - DO_FLD

Total	0.368211
Homogeneity	0.417644
Season	0.390268
Station	0.253377
Station-Season	0.460658
Trend	0.162079

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	pH_FLD	Annual	0.2220	0.5560	0.0111	8.0	10.58	0%	NA
MAT0016	pH_FLD	Mar-May	0.4349	0.9304	0.0143	8.0	9.25	0%	NA
MAT0016	pH_FLD	Apr-Jun	0.1036	0.5110	0.0500	7.9	10.08	10%	NA
MAT0016	pH_FLD	Jun-Sep	0.0501	0.3438	0.0475	8.0	10.33	10%	NA
MAT0016	pH_FLD	Jul-Sep	0.2208	0.2936	0.0300	8.0	10.25	0%	NA
MAT0016	pH_FLD	Apr-Oct	0.0655	0.6228	0.0333	8.0	10.42	0%	NA
MAT0016	pH_FLD	Oct-Dec	0.2920	0.6763	-0.0214	8.1	10.25	0%	NA
MAT0078	pH_FLD	Annual	0.4800	0.5919	-0.0134	6.8	10.58	0%	NA
MAT0078	pH_FLD	Mar-May	0.3507	0.6575	-0.0444	7.1	9.25	-10%	NA
MAT0078	pH_FLD	Apr-Jun	0.6571	0.9539	-0.0167	6.9	10.08	0%	NA
MAT0078	pH_FLD	Jun-Sep	0.2059	0.4494	0.0167	6.7	10.33	0%	NA
MAT0078	pH_FLD	Jul-Sep	0.0902	0.5394	0.0250	6.6	10.25	0%	NA
MAT0078	pH_FLD	Apr-Oct	0.6887	0.4677	0.0000	6.7	10.42	0%	NA
MAT0078	pH_FLD	Oct-Dec	0.1483	0.5902	-0.0500	6.7	10.25	-10%	NA

POTTF2 - pH_FLD

Total	0.625116
Homogeneity	0.572475
Season	0.534246
Station	0.147450
Station-Season	0.614005
Trend	0.765372

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	TALK	Annual	**0.0011**	0.9098	1.7083	50.0	10.58	**40%**	NA
MAT0016	TALK	Mar-May	0.0968	0.5750	1.7500	41.5	9.25	40%	NA
MAT0016	TALK	Apr-Jun	0.0840	0.6236	2.1000	49.8	10.08	40%	NA
MAT0016	TALK	Jun-Sep	0.0215	0.8021	2.4167	67.0	10.33	40%	NA
MAT0016	TALK	Jul-Sep	0.0219	0.7297	2.5000	67.0	10.25	40%	NA
MAT0016	TALK	Apr-Oct	**0.0013**	0.9378	2.1667	57.8	10.42	**40%**	NA
MAT0016	TALK	Oct-Dec	0.1635	0.6730	0.7000	58.8	10.25	10%	NA
MAT0078	TALK	Annual	0.6976	0.6791	0.0417	9.5	10.58	0%	NA
MAT0078	TALK	Mar-May	0.2998	0.5025	0.3125	7.3	9.25	40%	NA
MAT0078	TALK	Apr-Jun	0.1149	0.9339	0.5000	10.8	10.08	50%	NA
MAT0078	TALK	Jun-Sep	0.6399	0.9591	0.4097	24.5	10.33	20%	NA
MAT0078	TALK	Jul-Sep	0.8572	0.9506	0.3333	24.8	10.25	10%	NA
MAT0078	TALK	Apr-Oct	0.5615	0.6562	0.3125	19.8	10.42	20%	NA
MAT0078	TALK	Oct-Dec	0.5257	0.0743	-0.3000	18.0	10.25	-20%	NA

POTTF2 - TALK

Total	0.419555
Homogeneity	0.768013
Season	0.778085
Station	0.045001
Station-Season	0.835703
Trend	**0.008412**

NA - Detection limit not available until July 1994.

(Jun 1986 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	PO4W	Annual	0.6453	0.4972	-0.0005	0.0180	4.33	-12%	3/49
MAT0016	PO4W	Mar-May	1.0000	0.1861	-0.0015	0.0140	3.25	-35%	2/11
MAT0016	PO4W	Apr-Jun	1.0000	0.5023	-0.0003	0.0180	4.08	-7%	1/13
MAT0016	PO4W	Jun-Sep	0.6162	0.9594	0.0004	0.0180	4.33	10%	1/20
MAT0016	PO4W	Jul-Sep	0.8852	0.9789	0.0003	0.0180	4.25	7%	1/15
MAT0016	PO4W	Apr-Oct	0.8327	0.7873	-0.0002	0.0180	4.33	-5%	2/32
MAT0016	PO4W	Oct-Dec	0.3827	0.2143	-0.0040	0.0205	3.25	-63%	0/11
MAT0078	PO4W	Annual	**0.0001**	0.9515	0.0040	0.0260	4.33	**67%**	1/50
MAT0078	PO4W	Mar-May	0.0218	0.9116	0.0030	0.0280	3.25	35%	1/11
MAT0078	PO4W	Apr-Jun	0.1637	0.4129	0.0027	0.0455	4.08	24%	0/13
MAT0078	PO4W	Jun-Sep	0.1386	0.4460	0.0022	0.0425	4.33	22%	0/20
MAT0078	PO4W	Jul-Sep	0.0865	0.4081	0.0022	0.0400	4.25	23%	0/15
MAT0078	PO4W	Apr-Oct	0.0113	0.7356	0.0022	0.0400	4.33	24%	0/32
MAT0078	PO4W	Oct-Dec	0.0164	0.7855	0.0082	0.0180	3.25	148%	0/12

POTTF2 - PO4W

Total	0.078970
Homogeneity	0.217798
Season	0.838886
Station	0.000305
Station-Season	0.675167
Trend	0.011520

(Oct 1990 - Dec 1996) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	PO4F	Annual	**0.0005**	0.2793	0.0015	0.0053	6.25	**179%**	**15/74**
MAT0016	PO4F	Mar-May	0.1244	0.5715	0.0016	0.0053	5.25	160%	2/18
MAT0016	PO4F	Apr-Jun	0.1244	0.5715	0.0010	0.0050	5.25	105%	3/18
MAT0016	PO4F	Jun-Sep	0.8476	0.1883	0.0000	0.0060	5.33	0%	8/24
MAT0016	PO4F	Jul-Sep	0.9121	0.0916	0.0000	0.0050	5.25	0%	7/18
MAT0016	PO4F	Apr-Oct	0.0257	0.1151	0.0010	0.0048	6.08	128%	13/43
MAT0016	PO4F	Oct-Dec	**0.0004**	0.8317	0.0020	0.0030	6.25	**417%**	**4/21**
MAT0078	PO4F	Annual	0.5671	0.0581	0.0005	0.0175	6.25	18%	0/74
MAT0078	PO4F	Mar-May	0.5854	0.8995	-0.0005	0.0185	5.25	-14%	0/18
MAT0078	PO4F	Apr-Jun	0.1561	0.7324	-0.0018	0.0375	5.25	-25%	0/18
MAT0078	PO4F	Jun-Sep	0.1826	0.1608	-0.0020	0.0350	5.33	-30%	0/24
MAT0078	PO4F	Jul-Sep	0.5102	0.1164	-0.0010	0.0305	5.25	-17%	0/18
MAT0078	PO4F	Apr-Oct	0.7309	0.0510	-0.0003	0.0305	6.08	-6%	0/43
MAT0078	PO4F	Oct-Dec	0.0110	0.4169	0.0020	0.0120	6.25	104%	0/21

POTTF2 - PO4F

Total	0.007844
Homogeneity	0.029960
Season	0.007008
Station	0.026072
Station-Season	0.829654
Trend	0.010438

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	NH4	Annual	**0.0033**	0.1497	-0.0032	0.0760	10.58	**-45%**	4/122
PIS0033	NH4	Mar-May	0.7957	0.0371	-0.0004	0.0550	9.25	-7%	1/30
PIS0033	NH4	Apr-Jun	0.0550	0.8109	-0.0019	0.0715	10.08	-27%	1/31
PIS0033	NH4	Jun-Sep	**0.0003**	0.7647	-0.0091	0.1190	10.33	**-79%**	0/44
PIS0033	NH4	Jul-Sep	**0.0003**	0.8613	-0.0102	0.1190	10.25	**-88%**	0/33
PIS0033	NH4	Apr-Oct	**0.0001**	0.8793	-0.0057	0.0990	10.42	**-60%**	3/75
PIS0033	NH4	Oct-Dec	0.2224	0.9075	-0.0024	0.0400	10.25	-62%	3/32
XFB1986	NH4	Annual	**0.0002**	0.9179	-0.0089	0.2400	10.58	**-39%**	6/123
XFB1986	NH4	Mar-May	0.0299	0.9446	-0.0107	0.2043	9.25	-48%	0/30
XFB1986	NH4	Apr-Jun	**0.0032**	0.5134	-0.0183	0.2805	10.08	**-66%**	0/31
XFB1986	NH4	Jun-Sep	0.0387	0.3093	-0.0047	0.0965	10.33	-50%	6/44
XFB1986	NH4	Jul-Sep	0.3672	0.8026	-0.0020	0.0620	10.25	-33%	6/33
XFB1986	NH4	Apr-Oct	**0.0086**	0.6675	-0.0050	0.1240	10.42	**-42%**	**6/75**
XFB1986	NH4	Oct-Dec	0.0493	0.5185	-0.0113	0.2780	10.25	-42%	0/31

POTTF3 - NH4

Total	0.011164
Homogeneity	0.538838
Season	0.733262
Station	0.417226
Station-Season	0.276705
Trend	**0.000005**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	NO23	Annual	0.1474	0.8161	-0.0068	0.5550	10.58	-13%	2/123
PIS0033	NO23	Mar-May	0.1632	0.5107	-0.0126	0.6550	9.25	-18%	0/30
PIS0033	NO23	Apr-Jun	0.4040	0.2114	-0.0087	0.5900	10.08	-15%	0/31
PIS0033	NO23	Jun-Sep	0.8456	0.6518	-0.0011	0.2625	10.33	-4%	1/44
PIS0033	NO23	Jul-Sep	0.4716	0.8109	-0.0043	0.2625	10.25	-17%	1/33
PIS0033	NO23	Apr-Oct	0.4640	0.5757	-0.0040	0.3125	10.42	-13%	2/75
PIS0033	NO23	Oct-Dec	0.7530	0.5281	-0.0033	0.5600	10.25	-6%	1/33
XFB1986	NO23	Annual	**0.0005**	0.7231	-0.0423	2.1000	10.58	**-21%**	0/123
XFB1986	NO23	Mar-May	0.0980	0.2789	-0.0353	1.6500	9.25	-20%	0/30
XFB1986	NO23	Apr-Jun	0.4615	0.8092	-0.0250	1.5000	10.08	-17%	0/31
XFB1986	NO23	Jun-Sep	**0.0056**	0.6463	-0.0672	2.0750	10.33	**-33%**	0/44
XFB1986	NO23	Jul-Sep	**0.0039**	0.7004	-0.0883	2.2000	10.25	**-41%**	0/33
XFB1986	NO23	Apr-Oct	**0.0034**	0.7389	-0.0500	1.8750	10.42	**-28%**	0/75
XFB1986	NO23	Oct-Dec	0.1840	0.7688	-0.0413	2.4000	10.25	-18%	0/31

POTTF3 - NO23

Total	0.211775
Homogeneity	0.851228
Season	0.924219
Station	0.233922
Station-Season	0.572424
Trend	**0.000290**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	TP	Annual	0.5582	0.6287	0.0004	0.080	10.58	5%	0/120
PIS0033	TP	Mar-May	0.9176	0.5864	0.0002	0.058	9.25	3%	0/30
PIS0033	TP	Apr-Jun	0.3763	0.6454	0.0013	0.085	10.08	15%	0/30
PIS0033	TP	Jun-Sep	0.8456	0.6206	-0.0004	0.137	10.33	-3%	0/44
PIS0033	TP	Jul-Sep	0.4716	0.7552	-0.0019	0.137	10.25	-14%	0/33
PIS0033	TP	Apr-Oct	0.8070	0.8289	0.0003	0.108	10.42	3%	0/75
PIS0033	TP	Oct-Dec	0.6443	0.6881	0.0015	0.065	10.25	24%	0/30
XFB1986	TP	Annual	0.0173	0.4535	0.0026	0.070	10.58	39%	1/123
XFB1986	TP	Mar-May	1.0000	0.4069	0.0000	0.072	9.25	0%	0/30
XFB1986	TP	Apr-Jun	0.8826	0.5597	-0.0007	0.092	10.08	-8%	0/31
XFB1986	TP	Jun-Sep	0.0126	0.8699	0.0055	0.075	10.33	76%	0/44
XFB1986	TP	Jul-Sep	0.0118	0.9059	0.0060	0.075	10.25	82%	0/33
XFB1986	TP	Apr-Oct	**0.0094**	0.2412	0.0040	0.072	10.42	**58%**	1/75
XFB1986	TP	Oct-Dec	0.1688	0.0853	0.0032	0.054	10.25	61%	1/31

POTTF3 - TP

Total	0.385619
Homogeneity	0.595366
Season	0.875517
Station	0.327065
Station-Season	0.242085
Trend	0.031808

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	TSS	Annual	0.0204	0.5265	0.5000	7.0	10.58	80%	8/123
PIS0033	TSS	Mar-May	0.2782	0.7993	0.5000	10.3	9.25	50%	1/30
PIS0033	TSS	Apr-Jun	0.3014	0.8110	0.5000	10.3	10.08	50%	1/31
PIS0033	TSS	Jun-Sep	0.0559	0.2346	0.5667	8.3	10.33	70%	2/44
PIS0033	TSS	Jul-Sep	0.0719	0.1238	0.6833	7.3	10.25	100%	2/33
PIS0033	TSS	Apr-Oct	0.0350	0.5535	0.5333	9.3	10.42	60%	5/75
PIS0033	TSS	Oct-Dec	0.9275	0.3200	0.0000	4.5	10.25	0%	3/33
XFB1986	TSS	Annual	**0.0008**	0.4115	0.8333	14.5	10.58	**60%**	0/124
XFB1986	TSS	Mar-May	0.3757	0.5945	0.2500	15.5	9.25	10%	0/30
XFB1986	TSS	Apr-Jun	0.5200	0.7873	0.1250	21.0	10.08	10%	0/31
XFB1986	TSS	Jun-Sep	**0.0012**	0.7673	0.9018	15.3	10.33	**60%**	0/44
XFB1986	TSS	Jul-Sep	**0.0010**	0.9026	1.0000	14.8	10.25	**70%**	0/33
XFB1986	TSS	Apr-Oct	**0.0002**	0.3920	0.9375	15.3	10.42	**60%**	0/75
XFB1986	TSS	Oct-Dec	0.1444	0.0669	1.5000	13.5	10.25	110%	0/32

POTTF3 - TSS

Total	0.035549
Homogeneity	0.542360
Season	0.255867
Station	0.649963
Station-Season	0.728602
Trend	**0.000055**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	Secchi	Annual	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Mar-May	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Apr-Jun	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Jun-Sep	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Apr-Oct	NM	NM	NM	NM	NM	NM	NM
PIS0033	Secchi	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
XFB1986	Secchi	Annual	0.0540	0.4694	-0.0150	0.7	10.58	-20%	NA
XFB1986	Secchi	Mar-May	0.9169	0.1239	0.0000	0.6	9.25	0%	NA
XFB1986	Secchi	Apr-Jun	0.6553	0.3444	0.0036	0.6	10.08	10%	NA
XFB1986	Secchi	Jun-Sep	0.0269	0.9190	-0.0177	0.7	10.33	-30%	NA
XFB1986	Secchi	Jul-Sep	0.0360	0.8315	-0.0188	0.7	10.25	-30%	NA
XFB1986	Secchi	Apr-Oct	0.0555	0.2435	-0.0156	0.7	10.42	-20%	NA
XFB1986	Secchi	Oct-Dec	0.1644	0.3344	-0.0200	0.9	10.25	-20%	NA

POTTF3 - Secchi

Total	0.320687
Homogeneity	0.469430
Season	0.469430
Station	-
Station-Season	-
Trend	0.083163

NM - Not measured at this station.
NA - Not applicable, measured in the field.
- Only one station analyzed.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	CHAA	Annual	0.2061	0.5724	0.0589	1.2	10.58	50%	NA
PIS0033	CHAA	Mar-May	0.9525	0.6372	-0.0107	1.3	9.25	-10%	NA
PIS0033	CHAA	Apr-Jun	0.5060	0.8817	0.0531	1.3	10.08	40%	NA
PIS0033	CHAA	Jun-Sep	0.1987	0.6727	0.1572	1.9	10.33	90%	NA
PIS0033	CHAA	Jul-Sep	0.2809	0.4629	0.1535	1.9	10.25	80%	NA
PIS0033	CHAA	Apr-Oct	0.0623	0.7719	0.1131	1.3	10.42	90%	NA
PIS0033	CHAA	Oct-Dec	0.3974	0.0805	0.0487	0.5	10.25	90%	NA
XFB1986	CHAA	Annual	**0.0000**	0.5777	0.6043	4.5	10.58	**140%**	NA
XFB1986	CHAA	Mar-May	0.2561	0.4273	0.5566	5.3	9.25	100%	NA
XFB1986	CHAA	Apr-Jun	0.0348	0.2911	0.8910	5.3	10.08	170%	NA
XFB1986	CHAA	Jun-Sep	**0.0001**	0.8042	1.6860	11.4	10.33	**150%**	NA
XFB1986	CHAA	Jul-Sep	**0.0010**	0.6108	2.1116	13.0	10.25	**170%**	NA
XFB1986	CHAA	Apr-Oct	**0.0000**	0.5290	1.4474	5.8	10.42	**260%**	NA
XFB1986	CHAA	Oct-Dec	0.0213	0.2525	0.3470	2.1	10.25	170%	NA

POTTF3 - CHAA

Total	0.042676
Homogeneity	0.368750
Season	0.284347
Station	0.017666
Station-Season	0.881319
Trend	**0.000415**

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	DIN	Annual	**0.0027**	0.7939	-0.0156	0.6280	10.58	**-26%**	2/122
PIS0033	DIN	Mar-May	0.1342	0.4446	-0.0150	0.7280	9.25	-19%	0/30
PIS0033	DIN	Apr-Jun	0.1281	0.5167	-0.0140	0.6435	10.08	-22%	0/31
PIS0033	DIN	Jun-Sep	**0.0064**	0.4185	-0.0185	0.4070	10.33	**-47%**	1/44
PIS0033	DIN	Jul-Sep	**0.0019**	0.7297	-0.0253	0.4005	10.25	**-65%**	1/33
PIS0033	DIN	Apr-Oct	**0.0017**	0.6543	-0.0157	0.4310	10.42	**-38%**	2/75
PIS0033	DIN	Oct-Dec	0.6061	0.9472	-0.0045	0.5860	10.25	-8%	1/32
XFB1986	DIN	Annual	**0.0000**	0.9113	-0.0644	2.2560	10.58	**-30%**	0/123
XFB1986	DIN	Mar-May	0.0152	0.5743	-0.0549	1.9420	9.25	-26%	0/30
XFB1986	DIN	Apr-Jun	0.0442	0.8925	-0.0419	1.8570	10.08	-23%	0/31
XFB1986	DIN	Jun-Sep	**0.0006**	0.8027	-0.0759	2.2295	10.33	**-35%**	0/44
XFB1986	DIN	Jul-Sep	**0.0019**	0.6309	-0.0884	2.2295	10.25	**-41%**	0/33
XFB1986	DIN	Apr-Oct	**0.0001**	0.9334	-0.0707	2.1170	10.42	**-35%**	0/75
XFB1986	DIN	Oct-Dec	0.0556	0.9278	-0.0763	2.6800	10.25	-29%	0/31

POTTF3 - DIN

Total	0.013647
Homogeneity	0.938232
Season	0.689065
Station	0.286252
Station-Season	0.964490
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	TN	Annual	**0.0041**	0.6834	-0.0304	1.280	10.58	**-25%**	1/123
PIS0033	TN	Mar-May	0.0299	0.4184	-0.0402	1.368	9.25	-27%	0/30
PIS0033	TN	Apr-Jun	0.1281	0.1257	-0.0183	1.240	10.08	-15%	0/31
PIS0033	TN	Jun-Sep	0.1021	0.2783	-0.0243	1.080	10.33	-23%	0/44
PIS0033	TN	Jul-Sep	0.0219	0.6785	-0.0437	1.080	10.25	-42%	0/33
PIS0033	TN	Apr-Oct	0.0135	0.3803	-0.0270	1.130	10.42	-25%	1/75
PIS0033	TN	Oct-Dec	0.1635	0.5544	-0.0350	1.170	10.25	-31%	1/33
XFB1986	TN	Annual	**0.0000**	0.5577	-0.0751	2.900	10.58	**-27%**	0/123
XFB1986	TN	Mar-May	0.0299	0.4791	-0.0656	2.418	9.25	-25%	0/30
XFB1986	TN	Apr-Jun	0.0272	0.5022	-0.0579	2.418	10.08	-24%	0/31
XFB1986	TN	Jun-Sep	**0.0001**	0.5804	-0.0875	2.938	10.33	**-31%**	0/44
XFB1986	TN	Jul-Sep	**0.0009**	0.3795	-0.0964	2.963	10.25	**-33%**	0/33
XFB1986	TN	Apr-Oct	**0.0000**	0.6735	-0.0778	2.750	10.42	**-30%**	0/75
XFB1986	TN	Oct-Dec	0.0238	0.8714	-0.0833	3.375	10.25	-25%	0/31

POTTF3 - TN

Total	0.003439
Homogeneity	0.669858
Season	0.749266
Station	0.219917
Station-Season	0.491641
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	DO_FLD	Annual	**0.0084**	0.5471	-0.0833	10.1	10.58	**-10%**	NA
PIS0033	DO_FLD	Mar-May	**0.0070**	0.9511	-0.1000	10.7	9.25	**-10%**	NA
PIS0033	DO_FLD	Apr-Jun	**0.0017**	0.9189	-0.1167	9.8	10.08	**-10%**	NA
PIS0033	DO_FLD	Jun-Sep	0.3291	0.2471	-0.0525	7.1	10.33	-10%	NA
PIS0033	DO_FLD	Jul-Sep	0.9281	0.7192	0.0000	7.1	10.25	0%	NA
PIS0033	DO_FLD	Apr-Oct	0.0713	0.3152	-0.0667	7.9	10.42	-10%	NA
PIS0033	DO_FLD	Oct-Dec	0.7862	0.6325	-0.0100	11.1	10.25	0%	NA
XFB1986	DO_FLD	Annual	**0.0001**	0.7758	0.1500	9.7	10.58	**20%**	NA
XFB1986	DO_FLD	Mar-May	0.0494	0.2866	0.1500	10.1	9.25	10%	NA
XFB1986	DO_FLD	Apr-Jun	0.1404	0.7102	0.1214	9.1	10.08	10%	NA
XFB1986	DO_FLD	Jun-Sep	**0.0008**	0.9310	0.2299	6.5	10.33	**40%**	NA
XFB1986	DO_FLD	Jul-Sep	**0.0025**	0.8231	0.2500	7.0	10.25	**40%**	NA
XFB1986	DO_FLD	Apr-Oct	**0.0022**	0.7689	0.1667	7.4	10.42	**20%**	NA
XFB1986	DO_FLD	Oct-Dec	0.2600	0.5175	0.1000	10.1	10.25	10%	NA

POTTF3 - DO_FLD

Total	0.014132
Homogeneity	0.011533
Season	0.522948
Station	0.000001
Station-Season	0.797931
Trend	0.459978

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	pH_FLD	Annual	0.6740	0.9250	0.0000	7.2	10.58	0%	NA
PIS0033	pH_FLD	Mar-May	0.9586	0.7211	0.0000	7.3	9.25	0%	NA
PIS0033	pH_FLD	Apr-Jun	0.7662	0.6162	0.0000	7.2	10.08	0%	NA
PIS0033	pH_FLD	Jun-Sep	0.4100	0.5468	0.0125	7.0	10.33	0%	NA
PIS0033	pH_FLD	Jul-Sep	0.1750	0.7990	0.0167	6.9	10.25	0%	NA
PIS0033	pH_FLD	Apr-Oct	0.4607	0.8331	0.0100	7.0	10.42	0%	NA
PIS0033	pH_FLD	Oct-Dec	1.0000	0.4111	0.0000	7.2	10.25	0%	NA
XFB1986	pH_FLD	Annual	**0.0000**	0.7676	0.0500	7.6	10.58	**10%**	NA
XFB1986	pH_FLD	Mar-May	0.0423	0.8445	0.0600	7.6	9.25	10%	NA
XFB1986	pH_FLD	Apr-Jun	**0.0005**	0.3917	0.0800	7.5	10.08	**10%**	NA
XFB1986	pH_FLD	Jun-Sep	**0.0001**	0.3935	0.0789	7.3	10.33	**10%**	NA
XFB1986	pH_FLD	Jul-Sep	**0.0038**	0.4612	0.0750	7.3	10.25	**10%**	NA
XFB1986	pH_FLD	Apr-Oct	**0.0000**	0.5109	0.0714	7.4	10.42	**10%**	NA
XFB1986	pH_FLD	Oct-Dec	0.1186	0.7142	0.0300	7.6	10.25	0%	NA

POTTF3 - pH_FLD

Total	0.102969
Homogeneity	0.576294
Season	0.832490
Station	**0.003406**
Station-Season	0.878061
Trend	**0.000539**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	TALK	Annual	0.0119	0.5830	0.7500	20.0	10.58	40%	NA
PIS0033	TALK	Mar-May	**0.0059**	0.3337	0.9000	14.3	9.25	**60%**	NA
PIS0033	TALK	Apr-Jun	**0.0068**	0.3703	1.1250	18.0	10.08	**60%**	NA
PIS0033	TALK	Jun-Sep	0.6399	0.6504	0.6771	44.0	10.33	20%	NA
PIS0033	TALK	Jul-Sep	0.8218	0.4698	0.3125	44.0	10.25	10%	NA
PIS0033	TALK	Apr-Oct	0.0865	0.2359	0.6875	28.3	10.42	30%	NA
PIS0033	TALK	Oct-Dec	0.1894	0.4228	0.7500	7.2	10.25	110%	NA
XFB1986	TALK	Annual	0.0734	0.7832	0.8417	70.0	10.58	10%	NA
XFB1986	TALK	Mar-May	0.7957	0.4688	0.3571	60.0	9.25	10%	NA
XFB1986	TALK	Apr-Jun	0.4904	0.8152	0.6667	63.5	10.08	10%	NA
XFB1986	TALK	Jun-Sep	0.2115	0.2919	0.8167	70.5	10.33	10%	NA
XFB1986	TALK	Jul-Sep	0.1491	0.2004	1.0833	68.8	10.25	20%	NA
XFB1986	TALK	Apr-Oct	0.0618	0.6582	1.0000	69.8	10.42	10%	NA
XFB1986	TALK	Oct-Dec	0.2036	0.7577	0.8500	73.8	10.25	10%	NA

POTTF3 - TALK

Total	0.317558
Homogeneity	0.811302
Season	0.447168
Station	0.558447
Station-Season	0.894924
Trend	**0.001779**

NA - Detection limit not available until July 1994.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	PO4W	Annual	0.2314	0.6549	-0.0020	0.0440	4.33	-20%	0/49
PIS0033	PO4W	Mar-May	0.3827	0.4036	-0.0037	0.0360	3.25	-33%	0/11
PIS0033	PO4W	Apr-Jun	0.1637	0.8710	-0.0043	0.0480	4.08	-37%	0/13
PIS0033	PO4W	Jun-Sep	0.2631	0.9600	-0.0058	0.1105	4.33	-23%	0/20
PIS0033	PO4W	Jul-Sep	0.3914	0.8715	-0.0078	0.1105	4.25	-30%	0/15
PIS0033	PO4W	Apr-Oct	0.1722	0.8682	-0.0033	0.0855	4.33	-17%	0/32
PIS0033	PO4W	Oct-Dec	0.8445	0.5404	0.0008	0.0400	3.25	7%	0/12
XFB1986	PO4W	Annual	0.1524	0.2010	0.0024	0.0330	4.33	32%	0/50
XFB1986	PO4W	Mar-May	0.8231	0.0957	0.0013	0.0285	3.25	15%	0/11
XFB1986	PO4W	Apr-Jun	0.8638	0.1457	0.0030	0.0350	4.08	35%	0/13
XFB1986	PO4W	Jun-Sep	0.0662	0.9233	0.0041	0.0288	4.33	62%	0/20
XFB1986	PO4W	Jul-Sep	0.0660	0.9231	0.0044	0.0218	4.25	86%	0/15
XFB1986	PO4W	Apr-Oct	0.0484	0.4369	0.0044	0.0310	4.33	62%	0/32
XFB1986	PO4W	Oct-Dec	1.0000	0.1578	-0.0005	0.0375	3.25	-4%	0/12

POTTF3 - PO4W

Total	0.359355
Homogeneity	0.307344
Season	0.098733
Station	0.106157
Station-Season	0.877850
Trend	0.902868

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
PIS0033	PO4F	Annual	0.0451	0.0736	-0.0020	0.0405	6.25	-31%	0/73
PIS0033	PO4F	Mar-May	0.8262	0.6296	0.0003	0.0243	5.25	6%	0/18
PIS0033	PO4F	Apr-Jun	0.0790	0.0967	-0.0040	0.0455	5.25	-46%	0/18
PIS0033	PO4F	Jun-Sep	**0.0001**	0.7028	-0.0096	0.0800	5.33	**-64%**	0/24
PIS0033	PO4F	Jul-Sep	**0.0024**	0.7193	-0.0113	0.0800	5.25	**-74%**	0/18
PIS0033	PO4F	Apr-Oct	**0.0006**	0.3612	-0.0060	0.0735	6.08	**-50%**	0/43
PIS0033	PO4F	Oct-Dec	0.7267	0.7556	-0.0004	0.0380	6.25	-7%	0/21
XFB1986	PO4F	Annual	0.0800	0.7768	0.0014	0.0173	6.25	51%	2/73
XFB1986	PO4F	Mar-May	0.9131	0.9194	-0.0002	0.0173	5.25	-6%	0/18
XFB1986	PO4F	Apr-Jun	0.8283	0.8683	-0.0003	0.0218	5.25	-7%	0/18
XFB1986	PO4F	Jun-Sep	0.5071	0.5606	0.0010	0.0225	5.33	24%	2/24
XFB1986	PO4F	Jul-Sep	0.2724	0.6465	0.0017	0.0180	5.25	50%	2/18
XFB1986	PO4F	Apr-Oct	0.3022	0.7944	0.0010	0.0183	6.08	33%	2/43
XFB1986	PO4F	Oct-Dec	0.3071	0.7495	0.0020	0.0175	6.25	71%	0/20

POTTF3 - PO4F

Total	0.105026
Homogeneity	0.081871
Season	0.151522
Station	0.006796
Station-Season	0.539446
Trend	0.974871

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0000**	0.8587	-0.0044	0.1150	11.83	**-45%**	**31/137**
XDA4238	NH4	Mar-May	0.0746	0.8321	-0.0067	0.1150	11.25	-66%	1/36
XDA4238	NH4	Jul-Sep	**0.0010**	0.2142	-0.0025	0.0355	11.25	**-79%**	**21/36**
XDA4238	NH4	Apr-Oct	**0.0000**	0.6465	-0.0034	0.0725	11.58	**-54%**	**29/84**
XDA4238	NH4	Oct-Dec	**0.0030**	0.6141	-0.0060	0.1670	11.25	**-40%**	**3/35**
XDA1177	NH4	Annual	**0.0042**	0.8535	-0.0024	0.0935	11.83	**-30%**	**29/138**
XDA1177	NH4	Mar-May	0.6342	0.8886	-0.0014	0.1025	11.25	-15%	1/36
XDA1177	NH4	Jul-Sep	0.2177	0.4262	-0.0010	0.0235	11.25	-48%	20/36
XDA1177	NH4	Apr-Oct	0.0512	0.5441	-0.0016	0.0775	11.58	-24%	27/84
XDA1177	NH4	Oct-Dec	0.1079	0.6424	-0.0055	0.1530	11.25	-40%	4/35
XDB3321	NH4	Annual	0.6168	0.2281	0.0023	0.1000	5.58	13%	14/64
XDB3321	NH4	Mar-May	0.0636	0.6158	0.0165	0.1075	5.25	81%	1/18
XDB3321	NH4	Jul-Sep	1.0000	0.1702	0.0000	0.0250	5.25	0%	10/18
XDB3321	NH4	Apr-Oct	0.5078	0.1399	0.0027	0.0565	5.50	26%	13/41
XDB3321	NH4	Oct-Dec	0.0449	0.9361	-0.0148	0.1500	4.25	-42%	2/14

POTOH - NH4

Total	0.002919
Homogeneity	0.188679
Season	0.488039
Station	**0.000415**
Station-Season	0.810228
Trend	**0.000003**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	0.7072	0.7342	-0.0031	1.1000	11.83	-3%	1/138
XDA4238	NO23	Mar-May	0.3176	0.9604	-0.0124	1.5088	11.25	-9%	0/36
XDA4238	NO23	Jul-Sep	0.3219	0.8044	0.0174	0.3470	11.25	56%	1/36
XDA4238	NO23	Apr-Oct	0.7748	0.8720	0.0007	0.7283	11.58	1%	1/84
XDA4238	NO23	Oct-Dec	1.0000	0.3454	0.0000	1.1740	11.25	0%	0/36
XDA1177	NO23	Annual	0.9175	0.8741	0.0000	0.9188	11.83	0%	0/139
XDA1177	NO23	Mar-May	0.7808	0.6832	-0.0017	1.2418	11.25	-2%	0/36
XDA1177	NO23	Jul-Sep	0.3219	0.6123	0.0233	0.2718	11.25	96%	0/36
XDA1177	NO23	Apr-Oct	0.3368	0.9219	0.0165	0.6400	11.58	30%	0/84
XDA1177	NO23	Oct-Dec	0.8427	0.8661	-0.0041	0.9505	11.25	-5%	0/36
XDB3321	NO23	Annual	**0.0000**	0.7179	0.0975	0.7400	5.58	**74%**	0/65
XDB3321	NO23	Mar-May	0.0382	0.9145	0.0750	1.1530	5.25	34%	0/18
XDB3321	NO23	Jul-Sep	**0.0005**	0.8683	0.1125	0.2085	5.25	**283%**	0/18
XDB3321	NO23	Apr-Oct	**0.0000**	0.9334	0.1094	0.5200	5.50	**116%**	0/41
XDB3321	NO23	Oct-Dec	0.7751	0.6546	0.1130	0.8130	4.25	59%	0/15

POTOH - NO23

Total	0.411123
Homogeneity	0.525871
Season	0.162311
Station	0.002358
Station-Season	0.999596
Trend	0.063123

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.7640	0.9679	0.0002	0.110	11.83	2%	1/135
XDA4238	TP	Mar-May	0.8430	0.8588	-0.0004	0.117	11.25	-4%	1/36
XDA4238	TP	Jul-Sep	0.9054	0.4905	0.0002	0.115	11.25	2%	0/36
XDA4238	TP	Apr-Oct	0.9793	0.9185	0.0000	0.104	11.58	0%	1/84
XDA4238	TP	Oct-Dec	0.3035	0.9750	0.0013	0.095	11.25	15%	0/33
XDA1177	TP	Annual	0.0407	0.7846	0.0011	0.100	11.83	13%	0/136
XDA1177	TP	Mar-May	0.1427	0.7323	0.0016	0.091	11.25	20%	0/36
XDA1177	TP	Jul-Sep	0.7210	0.5499	0.0005	0.116	11.25	5%	0/36
XDA1177	TP	Apr-Oct	0.2989	0.9142	0.0007	0.105	11.58	8%	0/84
XDA1177	TP	Oct-Dec	0.8230	0.8499	0.0003	0.121	11.25	3%	0/33
XDB3321	TP	Annual	0.1431	0.5867	-0.0030	0.095	5.58	-18%	0/62
XDB3321	TP	Mar-May	0.8283	0.1596	-0.0020	0.082	5.25	-13%	0/18
XDB3321	TP	Jul-Sep	0.5854	0.6288	-0.0005	0.122	5.25	-2%	0/18
XDB3321	TP	Apr-Oct	0.4630	0.3837	-0.0013	0.110	5.50	-7%	0/41
XDB3321	TP	Oct-Dec	0.0485	0.5605	-0.0160	0.108	4.25	-63%	0/13

POTOH - TP

Total	0.802986
Homogeneity	0.774352
Season	0.926716
Station	0.019760
Station-Season	0.838180
Trend	0.670242

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	**0.0038**	0.7010	1.0000	23.0	11.83	**50%**	1/138
XDA4238	TSS	Mar-May	0.3413	0.9054	0.8286	34.5	11.25	30%	0/36
XDA4238	TSS	Jul-Sep	0.0671	0.6122	0.5000	18.8	11.25	30%	0/36
XDA4238	TSS	Apr-Oct	**0.0046**	0.6318	0.8536	18.8	11.58	**50%**	1/84
XDA4238	TSS	Oct-Dec	0.0215	0.1828	1.7222	8.3	11.25	230%	1/36
XDA1177	TSS	Annual	**0.0006**	0.5456	0.8000	21.3	11.83	**40%**	1/139
XDA1177	TSS	Mar-May	0.0113	0.8234	1.3167	24.8	11.25	60%	0/36
XDA1177	TSS	Jul-Sep	0.0194	0.0913	0.7778	10.8	11.25	80%	0/36
XDA1177	TSS	Apr-Oct	**0.0005**	0.4704	0.7679	18.0	11.58	**50%**	1/84
XDA1177	TSS	Oct-Dec	0.2651	0.9243	0.7321	39.9	11.25	20%	1/36
XDB3321	TSS	Annual	0.3886	0.7676	1.0000	16.0	5.58	30%	1/65
XDB3321	TSS	Mar-May	0.7449	0.3722	-0.3750	22.5	5.25	-10%	0/18
XDB3321	TSS	Jul-Sep	0.2752	0.5967	1.6667	13.3	5.25	70%	0/18
XDB3321	TSS	Apr-Oct	0.1411	0.6713	1.3250	13.8	5.50	50%	0/41
XDB3321	TSS	Oct-Dec	0.1985	0.4344	1.1250	9.7	4.25	50%	1/15

POTOH - TSS

Total	0.164525
Homogeneity	0.776691
Season	0.134908
Station	0.215360
Station-Season	0.992358
Trend	**0.000072**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	Secchi	Annual	0.0607	0.7959	-0.0088	0.5	11.83	-20%	NA
XDA4238	Secchi	Mar-May	0.9037	0.9666	0.0000	0.3	11.25	0%	NA
XDA4238	Secchi	Jul-Sep	0.0598	0.7607	-0.0207	0.6	11.25	-40%	NA
XDA4238	Secchi	Apr-Oct	0.0354	0.7425	-0.0119	0.5	11.58	-30%	NA
XDA4238	Secchi	Oct-Dec	0.0663	0.4164	-0.0422	0.8	11.25	-60%	NA
XDA1177	Secchi	Annual	0.0183	0.9883	-0.0083	0.5	11.83	-20%	NA
XDA1177	Secchi	Mar-May	0.1780	0.4983	-0.0045	0.4	11.25	-10%	NA
XDA1177	Secchi	Jul-Sep	0.1861	0.8874	-0.0114	0.7	11.25	-20%	NA
XDA1177	Secchi	Apr-Oct	0.0110	0.9743	-0.0100	0.6	11.58	-20%	NA
XDA1177	Secchi	Oct-Dec	0.2308	0.6526	-0.0268	0.8	11.25	-40%	NA
XDB3321	Secchi	Annual	1.0000	0.2008	0.0000	0.5	5.58	0%	NA
XDB3321	Secchi	Mar-May	0.6499	0.1965	0.0000	0.4	5.25	0%	NA
XDB3321	Secchi	Jul-Sep	0.7363	0.9498	0.0000	0.7	5.25	0%	NA
XDB3321	Secchi	Apr-Oct	0.1720	0.4779	-0.0250	0.6	5.50	-20%	NA
XDB3321	Secchi	Oct-Dec	0.8875	0.5712	0.0484	0.8	4.25	30%	NA

POTOH - Secchi

Total	0.604090
Homogeneity	0.763168
Season	0.255160
Station	0.140582
Station-Season	0.971663
Trend	0.035477

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	0.0899	0.1245	0.0837	4.3	11.67	20%	NA
XDA4238	CHAA	Mar-May	0.6677	0.0844	0.0732	4.7	11.08	20%	NA
XDA4238	CHAA	Jul-Sep	**0.0044**	0.3175	0.4915	5.6	11.25	**100%**	NA
XDA4238	CHAA	Apr-Oct	0.0159	0.2087	0.1995	4.7	11.50	50%	NA
XDA4238	CHAA	Oct-Dec	0.4997	0.3204	-0.0174	3.3	11.25	-10%	NA
XDA1177	CHAA	Annual	0.1440	0.3859	0.0935	5.7	11.67	20%	NA
XDA1177	CHAA	Mar-May	0.4651	0.6470	-0.1286	14.9	11.08	-10%	NA
XDA1177	CHAA	Jul-Sep	0.0395	0.6210	0.4157	7.5	11.25	60%	NA
XDA1177	CHAA	Apr-Oct	0.3703	0.4936	0.0997	6.0	11.50	20%	NA
XDA1177	CHAA	Oct-Dec	0.1874	0.1243	0.0827	1.7	11.25	50%	NA
XDB3321	CHAA	Annual	0.2476	0.6030	-0.2020	5.0	5.42	-20%	NA
XDB3321	CHAA	Mar-May	0.0416	0.9105	-1.1960	13.9	5.08	-40%	NA
XDB3321	CHAA	Jul-Sep	0.5152	0.9540	-1.0655	8.0	5.25	-70%	NA
XDB3321	CHAA	Apr-Oct	0.0963	0.9722	-1.0180	8.3	5.42	-70%	NA
XDB3321	CHAA	Oct-Dec	1.0000	0.3829	-0.0252	2.5	4.25	0%	NA

POTTF1 - CHAA

Total	0.186669
Homogeneity	0.201447
Season	0.034007
Station	0.113908
Station-Season	0.793175
Trend	0.203806

NA - Not applicable, determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	0.2315	0.6463	-0.0124	1.2640	11.83	-12%	2/137
XDA4238	DIN	Mar-May	0.1133	0.8234	-0.0205	1.6488	11.25	-14%	0/36
XDA4238	DIN	Jul-Sep	0.3420	0.8443	0.0141	0.3995	11.25	40%	2/36
XDA4238	DIN	Apr-Oct	0.7955	0.6849	-0.0052	0.8543	11.58	-7%	2/84
XDA4238	DIN	Oct-Dec	0.4841	0.3349	-0.0107	1.3610	11.25	-9%	0/35
XDA1177	DIN	Annual	0.8510	0.8608	-0.0024	1.0265	11.83	-3%	1/138
XDA1177	DIN	Mar-May	0.5794	0.9752	-0.0098	1.3818	11.25	-8%	0/36
XDA1177	DIN	Jul-Sep	0.3420	0.6737	0.0218	0.3118	11.25	79%	1/36
XDA1177	DIN	Apr-Oct	0.5004	0.9473	0.0117	0.7135	11.58	19%	1/84
XDA1177	DIN	Oct-Dec	0.9672	0.7058	-0.0001	1.1885	11.25	-0%	0/35
XDB3321	DIN	Annual	**0.0000**	0.2901	0.0987	0.7950	5.58	**69%**	1/64
XDB3321	DIN	Mar-May	0.0382	0.9145	0.0987	1.2680	5.25	41%	0/18
XDB3321	DIN	Jul-Sep	**0.0005**	0.8683	0.1255	0.2360	5.25	**279%**	**1/18**
XDB3321	DIN	Apr-Oct	**0.0000**	0.9334	0.1262	0.5575	5.50	**125%**	1/41
XDB3321	DIN	Oct-Dec	1.0000	0.2518	0.0016	1.0075	4.25	1%	0/14

POTOH - DIN

Total	0.148460
Homogeneity	0.155986
Season	0.157076
Station	0.000447
Station-Season	0.949025
Trend	0.231041

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	0.0845	0.5403	-0.0184	1.933	11.83	-11%	0/138
XDA4238	TN	Mar-May	0.0293	0.8123	-0.0372	2.170	11.25	-19%	0/36
XDA4238	TN	Jul-Sep	0.7815	0.3050	0.0158	1.003	11.25	18%	0/36
XDA4238	TN	Apr-Oct	0.2878	0.3274	-0.0164	1.420	11.58	-13%	0/84
XDA4238	TN	Oct-Dec	0.9054	0.4474	-0.0013	1.865	11.25	-1%	0/36
XDA1177	TN	Annual	0.5351	0.4999	0.0042	1.667	11.83	3%	1/139
XDA1177	TN	Mar-May	0.7812	0.3863	-0.0023	1.919	11.25	-1%	0/36
XDA1177	TN	Jul-Sep	0.0357	0.9523	0.0226	0.940	11.25	27%	0/36
XDA1177	TN	Apr-Oct	0.1691	0.5121	0.0106	1.235	11.58	10%	0/84
XDA1177	TN	Oct-Dec	0.9369	0.7355	0.0025	1.785	11.25	2%	0/36
XDB3321	TN	Annual	**0.0005**	0.5018	0.0817	1.405	5.58	**33%**	0/65
XDB3321	TN	Mar-May	**0.0084**	0.7292	0.0700	1.901	5.25	**19%**	0/18
XDB3321	TN	Jul-Sep	**0.0092**	0.8284	0.1050	0.889	5.25	**62%**	0/18
XDB3321	TN	Apr-Oct	**0.0021**	0.8240	0.1161	1.183	5.50	**54%**	0/41
XDB3321	TN	Oct-Dec	0.7751	0.6495	-0.0300	1.505	4.25	-9%	0/15

POTOH - TN

Total	0.113985
Homogeneity	0.119210
Season	0.076678
Station	0.000716
Station-Season	0.950051
Trend	0.235278

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.1757	0.0177	0.0250	8.8	11.83	0%	NA
XDA4238	DO_FLD	Mar-May	0.0622	0.9804	0.0500	9.3	11.25	10%	NA
XDA4238	DO_FLD	Jul-Sep	0.2045	0.0003	0.0450	6.3	11.25	10%	NA
XDA4238	DO_FLD	Apr-Oct	0.1074	0.0047	0.0333	7.2	11.58	10%	NA
XDA4238	DO_FLD	Oct-Dec	0.2179	0.5868	-0.0500	9.5	11.25	-10%	NA
XDA1177	DO_FLD	Annual	0.3839	0.0349	0.0250	8.7	11.83	0%	NA
XDA1177	DO_FLD	Mar-May	0.3413	0.6887	0.0500	9.0	11.25	10%	NA
XDA1177	DO_FLD	Jul-Sep	0.2840	0.0008	0.0500	6.2	11.25	10%	NA
XDA1177	DO_FLD	Apr-Oct	0.3360	0.0046	0.0306	7.1	11.58	10%	NA
XDA1177	DO_FLD	Oct-Dec	0.3204	0.4931	-0.0333	9.3	11.25	0%	NA
XDB3321	DO_FLD	Annual	0.4582	0.5115	0.0500	8.0	5.58	0%	NA
XDB3321	DO_FLD	Mar-May	1.0000	0.0730	0.0000	9.2	5.25	0%	NA
XDB3321	DO_FLD	Jul-Sep	0.9131	0.4454	0.0200	6.3	5.25	0%	NA
XDB3321	DO_FLD	Apr-Oct	0.2378	0.7537	0.0875	6.6	5.50	10%	NA
XDB3321	DO_FLD	Oct-Dec	0.3222	0.3535	0.1938	9.0	4.25	10%	NA

POTOH - DO_FLD

Total	0.012660
Homogeneity	0.019814
Season	0.000904
Station	0.896925
Station-Season	0.428658
Trend	0.069780

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0009**	0.0994	0.0250	7.5	11.83	**0%**	NA
XDA4238	pH_FLD	Mar-May	0.0128	0.8988	0.0200	7.6	11.25	0%	NA
XDA4238	pH_FLD	Jul-Sep	**0.0037**	0.0174	0.0611	7.4	11.25	**10%**	NA
XDA4238	pH_FLD	Apr-Oct	**0.0002**	0.1764	0.0333	7.4	11.58	**10%**	NA
XDA4238	pH_FLD	Oct-Dec	0.7183	0.5388	0.0000	7.5	11.25	0%	NA
XDA1177	pH_FLD	Annual	**0.0027**	**0.0085**	0.0167	7.6	11.83	**0%**	NA
XDA1177	pH_FLD	Mar-May	0.1941	0.1711	0.0077	7.7	11.25	0%	NA
XDA1177	pH_FLD	Jul-Sep	**0.0003**	**0.0093**	0.0500	7.4	11.25	**10%**	NA
XDA1177	pH_FLD	Apr-Oct	**0.0012**	0.0186	0.0214	7.5	11.58	**0%**	NA
XDA1177	pH_FLD	Oct-Dec	0.9358	0.3597	0.0000	7.5	11.25	0%	NA
XDB3321	pH_FLD	Annual	0.0627	0.7831	0.0250	7.6	5.58	0%	NA
XDB3321	pH_FLD	Mar-May	0.5575	0.8769	0.0000	7.8	5.25	0%	NA
XDB3321	pH_FLD	Jul-Sep	0.7404	0.3206	0.0100	7.5	5.25	0%	NA
XDB3321	pH_FLD	Apr-Oct	0.3299	0.7758	0.0208	7.5	5.50	0%	NA
XDB3321	pH_FLD	Oct-Dec	0.2432	0.4649	0.0500	7.5	4.25	0%	NA

POTOH - pH_FLD

Total	0.000218
Homogeneity	0.047408
Season	**0.006221**
Station	0.825942
Station-Season	0.370305
Trend	**0.000001**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TALK	Annual	**0.0002**	0.5833	1.5714	63.0	11.00	**30%**	NA
XDA4238	TALK	Mar-May	0.1150	0.8795	0.8333	63.5	10.25	10%	NA
XDA4238	TALK	Jul-Sep	**0.0012**	0.7887	3.5000	50.3	10.25	**70%**	NA
XDA4238	TALK	Apr-Oct	**0.0001**	0.9468	2.3571	61.8	10.58	**40%**	NA
XDA4238	TALK	Oct-Dec	0.0796	0.1704	1.4000	58.3	10.25	20%	NA
XDA1177	TALK	Annual	**0.0010**	0.4417	1.6000	63.8	11.00	**30%**	NA
XDA1177	TALK	Mar-May	0.4180	0.3547	0.6000	63.3	10.25	10%	NA
XDA1177	TALK	Jul-Sep	**0.0025**	0.9265	3.5000	49.5	10.25	**70%**	NA
XDA1177	TALK	Apr-Oct	**0.0003**	0.7789	2.5000	62.8	10.58	**40%**	NA
XDA1177	TALK	Oct-Dec	0.0305	0.4292	1.6667	59.8	10.25	30%	NA
XDB3321	TALK	Annual	0.3785	0.9990	-1.3333	66.5	4.75	-10%	NA
XDB3321	TALK	Mar-May	0.3914	0.8715	-1.5000	64.3	4.25	-10%	NA
XDB3321	TALK	Jul-Sep	0.8875	0.9231	-3.5000	52.3	4.25	-30%	NA
XDB3321	TALK	Apr-Oct	0.2913	0.9935	-3.1250	64.0	4.50	-20%	NA
XDB3321	TALK	Oct-Dec	0.8383	0.7526	-0.1667	64.0	3.25	0%	NA

POTOH - TALK

Total	0.110285
Homogeneity	0.482032
Season	0.274285
Station	**0.001994**
Station-Season	0.993453
Trend	**0.000552**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0003**	0.9336	-0.0053	0.0680	5.58	**-44%**	1/64
XDA4238	PO4W	Mar-May	0.0187	0.8702	-0.0050	0.0525	5.25	-50%	1/17
XDA4238	PO4W	Jul-Sep	0.0636	0.7729	-0.0060	0.0790	5.25	-40%	0/18
XDA4238	PO4W	Apr-Oct	**0.0016**	0.9860	-0.0050	0.0690	5.50	**-40%**	0/41
XDA4238	PO4W	Oct-Dec	0.6714	0.5712	-0.0018	0.0650	4.25	-12%	0/15
XDA1177	PO4W	Annual	0.1344	0.9296	-0.0018	0.0610	5.58	-16%	1/65
XDA1177	PO4W	Mar-May	0.7261	0.5998	-0.0015	0.0450	5.25	-18%	1/17
XDA1177	PO4W	Jul-Sep	0.3799	0.8706	-0.0015	0.0678	5.25	-12%	0/18
XDA1177	PO4W	Apr-Oct	0.2378	0.9914	-0.0015	0.0633	5.50	-13%	0/41
XDA1177	PO4W	Oct-Dec	0.8852	0.8660	-0.0006	0.0718	4.25	-4%	0/15
XDB3321	PO4W	Annual	0.0215	0.8638	-0.0030	0.0635	5.58	-26%	1/63
XDB3321	PO4W	Mar-May	0.7261	0.9209	-0.0010	0.0325	5.25	-16%	1/17
XDB3321	PO4W	Jul-Sep	0.0827	0.7193	-0.0035	0.0765	5.25	-24%	0/18
XDB3321	PO4W	Apr-Oct	0.1243	0.5970	-0.0017	0.0650	5.50	-14%	0/41
XDB3321	PO4W	Oct-Dec	0.0609	0.9355	-0.0086	0.0736	4.25	-50%	0/14

POTOH - PO4W

Total	0.295942
Homogeneity	0.991377
Season	0.573083
Station	0.351498
Station-Season	0.999369
Trend	**0.000003**

(Oct 1990 - Dec 1996) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4F	Annual	0.4964	0.7519	-0.0010	0.0305	6.25	-20%	1/73
XDA4238	PO4F	Mar-May	1.0000	0.8284	0.0005	0.0218	5.25	12%	0/18
XDA4238	PO4F	Jul-Sep	0.3855	0.6547	-0.0030	0.0375	5.25	-42%	1/18
XDA4238	PO4F	Apr-Oct	0.2189	0.9627	-0.0015	0.0320	6.08	-29%	1/43
XDA4238	PO4F	Oct-Dec	0.2213	0.8539	-0.0012	0.0430	6.25	-17%	0/21
XDA1177	PO4F	Annual	0.7519	0.3460	0.0000	0.0365	6.25	0%	0/73
XDA1177	PO4F	Mar-May	0.5102	0.5508	0.0008	0.0264	5.25	16%	0/18
XDA1177	PO4F	Jul-Sep	0.8262	0.1727	-0.0007	0.0425	5.25	-9%	0/18
XDA1177	PO4F	Apr-Oct	0.7817	0.4627	0.0000	0.0410	6.08	0%	0/43
XDA1177	PO4F	Oct-Dec	0.6610	0.9118	-0.0007	0.0475	6.25	-9%	0/21
XDB3321	PO4F	Annual	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Mar-May	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Jul-Sep	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Apr-Oct	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Oct-Dec	NA	NA	NA	NA	NA	NA	NA

POTOH - PO4F

Total	0.677579
Homogeneity	0.622392
Season	0.089013
Station	0.469747
Station-Season	0.998079
Trend	0.910946

NA - Not available, sampling stopped in September 1990.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	0.0923	0.3184	-0.0014	0.0750	11.83	-22%	20/137
XDC1706	NH4	Mar-May	0.6630	0.1664	0.0020	0.0675	11.25	33%	2/36
XDC1706	NH4	Jul-Sep	1.0000	0.3938	0.0000	0.0380	11.25	0%	9/36
XDC1706	NH4	Oct-Dec	0.0261	0.9340	-0.0034	0.1010	11.25	-38%	3/35
XDC1706	NH4	Mar-Nov	0.2758	0.2566	-0.0010	0.0578	11.75	-20%	17/107
MLE2.2	NH4	Annual	0.9164	0.4543	0.0000	0.0400	11.92	0%	50/138
MLE2.2	NH4	Mar-May	0.2473	0.3432	0.0016	0.0325	11.25	55%	17/36
MLE2.2	NH4	Jul-Sep	0.4277	0.1237	-0.0012	0.0455	11.25	-30%	13/36
MLE2.2	NH4	Oct-Dec	0.6154	0.3094	0.0000	0.0845	11.25	0%	9/35
MLE2.2	NH4	Mar-Nov	0.7470	0.2587	0.0000	0.0500	11.75	0%	40/108
MLE2.3	NH4	Annual	**0.0001**	0.1865	-0.0015	0.0243	11.83	**-73%**	**50/138**
MLE2.3	NH4	Mar-May	0.9051	0.3038	0.0000	0.0204	11.25	0%	11/36
MLE2.3	NH4	Jul-Sep	0.0951	0.2964	-0.0013	0.0233	11.25	-63%	12/36
MLE2.3	NH4	Oct-Dec	**0.0001**	0.8666	-0.0040	0.0668	11.25	**-67%**	**5/36**
MLE2.3	NH4	Mar-Nov	**0.0025**	0.1747	-0.0015	0.0243	11.75	**-73%**	**27/108**

POTMH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	0.5466	0.8533	0.0043	0.4868	11.83	10%	0/138
XDC1706	NO23	Mar-May	0.4277	0.5108	0.0207	0.7733	11.25	30%	0/36
XDC1706	NO23	Jul-Sep	0.7515	0.7218	0.0053	0.1470	11.25	41%	0/36
XDC1706	NO23	Oct-Dec	0.9054	0.9953	0.0013	0.5600	11.25	3%	0/36
XDC1706	NO23	Mar-Nov	0.3368	0.9619	0.0078	0.3650	11.75	25%	0/108
MLE2.2	NO23	Annual	0.3999	0.5039	0.0007	0.0650	11.92	13%	36/138
MLE2.2	NO23	Mar-May	0.0626	0.9262	0.0302	0.3881	11.25	88%	1/36
MLE2.2	NO23	Jul-Sep	0.6509	0.7006	0.0000	0.0100	11.25	0%	22/36
MLE2.2	NO23	Oct-Dec	0.2165	0.8547	-0.0030	0.0875	11.25	-39%	7/35
MLE2.2	NO23	Mar-Nov	0.1263	0.6396	0.0016	0.0425	11.75	44%	35/108
MLE2.3	NO23	Annual	0.3528	0.1809	0.0005	0.1446	11.83	4%	36/138
MLE2.3	NO23	Mar-May	0.0239	0.8156	0.0246	0.3099	11.25	89%	0/36
MLE2.3	NO23	Jul-Sep	0.6862	0.7059	0.0000	0.0052	11.25	0%	0/36
MLE2.3	NO23	Oct-Dec	0.1043	0.8661	-0.0030	0.1175	11.25	-29%	0/36
MLE2.3	NO23	Mar-Nov	0.0884	0.2057	0.0010	0.0453	11.75	26%	0/108

POTMH - NO23

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.9136	0.3521	0.0000	0.086	11.83	0%	0/134
XDC1706	TP	Mar-May	0.9671	0.8632	0.0000	0.079	11.25	0%	0/35
XDC1706	TP	Jul-Sep	0.1534	0.5333	-0.0018	0.122	11.25	-17%	0/36
XDC1706	TP	Oct-Dec	0.5918	0.6231	-0.0009	0.089	11.25	-11%	0/33
XDC1706	TP	Mar-Nov	0.3542	0.7688	-0.0008	0.103	11.75	-9%	0/105
MLE2.2	TP	Annual	0.7452	0.2060	0.0000	0.050	11.92	0%	2/134
MLE2.2	TP	Mar-May	0.1889	0.8314	0.0008	0.035	11.25	26%	1/36
MLE2.2	TP	Jul-Sep	0.9683	0.0344	0.0000	0.058	11.25	0%	0/36
MLE2.2	TP	Oct-Dec	0.4366	0.2553	-0.0005	0.051	11.25	-11%	0/31
MLE2.2	TP	Mar-Nov	0.9244	0.1563	0.0000	0.053	11.75	0%	1/105
MLE2.3	TP	Annual	0.0109	0.9033	0.0004	0.027	12.00	18%	9/142
MLE2.3	TP	Mar-May	0.7206	0.5174	0.0003	0.029	11.25	12%	7/36
MLE2.3	TP	Jul-Sep	0.0205	0.5652	0.0006	0.032	11.25	21%	0/36
MLE2.3	TP	Oct-Dec	0.2951	0.9199	0.0003	0.029	11.25	12%	0/36
MLE2.3	TP	Mar-Nov	0.0500	0.7856	0.0003	0.031	11.75	11%	7/108

POTMH - TP

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	**0.0000**	0.4620	0.8750	10.3	11.83	**100%**	1/138
XDC1706	TSS	Mar-May	**0.0029**	0.9043	1.0357	13.3	11.25	**90%**	0/36
XDC1706	TSS	Jul-Sep	**0.0004**	0.2837	0.8750	9.0	11.25	**110%**	0/36
XDC1706	TSS	Oct-Dec	0.0459	0.1015	0.5857	6.6	11.25	100%	1/36
XDC1706	TSS	Mar-Nov	**0.0000**	0.3929	0.8944	10.4	11.75	**100%**	1/108
MLE2.2	TSS	Annual	**0.0000**	0.5694	0.6188	8.5	11.92	**90%**	0/138
MLE2.2	TSS	Mar-May	0.0175	0.4802	0.5607	9.9	11.25	60%	0/36
MLE2.2	TSS	Jul-Sep	0.3033	0.2872	0.3259	9.3	11.25	40%	0/36
MLE2.2	TSS	Oct-Dec	**0.0008**	0.4778	1.0000	6.6	11.25	**170%**	0/35
MLE2.2	TSS	Mar-Nov	**0.0002**	0.5728	0.5528	8.9	11.75	**70%**	0/108
MLE2.3	TSS	Annual	0.7692	0.4981	0.0146	4.9	11.67	0%	0/138
MLE2.3	TSS	Mar-May	0.4922	0.8569	0.0719	4.4	11.03	20%	0/34
MLE2.3	TSS	Jul-Sep	0.1325	0.0878	-0.0917	6.0	11.25	-20%	0/36
MLE2.3	TSS	Oct-Dec	0.4999	0.5155	0.0667	3.8	11.25	20%	0/36
MLE2.3	TSS	Mar-Nov	0.8511	0.3182	-0.0092	5.3	11.58	0%	0/106

POTMH - TSS

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	Secchi	Annual	0.0842	0.7965	-0.0125	0.8	11.83	-20%	NA
XDC1706	Secchi	Mar-May	0.2305	1.0000	-0.0162	0.7	11.25	-30%	NA
XDC1706	Secchi	Jul-Sep	0.7790	0.2589	0.0000	0.8	11.25	0%	NA
XDC1706	Secchi	Oct-Dec	0.4967	0.8520	-0.0125	1.0	11.25	-10%	NA
XDC1706	Secchi	Mar-Nov	0.0921	0.7026	-0.0125	0.8	11.75	-20%	NA
MLE2.2	Secchi	Annual	0.3226	0.6453	0.0056	1.3	11.92	10%	NA
MLE2.2	Secchi	Mar-May	0.6593	0.8098	0.0000	1.1	11.25	0%	NA
MLE2.2	Secchi	Jul-Sep	0.0720	0.1655	0.0218	1.3	11.25	20%	NA
MLE2.2	Secchi	Oct-Dec	0.9338	0.9120	0.0000	1.5	11.25	0%	NA
MLE2.2	Secchi	Mar-Nov	0.4595	0.5266	0.0000	1.2	11.75	0%	NA
MLE2.3	Secchi	Annual	**0.0057**	0.1130	-0.0313	2.0	12.00	**-20%**	NA
MLE2.3	Secchi	Mar-May	0.0213	0.7943	-0.0500	2.3	11.25	-20%	NA
MLE2.3	Secchi	Jul-Sep	0.1746	0.5069	-0.0250	1.6	11.25	-20%	NA
MLE2.3	Secchi	Oct-Dec	0.0936	0.9670	-0.0333	2.3	11.25	-20%	NA
MLE2.3	Secchi	Mar-Nov	**0.0004**	0.8519	-0.0375	2.0	11.75	**-20%**	NA

POTMH - Secchi

Total	0.196518
Homogeneity	0.269770
Season	0.086377
Station	0.029379
Station-Season	0.870195
Trend	0.067894

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.4079	0.7203	0.0747	4.6	11.67	20%	NA
XDC1706	CHAA	Mar-May	0.3029	0.8239	-0.2818	17.6	11.08	-20%	NA
XDC1706	CHAA	Jul-Sep	0.2349	0.4802	0.2118	8.6	11.25	30%	NA
XDC1706	CHAA	Oct-Dec	0.7214	0.2713	0.0382	3.3	11.25	10%	NA
XDC1706	CHAA	Mar-Nov	0.7250	0.5434	0.0338	7.6	11.58	10%	NA
MLE2.2	CHAA	Annual	0.6559	0.3396	0.0903	7.0	11.75	20%	NA
MLE2.2	CHAA	Mar-May	0.0531	0.4305	-0.7477	10.6	11.17	-80%	NA
MLE2.2	CHAA	Jul-Sep	0.2505	0.8834	0.4161	6.1	11.25	80%	NA
MLE2.2	CHAA	Oct-Dec	0.1744	0.7593	0.2245	5.9	11.25	40%	NA
MLE2.2	CHAA	Mar-Nov	0.8530	0.4365	0.0435	7.2	11.67	10%	NA
MLE2.3	CHAA	Annual	0.3091	0.3275	0.0886	7.1	11.92	10%	NA
MLE2.3	CHAA	Mar-May	0.1133	0.6822	-0.5913	10.1	11.25	-70%	NA
MLE2.3	CHAA	Jul-Sep	0.1133	0.9217	0.1844	6.4	11.25	30%	NA
MLE2.3	CHAA	Oct-Dec	0.0175	0.9275	0.3006	5.2	11.25	70%	NA
MLE2.3	CHAA	Mar-Nov	0.2931	0.3491	0.0942	7.1	11.75	20%	NA

POTMH - CHAA

Total	0.532272
Homogeneity	0.573649
Season	0.041492
Station	0.961614
Station-Season	0.947329
Trend	0.175203

NA - Not applicable, determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	0.8832	0.8749	0.0035	0.5518	11.83	8%	2/137
XDC1706	DIN	Mar-May	0.4285	0.6570	0.0169	0.8358	11.25	23%	0/36
XDC1706	DIN	Jul-Sep	0.7515	0.5243	0.0064	0.2070	11.25	35%	2/36
XDC1706	DIN	Oct-Dec	0.9017	0.9820	-0.0004	0.6610	11.25	-1%	0/35
XDC1706	DIN	Mar-Nov	0.5628	0.9570	0.0063	0.4228	11.75	18%	2/107
MLE2.2	DIN	Annual	0.4921	0.3448	0.0019	0.1365	11.92	17%	38/138
MLE2.2	DIN	Mar-May	0.0325	0.7401	0.0360	0.4988	11.25	81%	1/36
MLE2.2	DIN	Jul-Sep	0.4516	0.2553	-0.0016	0.0700	11.25	-26%	23/36
MLE2.2	DIN	Oct-Dec	0.6804	0.9988	-0.0060	0.1414	11.25	-48%	7/35
MLE2.2	DIN	Mar-Nov	0.2528	0.2975	0.0034	0.1265	11.75	32%	37/108
MLE2.3	DIN	Annual	0.5110	0.0282	-0.0009	0.1733	11.83	-6%	10/140
MLE2.3	DIN	Mar-May	0.0175	0.7401	0.0241	0.3220	11.25	84%	0/36
MLE2.3	DIN	Jul-Sep	0.4046	0.5201	-0.0012	0.0329	11.25	-41%	8/36
MLE2.3	DIN	Oct-Dec	**0.0043**	0.9670	-0.0099	0.1843	11.25	**-60%**	**2/36**
MLE2.3	DIN	Mar-Nov	0.7143	0.0300	0.0005	0.1159	11.75	5%	9/108

POTMH - DIN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	0.6900	0.6167	-0.0046	1.184	11.83	-5%	0/137
XDC1706	TN	Mar-May	0.7733	0.3799	0.0032	1.690	11.25	2%	0/35
XDC1706	TN	Jul-Sep	0.3033	0.7355	-0.0127	0.901	11.25	-16%	0/36
XDC1706	TN	Oct-Dec	0.4761	0.6018	0.0112	1.143	11.25	11%	0/36
XDC1706	TN	Mar-Nov	0.5628	0.7576	-0.0060	1.110	11.75	-6%	0/107
MLE2.2	TN	Annual	0.1287	0.5255	0.0127	0.880	11.92	17%	0/138
MLE2.2	TN	Mar-May	0.0686	0.9571	0.0402	0.998	11.25	45%	0/36
MLE2.2	TN	Jul-Sep	0.2676	0.3466	0.0131	0.621	11.25	24%	0/36
MLE2.2	TN	Oct-Dec	0.3874	0.5390	0.0118	0.679	11.25	20%	0/35
MLE2.2	TN	Mar-Nov	0.0282	0.8650	0.0165	0.696	11.75	28%	0/108
MLE2.3	TN	Annual	0.0104	0.7865	0.0080	0.622	11.92	15%	NC
MLE2.3	TN	Mar-May	0.0964	0.7831	0.0170	0.833	11.25	23%	NC
MLE2.3	TN	Jul-Sep	0.0964	0.8766	0.0070	0.611	11.25	13%	NC
MLE2.3	TN	Oct-Dec	0.8122	0.4986	-0.0006	0.642	11.25	-1%	NC
MLE2.3	TN	Mar-Nov	**0.0040**	0.9314	0.0098	0.611	11.75	**19%**	NC

POTMH - TN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NC - Not calculated, labortaory methods changed over time.
NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	0.6767	0.2452	-0.0045	7.6	11.83	0%	NA
XDC1706	DO_FLD	Mar-May	0.0878	0.1078	-0.0937	10.7	11.25	-10%	NA
XDC1706	DO_FLD	Jul-Sep	0.6337	0.2699	0.0125	5.6	11.25	0%	NA
XDC1706	DO_FLD	Oct-Dec	0.5510	0.4429	-0.0172	8.4	11.25	0%	NA
XDC1706	DO_FLD	Mar-Nov	0.3837	0.1389	-0.0161	6.9	11.75	0%	NA
MLE2.2	DO_FLD	Annual	0.8840	0.0299	0.0031	9.4	11.92	0%	NA
MLE2.2	DO_FLD	Mar-May	0.1319	0.0478	-0.1146	12.3	11.25	-10%	NA
MLE2.2	DO_FLD	Jul-Sep	0.1655	0.0975	0.1021	6.6	11.25	20%	NA
MLE2.2	DO_FLD	Oct-Dec	0.8691	0.1626	0.0100	10.0	11.25	0%	NA
MLE2.2	DO_FLD	Mar-Nov	0.6308	0.0343	0.0158	7.5	11.75	0%	NA
MLE2.3	DO_FLD	Annual	**0.0052**	0.4019	-0.0658	9.7	12.00	**-10%**	NA
MLE2.3	DO_FLD	Mar-May	0.0570	0.4110	-0.0889	12.1	11.25	-10%	NA
MLE2.3	DO_FLD	Jul-Sep	0.4516	0.1168	-0.0250	7.5	11.25	0%	NA
MLE2.3	DO_FLD	Oct-Dec	0.8113	0.5743	-0.0004	9.3	11.25	0%	NA
MLE2.3	DO_FLD	Mar-Nov	0.0634	0.3322	-0.0417	8.2	11.75	-10%	NA

POTMH - DO_FLD

Total	0.022579
Homogeneity	0.035178
Season	0.007710
Station	0.085298
Station-Season	0.511855
Trend	0.066883

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	0.5701	0.0030	0.0000	7.7	11.83	0%	NA
XDC1706	pH_FLD	Mar-May	0.0868	0.0336	-0.0194	8.0	11.25	0%	NA
XDC1706	pH_FLD	Jul-Sep	0.0348	0.4882	0.0237	7.5	11.25	0%	NA
XDC1706	pH_FLD	Oct-Dec	0.7455	0.6244	0.0000	7.6	11.25	0%	NA
XDC1706	pH_FLD	Mar-Nov	0.3441	0.0153	0.0048	7.6	11.75	0%	NA
MLE2.2	pH_FLD	Annual	**0.0021**	0.0263	0.0250	8.0	11.92	**0%**	NA
MLE2.2	pH_FLD	Mar-May	0.5794	0.1021	-0.0137	8.2	11.25	0%	NA
MLE2.2	pH_FLD	Jul-Sep	**0.0055**	0.1199	0.0443	7.9	11.25	**10%**	NA
MLE2.2	pH_FLD	Oct-Dec	**0.0058**	0.0802	0.0350	7.9	11.25	**10%**	NA
MLE2.2	pH_FLD	Mar-Nov	**0.0020**	**0.0104**	0.0283	7.9	11.75	**0%**	NA
MLE2.3	pH_FLD	Annual	0.0770	0.0150	0.0063	8.0	12.00	0%	NA
MLE2.3	pH_FLD	Mar-May	0.2644	0.1553	-0.0108	8.3	11.25	0%	NA
MLE2.3	pH_FLD	Jul-Sep	0.0149	0.1729	0.0222	8.0	11.25	0%	NA
MLE2.3	pH_FLD	Oct-Dec	0.8731	0.1083	0.0000	8.0	11.25	0%	NA
MLE2.3	pH_FLD	Mar-Nov	0.3334	0.0220	0.0034	8.0	11.75	0%	NA

POTMH - pH_FLD

Total	0.000005
Homogeneity	**0.000073**
Season	**0.000002**
Station	0.278250
Station-Season	0.268683
Trend	**0.001274**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TALK	Annual	**0.0030**	0.4047	1.1000	70.0	11.00	**20%**	NA
XDC1706	TALK	Mar-May	0.8572	0.3105	-0.2500	70.0	10.25	0%	NA
XDC1706	TALK	Jul-Sep	0.0219	0.9076	1.8500	59.5	10.25	30%	NA
XDC1706	TALK	Oct-Dec	**0.0025**	0.6502	1.7000	64.5	10.25	**30%**	NA
XDC1706	TALK	Mar-Nov	**0.0039**	0.3542	1.2083	67.4	10.75	**20%**	NA
MLE2.2	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Mar-Nov	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Mar-Nov	NM	NM	NM	NM	NM	NM	NM

POTMH - TALK

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NA - Detection limit not available until July 1994.
NM - Not measured at this station.
- Trends not available for full segment.

(Jan 1985 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W	Annual	0.0275	0.8523	-0.0021	0.0500	5.58	-23%	3/64
XDC1706	PO4W	Mar-May	0.6381	0.4525	-0.0017	0.0200	5.25	-45%	2/17
XDC1706	PO4W	Jul-Sep	0.3855	1.0000	-0.0017	0.0675	5.25	-13%	0/18
XDC1706	PO4W	Oct-Dec	0.0101	0.8799	-0.0055	0.0545	4.25	-43%	0/15
XDC1706	PO4W	Mar-Nov	0.1193	0.8871	-0.0018	0.0560	5.58	-18%	2/51
MLE2.2	PO4W	Annual	0.1296	0.7413	0.0000	0.0075	5.67	0%	54/65
MLE2.2	PO4W	Mar-May	0.2556	0.7903	-0.0004	0.0075	5.25	-28%	15/17
MLE2.2	PO4W	Jul-Sep	0.2933	0.6880	-0.0005	0.0103	5.25	-26%	12/18
MLE2.2	PO4W	Oct-Dec	0.5563	0.2393	0.0000	0.0056	4.25	0%	14/15
MLE2.2	PO4W	Mar-Nov	0.1320	0.5785	0.0000	0.0075	5.58	0%	42/51
MLE2.3	PO4W	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Mar-Nov	NM	NM	NM	NM	NM	NM	NM

POTMH - PO4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NM - Not measured at this station.
NA - Trends not available for full segment.

(Oct 1990 - Dec 1996) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4F	Annual	0.3189	0.6919	0.0007	0.0228	6.25	19%	1/73
XDC1706	PO4F	Mar-May	0.5854	0.9653	0.0008	0.0150	5.25	28%	1/18
XDC1706	PO4F	Jul-Sep	0.5854	0.3797	-0.0007	0.0405	5.25	-9%	0/18
XDC1706	PO4F	Oct-Dec	0.1917	0.6043	0.0017	0.0293	6.25	36%	0/21
XDC1706	PO4F	Mar-Nov	0.4756	0.7835	0.0007	0.0276	6.17	16%	1/56
MLE2.2	PO4F	Annual	0.3787	0.2279	0.0002	0.0063	6.25	20%	19/72
MLE2.2	PO4F	Mar-May	0.6606	0.2646	0.0005	0.0040	5.25	66%	4/18
MLE2.2	PO4F	Jul-Sep	0.1198	0.7772	0.0010	0.0075	5.25	70%	0/18
MLE2.2	PO4F	Oct-Dec	0.3029	0.7438	0.0005	0.0065	6.25	48%	8/20
MLE2.2	PO4F	Mar-Nov	0.2545	0.1538	0.0005	0.0075	6.17	41%	11/56
MLE2.3 (85-96)	PO4F	Annual	0.2737	0.0695	0.0000	0.0031	11.83	0%	40/140
MLE2.3 (85-96)	PO4F	Mar-May	0.6158	0.0779	0.0000	0.0041	11.25	0%	13/36
MLE2.3 (85-96)	PO4F	Jul-Sep	0.1237	0.3285	0.0000	0.0033	11.25	0%	5/36
MLE2.3 (85-96)	PO4F	Oct-Dec	**0.0099**	0.5710	-0.0001	0.0027	11.25	**-41%**	8/36
MLE2.3 (85-96)	PO4F	Mar-Nov	0.5114	0.0315	0.0000	0.0033	11.75	0%	22/108

POTMH - PO4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0001**	0.6303	-0.0099	0.2100	11.75	**-55%**	1/136
XFB2470	NH4	Mar-May	**0.0006**	0.6305	-0.0157	0.2525	11.17	**-69%**	0/35
XFB2470	NH4	Apr-Jun	**0.0002**	0.6822	-0.0185	0.3300	11.25	**-63%**	0/36
XFB2470	NH4	Jun-Sep	0.1596	0.2119	-0.0043	0.1110	11.33	-44%	1/48
XFB2470	NH4	Jul-Sep	0.7214	0.4639	-0.0008	0.0950	11.25	-9%	1/36
XFB2470	NH4	Apr-Oct	**0.0017**	0.2403	-0.0078	0.1720	11.58	**-53%**	1/84
XFB2470	NH4	Oct-Dec	0.0932	0.8770	-0.0095	0.1720	11.25	-62%	0/34
XFB1433	NH4	Annual	**0.0000**	0.2529	-0.0097	0.2250	11.83	**-51%**	7/137
XFB1433	NH4	Mar-May	**0.0000**	0.9150	-0.0175	0.3000	11.25	**-66%**	0/36
XFB1433	NH4	Apr-Jun	**0.0000**	0.9255	-0.0162	0.2750	11.25	**-66%**	0/36
XFB1433	NH4	Jun-Sep	0.0994	0.2330	-0.0036	0.0648	11.33	-63%	7/48
XFB1433	NH4	Jul-Sep	0.6917	0.9798	-0.0009	0.0578	11.25	-18%	7/36
XFB1433	NH4	Apr-Oct	**0.0001**	0.1639	-0.0075	0.1650	11.58	**-53%**	**7/84**
XFB1433	NH4	Oct-Dec	0.0642	0.6034	-0.0081	0.1950	11.25	-47%	0/34
XEA6596	NH4	Annual	**0.0000**	0.9715	-0.0090	0.1775	11.83	**-60%**	5/138
XEA6596	NH4	Mar-May	**0.0017**	0.6995	-0.0113	0.2050	11.25	**-62%**	1/36
XEA6596	NH4	Apr-Jun	**0.0063**	0.5355	-0.0078	0.1200	11.25	**-73%**	**2/36**
XEA6596	NH4	Jun-Sep	**0.0073**	0.4928	-0.0058	0.0995	11.33	**-66%**	**4/48**
XEA6596	NH4	Jul-Sep	0.0110	0.3309	-0.0058	0.1305	11.25	-50%	3/36
XEA6596	NH4	Apr-Oct	**0.0000**	0.7390	-0.0070	0.1390	11.58	**-58%**	**5/84**
XEA6596	NH4	Oct-Dec	**0.0068**	0.8519	-0.0120	0.1700	11.25	**-79%**	0/34
XEA1840	NH4	Annual	**0.0000**	0.9209	-0.0080	0.1300	11.83	**-73%**	7/138
XEA1840	NH4	Mar-May	0.2505	0.4160	-0.0060	0.1000	11.25	-68%	1/36
XEA1840	NH4	Apr-Jun	0.2193	0.4044	-0.0040	0.0675	11.25	-67%	4/36
XEA1840	NH4	Jun-Sep	**0.0008**	0.7619	-0.0081	0.1060	11.33	**-87%**	**6/48**
XEA1840	NH4	Jul-Sep	**0.0009**	0.7919	-0.0091	0.1165	11.25	**-88%**	**3/36**
XEA1840	NH4	Apr-Oct	**0.0005**	0.6104	-0.0073	0.1040	11.58	**-81%**	**7/84**
XEA1840	NH4	Oct-Dec	**0.0084**	0.9434	-0.0077	0.1733	11.25	**-50%**	0/35

POTTF1 - NH4

Total	0.000000
Homogeneity	0.948477
Season	0.824400
Station	0.880805
Station-Season	0.838776
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	0.2798	0.6401	-0.0127	2.0000	11.75	-7%	0/137
XFB2470	NO23	Mar-May	0.4300	0.1967	-0.0109	1.7618	11.17	-7%	0/35
XFB2470	NO23	Apr-Jun	0.6059	0.9706	0.0143	1.6770	11.25	10%	0/36
XFB2470	NO23	Jun-Sep	0.4496	0.7204	-0.0151	1.6840	11.33	-10%	0/48
XFB2470	NO23	Jul-Sep	0.2498	0.8383	-0.0214	1.8525	11.25	-13%	0/36
XFB2470	NO23	Apr-Oct	0.4830	0.9120	-0.0080	1.7183	11.58	-5%	0/84
XFB2470	NO23	Oct-Dec	0.8689	0.4788	0.0037	2.0613	11.25	2%	0/35
XFB1433	NO23	Annual	0.2495	0.8984	-0.0143	1.7750	11.83	-10%	0/138
XFB1433	NO23	Mar-May	0.5502	0.4706	-0.0096	1.6820	11.25	-6%	0/36
XFB1433	NO23	Apr-Jun	1.0000	0.7819	0.0000	1.6280	11.25	0%	0/36
XFB1433	NO23	Jun-Sep	0.3905	0.8286	-0.0203	1.5250	11.33	-15%	0/48
XFB1433	NO23	Jul-Sep	0.3621	0.6790	-0.0290	1.5250	11.25	-21%	0/36
XFB1433	NO23	Apr-Oct	0.2871	0.8694	-0.0176	1.6280	11.58	-13%	0/84
XFB1433	NO23	Oct-Dec	0.8367	0.3193	-0.0057	2.0265	11.25	-3%	0/35
XEA6596	NO23	Annual	0.8680	0.9810	0.0000	1.6115	11.83	0%	0/139
XEA6596	NO23	Mar-May	0.9054	0.7297	-0.0023	1.7040	11.25	-2%	0/36
XEA6596	NO23	Apr-Jun	0.8740	0.7216	0.0009	1.3735	11.25	1%	0/36
XEA6596	NO23	Jun-Sep	0.8907	0.9560	0.0012	0.9135	11.33	1%	0/48
XEA6596	NO23	Jul-Sep	1.0000	0.8763	0.0000	0.8348	11.25	0%	0/36
XEA6596	NO23	Apr-Oct	0.8967	0.9881	0.0001	1.1170	11.58	0%	0/84
XEA6596	NO23	Oct-Dec	0.9016	0.3024	-0.0036	1.6315	11.25	-2%	0/35
XEA1840	NO23	Annual	0.9834	0.9836	0.0000	1.1775	11.83	0%	0/139
XEA1840	NO23	Mar-May	0.8117	0.6876	-0.0007	1.4698	11.25	-1%	0/36
XEA1840	NO23	Apr-Jun	0.7494	0.9798	0.0018	1.1268	11.25	2%	0/36
XEA1840	NO23	Jun-Sep	0.4690	0.9503	0.0079	0.4844	11.33	18%	0/48
XEA1840	NO23	Jul-Sep	0.4516	0.8671	0.0140	0.4299	11.25	37%	0/36
XEA1840	NO23	Apr-Oct	0.3905	0.9986	0.0104	0.9332	11.58	13%	0/84
XEA1840	NO23	Oct-Dec	0.8113	0.6694	-0.0003	1.5390	11.25	-0%	0/36

POTTF1 - NO23

Total	0.998317
Homogeneity	0.999081
Season	0.775412
Station	0.788443
Station-Season	0.998329
Trend	0.181185

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.2958	0.3671	0.0012	0.099	11.75	14%	1/136
XFB2470	TP	Mar-May	0.9343	0.4337	-0.0001	0.080	11.17	-1%	0/35
XFB2470	TP	Apr-Jun	0.3621	0.9433	-0.0011	0.101	11.25	-12%	0/36
XFB2470	TP	Jun-Sep	0.1314	0.1934	0.0039	0.112	11.33	40%	1/48
XFB2470	TP	Jul-Sep	0.0395	0.2926	0.0060	0.110	11.25	62%	1/36
XFB2470	TP	Apr-Oct	0.3244	0.3156	0.0013	0.100	11.58	15%	1/84
XFB2470	TP	Oct-Dec	0.3660	0.7969	0.0014	0.098	11.25	16%	0/34
XFB1433	TP	Annual	0.6694	0.3598	0.0005	0.109	11.83	5%	0/136
XFB1433	TP	Mar-May	0.3614	0.5880	-0.0011	0.101	11.25	-12%	0/36
XFB1433	TP	Apr-Jun	0.8689	0.2540	-0.0002	0.091	11.25	-3%	0/35
XFB1433	TP	Jun-Sep	0.1578	0.6356	0.0020	0.134	11.33	17%	0/47
XFB1433	TP	Jul-Sep	0.2847	0.4518	0.0015	0.118	11.25	14%	0/36
XFB1433	TP	Apr-Oct	0.2248	0.3751	0.0012	0.102	11.58	14%	0/83
XFB1433	TP	Oct-Dec	0.3221	0.3490	0.0020	0.084	11.25	27%	0/34
XEA6596	TP	Annual	0.5077	0.7194	0.0007	0.125	11.83	7%	0/136
XEA6596	TP	Mar-May	0.1127	0.7362	-0.0030	0.132	11.25	-26%	0/36
XEA6596	TP	Apr-Jun	0.3430	0.4035	-0.0015	0.121	11.25	-14%	0/35
XEA6596	TP	Jun-Sep	0.0972	0.7031	0.0033	0.148	11.33	25%	0/47
XEA6596	TP	Jul-Sep	0.0964	0.5582	0.0038	0.149	11.25	29%	0/36
XEA6596	TP	Apr-Oct	0.3987	0.3584	0.0010	0.125	11.58	9%	0/83
XEA6596	TP	Oct-Dec	0.4211	0.8191	0.0013	0.111	11.25	13%	0/33
XEA1840	TP	Annual	0.7022	0.8970	0.0005	0.137	11.83	4%	0/136
XEA1840	TP	Mar-May	0.3621	0.5842	-0.0016	0.097	11.25	-19%	0/36
XEA1840	TP	Apr-Jun	1.0000	0.1374	0.0000	0.096	11.25	0%	0/36
XEA1840	TP	Jun-Sep	0.3721	0.4590	0.0020	0.175	11.33	13%	0/48
XEA1840	TP	Jul-Sep	0.8430	0.5311	0.0008	0.206	11.25	4%	0/36
XEA1840	TP	Apr-Oct	0.8154	0.5067	0.0004	0.141	11.58	3%	0/84
XEA1840	TP	Oct-Dec	0.6365	0.9284	0.0018	0.127	11.25	16%	0/34

POTTF1 - TP

Total	0.814961
Homogeneity	0.828527
Season	0.017382
Station	0.970842
Station-Season	0.997808
Trend	0.246099

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.8162	0.8951	0.1364	35.0	11.75	0%	0/137
XFB2470	TSS	Mar-May	0.7417	0.6869	-0.2500	24.8	11.17	-10%	0/35
XFB2470	TSS	Apr-Jun	0.4277	0.9892	-0.5000	35.3	11.25	-20%	0/36
XFB2470	TSS	Jun-Sep	0.6064	0.3949	0.5079	36.8	11.33	20%	0/48
XFB2470	TSS	Jul-Sep	0.4277	0.2869	0.9583	36.8	11.25	30%	0/36
XFB2470	TSS	Apr-Oct	0.8355	0.6721	-0.1333	35.5	11.58	0%	0/84
XFB2470	TSS	Oct-Dec	0.6799	0.5392	0.5000	33.3	11.25	20%	0/35
XFB1433	TSS	Annual	0.2771	0.1519	0.5000	35.0	11.83	20%	0/138
XFB1433	TSS	Mar-May	0.1319	0.0657	-1.5417	52.8	11.25	-30%	0/36
XFB1433	TSS	Apr-Jun	1.0000	0.0060	0.0000	36.0	11.25	0%	0/36
XFB1433	TSS	Jun-Sep	0.0111	0.7378	1.1847	30.5	11.33	40%	0/48
XFB1433	TSS	Jul-Sep	0.0570	0.6337	1.1847	29.8	11.25	40%	0/36
XFB1433	TSS	Apr-Oct	0.1256	0.0433	0.6548	29.3	11.58	30%	0/84
XFB1433	TSS	Oct-Dec	0.3866	0.7728	0.6250	35.0	11.25	20%	0/35
XEA6596	TSS	Annual	0.0602	0.5845	1.0000	44.0	11.83	30%	0/137
XEA6596	TSS	Mar-May	0.6922	0.4344	-0.3875	48.8	11.25	-10%	0/36
XEA6596	TSS	Apr-Jun	0.9369	0.2872	0.1806	41.8	11.25	0%	0/36
XEA6596	TSS	Jun-Sep	0.0638	0.4144	1.8036	45.3	11.33	50%	0/48
XEA6596	TSS	Jul-Sep	0.0958	0.2415	2.0871	45.3	11.25	50%	0/36
XEA6596	TSS	Apr-Oct	0.0778	0.2598	1.0000	40.5	11.58	30%	0/84
XEA6596	TSS	Oct-Dec	0.2460	0.4418	1.2250	35.0	11.25	40%	0/34
XEA1840	TSS	Annual	0.7562	0.8793	0.1250	57.4	11.83	0%	0/139
XEA1840	TSS	Mar-May	0.3413	0.5349	-0.5227	50.0	11.25	-10%	0/36
XEA1840	TSS	Apr-Jun	0.3614	0.5068	-0.9438	41.3	11.25	-30%	0/36
XEA1840	TSS	Jun-Sep	0.5588	0.5769	0.5000	57.6	11.33	10%	0/48
XEA1840	TSS	Jul-Sep	0.6059	0.3720	0.4750	57.9	11.25	10%	0/36
XEA1840	TSS	Apr-Oct	0.9586	0.5788	0.0000	55.2	11.58	0%	1/84
XEA1840	TSS	Oct-Dec	0.5523	0.8400	0.9167	47.8	11.25	20%	1/36

POTTF1 - TSS

Total	0.726716
Homogeneity	0.809696
Season	0.046396
Station	0.633729
Station-Season	0.991465
Trend	0.069010

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0000**	0.5196	0.4059	3.6	11.67	**130%**	NA
XFB2470	CHAA	Mar-May	0.0549	0.1747	0.5011	4.9	11.08	110%	NA
XFB2470	CHAA	Apr-Jun	**0.0084**	0.1164	0.6173	6.1	11.17	**110%**	NA
XFB2470	CHAA	Jun-Sep	**0.0013**	0.8485	0.8590	9.2	11.33	**110%**	NA
XFB2470	CHAA	Jul-Sep	0.0141	0.8390	0.8289	12.9	11.25	70%	NA
XFB2470	CHAA	Apr-Oct	**0.0000**	0.4101	0.6405	6.3	11.50	**120%**	NA
XFB2470	CHAA	Oct-Dec	0.0186	0.1642	0.2277	2.4	11.25	110%	NA
XFB1433	CHAA	Annual	**0.0028**	0.6688	0.3819	4.3	11.67	**100%**	NA
XFB1433	CHAA	Mar-May	0.3669	0.4291	0.4089	4.7	11.08	100%	NA
XFB1433	CHAA	Apr-Jun	0.2487	0.4194	0.4292	7.0	11.17	70%	NA
XFB1433	CHAA	Jun-Sep	0.1926	0.9422	0.7605	16.5	11.33	50%	NA
XFB1433	CHAA	Jul-Sep	0.3033	0.8390	0.7605	19.5	11.25	40%	NA
XFB1433	CHAA	Apr-Oct	0.0204	0.5920	0.5221	10.0	11.50	60%	NA
XFB1433	CHAA	Oct-Dec	**0.0013**	0.5540	0.3905	2.4	11.25	**190%**	NA
XEA6596	CHAA	Annual	0.1193	0.8591	0.1505	5.6	11.67	30%	NA
XEA6596	CHAA	Mar-May	0.9316	0.6798	-0.0559	4.7	11.08	-10%	NA
XEA6596	CHAA	Apr-Jun	0.8370	0.6027	0.0373	13.7	11.17	0%	NA
XEA6596	CHAA	Jun-Sep	0.3727	0.9182	0.6574	23.6	11.33	30%	NA
XEA6596	CHAA	Jul-Sep	0.4761	0.7831	0.7185	21.5	11.25	40%	NA
XEA6596	CHAA	Apr-Oct	0.5102	0.9503	0.1745	15.8	11.50	10%	NA
XEA6596	CHAA	Oct-Dec	0.0391	0.3970	0.2444	3.0	11.25	90%	NA
XEA1840	CHAA	Annual	0.0675	0.9591	0.1430	4.2	11.67	40%	NA
XEA1840	CHAA	Mar-May	0.5192	0.8415	0.1109	4.0	11.08	30%	NA
XEA1840	CHAA	Apr-Jun	0.2165	0.7021	0.2490	8.3	11.17	30%	NA
XEA1840	CHAA	Jun-Sep	0.1069	0.9245	0.3693	9.8	11.33	40%	NA
XEA1840	CHAA	Jul-Sep	0.2505	0.8915	0.3379	6.8	11.25	60%	NA
XEA1840	CHAA	Apr-Oct	0.1471	0.9419	0.2428	6.2	11.50	40%	NA
XEA1840	CHAA	Oct-Dec	0.2349	0.4986	0.1080	1.9	11.25	60%	NA

POTTF1 - CHAA

Total	0.111934
Homogeneity	0.926106
Season	0.365609
Station	0.201743
Station-Season	0.989429
Trend	**0.000000**

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.0202	0.8646	-0.0250	2.1020	11.75	-14%	0/136
XFB2470	DIN	Mar-May	0.0640	0.4773	-0.0240	2.0598	11.17	-13%	0/35
XFB2470	DIN	Apr-Jun	0.3420	0.9814	-0.0096	1.9940	11.25	-5%	0/36
XFB2470	DIN	Jun-Sep	0.1926	0.9344	-0.0179	1.9115	11.33	-11%	0/48
XFB2470	DIN	Jul-Sep	0.2052	0.8390	-0.0300	1.9085	11.25	-18%	0/36
XFB2470	DIN	Apr-Oct	0.0620	0.9961	-0.0202	2.0205	11.58	-12%	0/84
XFB2470	DIN	Oct-Dec	0.6065	0.4403	-0.0244	2.2823	11.25	-12%	0/34
XFB1433	DIN	Annual	0.0203	0.9358	-0.0263	2.0220	11.83	-15%	0/137
XFB1433	DIN	Mar-May	0.0686	0.8390	-0.0282	2.0110	11.25	-16%	0/36
XFB1433	DIN	Apr-Jun	0.0964	0.9275	-0.0221	1.8970	11.25	-13%	0/36
XFB1433	DIN	Jun-Sep	0.1499	0.7130	-0.0285	1.6548	11.33	-20%	0/48
XFB1433	DIN	Jul-Sep	0.3420	0.6018	-0.0301	1.5828	11.25	-21%	0/36
XFB1433	DIN	Apr-Oct	0.0295	0.9513	-0.0288	1.8970	11.58	-18%	0/84
XFB1433	DIN	Oct-Dec	0.5479	0.3902	-0.0219	2.2365	11.25	-11%	0/34
XEA6596	DIN	Annual	0.1871	0.9474	-0.0134	1.7565	11.83	-9%	0/138
XEA6596	DIN	Mar-May	0.2349	0.4986	-0.0173	1.9253	11.25	-10%	0/36
XEA6596	DIN	Apr-Jun	0.6922	0.5652	-0.0025	1.4935	11.25	-2%	0/36
XEA6596	DIN	Jun-Sep	0.7839	0.9599	-0.0055	1.0455	11.33	-6%	0/48
XEA6596	DIN	Jul-Sep	0.6922	0.9046	-0.0087	0.9273	11.25	-11%	0/36
XEA6596	DIN	Apr-Oct	0.6042	0.9667	-0.0055	1.2450	11.58	-5%	0/84
XEA6596	DIN	Oct-Dec	0.4397	0.3547	-0.0137	1.8015	11.25	-9%	0/34
XEA1840	DIN	Annual	0.4398	0.9696	-0.0094	1.2425	11.83	-9%	0/138
XEA1840	DIN	Mar-May	0.7515	0.6822	-0.0060	1.5973	11.25	-4%	0/36
XEA1840	DIN	Apr-Jun	0.9369	0.9046	0.0010	1.1888	11.25	1%	0/36
XEA1840	DIN	Jun-Sep	0.9453	0.9182	0.0026	0.6115	11.33	5%	0/48
XEA1840	DIN	Jul-Sep	0.8742	0.7930	0.0035	0.5901	11.25	7%	0/36
XEA1840	DIN	Apr-Oct	0.7167	0.9902	0.0041	1.0570	11.58	4%	0/84
XEA1840	DIN	Oct-Dec	0.6211	0.5532	-0.0090	1.6790	11.25	-6%	0/35

POTTF1 - DIN

Total	0.954339
Homogeneity	0.999610
Season	0.873990
Station	0.709314
Station-Season	0.998781
Trend	**0.000625**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	**0.0095**	0.5631	-0.0360	2.800	11.75	**-15%**	0/136
XFB2470	TN	Mar-May	0.0693	0.7186	-0.0435	2.587	11.17	-19%	0/35
XFB2470	TN	Apr-Jun	0.0122	0.2921	-0.0430	2.587	11.25	-19%	0/36
XFB2470	TN	Jun-Sep	0.1143	0.1250	-0.0313	2.888	11.33	-12%	0/48
XFB2470	TN	Jul-Sep	0.7515	0.5243	-0.0082	2.558	11.25	-4%	0/36
XFB2470	TN	Apr-Oct	0.0208	0.3900	-0.0335	2.612	11.58	-15%	0/84
XFB2470	TN	Oct-Dec	0.5926	0.3341	-0.0223	2.789	11.25	-9%	0/35
XFB1433	TN	Annual	**0.0006**	0.5483	-0.0364	2.700	11.83	**-16%**	0/138
XFB1433	TN	Mar-May	0.0879	0.7903	-0.0250	2.474	11.25	-11%	0/36
XFB1433	TN	Apr-Jun	**0.0062**	0.1076	-0.0412	2.496	11.25	**-19%**	0/36
XFB1433	TN	Jun-Sep	**0.0083**	0.0721	-0.0398	2.638	11.33	**-17%**	0/48
XFB1433	TN	Jul-Sep	0.2505	0.4031	-0.0250	2.518	11.25	-11%	0/36
XFB1433	TN	Apr-Oct	**0.0018**	0.2642	-0.0354	2.531	11.58	**-16%**	0/84
XFB1433	TN	Oct-Dec	0.3027	0.4936	-0.0331	2.727	11.25	-14%	0/35
XEA6596	TN	Annual	0.0223	0.7933	-0.0233	2.465	11.83	-11%	0/137
XEA6596	TN	Mar-May	0.0810	0.9342	-0.0366	2.513	11.25	-16%	0/36
XEA6596	TN	Apr-Jun	**0.0063**	0.4273	-0.0295	2.465	11.25	**-14%**	0/36
XEA6596	TN	Jun-Sep	0.1402	0.1970	-0.0183	1.948	11.33	-11%	0/48
XEA6596	TN	Jul-Sep	0.8430	0.9890	-0.0042	1.889	11.25	-3%	0/36
XEA6596	TN	Apr-Oct	0.0617	0.4498	-0.0188	2.276	11.58	-10%	0/84
XEA6596	TN	Oct-Dec	0.9286	0.8548	0.0000	2.432	11.25	0%	0/33
XEA1840	TN	Annual	0.1421	0.8557	-0.0167	2.015	11.83	-10%	0/139
XEA1840	TN	Mar-May	0.1217	0.7391	-0.0236	2.217	11.25	-12%	0/36
XEA1840	TN	Apr-Jun	0.0810	0.7110	-0.0299	1.982	11.25	-17%	0/36
XEA1840	TN	Jun-Sep	0.8638	0.5945	-0.0051	1.425	11.33	-4%	0/48
XEA1840	TN	Jul-Sep	0.6065	0.9346	0.0113	1.390	11.25	9%	0/36
XEA1840	TN	Apr-Oct	0.5507	0.6672	-0.0085	1.661	11.58	-6%	0/84
XEA1840	TN	Oct-Dec	0.8122	0.4802	-0.0037	2.154	11.25	-2%	0/36

POTTF1 - TN

Total	0.114774
Homogeneity	0.909506
Season	0.021727
Station	0.600551
Station-Season	0.999940
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0024**	0.5985	0.0823	7.4	11.83	**10%**	NA
XFB2470	DO_FLD	Mar-May	0.0626	0.6004	0.1000	9.0	11.25	10%	NA
XFB2470	DO_FLD	Apr-Jun	0.0815	0.6210	0.1000	6.6	11.25	20%	NA
XFB2470	DO_FLD	Jun-Sep	**0.0016**	0.7348	0.1155	5.9	11.33	**20%**	NA
XFB2470	DO_FLD	Jul-Sep	**0.0025**	0.6177	0.1127	5.9	11.25	**20%**	NA
XFB2470	DO_FLD	Apr-Oct	**0.0008**	0.7807	0.1028	6.3	11.58	**20%**	NA
XFB2470	DO_FLD	Oct-Dec	0.9016	0.7829	0.0063	10.6	11.25	0%	NA
XFB1433	DO_FLD	Annual	0.0112	0.8027	0.0667	7.8	11.83	10%	NA
XFB1433	DO_FLD	Mar-May	0.0352	0.9439	0.0854	8.9	11.25	10%	NA
XFB1433	DO_FLD	Apr-Jun	0.0515	0.9798	0.0750	6.9	11.25	10%	NA
XFB1433	DO_FLD	Jun-Sep	0.1697	0.5067	0.0655	6.4	11.33	10%	NA
XFB1433	DO_FLD	Jul-Sep	0.3621	0.3639	0.0500	6.4	11.25	10%	NA
XFB1433	DO_FLD	Apr-Oct	0.0238	0.8531	0.0700	6.8	11.58	10%	NA
XFB1433	DO_FLD	Oct-Dec	0.7097	0.5541	0.0250	10.4	11.25	0%	NA
XEA6596	DO_FLD	Annual	0.1892	0.9145	0.0250	8.8	11.83	0%	NA
XEA6596	DO_FLD	Mar-May	0.1776	0.6653	0.0592	9.1	11.25	10%	NA
XEA6596	DO_FLD	Apr-Jun	0.7812	0.2965	0.0125	8.5	11.25	0%	NA
XEA6596	DO_FLD	Jun-Sep	0.8364	0.4776	0.0031	6.7	11.33	0%	NA
XEA6596	DO_FLD	Jul-Sep	0.4501	0.5595	0.0268	6.4	11.25	0%	NA
XEA6596	DO_FLD	Apr-Oct	0.3361	0.6920	0.0286	7.1	11.58	0%	NA
XEA6596	DO_FLD	Oct-Dec	0.4819	0.5869	0.0286	10.5	11.25	0%	NA
XEA1840	DO_FLD	Annual	0.4427	0.8424	0.0111	8.3	11.33	0%	NA
XEA1840	DO_FLD	Mar-May	0.4277	0.5304	0.0219	9.8	11.25	0%	NA
XEA1840	DO_FLD	Apr-Jun	0.7511	0.7884	-0.0125	8.2	11.25	0%	NA
XEA1840	DO_FLD	Jun-Sep	0.4483	0.6782	0.0143	5.8	11.33	0%	NA
XEA1840	DO_FLD	Jul-Sep	0.2169	0.9094	0.0375	5.6	11.25	10%	NA
XEA1840	DO_FLD	Apr-Oct	0.4052	0.9220	0.0125	6.8	11.58	0%	NA
XEA1840	DO_FLD	Oct-Dec	0.6329	0.5423	-0.0158	10.1	11.25	0%	NA

POTTF1 - DO_FLD

Total	0.558391
Homogeneity	0.964459
Season	0.127389
Station	0.375730
Station-Season	0.999796
Trend	**0.000117**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.4530	0.0500	7.3	11.83	**10%**	NA
XFB2470	pH_FLD	Mar-May	**0.0019**	0.7962	0.0500	7.4	11.25	**10%**	NA
XFB2470	pH_FLD	Apr-Jun	**0.0002**	0.7434	0.0595	7.2	11.25	**10%**	NA
XFB2470	pH_FLD	Jun-Sep	**0.0000**	0.4861	0.0500	7.1	11.33	**10%**	NA
XFB2470	pH_FLD	Jul-Sep	**0.0001**	0.3084	0.0500	7.1	11.25	**10%**	NA
XFB2470	pH_FLD	Apr-Oct	**0.0000**	0.6703	0.0500	7.2	11.58	**10%**	NA
XFB2470	pH_FLD	Oct-Dec	0.0183	0.4928	0.0333	7.4	11.25	10%	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.7839	0.0477	7.3	11.83	**10%**	NA
XFB1433	pH_FLD	Mar-May	**0.0006**	0.8481	0.0569	7.3	11.25	**10%**	NA
XFB1433	pH_FLD	Apr-Jun	**0.0002**	0.7324	0.0500	7.3	11.25	**10%**	NA
XFB1433	pH_FLD	Jun-Sep	**0.0001**	0.6396	0.0500	7.3	11.33	**10%**	NA
XFB1433	pH_FLD	Jul-Sep	**0.0028**	0.5797	0.0500	7.2	11.25	**10%**	NA
XFB1433	pH_FLD	Apr-Oct	**0.0000**	0.9064	0.0500	7.3	11.58	**10%**	NA
XFB1433	pH_FLD	Oct-Dec	0.0268	0.5697	0.0375	7.3	11.17	10%	NA
XEA6596	pH_FLD	Annual	**0.0000**	0.9794	0.0357	7.7	11.83	**10%**	NA
XEA6596	pH_FLD	Mar-May	**0.0025**	0.9256	0.0414	7.5	11.25	**10%**	NA
XEA6596	pH_FLD	Apr-Jun	0.0389	0.4032	0.0286	7.6	11.25	0%	NA
XEA6596	pH_FLD	Jun-Sep	0.0359	0.7217	0.0357	7.8	11.33	10%	NA
XEA6596	pH_FLD	Jul-Sep	0.0192	0.8927	0.0500	7.6	11.25	10%	NA
XEA6596	pH_FLD	Apr-Oct	**0.0007**	0.9111	0.0394	7.5	11.58	**10%**	NA
XEA6596	pH_FLD	Oct-Dec	0.0237	0.9443	0.0409	7.3	11.25	10%	NA
XEA1840	pH_FLD	Annual	**0.0000**	0.7883	0.0333	7.6	11.83	**10%**	NA
XEA1840	pH_FLD	Mar-May	**0.0036**	0.5241	0.0345	7.5	11.25	**10%**	NA
XEA1840	pH_FLD	Apr-Jun	0.0941	0.5498	0.0200	7.6	11.25	0%	NA
XEA1840	pH_FLD	Jun-Sep	**0.0052**	0.5037	0.0500	7.4	11.33	**10%**	NA
XEA1840	pH_FLD	Jul-Sep	**0.0022**	0.7148	0.0595	7.2	11.25	**10%**	NA
XEA1840	pH_FLD	Apr-Oct	**0.0006**	0.7982	0.0402	7.5	11.58	**10%**	NA
XEA1840	pH_FLD	Oct-Dec	0.1478	0.9816	0.0236	7.3	11.25	0%	NA

POTTF1 - pH_FLD

Total	0.000000
Homogeneity	0.970502
Season	0.064823
Station	0.652116
Station-Season	0.999961
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TALK	Annual	0.0605	0.8751	0.6429	73.0	11.00	10%	NA
XFB2470	TALK	Mar-May	0.7189	0.6771	0.5000	68.3	10.25	10%	NA
XFB2470	TALK	Apr-Jun	0.5288	0.8322	0.5000	73.0	10.25	10%	NA
XFB2470	TALK	Jun-Sep	0.0504	0.5925	0.8929	72.3	10.33	10%	NA
XFB2470	TALK	Jul-Sep	0.0266	0.6639	1.1667	69.8	10.25	20%	NA
XFB2470	TALK	Apr-Oct	0.0249	0.8708	1.0000	73.5	10.58	10%	NA
XFB2470	TALK	Oct-Dec	0.4255	0.6659	0.5714	79.5	10.25	10%	NA
XFB1433	TALK	Annual	0.0369	0.6909	0.7143	71.0	11.00	10%	NA
XFB1433	TALK	Mar-May	0.9641	0.8995	0.0000	66.0	10.25	0%	NA
XFB1433	TALK	Apr-Jun	0.7530	0.9920	0.2500	71.5	10.25	0%	NA
XFB1433	TALK	Jun-Sep	0.0141	0.6872	1.2500	67.8	10.33	20%	NA
XFB1433	TALK	Jul-Sep	**0.0069**	0.9226	1.5714	63.5	10.25	**30%**	NA
XFB1433	TALK	Apr-Oct	0.0145	0.7904	1.0000	70.3	10.58	20%	NA
XFB1433	TALK	Oct-Dec	0.4507	0.5405	0.6000	74.5	10.25	10%	NA
XEA6596	TALK	Annual	0.0214	0.4869	0.9722	67.8	11.00	20%	NA
XEA6596	TALK	Mar-May	0.6528	0.8834	0.4000	63.5	10.25	10%	NA
XEA6596	TALK	Apr-Jun	0.8218	0.5424	-0.1667	70.3	10.25	0%	NA
XEA6596	TALK	Jun-Sep	0.0322	0.0859	1.7500	67.8	10.33	30%	NA
XEA6596	TALK	Jul-Sep	**0.0026**	0.5411	2.5000	63.8	10.25	**40%**	NA
XEA6596	TALK	Apr-Oct	0.0184	0.2381	1.3750	66.5	10.58	20%	NA
XEA6596	TALK	Oct-Dec	0.2002	0.4143	1.0000	69.0	10.25	10%	NA
XEA1840	TALK	Annual	0.0261	0.3874	0.8750	62.0	11.00	20%	NA
XEA1840	TALK	Mar-May	0.6203	0.9391	0.2500	64.5	10.25	0%	NA
XEA1840	TALK	Apr-Jun	0.5893	0.9583	0.4167	68.3	10.25	10%	NA
XEA1840	TALK	Jun-Sep	**0.0079**	0.3823	1.9167	60.8	10.33	**30%**	NA
XEA1840	TALK	Jul-Sep	**0.0025**	0.6132	3.5000	60.8	10.25	**60%**	NA
XEA1840	TALK	Apr-Oct	**0.0080**	0.6541	1.5000	61.8	10.58	**30%**	NA
XEA1840	TALK	Oct-Dec	0.2793	0.2651	1.0000	60.5	10.25	20%	NA

POTTF1 - TALK

Total	0.247865
Homogeneity	0.866658
Season	**0.003783**
Station	0.996267
Station-Season	0.999992
Trend	**0.000024**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	0.6527	0.8351	0.0004	0.0320	5.50	7%	2/63
XFB2470	PO4W	Mar-May	0.8031	0.7122	-0.0011	0.0250	5.17	-23%	2/16
XFB2470	PO4W	Apr-Jun	0.9131	0.7970	-0.0010	0.0460	5.25	-11%	1/18
XFB2470	PO4W	Jun-Sep	0.2179	0.5857	0.0016	0.0360	5.33	24%	0/24
XFB2470	PO4W	Jul-Sep	0.1244	0.6199	0.0023	0.0293	5.25	41%	0/18
XFB2470	PO4W	Apr-Oct	0.3016	0.7887	0.0009	0.0360	5.50	14%	1/41
XFB2470	PO4W	Oct-Dec	0.7751	0.6495	-0.0016	0.0370	4.25	-18%	0/15
XFB1433	PO4W	Annual	0.3408	0.5667	-0.0010	0.0400	5.58	-14%	3/64
XFB1433	PO4W	Mar-May	0.3469	0.4026	-0.0020	0.0325	5.25	-32%	1/17
XFB1433	PO4W	Apr-Jun	0.9121	0.5996	0.0000	0.0370	5.25	0%	0/18
XFB1433	PO4W	Jun-Sep	0.4421	0.8453	0.0005	0.0270	5.33	10%	1/24
XFB1433	PO4W	Jul-Sep	0.4395	0.6886	0.0016	0.0200	5.25	42%	1/18
XFB1433	PO4W	Apr-Oct	0.7099	0.8812	0.0002	0.0295	5.50	4%	1/41
XFB1433	PO4W	Oct-Dec	0.1198	0.3829	-0.0040	0.0470	4.25	-36%	1/15
XEA6596	PO4W	Annual	0.2597	0.8948	-0.0011	0.0388	5.58	-16%	2/65
XEA6596	PO4W	Mar-May	0.5538	0.6293	-0.0011	0.0325	5.25	-18%	2/17
XEA6596	PO4W	Apr-Jun	0.9131	0.4454	-0.0003	0.0325	5.25	-5%	1/18
XEA6596	PO4W	Jun-Sep	0.5071	0.6226	-0.0021	0.0390	5.33	-29%	0/24
XEA6596	PO4W	Jul-Sep	0.2724	0.7484	-0.0030	0.0440	5.25	-36%	0/18
XEA6596	PO4W	Apr-Oct	0.5055	0.6977	-0.0011	0.0358	5.50	-17%	1/41
XEA6596	PO4W	Oct-Dec	0.6650	0.2882	-0.0020	0.0445	4.25	-19%	0/15
XEA1840	PO4W	Annual	0.0140	0.7506	-0.0030	0.0500	5.58	-34%	2/64
XEA1840	PO4W	Mar-May	0.2397	0.3142	-0.0031	0.0375	5.25	-43%	2/17
XEA1840	PO4W	Apr-Jun	1.0000	0.5504	0.0000	0.0342	5.25	0%	0/18
XEA1840	PO4W	Jun-Sep	0.1311	0.3172	-0.0040	0.0645	5.33	-33%	0/24
XEA1840	PO4W	Jul-Sep	0.0301	0.8683	-0.0070	0.0665	5.25	-55%	0/18
XEA1840	PO4W	Apr-Oct	0.0658	0.5524	-0.0028	0.0525	5.50	-29%	0/41
XEA1840	PO4W	Oct-Dec	0.2031	0.5712	-0.0020	0.0550	4.25	-15%	0/15

POTTF1 - PO4W

Total	0.813780
Homogeneity	0.931014
Season	0.231155
Station	0.249056
Station-Season	0.996232
Trend	0.017060

(Oct 1990 - Dec 1996) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4F	Annual	0.2438	0.7486	0.0010	0.0200	6.25	31%	3/73
XFB2470	PO4F	Mar-May	0.3855	0.8683	-0.0020	0.0240	5.25	-44%	0/18
XFB2470	PO4F	Apr-Jun	0.3855	0.8683	-0.0020	0.0270	5.25	-39%	0/18
XFB2470	PO4F	Jun-Sep	0.2972	0.5900	0.0013	0.0220	5.33	32%	1/24
XFB2470	PO4F	Jul-Sep	0.1244	0.9041	0.0020	0.0185	5.25	57%	1/18
XFB2470	PO4F	Apr-Oct	0.5359	0.6684	0.0010	0.0220	6.08	28%	2/43
XFB2470	PO4F	Oct-Dec	0.4034	0.9935	0.0020	0.0200	6.25	63%	1/20
XFB1433	PO4F	Annual	0.1760	0.9248	0.0016	0.0185	6.25	54%	3/72
XFB1433	PO4F	Mar-May	0.8283	0.6547	-0.0013	0.0235	5.25	-29%	0/18
XFB1433	PO4F	Apr-Jun	0.9131	0.6932	-0.0007	0.0240	5.25	-15%	0/18
XFB1433	PO4F	Jun-Sep	0.5071	0.7431	0.0011	0.0185	5.33	32%	1/24
XFB1433	PO4F	Jul-Sep	0.3261	0.7914	0.0020	0.0165	5.25	64%	1/18
XFB1433	PO4F	Apr-Oct	0.4925	0.9101	0.0010	0.0185	6.08	33%	2/43
XFB1433	PO4F	Oct-Dec	0.2713	0.7632	0.0027	0.0230	6.25	73%	1/19
XEA6596	PO4F	Annual	0.0701	0.9197	0.0010	0.0200	6.25	31%	0/73
XEA6596	PO4F	Mar-May	0.7434	0.9209	-0.0015	0.0225	5.25	-35%	0/18
XEA6596	PO4F	Apr-Jun	1.0000	0.7192	0.0000	0.0215	5.25	0%	0/18
XEA6596	PO4F	Jun-Sep	0.0446	0.7284	0.0015	0.0165	5.33	48%	0/24
XEA6596	PO4F	Jul-Sep	0.0482	0.6011	0.0020	0.0135	5.25	78%	0/18
XEA6596	PO4F	Apr-Oct	0.1891	0.6776	0.0010	0.0180	6.08	34%	0/43
XEA6596	PO4F	Oct-Dec	0.5758	0.9490	0.0005	0.0230	6.25	14%	0/20
XEA1840	PO4F	Annual	0.4988	0.7900	-0.0005	0.0290	6.25	-11%	0/74
XEA1840	PO4F	Mar-May	0.2724	0.7918	-0.0015	0.0228	5.25	-35%	0/18
XEA1840	PO4F	Apr-Jun	0.0790	0.9236	-0.0030	0.0273	5.25	-58%	0/18
XEA1840	PO4F	Jun-Sep	0.5071	0.7194	-0.0009	0.0350	5.33	-14%	0/24
XEA1840	PO4F	Jul-Sep	1.0000	0.9190	0.0000	0.0350	5.25	0%	0/18
XEA1840	PO4F	Apr-Oct	0.1679	0.9310	-0.0017	0.0325	6.08	-32%	0/43
XEA1840	PO4F	Oct-Dec	0.7267	0.5452	-0.0007	0.0350	6.25	-13%	0/21

POTTF1 - PO4F

Total	0.948034
Homogeneity	0.981786
Season	0.098236
Station	0.266519
Station-Season	0.999998
Trend	0.039961

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	DO_FLD	Annual	0.1212	0.3916	-0.0500	10.4	10.58	-10%	NA
MAT0016	DO_FLD	Mar-May	0.4997	0.2993	-0.0214	10.5	9.25	0%	NA
MAT0016	DO_FLD	Apr-Jun	0.5214	0.3379	-0.0333	9.7	10.08	0%	NA
MAT0016	DO_FLD	Jun-Sep	0.8761	0.7247	0.0125	7.9	10.33	0%	NA
MAT0016	DO_FLD	Jul-Sep	0.8218	0.6705	-0.0125	7.9	10.25	0%	NA
MAT0016	DO_FLD	Apr-Oct	0.2098	0.5364	-0.0429	9.0	10.42	0%	NA
MAT0016	DO_FLD	Oct-Dec	**0.0069**	0.7977	-0.1750	11.8	10.25	**-20%**	NA

POTTF2 - DO_FLD

Total	0.311787
Homogeneity	0.391646
Season	0.391646
Station	-
Station-Season	-
Trend	0.138640

NA - Not applicable, measured in the field.
- Only one station analyzed.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
MAT0016	pH_FLD	Annual	0.0876	0.6726	0.0236	7.8	10.58	0%	NA
MAT0016	pH_FLD	Mar-May	0.0472	0.9695	0.0400	7.6	9.25	0%	NA
MAT0016	pH_FLD	Apr-Jun	0.0373	0.9376	0.0500	7.6	10.08	10%	NA
MAT0016	pH_FLD	Jun-Sep	0.0604	0.5408	0.0778	7.5	10.33	10%	NA
MAT0016	pH_FLD	Jul-Sep	0.1894	0.4143	0.0550	7.5	10.25	10%	NA
MAT0016	pH_FLD	Apr-Oct	0.0336	0.7740	0.0417	7.7	10.42	10%	NA
MAT0016	pH_FLD	Oct-Dec	0.3853	0.8811	-0.0167	8.1	10.25	0%	NA

POTTF2 - pH_FLD

Total	0.482645
Homogeneity	0.672561
Season	0.672561
Station	-
Station-Season	-
Trend	0.078375

NA - Not applicable, measured in the field.
- Only one station analyzed.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB1986	DO_FLD	Annual	0.8710	0.8862	0.0000	9.9	10.58	0%	NA
XFB1986	DO_FLD	Mar-May	0.9131	0.2014	-0.0333	10.3	9.25	0%	NA
XFB1986	DO_FLD	Apr-Jun	1.0000	0.1868	0.0000	9.2	10.00	0%	NA
XFB1986	DO_FLD	Jun-Sep	0.8227	0.9826	0.0214	6.6	10.33	0%	NA
XFB1986	DO_FLD	Jul-Sep	0.9354	0.9490	0.0107	6.9	10.25	0%	NA
XFB1986	DO_FLD	Apr-Oct	0.8009	0.6357	0.0214	7.5	10.42	0%	NA
XFB1986	DO_FLD	Oct-Dec	1.0000	0.5434	0.1000	10.3	5.25	10%	NA

POTTF3 - DO_FLD

Total	0.923477
Homogeneity	0.886224
Season	0.886224
Station	-
Station-Season	-
Trend	0.827999

NA - Not applicable, measured in the field.
- Only one station analyzed.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB1986	pH_FLD	Annual	0.0265	0.9891	0.0667	7.5	10.58	10%	NA
XFB1986	pH_FLD	Mar-May	0.2724	0.7211	0.0687	7.6	9.25	10%	NA
XFB1986	pH_FLD	Apr-Jun	0.0827	0.5424	0.0687	7.3	10.00	10%	NA
XFB1986	pH_FLD	Jun-Sep	0.1364	0.7694	0.0667	7.2	10.33	10%	NA
XFB1986	pH_FLD	Jul-Sep	0.3723	0.8954	0.0650	7.3	10.25	10%	NA
XFB1986	pH_FLD	Apr-Oct	0.0445	0.9368	0.0687	7.4	10.42	10%	NA
XFB1986	pH_FLD	Oct-Dec	0.2149	0.9271	0.1000	7.6	5.25	10%	NA

POTTF3 - pH_FLD

Total	0.730152
Homogeneity	0.989143
Season	0.989143
Station	-
Station-Season	-
Trend	0.018325

NA - Not applicable, measured in the field.
- Only one station analyzed.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0000**	0.8689	-0.0055	0.1545	11.83	**-42%**	**20/136**
XDA4238	NH4	Mar-May	0.0994	0.6762	-0.0057	0.2000	11.25	-32%	0/35
XDA4238	NH4	Jul-Sep	**0.0006**	0.4022	-0.0043	0.0750	11.25	**-65%**	**15/36**
XDA4238	NH4	Apr-Oct	**0.0000**	0.8065	-0.0045	0.0760	11.58	**-69%**	**19/83**
XDA4238	NH4	Oct-Dec	**0.0020**	0.5573	-0.0063	0.1670	11.25	**-42%**	**2/35**
XDA1177	NH4	Annual	**0.0004**	0.8692	-0.0041	0.1185	11.83	**-41%**	**27/138**
XDA1177	NH4	Mar-May	0.2676	0.3737	-0.0036	0.1525	11.25	-27%	1/36
XDA1177	NH4	Jul-Sep	0.1776	0.8883	-0.0017	0.0435	11.25	-44%	19/36
XDA1177	NH4	Apr-Oct	**0.0020**	0.6469	-0.0037	0.0885	11.58	**-48%**	**24/84**
XDA1177	NH4	Oct-Dec	0.0355	0.9100	-0.0046	0.1460	11.25	-35%	3/35
XDB3321	NH4	Annual	0.9496	0.6545	-0.0007	0.1285	5.58	-3%	7/63
XDB3321	NH4	Mar-May	0.5152	0.2678	0.0090	0.1425	5.25	33%	2/18
XDB3321	NH4	Jul-Sep	0.6644	0.4090	-0.0045	0.0635	5.25	-37%	4/18
XDB3321	NH4	Apr-Oct	0.8833	0.4172	0.0024	0.1000	5.50	13%	5/41
XDB3321	NH4	Oct-Dec	0.3239	0.3708	-0.0140	0.1320	4.25	-45%	1/13

POTOH - NH4

Total	0.002977
Homogeneity	0.456897
Season	0.552053
Station	**0.000723**
Station-Season	0.974538
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	0.6245	0.6212	-0.0033	1.0215	11.83	-4%	0/136
XDA4238	NO23	Mar-May	0.2300	0.9381	-0.0167	1.6000	11.25	-12%	0/35
XDA4238	NO23	Jul-Sep	0.2665	0.5896	0.0240	0.3600	11.25	75%	0/35
XDA4238	NO23	Apr-Oct	0.7069	0.6974	0.0022	0.6568	11.58	4%	0/82
XDA4238	NO23	Oct-Dec	0.9054	0.4636	-0.0033	1.0240	11.25	-4%	0/36
XDA1177	NO23	Annual	0.2144	0.6290	0.0120	0.7170	11.83	20%	0/139
XDA1177	NO23	Mar-May	0.5517	0.8436	0.0167	1.1160	11.25	17%	0/36
XDA1177	NO23	Jul-Sep	0.3420	0.6737	0.0212	0.2495	11.25	96%	0/36
XDA1177	NO23	Apr-Oct	0.1536	0.9292	0.0171	0.5375	11.58	37%	0/84
XDA1177	NO23	Oct-Dec	0.2498	0.7207	0.0100	0.7225	11.25	16%	0/36
XDB3321	NO23	Annual	**0.0001**	0.0319	0.0765	0.4475	5.58	**95%**	0/64
XDB3321	NO23	Mar-May	0.0301	0.6547	0.1086	0.7275	5.25	78%	0/18
XDB3321	NO23	Jul-Sep	**0.0005**	0.8683	0.0900	0.1785	5.25	**265%**	0/18
XDB3321	NO23	Apr-Oct	**0.0000**	0.9690	0.0940	0.3800	5.50	**136%**	0/41
XDB3321	NO23	Oct-Dec	0.4404	0.1140	0.0400	0.4300	4.25	40%	0/14

POTOH - NO23

Total	0.038525
Homogeneity	0.070603
Season	0.001277
Station	0.011612
Station-Season	0.995627
Trend	0.037323

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.7925	0.9090	-0.0003	0.181	11.83	-2%	0/133
XDA4238	TP	Mar-May	0.8634	0.9517	-0.0002	0.206	11.25	-1%	0/34
XDA4238	TP	Jul-Sep	0.4999	0.1366	-0.0008	0.239	11.25	-4%	0/36
XDA4238	TP	Apr-Oct	0.6101	0.5813	-0.0006	0.162	11.42	-4%	0/82
XDA4238	TP	Oct-Dec	0.7212	0.9387	0.0012	0.161	11.25	8%	0/33
XDA1177	TP	Annual	0.8128	0.7987	-0.0007	0.188	11.83	-4%	0/135
XDA1177	TP	Mar-May	0.6342	0.3883	-0.0016	0.183	11.25	-10%	0/36
XDA1177	TP	Jul-Sep	0.4342	0.2271	0.0023	0.169	11.25	15%	0/35
XDA1177	TP	Apr-Oct	0.6353	0.4355	-0.0011	0.195	11.58	-7%	0/83
XDA1177	TP	Oct-Dec	0.4479	0.9861	-0.0020	0.212	11.25	-11%	0/33
XDB3321	TP	Annual	0.4040	0.7150	-0.0025	0.149	5.58	-9%	0/62
XDB3321	TP	Mar-May	0.9131	0.8582	-0.0010	0.139	5.25	-4%	0/18
XDB3321	TP	Jul-Sep	0.3261	0.2769	-0.0027	0.234	5.25	-6%	0/18
XDB3321	TP	Apr-Oct	0.3280	0.6539	-0.0026	0.205	5.50	-7%	0/40
XDB3321	TP	Oct-Dec	0.7103	0.4245	-0.0087	0.113	4.25	-33%	0/12

POTOH - TP

Total	0.975062
Homogeneity	0.973180
Season	0.789128
Station	0.843882
Station-Season	0.924911
Trend	0.445028

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	0.7054	0.1606	-0.3167	71.5	11.83	-10%	0/137
XDA4238	TSS	Mar-May	0.5098	0.2527	-0.6250	87.5	11.25	-10%	0/35
XDA4238	TSS	Jul-Sep	0.4285	0.0142	-1.2563	115.3	11.25	-10%	0/36
XDA4238	TSS	Apr-Oct	0.2684	0.0465	-1.0000	66.0	11.58	-20%	0/83
XDA4238	TSS	Oct-Dec	0.4516	0.7814	1.5375	62.5	11.25	30%	0/36
XDA1177	TSS	Annual	0.6944	0.3756	0.4000	83.5	11.83	10%	0/139
XDA1177	TSS	Mar-May	0.9369	0.6570	0.2583	86.3	11.25	0%	0/36
XDA1177	TSS	Jul-Sep	0.3219	0.0274	2.3750	92.3	11.25	30%	0/36
XDA1177	TSS	Apr-Oct	0.7165	0.1641	0.4167	83.5	11.58	10%	0/84
XDA1177	TSS	Oct-Dec	0.2349	0.9814	-2.9722	127.0	11.25	-30%	0/36
XDB3321	TSS	Annual	0.0703	0.9782	-6.6000	69.3	5.58	-50%	0/64
XDB3321	TSS	Mar-May	0.2301	0.6320	-8.0000	103.5	5.25	-40%	0/18
XDB3321	TSS	Jul-Sep	0.6644	0.4710	-5.5000	93.5	5.25	-30%	0/18
XDB3321	TSS	Apr-Oct	0.0673	0.8663	-7.7083	82.3	5.50	-50%	0/41
XDB3321	TSS	Oct-Dec	0.4404	0.7773	-4.1250	38.5	4.25	-50%	0/14

POTOH - TSS

Total	0.522022
Homogeneity	0.512672
Season	0.085935
Station	0.218588
Station-Season	0.926969
Trend	0.370916

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	**0.0006**	0.5349	0.1495	2.8	11.58	**60%**	NA
XDA4238	CHAA	Mar-May	0.7530	0.1426	0.0417	4.0	10.25	10%	NA
XDA4238	CHAA	Jul-Sep	**0.0020**	0.7831	0.4896	2.8	11.25	**200%**	NA
XDA4238	CHAA	Apr-Oct	**0.0003**	0.5494	0.2452	2.8	11.42	**100%**	NA
XDA4238	CHAA	Oct-Dec	0.1527	0.7539	0.0846	1.3	11.25	70%	NA
XDA1177	CHAA	Annual	0.0131	0.0423	0.1245	3.1	11.67	50%	NA
XDA1177	CHAA	Mar-May	0.2294	0.1301	-0.3488	13.1	11.08	-30%	NA
XDA1177	CHAA	Jul-Sep	0.0141	0.4955	0.2753	4.0	11.25	80%	NA
XDA1177	CHAA	Apr-Oct	0.0219	0.0384	0.1515	3.9	11.50	40%	NA
XDA1177	CHAA	Oct-Dec	0.2045	0.1658	0.0747	1.5	11.25	60%	NA
XDB3321	CHAA	Annual	1.0000	0.0805	0.0000	3.1	5.42	0%	NA
XDB3321	CHAA	Mar-May	0.0416	0.9392	-2.8040	19.1	5.08	-70%	NA
XDB3321	CHAA	Jul-Sep	0.6644	0.7193	0.1485	3.5	5.25	20%	NA
XDB3321	CHAA	Apr-Oct	0.2555	0.5873	-0.1000	3.7	5.42	-10%	NA
XDB3321	CHAA	Oct-Dec	0.2115	0.2143	0.1746	1.5	4.25	50%	NA

POTTF1 - CHAA

Total	0.002068
Homogeneity	0.031679
Season	**0.003491**
Station	0.145963
Station-Season	0.555681
Trend	**0.000296**

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	0.1698	0.2579	-0.0110	1.0665	11.83	-12%	0/135
XDA4238	DIN	Mar-May	0.0437	0.6066	-0.0293	1.7200	11.25	-19%	0/35
XDA4238	DIN	Jul-Sep	0.3035	0.6500	0.0177	0.4820	11.25	41%	0/35
XDA4238	DIN	Apr-Oct	0.7076	0.3441	-0.0046	0.7673	11.58	-7%	0/82
XDA4238	DIN	Oct-Dec	0.6804	0.2907	-0.0071	1.2110	11.25	-7%	0/35
XDA1177	DIN	Annual	0.4908	0.6874	0.0079	0.8520	11.83	11%	0/138
XDA1177	DIN	Mar-May	0.7214	0.7506	0.0054	1.2173	11.25	5%	0/36
XDA1177	DIN	Jul-Sep	0.3838	0.7355	0.0189	0.2945	11.25	72%	0/36
XDA1177	DIN	Apr-Oct	0.3374	0.9612	0.0110	0.6280	11.58	20%	0/84
XDA1177	DIN	Oct-Dec	0.4584	0.6022	0.0140	0.8460	11.25	19%	0/35
XDB3321	DIN	Annual	**0.0021**	0.1122	0.0783	0.6085	5.58	**72%**	0/63
XDB3321	DIN	Mar-May	0.0509	0.7193	0.1280	0.8990	5.25	75%	0/18
XDB3321	DIN	Jul-Sep	**0.0048**	0.8683	0.0914	0.3095	5.25	**155%**	0/18
XDB3321	DIN	Apr-Oct	**0.0000**	0.9371	0.0994	0.5148	5.50	**106%**	0/41
XDB3321	DIN	Oct-Dec	0.4111	0.3255	-0.0320	0.8220	4.25	-17%	0/13

POTOH - DIN

Total	0.108047
Homogeneity	0.096269
Season	0.027733
Station	0.022731
Station-Season	0.756947
Trend	0.486131

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	0.1673	0.2518	-0.0158	2.132	11.83	-9%	0/136
XDA4238	TN	Mar-May	**0.0074**	0.4773	-0.0459	2.402	11.25	**-22%**	0/35
XDA4238	TN	Jul-Sep	0.2665	0.6477	0.0222	1.095	11.25	23%	0/35
XDA4238	TN	Apr-Oct	0.3345	0.0978	-0.0171	1.269	11.58	-16%	0/82
XDA4238	TN	Oct-Dec	0.6922	0.6327	0.0098	1.791	11.25	6%	0/36
XDA1177	TN	Annual	0.6611	0.7021	0.0065	1.780	11.83	4%	0/138
XDA1177	TN	Mar-May	0.4754	0.3490	-0.0115	1.803	11.25	-7%	0/36
XDA1177	TN	Jul-Sep	0.0915	0.8802	0.0360	0.927	11.25	44%	0/35
XDA1177	TN	Apr-Oct	0.5621	0.5183	0.0088	1.205	11.58	9%	0/83
XDA1177	TN	Oct-Dec	0.5264	0.8234	0.0171	1.500	11.25	13%	0/36
XDB3321	TN	Annual	0.0670	0.6599	0.0925	1.265	5.58	41%	0/63
XDB3321	TN	Mar-May	0.2301	0.3221	0.1125	1.592	5.25	37%	0/18
XDB3321	TN	Jul-Sep	0.0636	0.7278	0.1125	0.949	5.25	62%	0/18
XDB3321	TN	Apr-Oct	0.0225	0.7719	0.1109	1.056	5.50	58%	0/41
XDB3321	TN	Oct-Dec	0.8774	0.5712	-0.0292	1.130	4.25	-11%	0/14

POTOH - TN

Total	0.432862
Homogeneity	0.391378
Season	0.151910
Station	0.043156
Station-Season	0.876272
Trend	0.744533

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.5700	0.1789	0.0106	8.4	11.83	0%	NA
XDA4238	DO_FLD	Mar-May	0.3218	0.3635	0.0250	9.4	11.25	0%	NA
XDA4238	DO_FLD	Jul-Sep	0.3026	0.0317	0.0500	5.5	11.25	10%	NA
XDA4238	DO_FLD	Apr-Oct	0.4131	0.1447	0.0200	6.3	11.58	0%	NA
XDA4238	DO_FLD	Oct-Dec	0.2498	0.7514	-0.0655	9.6	11.25	-10%	NA
XDA1177	DO_FLD	Annual	0.3034	0.3169	0.0167	7.9	11.83	0%	NA
XDA1177	DO_FLD	Mar-May	0.1857	0.8926	0.0833	8.6	11.25	10%	NA
XDA1177	DO_FLD	Jul-Sep	0.1286	0.5341	0.0250	5.1	11.25	10%	NA
XDA1177	DO_FLD	Apr-Oct	0.0806	0.5075	0.0400	5.6	11.58	10%	NA
XDA1177	DO_FLD	Oct-Dec	0.3885	0.8342	-0.0500	9.1	11.25	-10%	NA
XDB3321	DO_FLD	Annual	0.0204	0.5759	0.2000	6.2	5.58	20%	NA
XDB3321	DO_FLD	Mar-May	0.0482	0.6011	0.4000	7.0	5.25	30%	NA
XDB3321	DO_FLD	Jul-Sep	0.1289	0.2807	0.2500	4.6	5.25	30%	NA
XDB3321	DO_FLD	Apr-Oct	0.0126	0.4819	0.2688	5.0	5.50	30%	NA
XDB3321	DO_FLD	Oct-Dec	0.7548	0.5319	-0.1688	9.3	4.25	-10%	NA

POTOH - DO_FLD

Total	0.223283
Homogeneity	0.313442
Season	0.021639
Station	0.525127
Station-Season	0.868376
Trend	0.057804

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0000**	0.2474	0.0333	7.3	11.83	**10%**	NA
XDA4238	pH_FLD	Mar-May	**0.0008**	0.1829	0.0375	7.4	11.25	**10%**	NA
XDA4238	pH_FLD	Jul-Sep	**0.0003**	0.2758	0.0592	7.1	11.25	**10%**	NA
XDA4238	pH_FLD	Apr-Oct	**0.0000**	0.4985	0.0417	7.3	11.58	**10%**	NA
XDA4238	pH_FLD	Oct-Dec	0.6556	0.7069	0.0000	7.3	11.25	0%	NA
XDA1177	pH_FLD	Annual	**0.0000**	0.4068	0.0333	7.3	11.83	**10%**	NA
XDA1177	pH_FLD	Mar-May	**0.0038**	0.1849	0.0500	7.3	11.25	**10%**	NA
XDA1177	pH_FLD	Jul-Sep	**0.0016**	0.7725	0.0375	7.2	11.25	**10%**	NA
XDA1177	pH_FLD	Apr-Oct	**0.0000**	0.7187	0.0364	7.2	11.58	**10%**	NA
XDA1177	pH_FLD	Oct-Dec	0.1653	0.8248	0.0155	7.4	11.25	0%	NA
XDB3321	pH_FLD	Annual	**0.0013**	0.9538	0.0050	7.4	5.58	**0%**	NA
XDB3321	pH_FLD	Mar-May	0.0446	0.8193	0.0500	7.4	5.25	0%	NA
XDB3321	pH_FLD	Jul-Sep	0.0455	0.6412	0.0750	7.1	5.25	10%	NA
XDB3321	pH_FLD	Apr-Oct	**0.0016**	0.9533	0.0500	7.2	5.50	**0%**	NA
XDB3321	pH_FLD	Oct-Dec	0.7488	0.8257	0.0125	7.5	4.25	0%	NA

POTOH - pH_FLD

Total	0.000011
Homogeneity	0.623905
Season	0.020306
Station	0.346648
Station-Season	0.998861
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TALK	Annual	**0.0002**	0.6402	1.5000	63.5	11.00	**30%**	NA
XDA4238	TALK	Mar-May	0.1762	0.6291	0.7500	63.3	10.25	10%	NA
XDA4238	TALK	Jul-Sep	**0.0022**	0.7050	3.7857	52.3	10.25	**70%**	NA
XDA4238	TALK	Apr-Oct	**0.0002**	0.9178	2.3889	63.0	10.58	**40%**	NA
XDA4238	TALK	Oct-Dec	0.0339	0.2253	1.4000	60.0	10.25	20%	NA
XDA1177	TALK	Annual	**0.0071**	0.2716	1.2500	67.0	11.00	**20%**	NA
XDA1177	TALK	Mar-May	0.7183	0.2134	0.2778	66.0	10.25	0%	NA
XDA1177	TALK	Jul-Sep	**0.0040**	0.9055	3.1667	53.5	10.25	**60%**	NA
XDA1177	TALK	Apr-Oct	**0.0007**	0.6555	2.0000	63.8	10.58	**30%**	NA
XDA1177	TALK	Oct-Dec	0.0776	0.3942	1.2500	66.0	10.25	20%	NA
XDB3321	TALK	Annual	0.2016	0.9315	-1.3750	69.5	4.75	-10%	NA
XDB3321	TALK	Mar-May	0.3222	0.9231	-2.3125	68.0	4.25	-10%	NA
XDB3321	TALK	Jul-Sep	1.0000	0.9789	-0.2500	57.0	4.25	0%	NA
XDB3321	TALK	Apr-Oct	0.2868	0.9536	-2.0000	68.3	4.50	-10%	NA
XDB3321	TALK	Oct-Dec	0.3268	0.6303	-3.8750	67.3	3.25	-20%	NA

POTOH - TALK

Total	0.070062
Homogeneity	0.215480
Season	0.103033
Station	**0.000853**
Station-Season	0.986580
Trend	**0.004842**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0010**	0.9990	-0.0050	0.0730	5.58	**-38%**	2/63
XDA4238	PO4W	Mar-May	0.0951	0.9907	-0.0065	0.0700	5.25	-49%	1/16
XDA4238	PO4W	Jul-Sep	0.1017	0.9240	-0.0030	0.0745	5.25	-21%	1/18
XDA4238	PO4W	Apr-Oct	0.0226	0.9973	-0.0035	0.0740	5.50	-26%	1/40
XDA4238	PO4W	Oct-Dec	0.0865	0.5419	-0.0075	0.0730	4.25	-44%	0/15
XDA1177	PO4W	Annual	**0.0063**	0.8543	-0.0040	0.0750	5.58	**-30%**	1/65
XDA1177	PO4W	Mar-May	0.3469	0.2772	-0.0022	0.0650	5.25	-18%	1/17
XDA1177	PO4W	Jul-Sep	0.0790	0.6892	-0.0030	0.0770	5.25	-20%	0/18
XDA1177	PO4W	Apr-Oct	0.0658	0.5954	-0.0022	0.0745	5.50	-16%	0/41
XDA1177	PO4W	Oct-Dec	0.1198	1.0000	-0.0085	0.0980	4.25	-37%	0/15
XDB3321	PO4W	Annual	0.0967	0.4456	-0.0040	0.0633	5.58	-35%	2/63
XDB3321	PO4W	Mar-May	0.9070	0.3102	0.0022	0.0400	5.25	29%	1/17
XDB3321	PO4W	Jul-Sep	0.2301	0.7831	-0.0050	0.0783	5.25	-34%	0/18
XDB3321	PO4W	Apr-Oct	0.2403	0.7043	-0.0034	0.0705	5.50	-27%	0/41
XDB3321	PO4W	Oct-Dec	0.0449	0.8120	-0.0050	0.0600	4.25	-35%	0/14

POTOH - PO4W

Total	0.169596
Homogeneity	0.978662
Season	0.599384
Station	0.579663
Station-Season	0.987638
Trend	**0.000001**

(Oct 1990 - Dec 1996) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4F	Annual	0.9583	0.3792	0.0000	0.0350	6.25	0%	0/73
XDA4238	PO4F	Mar-May	1.0000	0.3314	0.0000	0.0263	5.25	0%	0/18
XDA4238	PO4F	Jul-Sep	0.8283	0.2807	0.0005	0.0408	5.25	6%	0/18
XDA4238	PO4F	Apr-Oct	0.6805	0.4778	-0.0010	0.0375	6.08	-16%	0/43
XDA4238	PO4F	Oct-Dec	0.2981	0.8102	-0.0010	0.0450	6.25	-14%	0/21
XDA1177	PO4F	Annual	0.8753	0.3535	0.0003	0.0385	6.25	5%	1/73
XDA1177	PO4F	Mar-May	0.6644	0.4090	0.0010	0.0260	5.25	20%	0/18
XDA1177	PO4F	Jul-Sep	0.7434	0.1331	0.0010	0.0445	5.25	12%	0/18
XDA1177	PO4F	Apr-Oct	0.7837	0.2617	0.0003	0.0430	5.50	4%	0/43
XDA1177	PO4F	Oct-Dec	0.6634	0.6188	-0.0005	0.0450	4.25	-5%	0/21
XDB3321	PO4F	Annual	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Mar-May	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Jul-Sep	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Apr-Oct	NA	NA	NA	NA	NA	NA	NA
XDB3321	PO4F	Oct-Dec	NA	NA	NA	NA	NA	NA	NA

POTOH - PO4F

Total	0.459870
Homogeneity	0.407489
Season	0.032227
Station	0.954923
Station-Season	0.992917
Trend	0.755995

NA - Not available, sampling stopped in September 1990.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	0.0434	0.1000	-0.0030	0.0900	11.83	-39%	17/137
XDC1706	NH4	Mar-May	0.7507	0.1761	0.0009	0.0750	11.25	14%	3/36
XDC1706	NH4	Jul-Sep	0.2847	0.1829	-0.0030	0.1220	11.25	-28%	5/36
XDC1706	NH4	Oct-Dec	0.4342	0.2462	-0.0026	0.1110	11.25	-26%	3/35
XDC1706	NH4	Mar-Nov	0.0370	0.0801	-0.0038	0.0970	11.75	-46%	12/107
MLE2.2	NH4	Annual	0.7843	0.3655	-0.0006	0.1250	11.92	-6%	14/137
MLE2.2	NH4	Mar-May	0.9683	0.5115	0.0000	0.0663	11.25	0%	4/36
MLE2.2	NH4	Jul-Sep	0.1783	0.2207	0.0097	0.1658	11.25	66%	3/36
MLE2.2	NH4	Oct-Dec	0.0860	0.8053	-0.0049	0.1250	11.25	-44%	2/34
MLE2.2	NH4	Mar-Nov	0.7809	0.4873	0.0008	0.1365	11.75	7%	8/107
MLE2.3	NH4	Annual	**0.0068**	**0.0061**	-0.0023	0.0936	11.83	**-29%**	9/140
MLE2.3	NH4	Mar-May	0.8742	0.0306	-0.0003	0.0503	11.25	-7%	4/36
MLE2.3	NH4	Jul-Sep	1.0000	0.6995	0.0000	0.1615	11.25	0%	2/36
MLE2.3	NH4	Oct-Dec	**0.0000**	0.9896	-0.0073	0.0995	11.25	**-83%**	1/36
MLE2.3	NH4	Mar-Nov	0.1256	0.0134	-0.0020	0.0970	11.75	-24%	6/108

POTMH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	0.0168	0.5905	0.0113	0.2650	11.83	50%	3/138
XDC1706	NO23	Mar-May	0.0266	0.9752	0.0375	0.4713	11.25	90%	0/36
XDC1706	NO23	Jul-Sep	0.6342	0.5766	0.0016	0.0960	11.25	19%	2/36
XDC1706	NO23	Oct-Dec	0.1910	0.8160	0.0143	0.2500	11.25	64%	0/36
XDC1706	NO23	Mar-Nov	0.0119	0.8658	0.0125	0.1963	11.75	75%	3/108
MLE2.2	NO23	Annual	0.3617	0.1152	0.0010	0.1350	11.92	9%	37/137
MLE2.2	NO23	Mar-May	0.0194	0.9262	0.0289	0.2600	11.25	125%	1/36
MLE2.2	NO23	Jul-Sep	0.7756	0.0670	0.0000	0.0100	11.25	0%	28/36
MLE2.2	NO23	Oct-Dec	0.4134	0.1963	-0.0017	0.0675	11.25	-28%	3/34
MLE2.2	NO23	Mar-Nov	0.0647	0.2462	0.0014	0.0750	11.75	22%	36/107
MLE2.3	NO23	Annual	0.3546	0.4026	0.0005	0.0839	11.83	7%	0/140
MLE2.3	NO23	Mar-May	0.0217	0.7355	0.0171	0.2386	11.25	81%	0/36
MLE2.3	NO23	Jul-Sep	0.6892	0.6146	0.0001	0.0088	11.25	13%	0/36
MLE2.3	NO23	Oct-Dec	0.1910	0.7509	-0.0013	0.0586	11.25	-25%	0/36
MLE2.3	NO23	Mar-Nov	0.1484	0.3147	0.0007	0.0353	11.75	23%	0/108

POTMH - NO23

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.4979	0.4810	-0.0007	0.103	11.83	-8%	2/133
XDC1706	TP	Mar-May	0.7721	0.1086	-0.0001	0.101	11.25	-1%	1/35
XDC1706	TP	Jul-Sep	0.1776	0.3068	-0.0027	0.172	11.25	-18%	0/36
XDC1706	TP	Oct-Dec	0.8175	0.9837	-0.0003	0.111	11.25	-3%	1/32
XDC1706	TP	Mar-Nov	0.2698	0.4812	-0.0012	0.136	11.75	-10%	1/104
MLE2.2	TP	Annual	0.6811	0.9807	0.0002	0.056	11.92	4%	1/134
MLE2.2	TP	Mar-May	0.5517	0.6450	0.0003	0.058	11.25	6%	0/36
MLE2.2	TP	Jul-Sep	0.6065	0.4886	0.0010	0.054	11.25	21%	0/36
MLE2.2	TP	Oct-Dec	0.5605	0.9404	-0.0007	0.056	11.25	-14%	0/31
MLE2.2	TP	Mar-Nov	0.5861	0.9129	0.0003	0.053	11.75	7%	0/105
MLE2.3	TP	Annual	0.0349	0.4699	0.0005	0.029	12.00	21%	3/142
MLE2.3	TP	Mar-May	0.4983	0.9983	0.0003	0.025	11.25	14%	1/36
MLE2.3	TP	Jul-Sep	0.0570	0.0687	0.0010	0.046	11.25	24%	0/36
MLE2.3	TP	Oct-Dec	0.0613	0.4759	0.0006	0.027	11.25	25%	0/36
MLE2.3	TP	Mar-Nov	0.0229	0.2856	0.0006	0.029	11.75	25%	1/108

POTMH - TP

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	1.0000	0.3451	0.0000	34.0	11.83	0%	0/138
XDC1706	TSS	Mar-May	0.9054	0.1827	-0.2179	36.3	11.25	-10%	0/36
XDC1706	TSS	Jul-Sep	0.9369	0.5652	-0.0625	50.3	11.25	0%	0/36
XDC1706	TSS	Oct-Dec	0.1534	0.7812	-1.5357	42.3	11.25	-40%	0/36
XDC1706	TSS	Mar-Nov	0.6638	0.3996	-0.2835	45.3	11.75	-10%	0/108
MLE2.2	TSS	Annual	**0.0000**	0.4625	1.1339	11.3	11.92	**120%**	2/138
MLE2.2	TSS	Mar-May	**0.0062**	0.2001	1.2778	23.4	11.25	**60%**	0/36
MLE2.2	TSS	Jul-Sep	**0.0079**	0.1138	1.0833	8.0	11.25	**150%**	1/36
MLE2.2	TSS	Oct-Dec	0.0259	0.5172	1.0000	9.8	11.25	120%	1/35
MLE2.2	TSS	Mar-Nov	**0.0000**	0.3808	1.0729	10.9	11.75	**120%**	1/108
MLE2.3	TSS	Annual	0.5294	0.6160	-0.0516	8.2	11.67	-10%	0/138
MLE2.3	TSS	Mar-May	0.1829	0.6310	0.2261	7.9	11.08	30%	0/34
MLE2.3	TSS	Jul-Sep	0.4277	0.2246	-0.0888	7.0	11.25	-10%	0/36
MLE2.3	TSS	Oct-Dec	0.1534	0.5918	-0.2018	10.3	11.25	-20%	0/36
MLE2.3	TSS	Mar-Nov	0.5108	0.3441	-0.0578	8.2	11.58	-10%	0/106

POTMH - TSS

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.0130	0.3960	0.1805	3.0	11.67	70%	NA
XDC1706	CHAA	Mar-May	0.4922	0.6784	-0.5759	40.2	11.08	-20%	NA
XDC1706	CHAA	Jul-Sep	**0.0079**	0.5175	0.2348	3.5	11.25	**80%**	NA
XDC1706	CHAA	Oct-Dec	0.3830	0.9708	0.1017	2.2	11.25	50%	NA
XDC1706	CHAA	Mar-Nov	0.0147	0.2078	0.1752	3.5	11.58	60%	NA
MLE2.2	CHAA	Annual	0.0535	0.4951	0.1332	2.2	11.75	70%	NA
MLE2.2	CHAA	Mar-May	0.5370	0.0901	0.2159	12.0	11.17	20%	NA
MLE2.2	CHAA	Jul-Sep	0.7815	0.7893	0.0158	1.8	11.25	10%	NA
MLE2.2	CHAA	Oct-Dec	0.0121	0.4429	0.3150	1.7	11.25	210%	NA
MLE2.2	CHAA	Mar-Nov	0.0709	0.2935	0.1245	2.2	11.67	70%	NA
MLE2.3	CHAA	Annual	0.4042	0.3159	0.0556	3.8	11.92	20%	NA
MLE2.3	CHAA	Mar-May	0.2052	0.6327	-0.8360	20.8	11.25	-50%	NA
MLE2.3	CHAA	Jul-Sep	0.6347	0.8766	0.0318	2.1	11.25	20%	NA
MLE2.3	CHAA	Oct-Dec	**0.0023**	0.9355	0.4523	2.8	11.25	**180%**	NA
MLE2.3	CHAA	Mar-Nov	0.5073	0.3117	0.0411	3.6	11.75	10%	NA

POTMH - CHAA

Total	0.156720
Homogeneity	0.420083
Season	0.064350
Station	0.498848
Station-Season	0.824828
Trend	**0.003641**

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	0.2936	0.7063	0.0099	0.3620	11.83	32%	2/137
XDC1706	DIN	Mar-May	0.0522	0.9441	0.0427	0.5163	11.25	93%	0/36
XDC1706	DIN	Jul-Sep	0.4516	0.8429	-0.0043	0.2655	11.25	-18%	2/36
XDC1706	DIN	Oct-Dec	0.3438	0.7814	0.0173	0.3373	11.25	58%	0/35
XDC1706	DIN	Mar-Nov	0.2661	0.8196	0.0114	0.3150	11.75	43%	2/107
MLE2.2	DIN	Annual	0.3506	0.2553	0.0042	0.2890	11.92	17%	12/136
MLE2.2	DIN	Mar-May	0.0478	0.8877	0.0290	0.3600	11.25	91%	0/36
MLE2.2	DIN	Jul-Sep	0.1541	0.0971	0.0092	0.2713	11.25	38%	7/36
MLE2.2	DIN	Oct-Dec	0.1294	0.9038	-0.0052	0.1908	11.25	-31%	4/33
MLE2.2	DIN	Mar-Nov	0.0966	0.2789	0.0087	0.2870	11.75	36%	10/106
MLE2.3	DIN	Annual	0.8858	0.0393	-0.0005	0.1950	11.83	-3%	0/140
MLE2.3	DIN	Mar-May	0.0217	0.5652	0.0196	0.2901	11.25	76%	0/36
MLE2.3	DIN	Jul-Sep	0.7815	0.4742	0.0013	0.1745	11.25	8%	0/36
MLE2.3	DIN	Oct-Dec	**0.0026**	0.7652	-0.0095	0.1753	11.25	**-61%**	0/36
MLE2.3	DIN	Mar-Nov	0.5368	0.0246	0.0022	0.1766	11.75	15%	0/108

POTMH - DIN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	0.1431	0.9394	0.0120	1.175	11.83	12%	0/136
XDC1706	TN	Mar-May	0.2326	0.8762	0.0175	1.285	11.25	15%	0/35
XDC1706	TN	Jul-Sep	0.9672	0.8249	-0.0004	0.780	11.25	-1%	0/35
XDC1706	TN	Oct-Dec	0.1133	0.6327	0.0245	1.043	11.25	26%	0/36
XDC1706	TN	Mar-Nov	0.2227	0.9718	0.0112	1.123	11.75	12%	0/106
MLE2.2	TN	Annual	0.0164	0.7838	0.0207	0.700	11.92	35%	0/137
MLE2.2	TN	Mar-May	0.1427	0.5897	0.0451	0.889	11.25	57%	0/36
MLE2.2	TN	Jul-Sep	0.0884	0.8675	0.0305	0.550	11.25	62%	0/36
MLE2.2	TN	Oct-Dec	0.0434	0.8281	0.0228	0.630	11.25	41%	0/34
MLE2.2	TN	Mar-Nov	**0.0054**	0.9699	0.0294	0.689	11.75	**50%**	0/107
MLE2.3	TN	Annual	0.1728	0.6598	0.0037	0.649	11.92	7%	NA
MLE2.3	TN	Mar-May	0.2052	0.6094	0.0133	0.882	11.25	17%	NA
MLE2.3	TN	Jul-Sep	0.0964	0.3760	0.0072	0.624	11.25	13%	NA
MLE2.3	TN	Oct-Dec	0.5264	0.4596	-0.0015	0.590	11.25	-3%	NA
MLE2.3	TN	Mar-Nov	0.0375	0.8695	0.0055	0.649	11.75	10%	NA

POTMH - TN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	**0.0034**	0.7065	0.0750	5.4	11.83	**20%**	NA
XDC1706	DO_FLD	Mar-May	0.2052	0.7930	0.0882	6.3	11.25	20%	NA
XDC1706	DO_FLD	Jul-Sep	0.3219	0.5841	0.0383	2.9	11.25	10%	NA
XDC1706	DO_FLD	Oct-Dec	0.1776	0.9202	0.0500	7.6	11.25	10%	NA
XDC1706	DO_FLD	Mar-Nov	**0.0056**	0.5086	0.0750	4.2	11.75	**20%**	NA
MLE2.2	DO_FLD	Annual	0.2113	0.1316	-0.0208	6.2	11.92	0%	NA
MLE2.2	DO_FLD	Mar-May	0.5794	0.4344	0.0500	7.4	11.25	10%	NA
MLE2.2	DO_FLD	Jul-Sep	0.1319	0.1561	-0.0379	1.6	11.25	-30%	NA
MLE2.2	DO_FLD	Oct-Dec	0.7413	0.4230	-0.0063	7.7	11.25	0%	NA
MLE2.2	DO_FLD	Mar-Nov	0.3483	0.3422	-0.0138	4.3	11.75	0%	NA
MLE2.3	DO_FLD	Annual	0.4217	0.2166	-0.0249	6.0	12.00	0%	NA
MLE2.3	DO_FLD	Mar-May	0.5794	0.5652	0.0533	6.8	11.25	10%	NA
MLE2.3	DO_FLD	Jul-Sep	0.0884	0.4144	-0.0636	2.4	11.25	-30%	NA
MLE2.3	DO_FLD	Oct-Dec	0.1326	0.9835	0.0923	7.0	11.25	10%	NA
MLE2.3	DO_FLD	Mar-Nov	0.8712	0.4615	-0.0065	5.7	11.75	0%	NA

POTMH - DO_FLD

Total	0.058743
Homogeneity	0.047372
Season	0.036640
Station	0.003295
Station-Season	0.709023
Trend	0.781540

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	0.0190	0.0751	0.0100	7.5	11.83	0%	NA
XDC1706	pH_FLD	Mar-May	0.7786	0.3816	0.0000	7.6	11.25	0%	NA
XDC1706	pH_FLD	Jul-Sep	**0.0032**	0.5865	0.0180	7.2	11.25	**0%**	NA
XDC1706	pH_FLD	Oct-Dec	0.8392	0.8082	0.0000	7.5	11.25	0%	NA
XDC1706	pH_FLD	Mar-Nov	**0.0031**	0.2743	0.0125	7.4	11.75	**0%**	NA
MLE2.2	pH_FLD	Annual	0.0935	0.8008	0.0083	7.6	11.92	0%	NA
MLE2.2	pH_FLD	Mar-May	0.3194	0.1980	0.0119	7.5	11.25	0%	NA
MLE2.2	pH_FLD	Jul-Sep	0.2318	0.9253	0.0077	7.3	11.25	0%	NA
MLE2.2	pH_FLD	Oct-Dec	0.1465	0.5419	0.0150	7.7	11.25	0%	NA
MLE2.2	pH_FLD	Mar-Nov	0.0846	0.5871	0.0083	7.5	11.75	0%	NA
MLE2.3	pH_FLD	Annual	0.5021	0.1051	0.0000	7.8	12.00	0%	NA
MLE2.3	pH_FLD	Mar-May	0.7210	0.2287	-0.0081	7.7	11.25	0%	NA
MLE2.3	pH_FLD	Jul-Sep	0.2116	0.2404	-0.0125	7.6	11.25	0%	NA
MLE2.3	pH_FLD	Oct-Dec	0.0756	0.2838	0.0110	7.8	11.25	0%	NA
MLE2.3	pH_FLD	Mar-Nov	0.5392	0.2251	-0.0019	7.7	11.75	0%	NA

POTMH - pH_FLD

Total	0.049225
Homogeneity	0.156957
Season	0.220245
Station	0.608713
Station-Season	0.171494
Trend	**0.005450**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TALK	Annual	0.0927	0.2185	0.5000	74.0	11.00	10%	NA
XDC1706	TALK	Mar-May	0.2068	0.5524	-0.6250	73.3	10.25	-10%	NA
XDC1706	TALK	Jul-Sep	0.0477	0.8521	1.5833	68.3	10.25	20%	NA
XDC1706	TALK	Oct-Dec	0.0134	0.9003	1.3750	71.0	10.25	20%	NA
XDC1706	TALK	Mar-Nov	0.0730	0.2829	0.5000	73.3	10.75	10%	NA
MLE2.2	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.2	TALK	Mar-Nov	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Mar-Nov	NM	NM	NM	NM	NM	NM	NM

POTMH - TALK

Total	0.153033
Homogeneity	0.218484
Season	0.218484
Station	-
Station-Season	-
Trend	0.104146

NA - Detection limit not available until July 1994.
NM - Not measured at this station.
- Only one station analyzed.

(Jan 1985 - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W	Annual	0.0677	0.5492	-0.0030	0.0460	5.58	-36%	2/64
XDC1706	PO4W	Mar-May	0.7261	0.3005	0.0007	0.0300	5.25	12%	1/17
XDC1706	PO4W	Jul-Sep	0.4450	0.7356	-0.0025	0.0675	5.25	-19%	0/18
XDC1706	PO4W	Oct-Dec	0.0223	0.4295	-0.0070	0.0500	4.25	-60%	1/15
XDC1706	PO4W	Mar-Nov	0.3786	0.7506	-0.0022	0.0520	5.58	-24%	1/51
MLE2.2	PO4W	Annual	0.1353	0.8504	0.0000	0.0075	5.67	0%	48/65
MLE2.2	PO4W	Mar-May	0.8079	0.4204	0.0000	0.0088	5.25	0%	14/17
MLE2.2	PO4W	Jul-Sep	0.4450	0.3428	-0.0040	0.0388	5.25	-54%	9/18
MLE2.2	PO4W	Oct-Dec	0.4109	0.4114	0.0000	0.0056	4.25	0%	15/15
MLE2.2	PO4W	Mar-Nov	0.1970	0.7284	-0.0001	0.0113	5.58	-5%	35/51
MLE2.3	PO4W	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Mar-May	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Jul-Sep	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Oct-Dec	NM	NM	NM	NM	NM	NM	NM
MLE2.3	PO4W	Mar-Nov	NM	NM	NM	NM	NM	NM	NM

POTMH - PO4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NM - Not measured at this station.
NA - Not applicable, detection limits differ between stations.

(Oct 1990 - Dec 1996) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4F	Annual	0.0936	0.7112	0.0012	0.0171	6.25	44%	5/73
XDC1706	PO4F	Mar-May	0.1561	0.6360	0.0015	0.0074	5.25	107%	1/18
XDC1706	PO4F	Jul-Sep	0.3799	0.6231	-0.0014	0.0395	5.25	-19%	0/18
XDC1706	PO4F	Oct-Dec	0.0564	0.8102	0.0030	0.0198	6.25	95%	1/21
XDC1706	PO4F	Mar-Nov	0.3734	0.6270	0.0010	0.0255	6.17	24%	1/56
MLE2.2	PO4F	Annual	0.0472	0.2086	0.0005	0.0053	6.25	60%	22/72
MLE2.2	PO4F	Mar-May	0.4280	0.3664	0.0003	0.0035	5.25	45%	6/18
MLE2.2	PO4F	Jul-Sep	0.6567	0.0585	-0.0007	0.0218	5.25	-17%	0/18
MLE2.2	PO4F	Oct-Dec	**0.0084**	0.5525	0.0010	0.0025	6.25	**250%**	**10/20**
MLE2.2	PO4F	Mar-Nov	0.1016	0.0743	0.0006	0.0080	6.17	46%	13/56
MLE2.3 (85-96)	PO4F	Annual	0.8494	0.0787	0.0000	0.0038	11.83	0%	18/140
MLE2.3 (85-96)	PO4F	Mar-May	0.2329	0.4393	0.0000	0.0029	11.25	0%	6/36
MLE2.3 (85-96)	PO4F	Jul-Sep	0.3413	0.0539	0.0010	0.0230	11.25	49%	0/36
MLE2.3 (85-96)	PO4F	Oct-Dec	0.0200	0.7154	-0.0002	0.0039	11.25	-57%	5/36
MLE2.3 (85-96)	PO4F	Mar-Nov	0.9071	0.0849	0.0000	0.0042	11.75	0%	9/108

POTMH - PO4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

SECTION VII

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0001**	LIFEREG	-0.0739	0.2300	11.83	**-58%**	**8/135**
XFB1433	NH4	Annual	**0.0001**	LIFEREG	-0.0710	0.2200	11.83	**-57%**	**17/137**
XEA6596	NH4	Annual	**0.0001**	LIFEREG	-0.0811	0.1500	11.83	**-62%**	**21/137**
XEA1840	NH4	Annual	**0.0008**	LIFEREG	-0.0471	0.1400	11.83	**-43%**	**12/138**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.0124	0.0929	2.9056
XFB1433	LNFLOW7	0.0346	0.0049	0.0201
XEA6596	LNFLOW3	0.0764	0.0000	0.0288
XEA1840	H5FLOW3	0.0355	0.0034	-0.0860

POTTF1 - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	0.4157	0.8372	0.0042	1.8140	11.83	3%	0/138
XFB1433	NO23	Annual	0.6164	0.9470	0.0044	1.7625	11.83	3%	0/138
XEA6596	NO23	Annual	0.4037	0.7529	-0.0109	1.6690	11.83	-8%	0/138
XEA1840	NO23	Annual	0.1540	0.9272	-0.0160	1.3680	11.83	-14%	0/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.3088	0.0000	-0.2817
XFB1433	LNFLOW3	0.1242	0.0000	-0.1734
XEA6596	LNFLOW3	0.0119	0.0969	0.0517
XEA1840	LNFLOW3	0.1730	0.0000	0.2089

POTTF1 - NO23

Total	0.991494
Homogeneity	0.989293
Season	0.369451
Station	0.284116
Station-Season	0.999734
Trend	0.671434

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.8644	0.3062	0.0002	0.071	11.83	3%	0/136
XFB1433	TP	Annual	0.9150	0.0680	-0.0001	0.087	11.83	-1%	0/136
XEA6596	TP	Annual	0.1999	0.4351	-0.0010	0.097	11.83	-12%	0/136
XEA1840	TP	Annual	0.8327	0.8969	0.0001	0.094	11.83	1%	0/137

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.1336	0.0000	-2748.36
XFB1433	H3FLOW3	0.0832	0.0000	-1433.97
XEA6596	H3FLOW3	0.1283	0.0000	-1667.90
XEA1840	H3FLOW3	0.1331	0.0000	-1132.67

POTTF1 - TP

Total	0.393675
Homogeneity	0.371486
Season	0.000157
Station	0.707846
Station-Season	0.999707
Trend	0.504590

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.8184	0.2384	-0.1472	14.5	11.83	-10%	1/138
XFB1433	TSS	Annual	0.7862	0.1822	-0.0535	18.5	11.83	0%	1/138
XEA6596	TSS	Annual	0.9835	0.1505	-0.0036	19.3	11.83	0%	0/139
XEA1840	TSS	Annual	0.9670	0.7044	-0.0240	22.5	11.83	0%	1/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.1407	0.0000	-2027315.00
XFB1433	H3FLOW3	0.1731	0.0000	-985161.00
XEA6596	H3FLOW3	0.2693	0.0000	-1223514.00
XEA1840	H3FLOW3	0.3586	0.0000	-1061491.00

POTTF1 - TSS

Total	0.286089
Homogeneity	0.259530
Season	0.000066
Station	0.996940
Station-Season	0.998096
Trend	0.635800

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	Secchi	Annual	0.8508	0.0688	-0.0004	0.7	11.83	0%	NA
XFB1433	Secchi	Annual	0.0878	0.0259	0.0050	0.5	11.83	10%	NA
XEA6596	Secchi	Annual	0.2291	0.2541	0.0050	0.5	11.83	10%	NA
XEA1840	Secchi	Annual	0.4825	0.4940	-0.0040	0.5	11.83	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.2260	0.0000	21.6312
XFB1433	H4FLOW3	0.2183	0.0000	19.2964
XEA6596	H4FLOW3	0.2608	0.0000	20.2499
XEA1840	LNFLOW3	0.1955	0.0000	-0.1117

POTTF1 - Secchi

Total	0.018304
Homogeneity	0.021278
Season	0.000001
Station	0.238194
Station-Season	0.997651
Trend	0.158282

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0000**	0.7162	0.8285	3.7	11.67	**260%**	NA
XFB1433	CHAA	Annual	**0.0002**	0.8923	0.5749	5.0	11.67	**130%**	NA
XEA6596	CHAA	Annual	**0.0142**	0.7219	0.4225	6.0	11.67	**80%**	NA
XEA1840	CHAA	Annual	0.7180	0.8089	0.0358	7.7	11.67	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.1068	0.0000	18.7248
XFB1433	H5FLOW3	0.1778	0.0000	26.3625
XEA6596	H5FLOW3	0.1878	0.0000	26.3973
XEA1840	H5FLOW3	0.0304	0.0063	9.1824

POTTF1 - CHAA

Total	0.007389
Homogeneity	0.751935
Season	0.543574
Station	**0.008716**
Station-Season	0.979348
Trend	**0.000000**

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.5327	0.9567	-0.0071	2.0930	11.83	-4%	0/135
XFB1433	DIN	Annual	0.2057	0.9749	-0.0116	1.9590	11.83	-7%	0/137
XEA6596	DIN	Annual	**0.0192**	0.6777	-0.0182	1.8643	11.83	**-12%**	0/136
XEA1840	DIN	Annual	**0.0255**	0.8545	-0.0251	1.4180	11.83	**-21%**	0/138

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2630	0.0000	-0.2793
XFB1433	H5FLOW3	0.0851	0.0000	0.7701
XEA6596	LNFLOW3	0.0288	0.0096	0.0890
XEA1840	LNFLOW3	0.1693	0.0000	0.2255

POTTF1 - DIN

Total	0.905496
Homogeneity	0.996412
Season	0.316450
Station	0.538653
Station-Season	0.999951
Trend	**0.001109**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	0.1197	0.5780	-0.0143	2.7763	11.83	-6%	0/136
XFB1433	TN	Annual	**0.0450**	0.9929	-0.0198	2.4948	11.83	**-9%**	0/136
XEA6596	TN	Annual	**0.0298**	0.9075	-0.0244	2.4208	11.83	**-12%**	0/137
XEA1840	TN	Annual	**0.0007**	0.9627	-0.0404	2.0770	11.83	**-23%**	0/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.3722	0.0000	-0.3659
XFB1433	H5FLOW3	0.2284	0.0000	1.2467
XEA6596	H4FLOW7	0.0281	0.0111	19.6600
XEA1840	LNFLOW3	0.1175	0.0000	0.1604

POTTF1 - TN

Total	0.595977
Homogeneity	0.997807
Season	0.262488
Station	0.555686
Station-Season	0.999995
Trend	**0.000005**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0255**	0.6157	0.0595	7.7	11.83	**10%**	NA
XFB1433	DO_FLD	Annual	0.5450	0.4765	0.0129	9.1	11.83	0%	NA
XEA6596	DO_FLD	Annual	0.7559	0.8848	-0.0118	9.5	11.83	0%	NA
XEA1840	DO_FLD	Annual	**0.0072**	0.3008	-0.0680	9.6	11.83	**-10%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.2915	0.0000	1.1831
XFB1433	LNFLOW7	0.2222	0.0000	0.9846
XEA6596	LNFLOW7	0.2237	0.0000	0.9476
XEA1840	LNFLOW7	0.2897	0.0000	1.1270

POTTF1 - DO_FLD

Total	0.390988
Homogeneity	0.352534
Season	0.052454
Station	0.008560
Station-Season	0.976752
Trend	0.940533

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.1144	0.0346	7.5	11.83	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.4900	0.0318	7.5	11.83	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0011**	0.8552	0.0254	7.7	11.83	**0%**	NA
XEA1840	pH_FLD	Annual	0.4087	0.3172	0.0090	7.7	11.83	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.0569	0.0003	0.0856
XFB1433	LNFLOW7	0.0143	0.0704	0.0455
XEA6596	LNFLOW7	0.0045	0.3045	0.0264
XEA1840	LNFLOW7	0.0674	0.0000	0.0999

POTTF1 - pH_FLD

Total	0.000070
Homogeneity	0.203448
Season	**0.000785**
Station	0.034690
Station-Season	0.998206
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TALK	Annual	**0.0012**	0.9848	1.0270	74.0	11.00	**20%**	NA
XFB1433	TALK	Annual	**0.0004**	0.9634	1.1896	72.0	11.00	**20%**	NA
XEA6596	TALK	Annual	**0.0012**	0.9295	1.2129	67.0	11.00	**20%**	NA
XEA1840	TALK	Annual	0.1052	0.6375	0.5920	64.3	11.00	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.2085	0.0000	1337
XFB1433	H4FLOW3	0.1432	0.0000	1114
XEA6596	H3FLOW3	0.0610	0.0002	215386
XEA1840	LNFLOW3	0.0104	0.1188	1.4093

POTTF1 - TALK

Total	0.153925
Homogeneity	0.998070
Season	0.246844
Station	0.500579
Station-Season	0.999999
Trend	**0.000000**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	0.1693	LIFEREG	-0.0377	0.0350	5.58	-19%	4/64
XFB1433	PO4W	Annual	0.1124	0.1600	-0.0017	0.0400	5.58	-24%	3/64
XEA6596	PO4W	Annual	**0.0468**	0.3083	-0.0018	0.0313	5.58	**-32%**	2/65
XEA1840	PO4W	Annual	0.0772	0.9599	-0.0013	0.0417	5.58	-17%	2/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.2256	0.0000	-2.4525
XFB1433	H4FLOW3	0.1992	0.0000	-2.3806
XEA6596	H3FLOW3	0.1148	0.0000	-559.6970
XEA1840	H4FLOW7	0.0069	0.0473	-0.7187

POTTF1 - PO4W

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, trends analyzed using different methods.

(Oct 1990 - Dec 1996)

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4F	Annual	0.6298	0.6406	0.0000	0.0185	6.25	0%	3/73
XFB1433	PO4F	Annual	0.7499	0.6934	0.0002	0.0178	6.25	7%	1/73
XEA6596	PO4F	Annual	0.9571	0.8709	0.0000	0.0180	6.25	0%	0/72
XEA1840	PO4F	Annual	0.5329	0.8969	-0.0005	0.0253	6.25	-12%	0/74

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.1613	0.0000	0.0041
XFB1433	LNFLOW3	0.2236	0.0000	0.0045
XEA6596	H4FLOW3	0.2427	0.0000	-7.9507
XEA1840	LNFLOW7	0.0306	0.0536	-0.0017

POTTF1 - PO4F

Total	0.983319
Homogeneity	0.978540
Season	0.214315
Station	0.846465
Station-Season	0.998060
Trend	0.810330

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0001**	LIFEREG	-0.0799	0.1150	11.83	**-61%**	**31/137**
XDA1177	NH4	Annual	**0.0021**	LIFEREG	-0.0435	0.0935	11.83	**-40%**	**29/138**
XDB3321	NH4	Annual	0.2301	LIFEREG	0.0495	0.1000	5.58	32%	14/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW3	0.1338	0.0000	-0.1617
XDA1177	LNFLOW3	0.1465	0.0000	0.0295
XDB3321	H5FLOW7	0.2993	0.0000	-0.2322

POTOH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	**0.0094**	0.9494	-0.0240	1.1000	11.83	**-26%**	1/138
XDA1177	NO23	Annual	0.2152	0.8146	-0.0132	0.9188	11.83	-17%	0/139
XDB3321	NO23	Annual	**0.0001**	0.6396	0.0680	0.7400	5.58	**51%**	0/65

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.4051	0.0000	0.3134
XDA1177	H5FLOW3	0.5293	0.0000	-1.7661
XDB3321	H5FLOW3	0.6037	0.0000	-2.0333

POTOH - NO23

Total	0.186827
Homogeneity	0.158938
Season	0.283488
Station	0.000010
Station-Season	0.998921
Trend	0.803014

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.6070	0.9834	-0.0005	0.110	11.83	-5%	1/135
XDA1177	TP	Annual	0.7982	0.9376	0.0002	0.100	11.83	2%	0/136
XDB3321	TP	Annual	0.1431	0.5867	-0.0025	0.095	5.58	-15%	0/62

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.1011	0.0000	-1062.66
XDA1177	H3FLOW3	0.1475	0.0000	-1309.89
XDB3321	H3FLOW14	0.0330	0.0714	-462.01

POTOH - TP

Total	0.976748
Homogeneity	0.979959
Season	0.865272
Station	0.310148
Station-Season	0.965610
Trend	0.289772

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	0.2989	0.9539	0.4358	23.0	11.83	20%	1/138
XDA1177	TSS	Annual	0.9670	0.8398	0.0388	21.3	11.83	0%	1/139
XDB3321	TSS	Annual	0.5395	0.6945	0.5080	16.0	5.58	20%	1/65

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.3104	0.0000	-983119
XDA1177	H3FLOW3	0.3264	0.0000	-1259510
XDB3321	H3FLOW14	0.2545	0.0000	-603112

POTOH - TSS

Total	0.980138
Homogeneity	0.983452
Season	0.428412
Station	0.806437
Station-Season	0.997213
Trend	0.277918

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	Secchi	Annual	0.9668	0.4947	-0.0001	0.5	11.83	0%	NA
XDA1177	Secchi	Annual	0.9835	0.9028	-0.0004	0.5	11.83	0%	NA
XDB3321	Secchi	Annual	0.0657	0.4030	0.0210	0.5	5.58	20%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.3247	0.0000	-0.1738
XDA1177	LNFLOW3	0.3898	0.0000	-0.1749
XDB3321	LNFLOW3	0.3087	0.0000	-0.1506

POTOH - Secchi

Total	0.673793
Homogeneity	0.695980
Season	0.292914
Station	0.241587
Station-Season	0.885968
Trend	0.232873

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	**0.0008**	0.1243	0.2259	4.3	11.67	**60%**	NA
XDA1177	CHAA	Annual	**0.0143**	0.6020	0.1264	5.7	11.67	**30%**	NA
XDB3321	CHAA	Annual	0.1576	0.2189	-0.6908	5.0	5.42	-70%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.0190	0.0384	-1.8915
XDA1177	H4FLOW3	0.0085	0.1263	230.1886
XDB3321	H5FLOW3	0.0200	0.1404	8.4266

POTOH - CHAA

Total	0.010986
Homogeneity	0.035102
Season	0.396164
Station	0.003000
Station-Season	0.163532
Trend	0.010015

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	**0.0040**	0.8506	-0.0283	1.2640	11.83	**-26%**	2/137
XDA1177	DIN	Annual	0.0573	0.6632	-0.0150	1.0265	11.83	-17%	1/138
XDB3321	DIN	Annual	**0.0005**	0.7508	0.0707	0.7950	5.58	**50%**	1/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.4128	0.0000	0.3470
XDA1177	H5FLOW3	0.5344	0.0000	-1.9161
XDB3321	H5FLOW3	0.6139	0.0000	-2.2592

POTOH - DIN

Total	0.109487
Homogeneity	0.107366
Season	0.171126
Station	0.000009
Station-Season	0.998728
Trend	0.309346

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	**0.0008**	0.5738	-0.0357	1.933	11.83	**-22%**	0/138
XDA1177	TN	Annual	**0.0257**	0.8711	-0.0166	1.667	11.83	**-12%**	1/139
XDB3321	TN	Annual	0.1409	0.6852	0.0410	1.405	5.58	16%	0/65

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.3277	0.0000	0.3057
XDA1177	LNFLOW3	0.4788	0.0000	0.3748
XDB3321	LNFLOW3	0.5175	0.0000	0.4148

POTOH - TN

Total	0.185722
Homogeneity	0.354515
Season	0.365156
Station	0.001087
Station-Season	0.959671
Trend	0.015471

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.1096	0.5030	-0.0397	8.8	11.83	-10%	NA
XDA1177	DO_FLD	Annual	**0.0117**	0.5117	-0.0493	8.7	11.83	**-10%**	NA
XDB3321	DO_FLD	Annual	0.3263	0.1899	-0.0610	8.0	5.58	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.1832	0.0000	0.8216
XDA1177	LNFLOW7	0.2286	0.0000	0.9627
XDB3321	LNFLOW7	0.1939	0.0000	0.9926

POTOH - DO_FLD

Total	0.141868
Homogeneity	0.389908
Season	0.012423
Station	0.510980
Station-Season	0.970463
Trend	**0.003726**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0100**	0.1499	0.0165	7.5	11.83	**0%**	NA
XDA1177	pH_FLD	Annual	0.1663	0.0056	0.0080	7.6	11.83	0%	NA
XDB3321	pH_FLD	Annual	0.3904	0.7914	0.0267	7.6	5.58	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.0433	0.0014	0.0666
XDA1177	LNFLOW7	0.1147	0.0000	0.1001
XDB3321	LNFLOW7	0.1075	0.0004	0.1044

POTOH - pH_FLD

Total	0.009504
Homogeneity	0.044956
Season	**0.002023**
Station	0.586327
Station-Season	0.585990
Trend	**0.003553**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TALK	Annual	**0.0009**	0.7499	1.5603	63.0	11.00	**30%**	NA
XDA1177	TALK	Annual	**0.0035**	0.4425	1.6456	63.8	11.00	**30%**	NA
XDB3321	TALK	Annual	0.4768	0.9992	-1.0834	66.5	4.75	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.0436	0.0015	2.8540
XDA1177	LNFLOW7	0.0160	0.0553	1.7262
XDB3321	H5FLOW7	0.0287	0.0706	-13.2307

POTOH - TALK

Total	0.304014
Homogeneity	0.697960
Season	0.244097
Station	**0.007215**
Station-Season	0.999395
Trend	**0.001951**

(Jan 1985 - Sep 1990)

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0002**	0.9595	-0.0051	0.0680	5.58	**-42%**	1/64
XDA1177	PO4W	Annual	0.0819	0.8225	-0.0023	0.0610	5.58	-21%	1/65
XDB3321	PO4W	Annual	**0.0250**	0.7294	-0.0020	0.0635	5.58	**-18%**	1/63

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW14	0.1232	0.0000	-699
XDA1177	H3FLOW14	0.1652	0.0000	-922
XDB3321	LNFLOW7	0.0709	0.0047	-0.0059

POTOH - PO4W

Total	0.149884
Homogeneity	0.972917
Season	0.451164
Station	0.381992
Station-Season	0.997315
Trend	**0.000001**

(Oct 1990 - Dec 1996)

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4F	Annual	0.8340	0.7914	0.0002	0.0305	6.25	4%	1/73
XDA1177	PO4F	Annual	0.4964	0.2096	0.0008	0.0365	6.25	14%	0/73
XDB3321	PO4F	Annual	NA	NA	NA	NA	NA	NA	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW14	0.1416	0.0000	-0.0050
XDA1177	LNFLOW14	0.1904	0.0000	-0.006
XDB3321	NA	NA	NA	NA

POTOH - PO4F

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NA - Not available, sampling stopped in September 1990.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	0.0817	LIFEREG	-0.0243	0.0750	11.83	-25%	20/137
MLE2.2	NH4	Annual	0.1106	LIFEREG	-0.0295	0.0400	11.92	-30%	50/138
MLE2.3	NH4	Annual	**0.0001**	LIFEREG	-0.1187	0.0243	11.83	**-75%**	36/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.1844	0.0000	0.0262
MLE2.2	H3FLOW21	0.0827	0.0000	-1123
MLE2.3	H3FLOW21	0.0293	0.0091	-321

POTMH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	**0.0211**	0.6608	-0.0170	0.4868	11.83	**-41%**	0/138
MLE2.2	NO23	Annual	0.6687	LIFEREG	-0.0067	0.0650	11.92	-8%	36/138
MLE2.3	NO23	Annual	0.3452	0.0207	-0.0026	0.1446	11.83	-21%	0/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5912	0.0000	-1.6489
MLE2.2	H5FLOW7	0.6227	0.0000	-1.2078
MLE2.3	H5FLOW7	0.5641	0.0000	-0.7419

POTMH - NO23

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.8791	0.7086	0.0000	0.086	11.83	0%	0/134
MLE2.2	TP	Annual	0.6341	0.2352	0.0002	0.050	11.92	5%	2/134
MLE2.3	TP	Annual	0.2353	LIFEREG	0.0069	0.027	12.00	9%	9/142

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW14	0.0137	0.0812	0.0914
MLE2.2	H5FLOW7	0.0475	0.0009	0.0547
MLE2.3	LNFLOW14	0.0677	0.0001	-0.0028

POTMH - TP

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	**0.0078**	0.4930	0.5355	10.3	11.83	**60%**	1/138
MLE2.2	TSS	Annual	**0.0000**	0.5025	0.5432	8.5	11.92	**80%**	0/138
MLE2.3	TSS	Annual	0.6153	0.6750	0.0211	4.9	11.67	0%	0/138

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW7	0.2158	0.0000	-864579
MLE2.2	H3FLOW21	0.0058	0.2510	12.6896
MLE2.3	LNFLOW7	0.0078	0.1821	-0.1781

POTMH - TSS

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	Secchi	Annual	0.7553	0.1227	-0.0020	0.8	11.83	0%	NA
MLE2.2	Secchi	Annual	**0.0246**	0.4282	0.0161	1.3	11.92	**10%**	NA
MLE2.3	Secchi	Annual	**0.0226**	0.1529	-0.0272	2.0	12.00	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.3059	0.0000	0.8773
MLE2.2	LNFLOW21	0.0774	0.0000	-0.1175
MLE2.3	H4FLOW14	0.0223	0.0226	23.4449

POTMH - Secchi

Total	0.032726
Homogeneity	0.025475
Season	0.037682
Station	0.007774
Station-Season	0.413441
Trend	0.887264

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.7664	0.6898	0.0363	4.6	11.67	10%	NA
MLE2.2	CHAA	Annual	0.8320	0.2179	-0.0145	7.0	11.75	0%	NA
MLE2.3	CHAA	Annual	0.7758	0.5244	-0.0317	7.1	11.92	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW21	0.0104	0.1228	1.3610
MLE2.2	LNFLOW14	0.0278	0.0113	2.0484
MLE2.3	LNFLOW14	0.0532	0.0004	2.0512

POTMH - CHAA

Total	0.619799
Homogeneity	0.573466
Season	0.017838
Station	0.896469
Station-Season	0.989317
Trend	0.914906

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	**0.0166**	0.7997	-0.0195	0.5518	11.83	**-42%**	2/137
MLE2.2	DIN	Annual	0.0978	LIFEREG	0.0168	0.1365	11.92	22%	38/138
MLE2.3	DIN	Annual	**0.0286**	LIFEREG	-0.0294	0.1733	11.83	**-29%**	10/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5923	0.0000	-1.7777
MLE2.2	H5FLOW7	0.5998	0.0000	-1.2155
MLE2.3	H5FLOW7	0.5472	0.0000	-0.7413

POTMH - DIN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	**0.0177**	0.5391	-0.0186	1.1840	11.83	**-19%**	0/137
MLE2.2	TN	Annual	0.3820	0.4719	0.0051	0.8800	11.92	7%	0/138
MLE2.3	TN	Annual	0.5550	0.6562	0.0019	0.6224	11.92	4%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5155	0.0000	-1.8389
MLE2.2	H5FLOW7	0.4688	0.0000	-1.1888
MLE2.3	H5FLOW14	0.4830	0.0000	-0.6920

POTMH - TN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	**0.0001**	0.1811	-0.0943	7.6	11.83	**-10%**	NA
MLE2.2	DO_FLD	Annual	0.1002	0.8244	-0.0562	9.4	11.92	-10%	NA
MLE2.3	DO_FLD	Annual	**0.0000**	0.4639	-0.1267	9.7	12.00	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.2386	0.0000	1.0984
MLE2.2	LNFLOW7	0.3376	0.0000	1.4936
MLE2.3	H5FLOW7	0.3522	0.0000	-6.3883

POTMH - DO_FLD

Total	0.000664
Homogeneity	0.400375
Season	0.073449
Station	0.135339
Station-Season	0.897914
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	0.7396	0.0055	-0.0014	7.7	11.83	0%	NA
MLE2.2	pH_FLD	Annual	**0.0158**	0.0584	0.0212	8.0	11.92	**0%**	NA
MLE2.3	pH_FLD	Annual	0.5585	0.0253	0.0049	8.0	12.00	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.0640	0.0001	0.0697
MLE2.2	LNFLOW7	0.1087	0.0000	0.1106
MLE2.3	LNFLOW14	0.1893	0.0000	0.1030

POTMH - pH_FLD

Total	0.000211
Homogeneity	0.000315
Season	0.000003
Station	0.185137
Station-Season	0.497732
Trend	0.091327

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TALK	Annual	**0.0008**	0.2600	1.2303	70.0	11.00	**20%**	NA
MLE2.2	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Annual	NM	NM	NM	NM	NM	NM	NM

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H4FLOW14	0.0564	0.0005	626
MLE2.2	NM	NM	NM	NM
MLE2.3	NM	NM	NM	NM

POTMH - TALK

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NA - Detection limit not available until July 1994
NM - Not measured at this station.
- Only one station analyzed.

(Jan 1985 - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W	Annual	0.4488	0.4242	-0.0013	0.0500	5.58	-15%	3/64
MLE2.2	PO4W	Annual	**0.0174**	0.6575	0.0000	0.0075	5.67	**0%**	54/65
MLE2.3	PO4W	Annual	NM	NM	NM	NM	NM	NM	NM

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.2197	0.0000	-0.0099
MLE2.2	H3FLOW14	0.0050	0.2500	36.9946
MLE2.3	NM	NM	NM	NM

POTMH - PO4W

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NM - Not measured at this station.
- Trends not available for full segment.

(Oct 1990 - Dec 1996) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4F	Annual	0.1137	0.6839	0.0017	0.0228	6.25	47%	1/73
MLE2.2	PO4F	Annual	0.1543	LIFEREG	0.0438	0.0063	6.25	32%	19/72
MLE2.3 (85-96)	PO4F	Annual	0.6653	LIFEREG	0.0053	0.0031	11.83	6%	40/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW14	0.0605	0.0070	-0.0036
MLE2.2	H3FLOW14	0.0513	0.0128	-88.9539
MLE2.3	H5FLOW7	0.0336	0.0053	0.0020

POTMH - PO4F

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0005**	0.5585	-0.0086	0.2100	11.75	**-48%**	1/136
XFB1433	NH4	Annual	**0.0001**	LIFEREG	-0.0656	0.2250	11.83	**-54%**	**7/137**
XEA6596	NH4	Annual	**0.0000**	0.9561	-0.0107	0.1775	11.83	**-71%**	5/138
XEA1840	NH4	Annual	**0.0001**	LIFEREG	-0.0759	0.1300	11.83	**-59%**	**7/138**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.0195	0.0358	3.4192
XFB1433	LNFLOW7	0.0296	0.0096	0.0185
XEA6596	LNFLOW3	0.0330	0.0055	0.0190
XEA1840	H5FLOW3	0.0135	0.0739	-0.0483

POTTF1 - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, trends analyzed using different methods.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	0.3215	0.9457	0.0079	2.0000	11.75	5%	0/137
XFB1433	NO23	Annual	0.8184	0.9467	-0.0031	1.7750	11.83	-2%	0/138
XEA6596	NO23	Annual	0.4941	0.9930	-0.0080	1.6115	11.83	-6%	0/139
XEA1840	NO23	Annual	0.3634	0.9759	-0.0112	1.1775	11.83	-11%	0/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.3050	0.0000	-0.2822
XFB1433	LNFLOW3	0.1427	0.0000	-0.183
XEA6596	LNFLOW3	0.0308	0.0071	0.0846
XEA1840	LNFLOW3	0.1911	0.0000	0.2189

POTTF1 - NO23

Total	0.999965
Homogeneity	0.999952
Season	0.926023
Station	0.516841
Station-Season	0.999906
Trend	0.639558

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.7979	0.4653	-0.0002	0.099	11.75	-2%	1/136
XFB1433	TP	Annual	0.4949	0.4484	-0.0010	0.109	11.83	-11%	0/136
XEA6596	TP	Annual	0.9488	0.4816	0.0000	0.125	11.83	0%	0/136
XEA1840	TP	Annual	0.7024	0.8079	-0.0005	0.137	11.83	-4%	0/136

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.0446	0.0016	-2161.62
XFB1433	H3FLOW3	0.1144	0.0000	-4416.09
XEA6596	H3FLOW3	0.0478	0.0009	-1448.3700
XEA1840	H3FLOW3	0.0396	0.0025	-988.7020

POTTF1 - TP

Total	0.779190
Homogeneity	0.775850
Season	0.003793
Station	0.959800
Station-Season	0.999799
Trend	0.364058

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.1399	0.5971	-0.9900	35.0	11.75	-30%	0/137
XFB1433	TSS	Annual	0.4910	0.5583	-0.4771	35.0	11.83	-20%	0/138
XEA6596	TSS	Annual	0.8660	0.1484	0.0486	44.0	11.83	0%	0/137
XEA1840	TSS	Annual	0.4325	0.6076	-0.2928	57.4	11.83	-10%	0/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.0869	0.0000	-2154731
XFB1433	H3FLOW3	0.1062	0.0000	-3438488
XEA6596	H3FLOW3	0.0881	0.0000	-1213503
XEA1840	H3FLOW3	0.1185	0.0000	-950460

POTTF1 - TSS

Total	0.495305
Homogeneity	0.542126
Season	0.000554
Station	0.705258
Station-Season	0.999879
Trend	0.144992

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0000**	0.4216	0.6846	3.6	11.67	**220%**	NA
XFB1433	CHAA	Annual	**0.0000**	0.9664	0.6473	4.3	11.67	**180%**	NA
XEA6596	CHAA	Annual	**0.0087**	0.6499	0.4319	5.6	11.67	**90%**	NA
XEA1840	CHAA	Annual	**0.0230**	0.9693	0.1533	4.2	11.67	**40%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.1145	0.0000	17.381
XFB1433	H5FLOW3	0.1358	0.0000	22.756
XEA6596	H5FLOW3	0.1362	0.0000	21.1967
XEA1840	H3FLOW7	0.0061	0.1543	64968.4300

POTTF1 - CHAA

Total	0.003346
Homogeneity	0.954299
Season	0.642780
Station	0.278275
Station-Season	0.972003
Trend	**0.000000**

NA - Concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.7011	0.9766	-0.0057	2.1020	11.75	-3%	0/136
XFB1433	DIN	Annual	0.0696	0.9454	-0.0168	2.0220	11.83	-10%	0/137
XEA6596	DIN	Annual	0.0540	0.9261	-0.0187	1.7565	11.83	-13%	0/138
XEA1840	DIN	Annual	0.0575	0.9867	-0.0250	1.2425	11.83	-24%	0/138

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2768	0.0000	-0.2843
XFB1433	H5FLOW3	0.0968	0.0000	0.8032
XEA6596	LNFLOW3	0.0390	0.0025	0.1046
XEA1840	LNFLOW3	0.1852	0.0000	0.2278

POTTF1 - DIN

Total	0.990154
Homogeneity	0.999943
Season	0.903260
Station	0.661035
Station-Season	0.999848
Trend	**0.001811**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	0.0856	0.3652	-0.0160	2.800	11.75	-7%	0/136
XFB1433	TN	Annual	**0.0255**	0.8408	-0.0265	2.700	11.83	**-12%**	0/138
XEA6596	TN	Annual	0.1131	0.8919	-0.0169	2.465	11.83	-8%	0/137
XEA1840	TN	Annual	**0.0166**	0.8429	-0.0268	2.015	11.83	**-16%**	0/139

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.4046	0.0000	-0.4006
XFB1433	H5FLOW7	0.1651	0.0000	1.3424
XEA6596	H3FLOW7	0.0250	0.0168	6079
XEA1840	LNFLOW3	0.1376	0.0000	0.1855

POTTF1 - TN

Total	0.445869
Homogeneity	0.964047
Season	0.027434
Station	0.912637
Station-Season	0.999990
Trend	**0.000028**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	0.8184	0.6649	0.0823	7.4	11.83	10%	NA
XFB1433	DO_FLD	Annual	0.7228	0.4643	-0.0085	7.8	11.83	0%	NA
XEA6596	DO_FLD	Annual	**0.0296**	0.9853	-0.0608	8.8	11.83	**-10%**	NA
XEA1840	DO_FLD	Annual	**0.0004**	0.7553	-0.0816	8.3	11.33	**-10%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.3392	0.0000	1.4379
XFB1433	LNFLOW7	0.2980	0.0000	1.2706
XEA6596	LNFLOW7	0.2887	0.0000	1.2120
XEA1840	LNFLOW7	0.3411	0.0000	1.3494

POTTF1 - DO_FLD

Total	0.564673
Homogeneity	0.815859
Season	0.116980
Station	0.044751
Station-Season	0.998985
Trend	**0.005983**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.2685	0.0367	7.3	11.83	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.7327	0.0385	7.3	11.83	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0002**	0.9363	0.0314	7.7	11.83	**0%**	NA
XEA1840	pH_FLD	Annual	**0.0104**	0.7829	0.0205	7.6	11.83	**0%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.1298	0.0000	0.1363
XFB1433	LNFLOW7	0.0704	0.0000	0.1008
XEA6596	LNFLOW7	0.0466	0.0009	0.0834
XEA1840	LNFLOW7	0.1303	0.0000	0.1375

POTTF1 - pH_FLD

Total	0.000140
Homogeneity	0.882710
Season	0.022864
Station	0.463961
Station-Season	0.999879
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TALK	Annual	**0.0015**	0.9798	1.1354	73.0	11.00	**20%**	NA
XFB1433	TALK	Annual	**0.0012**	0.9463	1.0363	71.0	11.00	**20%**	NA
XEA6596	TALK	Annual	**0.0012**	0.6791	1.0521	67.8	11.00	**20%**	NA
XEA1840	TALK	Annual	0.0586	0.5995	0.7000	62.0	11.00	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.1845	0.0000	1326
XFB1433	H4FLOW3	0.0390	0.0036	1123
XEA6596	H3FLOW3	0.0533	0.0006	204724
XEA1840	LNFLOW3	0.0269	0.0125	2.3012

POTTF1 - TALK

Total	0.104459
Homogeneity	0.989628
Season	0.097672
Station	0.658023
Station-Season	0.999995
Trend	**0.000000**

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990)

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	0.9485	0.7496	0.0000	0.0320	5.50	0%	2/63
XFB1433	PO4W	Annual	0.1610	0.8837	-0.0015	0.0400	5.58	-21%	3/64
XEA6596	PO4W	Annual	**0.0346**	0.9804	-0.0018	0.0388	5.58	**-26%**	2/65
XEA1840	PO4W	Annual	0.0593	0.6659	-0.0030	0.0500	5.58	-34%	2/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.1061	0.0000	-1.8068
XFB1433	H4FLOW3	0.1824	0.0000	-2.1166
XEA6596	H3FLOW3	0.0921	0.0000	-486.7710
XEA1840	LNFLOW3	0.0350	0.0015	-0.0038

POTTF1 - PO4W

Total	0.875339
Homogeneity	0.984129
Season	0.800031
Station	0.377749
Station-Season	0.979747
Trend	**0.003815**

(Oct 1990 - Dec 1996)

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4F	Annual	1.0000	0.3880	0.0000	0.0200	6.25	0%	3/73
XFB1433	PO4F	Annual	0.7428	0.6934	0.0000	0.0185	6.25	0%	3/72
XEA6596	PO4F	Annual	0.7088	0.8326	0.0000	0.0200	6.25	0%	0/73
XEA1840	PO4F	Annual	0.8763	0.8448	0.0000	0.0290	6.25	0%	0/74

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.1631	0.0000	0.0048
XFB1433	LNFLOW3	0.2028	0.0000	0.0044
XEA6596	H4FLOW3	0.1825	0.0000	-0.7093
XEA1840	H5FLOW3	0.0564	0.0084	0.0119

POTTF1 - PO4F

Total	0.946693
Homogeneity	0.936135
Season	0.026820
Station	0.958438
Station-Season	0.999863
Trend	0.703897

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0001**	LIFEREG	-0.0777	0.1545	11.83	**-60%**	**20/136**
XDA1177	NH4	Annual	**0.0001**	LIFEREG	-0.0636	0.1185	11.83	**-53%**	**27/138**
XDB3321	NH4	Annual	0.4355	LIFEREG	-0.0352	0.1285	5.58	-18%	7/63

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.1205	0.0000	0.0318
XDA1177	LNFLOW3	0.1564	0.0000	0.0289
XDB3321	LNFLOW7	0.0753	0.0040	0.0351

POTOH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	**0.0139**	0.5224	-0.0260	1.0215	11.83	**-30%**	0/136
XDA1177	NO23	Annual	0.5912	0.2559	-0.0046	0.7170	11.83	-8%	0/139
XDB3321	NO23	Annual	**0.0002**	0.3261	0.0545	0.4475	5.58	**68%**	0/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.456934	0.0000	0.3246
XDA1177	H5FLOW3	0.590899	0.0000	-1.7396
XDB3321	H5FLOW3	0.511626	0.0000	-1.4075

POTOH - NO23

Total	0.019326
Homogeneity	0.014692
Season	0.006527
Station	0.000060
Station-Season	0.984163
Trend	0.959826

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.4972	0.8631	-0.0012	0.181	11.83	-8%	0/133
XDA1177	TP	Annual	0.3437	0.4391	-0.0018	0.188	11.83	-11%	0/135
XDB3321	TP	Annual	0.3698	0.7135	-0.0023	0.149	5.58	-9%	0/62

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.022096	0.0285	-846.992
XDA1177	H3FLOW3	0.071972	0.0000	-1970.86
XDB3321	H4FLOW7	0.013448	0.2447	3.2174

POTOH - TP

Total	0.849453
Homogeneity	0.884959
Season	0.256898
Station	0.931570
Station-Season	0.964816
Trend	0.156082

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	0.3667	0.2613	-1.1686	71.5	11.83	-20%	0/137
XDA1177	TSS	Annual	0.6495	0.4606	-0.4620	83.5	11.83	-10%	0/139
XDB3321	TSS	Annual	**0.0462**	0.9515	-7.1324	69.3	5.58	**-60%**	0/64

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.0951	0.0000	-947451
XDA1177	H3FLOW14	0.0658	0.0001	-1539978
XDB3321	H3FLOW14	0.0411	0.0345	-974176

POTOH - TSS

Total	0.573450
Homogeneity	0.677058
Season	0.135946
Station	0.400573
Station-Season	0.941146
Trend	0.076825

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	**0.0064**	0.3151	0.1404	2.8	11.58	**60%**	NA
XDA1177	CHAA	Annual	0.0796	0.0872	0.1136	3.1	11.67	40%	NA
XDB3321	CHAA	Annual	0.1507	0.1644	-0.2638	3.1	5.42	-50%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW14	0.0173	0.0455	0.8175
XDA1177	H5FLOW14	0.0187	0.0380	-4.9043
XDB3321	H5FLOW7	0.1070	0.0005	-14.0778

POTTF1 - CHAA

Total	0.017679
Homogeneity	0.028050
Season	0.052558
Station	0.033302
Station-Season	0.237180
Trend	0.065073

NA - Concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	**0.0014**	0.2555	-0.0290	1.0665	11.83	**-32%**	0/135
XDA1177	DIN	Annual	0.3477	0.2840	-0.0082	0.8520	11.83	-11%	0/138
XDB3321	DIN	Annual	0.0511	0.0214	0.0370	0.6085	5.58	34%	0/63

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.4608	0.0000	0.3572
XDA1177	H5FLOW3	0.6037	0.0000	-1.8851
XDB3321	H5FLOW3	0.5273	0.0000	-1.5390

POTOH - DIN

Total	0.002676
Homogeneity	0.004125
Season	0.006872
Station	0.002593
Station-Season	0.383747
Trend	0.079629

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	**0.0048**	0.5172	-0.0250	2.1320	11.83	**-14%**	0/136
XDA1177	TN	Annual	0.2872	0.7300	-0.0075	1.7800	11.83	-5%	0/138
XDB3321	TN	Annual	0.1865	0.6691	0.0313	1.2650	5.58	14%	0/63

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.3908	0.0000	0.3433
XDA1177	LNFLOW3	0.5493	0.0000	0.4059
XDB3321	H5FLOW3	0.4801	0.0000	-1.7147

POTOH - TN

Total	0.367946
Homogeneity	0.457400
Season	0.514960
Station	0.012389
Station-Season	0.802042
Trend	0.082525

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	**0.0013**	0.2569	-0.0769	8.4	11.83	**-10%**	NA
XDA1177	DO_FLD	Annual	0.1471	0.3041	-0.0284	7.9	11.83	0%	NA
XDB3321	DO_FLD	Annual	0.2621	0.0966	0.1218	6.2	5.58	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.2531	0.0000	1.0359
XDA1177	H5FLOW3	0.2394	0.0000	-5.3138
XDB3321	H5FLOW3	0.1404	0.0001	-4.9538

POTOH - DO_FLD

Total	0.015226
Homogeneity	0.033150
Season	0.004109
Station	0.018023
Station-Season	0.790372
Trend	0.026992

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0007**	0.1384	0.0261	7.3	11.83	**0%**	NA
XDA1177	pH_FLD	Annual	**0.0004**	0.1359	0.0219	7.3	11.83	**0%**	NA
XDB3321	pH_FLD	Annual	**0.0089**	0.9840	0.0444	7.4	5.58	**0%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.1179	0.0000	0.1013
XDA1177	H5FLOW3	0.1416	0.0000	-0.5494
XDB3321	LNFLOW3	0.0184	0.1566	0.0403

POTOH - pH_FLD

Total	0.001890
Homogeneity	0.416854
Season	0.011257
Station	0.790942
Station-Season	0.970806
Trend	**0.000000**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TALK	Annual	**0.0007**	0.7480	1.6591	63.5	11.00	**30%**	NA
XDA1177	TALK	Annual	**0.0142**	0.3094	1.2600	67.0	11.00	**20%**	NA
XDB3321	TALK	Annual	0.2357	0.8022	-2.0569	69.5	4.75	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW7	0.0241	0.0188	-10.4738
XDA1177	H5FLOW7	0.0184	0.0378	-8.6123
XDB3321	H3FLOW3	0.0294	0.0937	248852

POTOH - TALK

Total	0.125472
Homogeneity	0.281704
Season	0.080165
Station	0.002463
Station-Season	0.991823
Trend	0.010621

NA - Detection limit not available until July 1994.

(Jan 1985 - Sep 1990)

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0003**	0.9946	-0.0050	0.0730	5.58	**-38%**	2/63
XDA1177	PO4W	Annual	**0.0182**	0.6428	-0.0034	0.0750	5.58	**-25%**	1/65
XDB3321	PO4W	Annual	0.1409	0.4135	-0.0030	0.0633	5.58	-26%	2/63

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW14	0.1820	0.0000	-828.68
XDA1177	H3FLOW14	0.1708	0.0000	-1066.11
XDB3321	LNFLOW7	0.0861	0.0020	-0.0079

POTOH - PO4W

Total	0.083243
Homogeneity	0.895935
Season	0.310894
Station	0.339204
Station-Season	0.985849
Trend	**0.000001**

(Oct 1990 - Dec 1996) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4F	Annual	0.2688	0.6840	0.0010	0.0350	6.25	18%	0/73
XDA1177	PO4F	Annual	0.4952	0.5480	0.0005	0.0385	6.25	8%	1/73
XDB3321	PO4F	Annual	NA	NA	NA	NA	NA	NA	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW3	0.2103	0.0000	0.0281
XDA1177	H5FLOW3	0.1843	0.0000	0.0265
XDB3321	NA	NA	NA	NA

POTOH - PO4F

Total	0.684115
Homogeneity	0.741464
Season	0.139517
Station	0.686924
Station-Season	0.998171
Trend	0.164818

NA - Not available, sampling stopped in September 1990.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	**0.0001**	LIFEREG	-0.0561	0.0900	11.83	**-49%**	**17/137**
MLE2.2	NH4	Annual	0.4608	LIFEREG	0.0107	0.1250	11.92	14%	14/137
MLE2.3	NH4	Annual	**0.0067**	LIFEREG	-0.0502	0.0936	11.83	**-45%**	**9/140**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW21	0.0203	0.0308	0.0172
MLE2.2	H5FLOW7	0.0255	0.0164	0.0917
MLE2.3	H5FLOW7	0.0541	0.0004	0.1177

POTMH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	0.3086	0.0370	0.0050	0.2650	11.83	22%	3/138
MLE2.2	NO23	Annual	0.5413	LIFEREG	0.0109	0.1350	11.92	14%	37/137
MLE2.3	NO23	Annual	0.0741	0.1048	-0.0020	0.0839	11.83	-28%	0/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5090	0.0000	-1.1289
MLE2.2	H5FLOW7	0.4223	0.0000	-0.5702
MLE2.3	H4FLOW21	0.4067	0.0000	-20.7971

POTMH - NO23

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.5998	0.4769	-0.0005	0.103	11.83	-6%	2/133
MLE2.2	TP	Annual	0.5452	0.9701	0.0004	0.056	11.92	9%	1/134
MLE2.3	TP	Annual	**0.0010**	0.3425	0.0009	0.029	12.00	**38%**	3/142

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW14	0.0039	0.3474	0.024
MLE2.2	H4FLOW14	0.0037	0.3692	0.4337
MLE2.3	LNFLOW7	0.0747	0.0000	-0.0048

POTMH - TP

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	0.3187	0.2234	-0.3898	34.0	11.83	-10%	0/138
MLE2.2	TSS	Annual	**0.0004**	0.4033	0.9471	11.3	11.92	**100%**	2/138
MLE2.3	TSS	Annual	0.0823	0.6833	-0.1310	8.2	11.67	-20%	0/138

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW14	0.0309	0.0077	5.7121
MLE2.2	H5FLOW7	0.0967	0.0000	-24.1447
MLE2.3	H5FLOW7	0.0335	0.0055	-5.0919

POTMH - TSS

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.8652	0.2496	-0.0443	3.0	11.67	-20%	NA
MLE2.2	CHAA	Annual	0.7990	0.0596	-0.0394	2.2	11.75	-20%	NA
MLE2.3	CHAA	Annual	0.1322	0.4039	-0.1683	3.8	11.92	-50%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.0533	0.0004	-19.4279
MLE2.2	H5FLOW14	0.1114	0.0000	-18.338
MLE2.3	H5FLOW14	0.1547	0.0000	-22.3825

POTMH - CHAA

Total	0.109218
Homogeneity	0.108914
Season	0.005692
Station	0.522977
Station-Season	0.712598
Trend	0.287541

NA - Concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	0.7849	0.0077	0.0027	0.3620	11.83	9%	2/137
MLE2.2	DIN	Annual	**0.0374**	LIFEREG	0.0167	0.2890	11.92	**22%**	12/136
MLE2.3	DIN	Annual	**0.0252**	**0.0047**	-0.0054	0.1950	11.83	**-33%**	0/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5347	0.0000	-1.1923
MLE2.2	H4FLOW21	0.4215	0.0000	-29.7852
MLE2.3	H4FLOW21	0.2759	0.0000	-17.8284

POTMH - DIN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	0.2699	0.5922	0.0098	1.175	11.83	10%	0/136
MLE2.2	TN	Annual	**0.0244**	0.1206	0.0133	0.700	11.92	**23%**	0/137
MLE2.3	TN	Annual	0.5967	0.4165	-0.0013	0.649	11.92	-2%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.3706	0.0000	-1.4361
MLE2.2	H5FLOW21	0.2915	0.0000	-0.829
MLE2.3	LNFLOW21	0.3706	0.0000	0.1107

POTMH - TN

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	0.9338	0.1124	0.0067	5.4	11.83	0%	NA
MLE2.2	DO_FLD	Annual	**0.0105**	0.4368	-0.1208	6.2	11.92	**-20%**	NA
MLE2.3	DO_FLD	Annual	**0.0009**	0.7159	-0.1047	6.0	12.00	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.1139	0.0000	1.0097
MLE2.2	H5FLOW7	0.1469	0.0000	-7.4121
MLE2.3	H5FLOW7	0.1799	0.0000	-8.1716

POTMH - DO_FLD

Total	0.028716
Homogeneity	0.175734
Season	**0.004488**
Station	0.034497
Station-Season	0.994168
Trend	**0.000845**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	**0.0100**	0.0890	0.0114	7.5	11.83	**0%**	NA
MLE2.2	pH_FLD	Annual	0.3820	0.8587	0.0051	7.6	11.92	0%	NA
MLE2.3	pH_FLD	Annual	0.6177	0.1316	-0.0015	7.8	12.00	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW14	0.0082	0.1721	1880.962
MLE2.2	H5FLOW7	0.0507	0.0006	-0.3897
MLE2.3	H5FLOW7	0.0727	0.0000	-0.4103

POTMH - pH_FLD

Total	0.093424
Homogeneity	0.136186
Season	0.176400
Station	0.131134
Station-Season	0.295276
Trend	0.066484

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TALK	Annual	**0.0174**	0.3010	0.7109	74.0	11.00	**10%**	NA
MLE2.2	TALK	Annual	NM	NM	NM	NM	NM	NM	NM
MLE2.3	TALK	Annual	NM	NM	NM	NM	NM	NM	NM

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW21	0.0537	0.0007	182082
MLE2.2	NM	NM	NM	NM
MLE2.3	NM	NM	NM	NM

POTMH - TALK

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NA - Detection limit not available until July 1994
NM - Not measured at this station.
- Only one station analyzed.

(Jan 1985 - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W	Annual	0.1313	0.6660	-0.0032	0.0460	5.58	-39%	2/64
MLE2.2	PO4W	Annual	0.0704	LIFEREG	-0.1109	0.0075	5.67	-47%	48/65
MLE2.3	PO4W	Annual	NM	NM	NM	NM	NM	NM	NM

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.1270	0.0000	-0.0085
MLE2.2	H5FLOW7	0.0849	0.0000	0.0232
MLE2.3	NM	NM	NM	NM

POTMH - PO4

Total	-
Homogeneity	-
Season	-
Station	-
Station-Season	-
Trend	-

NM - Not measured at this station.
- Trends not available for full segment.

(Oct 1990 - Dec 1996)

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4F	Annual	0.2967	LIFEREG	0.0320	0.0171	6.25	22%	5/73
MLE2.2	PO4F	Annual	**0.0019**	LIFEREG	0.1256	0.0053	6.25	**119%**	**22/72**
MLE2.3 (85-96)	PO4F	Annual	0.6790	LIFEREG	0.0057	0.0038	11.83	7%	18/140

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.1011	0.0004	-0.0048
MLE2.2	LNFLOW7	0.1158	0.0001	-0.0058
MLE2.3	LNFLOW7	0.1014	0.0000	-0.0054

POTMH - PO4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, detection limits differ between stations and trends were calculated using different methods.

SECTION VIII

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	**0.0002**	0.7346	-0.0016	0.135	22.33	**-27%**	0/211
XFB1433	TP	Annual	**0.0000**	0.2027	-0.0017	0.130	22.08	**-29%**	0/215
XEA6596	TP	Annual	**0.0001**	0.8132	-0.0016	0.120	22.33	**-30%**	1/221
XEA1840	TP	Annual	**0.0003**	0.8979	-0.0017	0.100	22.75	**-39%**	0/225

POTTF1 - TP

Total	0.000001
Homogeneity	0.885117
Season	0.017881
Station	0.812268
Station-Season	0.999748
Trend	**0.000000**

(mid-1970s - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	**0.0000**	0.9983	-0.0029	0.0800	16.08	**-58%**	**9/143**
XFB1433	PO4W	Annual	**0.0000**	0.9453	-0.0027	0.0700	15.83	**-61%**	**12/145**
XEA6596	PO4W	Annual	**0.0000**	0.9830	-0.0025	0.0800	16.08	**-50%**	**14/150**
XEA1840	PO4W	Annual	**0.0004**	0.8184	-0.0012	0.0500	16.50	**-40%**	**10/152**

POTTF1 - PO4W

Total	0.000000
Homogeneity	0.999891
Season	0.734427
Station	0.519887
Station-Season	0.999986
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	**0.0006**	0.3082	0.0191	2.206	22.33	**19%**	0/217
XFB1433	TN	Annual	**0.0023**	0.3505	0.0153	2.202	22.08	**15%**	0/217
XEA6596	TN	Annual	**0.0001**	0.3925	0.0235	1.899	22.33	**28%**	1/222
XEA1840	TN	Annual	**0.0000**	0.4839	0.0263	1.576	22.75	**38%**	0/227

POTTF1 - TN

Total	0.000002
Homogeneity	0.390287
Season	**0.000395**
Station	0.580257
Station-Season	0.999070
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.0165	0.3304	0.0152	1.6900	22.33	20%	0/217
XFB1433	DIN	Annual	**0.0013**	0.4082	0.0158	1.7195	22.08	**20%**	0/218
XEA6596	DIN	Annual	**0.0002**	0.8451	0.0176	1.3540	22.33	**29%**	0/221
XEA1840	DIN	Annual	**0.0000**	0.8192	0.0235	1.3570	22.75	**39%**	1/227

POTTF1 - DIN

Total	0.000181
Homogeneity	0.778130
Season	0.026499
Station	0.508268
Station-Season	0.996346
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	**0.0000**	0.1762	0.0384	1.1460	22.33	**75%**	0/220
XFB1433	NO23	Annual	**0.0000**	0.3813	0.0345	1.0925	22.08	**70%**	0/220
XEA6596	NO23	Annual	**0.0000**	0.8707	0.0294	1.0465	22.33	**63%**	0/224
XEA1840	NO23	Annual	**0.0000**	0.9355	0.0297	0.8955	22.75	**75%**	0/228

POTTF1 - NO23

Total	0.000000
Homogeneity	0.819939
Season	**0.007193**
Station	0.972757
Station-Season	0.999654
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0000**	0.1512	-0.0136	0.4700	22.33	**-65%**	**11/217**
XFB1433	NH4	Annual	**0.0000**	0.4781	-0.0115	0.4700	22.08	**-54%**	**24/218**
XEA6596	NH4	Annual	**0.0000**	0.1685	-0.0056	0.3900	22.33	**-32%**	**37/222**
XEA1840	NH4	Annual	0.0172	0.0033	-0.0018	0.3550	22.75	-12%	35/227

POTTF1 - NH4

Total	0.000000
Homogeneity	**0.000711**
Season	**0.000014**
Station	**0.002237**
Station-Season	0.752594
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	**0.0004**	0.5774	0.4000	18.0	22.33	**50%**	1/206
XFB1433	TSS	Annual	**0.0000**	0.7543	0.4444	17.0	21.33	**60%**	1/205
XEA6596	TSS	Annual	0.0195	0.3722	0.2500	16.0	22.33	30%	0/211
XEA1840	TSS	Annual	0.3510	0.1882	0.1111	18.0	22.75	10%	1/213

POTTF1 - TSS

Total	0.002255
Homogeneity	0.397740
Season	**0.000316**
Station	0.165326
Station-Season	0.999982
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	Secchi	Annual	0.0431	0.9087	-0.0029	0.6	21.58	-10%	NA
XFB1433	Secchi	Annual	0.3536	0.7428	0.0000	0.5	21.50	0%	NA
XEA6596	Secchi	Annual	0.8761	0.7091	0.0000	0.6	21.58	0%	NA
XEA1840	Secchi	Annual	0.3675	0.2164	0.0001	0.6	21.58	0%	NA

POTTF1 - Secchi

Total	0.767934
Homogeneity	0.764669
Season	0.013435
Station	0.231655
Station-Season	0.999791
Trend	0.361709

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	0.0205	0.8937	0.1577	32.1	20.75	10%	NA
XFB1433	CHAA	Annual	0.8304	0.7959	0.0168	26.7	20.75	0%	NA
XEA6596	CHAA	Annual	0.0878	0.8392	-0.1462	29.4	20.75	-10%	NA
XEA1840	CHAA	Annual	**0.0000**	0.8169	-0.4028	29.4	20.75	**-30%**	NA

POTTF1 - CHAA

Total	0.214944
Homogeneity	0.310796
Season	0.197028
Station	0.000014
Station-Season	0.999848
Trend	0.040844

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0040**	0.0208	0.0500	9.9	22.08	**10%**	NA
XFB1433	DO_FLD	Annual	0.7100	0.1565	0.0013	10.1	22.08	0%	NA
XEA6596	DO_FLD	Annual	0.0325	0.1670	-0.0250	10.0	22.08	-10%	NA
XEA1840	DO_FLD	Annual	**0.0000**	0.0157	-0.0500	10.0	22.75	**-10%**	NA

POTTF1 - DO_FLD

Total	0.000012
Homogeneity	0.000010
Season	0.000001
Station	0.000033
Station-Season	0.745399
Trend	0.394874

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.0590	0.0278	7.8	21.92	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.2813	0.0225	7.7	21.92	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0000**	0.0966	0.0167	8.0	21.92	**0%**	NA
XEA1840	pH_FLD	Annual	0.5040	0.0436	0.0000	8.0	22.67	0%	NA

POTTF1 - pH_FLD

Total	0.000000
Homogeneity	**0.000189**
Season	**0.000000**
Station	**0.000209**
Station-Season	0.989494
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	**0.0005**	0.6268	-0.0013	0.135	22.75	**-22%**	1/218
XDA1177	TP	Annual	0.0391	0.9868	-0.0007	0.090	22.08	-17%	0/217
XDB3321	TP	Annual	0.1071	0.3959	-0.0010	0.090	16.50	-18%	0/147

POTOH - TP

Total	0.102514
Homogeneity	0.878930
Season	0.536707
Station	0.415397
Station-Season	0.906370
Trend	**0.000003**

(mid-1970s - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	0.2067	0.6628	-0.0004	0.0600	16.50	-11%	6/146
XDA1177	PO4W	Annual	0.1913	0.5271	-0.0006	0.0700	15.83	-14%	4/146
XDB3321	PO4W	Annual	0.1049	0.3791	-0.0004	0.0600	16.50	-11%	5/149

POTOH - PO4W

Total	0.367289
Homogeneity	0.686050
Season	**0.008343**
Station	0.955303
Station-Season	0.999923
Trend	**0.005289**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	0.0214	0.9874	0.0101	1.575	22.75	15%	0/220
XDA1177	TN	Annual	**0.0007**	0.5747	0.0128	1.460	22.00	**19%**	0/219
XDB3321	TN	Annual	**0.0000**	0.5577	0.0292	1.370	16.50	**35%**	0/151

POTOH - TN

Total	0.036035
Homogeneity	0.916027
Season	0.244615
Station	0.422635
Station-Season	0.995009
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	**0.0036**	0.8100	0.0130	1.2160	22.75	**24%**	4/221
XDA1177	DIN	Annual	**0.0030**	0.3412	0.0163	0.9900	22.00	**36%**	4/218
XDB3321	DIN	Annual	**0.0000**	0.7346	0.0249	0.9560	16.50	**43%**	3/151

POTOH - DIN

Total	0.012514
Homogeneity	0.772301
Season	0.071076
Station	0.450079
Station-Season	0.995760
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	**0.0000**	0.6624	0.0198	0.9760	22.75	**46%**	1/222
XDA1177	NO23	Annual	**0.0000**	0.3957	0.0205	0.8670	22.00	**52%**	0/219
XDB3321	NO23	Annual	**0.0000**	0.6429	0.0301	0.7680	16.50	**65%**	0/152

POTOH - NO23

Total	0.000001
Homogeneity	0.706029
Season	0.049491
Station	0.568374
Station-Season	0.992182
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0000**	0.9151	-0.0026	0.2200	22.75	**-27%**	**48/221**
XDA1177	NH4	Annual	**0.0017**	0.9094	-0.0016	0.1100	22.08	**-32%**	**45/220**
XDB3321	NH4	Annual	0.3444	0.9335	-0.0006	0.1950	16.50	-5%	26/151

POTOH - NH4

Total	0.016941
Homogeneity	0.931438
Season	0.479064
Station	0.020415
Station-Season	0.999927
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	**0.0027**	0.2663	0.4226	13.0	22.75	**70%**	1/209
XDA1177	TSS	Annual	**0.0095**	0.3558	0.3000	20.0	21.33	**30%**	2/206
XDB3321	TSS	Annual	0.1401	0.3826	0.2857	18.0	16.50	30%	1/136

POTOH - TSS

Total	0.030380
Homogeneity	0.319020
Season	**0.003677**
Station	0.579170
Station-Season	0.989242
Trend	**0.000101**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	Secchi	Annual	0.2182	0.8155	-0.0016	0.6	21.58	-10%	NA
XDA1177	Secchi	Annual	0.2259	0.3397	-0.0009	0.5	21.58	0%	NA
XDB3321	Secchi	Annual	0.4752	0.2552	0.0006	0.6	15.33	0%	NA

POTOH - Secchi

Total	0.421839
Homogeneity	0.404158
Season	0.013335
Station	0.161191
Station-Season	0.993975
Trend	0.425699

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	**0.0057**	0.0560	-0.1398	16.0	20.75	**-20%**	NA
XDA1177	CHAA	Annual	0.1361	0.0770	-0.0717	8.0	20.75	-20%	NA
XDB3321	CHAA	Annual	**0.0063**	0.5844	-0.4704	21.4	14.50	**-30%**	NA

POTTF1 - CHAA

Total	0.007238
Homogeneity	0.076401
Season	**0.001045**
Station	0.719325
Station-Season	0.827652
Trend	**0.000416**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.1916	0.0888	-0.0167	9.0	22.75	0%	NA
XDA1177	DO_FLD	Annual	0.0689	0.0318	-0.0182	8.9	22.08	0%	NA
XDB3321	DO_FLD	Annual	0.0463	0.8404	-0.0333	9.2	16.50	-10%	NA

POTOH - DO_FLD

Total	0.043404
Homogeneity	0.108912
Season	0.000740
Station	0.886051
Station-Season	0.926181
Trend	0.013082

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	0.0393	0.0436	0.0071	7.8	22.67	0%	NA
XDA1177	pH_FLD	Annual	0.0596	0.0381	0.0062	7.9	21.92	0%	NA
XDB3321	pH_FLD	Annual	0.7863	0.9389	0.0000	7.8	16.42	0%	NA

POTOH - pH_FLD

Total	0.058608
Homogeneity	0.090085
Season	0.000931
Station	0.572407
Station-Season	0.898782
Trend	0.060782

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.0162	0.7920	-0.0008	0.090	22.75	-20%	0/222
XDC1706	PO4W*	Annual	0.0522	0.3313	-0.0006	0.0500	16.50	-20%	9/153
XDC1706	TN	Annual	0.3800	0.1841	0.004	1.313	22.75	6%	0/225
XDC1706	DIN	Annual	0.0236	0.3568	0.0073	0.7840	22.75	21%	3/225
XDC1706	NO23	Annual	**0.0016**	0.3280	0.0093	0.6105	22.75	**35%**	0/226
XDC1706	NH4	Annual	0.0341	0.2106	-0.0011	0.1650	22.75	-15%	34/227
XDC1706	TSS	Annual	**0.0037**	0.5688	0.2500	18.0	22.75	**30%**	1/212
XDC1706	Secchi	Annual	0.4459	0.8542	0.0000	0.7	21.58	0%	NA
XDC1706	CHAA	Annual	0.1709	0.0368	-0.0997	21.4	20.75	-10%	DC
XDC1706	DO_FLD	Annual	**0.0000**	0.2524	-0.0500	10.4	22.75	**-10%**	NA
XDC1706	pH_FLD	Annual	0.9144	0.0735	0.0000	8.0	22.67	0%	NA

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0000**	0.0657	-0.0115	0.4400	22.08	**-58%**	3/165
XFB1433	NH4	Annual	**0.0000**	0.1939	-0.0106	0.5150	22.08	**-45%**	**10/177**
XEA6596	NH4	Annual	**0.0000**	0.7164	-0.0060	0.4450	22.08	**-30%**	**12/177**
XEA1840	NH4	Annual	**0.0034**	0.2826	-0.0040	0.2900	22.08	**-30%**	**16/181**

POTTF1 - NH4

Total	0.000000
Homogeneity	0.117949
Season	**0.000108**
Station	0.256532
Station-Season	0.987716
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	**0.0058**	0.3590	0.0265	1.2020	22.08	**49%**	0/166
XFB1433	NO23	Annual	0.0499	0.7502	0.0152	1.0855	22.08	31%	0/178
XEA6596	NO23	Annual	**0.0006**	0.8671	0.0239	0.9800	22.08	**54%**	0/180
XEA1840	NO23	Annual	**0.0008**	0.9978	0.0188	1.0210	22.08	**41%**	0/182

POTTF1 - NO23

Total	0.094986
Homogeneity	0.981434
Season	0.476589
Station	0.761082
Station-Season	0.988773
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.8073	0.0859	-0.0002	0.100	22.08	-4%	1/163
XFB1433	TP	Annual	0.0463	0.4322	-0.0012	0.115	22.08	-23%	0/176
XEA6596	TP	Annual	0.0652	0.9502	-0.0016	0.130	22.08	-27%	0/175
XEA1840	TP	Annual	0.3052	0.9211	-0.0009	0.100	22.08	-20%	0/179

POTTF1 - TP

Total	0.443742
Homogeneity	0.719721
Season	0.137918
Station	0.523559
Station-Season	0.912588
Trend	**0.005338**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.0215	0.7198	1.0000	32.0	21.25	70%	1/152
XFB1433	TSS	Annual	0.0115	0.0626	0.7321	29.0	21.33	50%	0/165
XEA6596	TSS	Annual	**0.0037**	0.3096	1.0000	23.0	21.33	**90%**	0/166
XEA1840	TSS	Annual	0.7711	0.6397	0.0714	33.0	21.33	0%	1/169

POTTF1 - TSS

Total	0.040035
Homogeneity	0.279766
Season	**0.003413**
Station	0.287242
Station-Season	0.955219
Trend	**0.000158**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0004**	0.5325	0.2789	32.1	20.75	**20%**	NA
XFB1433	CHAA	Annual	0.0393	0.4520	0.2490	49.5	20.75	10%	NA
XEA6596	CHAA	Annual	0.6788	0.6674	-0.0599	32.1	20.75	0%	NA
XEA1840	CHAA	Annual	0.7650	0.8405	-0.0264	24.1	20.75	0%	NA

POTTF1 - CHAA

Total	0.313323
Homogeneity	0.525796
Season	0.068199
Station	0.019691
Station-Season	0.989219
Trend	0.010753

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	0.6214	0.7563	0.0040	1.8370	22.08	5%	0/165
XFB1433	DIN	Annual	0.8969	0.7012	-0.0020	1.7205	22.08	-3%	0/177
XEA6596	DIN	Annual	0.1124	0.9057	0.0083	1.4580	22.08	13%	0/177
XEA1840	DIN	Annual	0.0555	0.9884	0.0103	1.2370	22.08	18%	0/181

POTTF1 - DIN

Total	0.977991
Homogeneity	0.993707
Season	0.786427
Station	0.570861
Station-Season	0.989681
Trend	0.043698

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	0.2282	0.8890	0.0106	2.130	22.08	11%	0/164
XFB1433	TN	Annual	0.9082	0.8918	0.0005	2.088	22.08	1%	0/177
XEA6596	TN	Annual	0.2193	0.8026	0.0092	1.869	22.08	11%	0/177
XEA1840	TN	Annual	0.0104	0.9437	0.0179	1.591	22.08	25%	0/182

POTTF1 - TN

Total	0.966649
Homogeneity	0.994602
Season	0.541954
Station	0.424722
Station-Season	0.999110
Trend	0.016645

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0084**	**0.0079**	0.0417	9.7	22.58	**10%**	NA
XFB1433	DO_FLD	Annual	0.1438	0.0441	0.0200	9.4	22.58	0%	NA
XEA6596	DO_FLD	Annual	0.3719	0.6230	-0.0095	9.8	22.58	0%	NA
XEA1840	DO_FLD	Annual	**0.0094**	0.1620	-0.0282	8.0	22.75	**-10%**	NA

POTTF1 - DO_FLD

Total	0.000984
Homogeneity	0.000787
Season	0.000008
Station	0.003266
Station-Season	0.789533
Trend	0.529938

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.3154	0.0227	8.0	22.58	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.5949	0.0250	8.0	22.58	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0023**	0.6319	0.0167	8.1	22.58	**0%**	NA
XEA1840	pH_FLD	Annual	0.1406	0.4759	0.0050	8.0	22.67	0%	NA

POTTF1 - pH_FLD

Total	0.000009
Homogeneity	0.346697
Season	0.010819
Station	0.032688
Station-Season	0.990461
Trend	**0.000000**

NA - Not applicable, measured in the field.

(mid 1970s - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	**0.0015**	0.7734	-0.0025	0.0700	15.83	**-57%**	2/91
XFB1433	PO4W	Annual	**0.0020**	0.2925	-0.0023	0.0800	15.83	**-46%**	**10/104**
XEA6596	PO4W	Annual	**0.0003**	0.4724	-0.0021	0.0700	15.83	**-48%**	**8/106**
XEA1840	PO4W	Annual	**0.0095**	0.7291	-0.0014	0.0600	15.83	**-37%**	**6/107**

POTTF1 - PO4W

Total	0.000448
Homogeneity	0.783605
Season	0.160834
Station	0.941668
Station-Season	0.894529
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0000**	0.2076	-0.0048	0.1200	22.08	**-88%**	**26/180**
XDA1177	NH4	Annual	**0.0001**	0.5543	-0.0033	0.1600	22.08	**-46%**	**34/182**
XDB3321	NH4	Annual	0.2303	0.8366	-0.0025	0.1400	15.83	-28%	10/107

POTOH - NH4

Total	0.000018
Homogeneity	0.216872
Season	0.051256
Station	**0.005267**
Station-Season	0.972673
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	0.0285	0.9787	0.0105	0.9730	22.08	24%	0/180
XDA1177	NO23	Annual	0.0287	0.8827	0.0103	0.8130	22.08	28%	0/183
XDB3321	NO23	Annual	0.0220	0.7525	0.0146	0.5480	15.83	42%	0/108

POTOH - NO23

Total	0.768282
Homogeneity	0.995305
Season	0.337249
Station	0.998689
Station-Season	0.999963
Trend	**0.000417**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.2335	0.9788	-0.0012	0.090	22.08	-29%	0/177
XDA1177	TP	Annual	0.9887	0.8404	0.0000	0.090	22.08	0%	0/179
XDB3321	TP	Annual	0.9763	0.4023	0.0000	0.100	15.83	0%	0/106

POTOH - TP

Total	0.953043
Homogeneity	0.953135
Season	0.444491
Station	0.725103
Station-Season	0.979466
Trend	0.369370

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	0.0702	0.6306	0.9000	43.0	21.33	40%	0/169
XDA1177	TSS	Annual	0.0488	0.6519	1.2500	56.0	21.33	50%	0/170
XDB3321	TSS	Annual	1.0000	0.5264	0.1000	42.0	15.08	0%	0/95

POTOH - TSS

Total	0.501178
Homogeneity	0.680740
Season	0.468066
Station	0.226416
Station-Season	0.767976
Trend	0.029879

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	0.0710	0.2708	0.0800	10.7	20.75	20%	NA
XDA1177	CHAA	Annual	0.5428	0.0124	0.0448	15.6	20.75	10%	NA
XDB3321	CHAA	Annual	0.0761	0.1699	-0.2129	8.0	14.50	-40%	NA

POTTF1 - CHAA

Total	0.011685
Homogeneity	0.010526
Season	0.000657
Station	0.110312
Station-Season	0.563776
Trend	0.367269

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	0.5915	0.8089	0.0024	1.1115	22.08	5%	1/179
XDA1177	DIN	Annual	0.3122	0.5568	0.0048	0.9230	22.08	11%	1/182
XDB3321	DIN	Annual	0.4656	0.2008	0.0061	0.6870	15.83	14%	0/107

POTOH - DIN

Total	0.654359
Homogeneity	0.641343
Season	0.089985
Station	0.893172
Station-Season	0.916751
Trend	0.409685

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	0.4239	0.9889	0.0041	1.567	22.08	6%	0/180
XDA1177	TN	Annual	0.1745	0.8583	0.0083	1.460	22.08	13%	0/182
XDB3321	TN	Annual	1.0000	0.8112	0.0000	1.478	15.83	0%	0/107

POTOH - TN

Total	0.993022
Homogeneity	0.995258
Season	0.974950
Station	0.638166
Station-Season	0.948979
Trend	0.234438

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.2159	0.0105	-0.0143	8.4	22.75	0%	NA
XDA1177	DO_FLD	Annual	0.0138	0.3654	-0.0250	8.7	22.08	-10%	NA
XDB3321	DO_FLD	Annual	**0.0035**	0.3423	-0.0750	8.9	16.50	**-10%**	NA

POTOH - DO_FLD

Total	0.002427
Homogeneity	0.046214
Season	**0.000703**
Station	0.504121
Station-Season	0.784341
Trend	**0.000154**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0075**	0.7662	0.0091	7.8	22.67	**0%**	NA
XDA1177	pH_FLD	Annual	**0.0040**	0.6032	0.0100	7.8	20.92	**0%**	NA
XDB3321	pH_FLD	Annual	**0.0100**	0.6551	-0.0106	7.8	16.42	**0%**	NA

POTOH - pH_FLD

Total	0.152487
Homogeneity	0.188357
Season	0.117209
Station	0.000210
Station-Season	0.995403
Trend	0.115167

NA - Not applicable, measured in the field.

(mid-1970s - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0096**	0.8693	-0.0015	0.0700	15.83	**-34%**	**6/107**
XDA1177	PO4W	Annual	**0.0083**	0.1215	-0.0016	0.0700	15.83	**-36%**	5/109
XDB3321	PO4W	Annual	0.0826	0.4809	-0.0011	0.0600	15.83	-29%	7/107

POTOH - PO4W

Total	0.060802
Homogeneity	0.531274
Season	**0.003738**
Station	0.775709
Station-Season	0.999838
Trend	**0.000005**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	0.0365	0.1351	-0.0025	0.1300	22.08	-42%	23/181
XDC1706	NO23	Annual	0.1800	0.8674	0.0036	0.3330	22.08	24%	3/182
XDC1706	TP	Annual	0.3327	0.8596	-0.0007	0.090	22.08	-17%	2/176
XDC1706	TSS	Annual	0.0110	0.3555	0.8693	28.5	21.33	70%	1/169
XDC1706	CHAA	Annual	0.0827	0.3354	0.1094	9.4	20.75	20%	DC
XDC1706	DIN	Annual	0.9556	0.6488	-0.0002	0.4900	22.08	-1%	6/181
XDC1706	TN	Annual	0.5837	0.4019	0.0029	1.284	22.08	5%	0/180
XDC1706	DO_FLD	Annual	0.0501	0.5373	-0.0289	7.6	22.75	-10%	NA
XDC1706	pH_FLD	Annual	**0.0004**	0.0925	0.0100	8.0	22.67	**0%**	NA
XDC1706	PO4W*	Annual	0.3302	0.6957	-0.0004	0.0500	15.83	-13%	10/108

DC - Not applicable, concentration is determined by computer.
NA - Not applicable, measured in the field.
*Mid-1970s through September 1990.

SECTION IX

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0001**	LIFEREG	-0.0694	0.4700	22.33	**-79%**	**11/217**
XFB1433	NH4	Annual	**0.0001**	LIFEREG	-0.0713	0.4700	22.08	**-79%**	**24/218**
XEA6596	NH4	Annual	**0.0001**	LIFEREG	-0.0449	0.3900	22.33	**-63%**	**37/222**
XEA1840	NH4	Annual	0.1172	LIFEREG	-0.0127	0.3550	22.75	-25%	35/227

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.0143	0.0334	6.3134
XFB1433	LNFLOW3	0.0133	0.0390	0.0211
XEA6596	H5FLOW3	0.0982	0.0000	-0.2136
XEA1840	H5FLOW3	0.0820	0.0000	-0.1832

POTTF1 - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	**0.0000**	0.7431	0.0362	1.1460	22.33	**71%**	0/220
XFB1433	NO23	Annual	**0.0000**	0.7365	0.0367	1.0925	22.08	**74%**	0/220
XEA6596	NO23	Annual	**0.0000**	0.7202	0.0292	1.0465	22.33	**62%**	0/224
XEA1840	NO23	Annual	**0.0000**	0.9008	0.0293	0.8955	22.75	**74%**	0/228

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2492	0.0000	-0.2853
XFB1433	LNFLOW3	0.1040	0.0000	-0.1718
XEA6596	LNFLOW3	0.0088	0.0869	0.0482
XEA1840	LNFLOW3	0.1553	0.0000	0.2090

POTTF1 - NO23

Total	0.000000
Homogeneity	0.974297
Season	0.031784
Station	0.764502
Station-Season	0.999998
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	**0.0001**	0.7727	-0.0019	0.135	22.33	**-31%**	0/211
XFB1433	TP	Annual	**0.0000**	0.2574	-0.0019	0.130	22.08	**-32%**	0/215
XEA6596	TP	Annual	**0.0000**	0.6821	-0.0018	0.120	22.33	**-34%**	1/221
XEA1840	TP	Annual	**0.0001**	0.9188	-0.0017	0.100	22.75	**-39%**	0/225

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.0684	0.0000	-2030.9400
XFB1433	H3FLOW3	0.0289	0.0028	-1129.2500
XEA6596	H3FLOW3	0.0301	0.0018	-1175.1500
XEA1840	H3FLOW3	0.0205	0.0094	-828.7420

POTTF1 - TP

Total	0.000000
Homogeneity	0.896468
Season	0.019934
Station	0.859975
Station-Season	0.999737
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	**0.0047**	0.2503	0.4805	18.0	22.33	**60%**	1/206
XFB1433	TSS	Annual	**0.0063**	0.2575	0.3411	17.0	21.33	**40%**	1/205
XEA6596	TSS	Annual	**0.0112**	0.2509	0.3389	16.0	22.33	**50%**	0/211
XEA1840	TSS	Annual	0.1811	0.1234	0.2052	18.0	22.75	30%	1/213

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.1168	0.0000	-1663392
XFB1433	H3FLOW3	0.1518	0.0000	-841212
XEA6596	H3FLOW3	0.2352	0.0000	-1056001
XEA1840	H3FLOW3	0.3048	0.0000	-917629

POTTF1 - TSS

Total	0.001992
Homogeneity	0.124571
Season	**0.000004**
Station	0.835821
Station-Season	0.999717
Trend	**0.000002**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	Secchi	Annual	0.1756	0.7401	-0.0025	0.6	21.58	-10%	NA
XFB1433	Secchi	Annual	0.9286	0.4813	-0.0003	0.5	21.50	0%	NA
XEA6596	Secchi	Annual	0.3884	0.3432	0.0013	0.6	21.58	0%	NA
XEA1840	Secchi	Annual	0.2499	0.1248	0.0033	0.6	21.58	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.1730	0.0000	23.1901
XFB1433	H4FLOW3	0.1733	0.0000	20.4276
XEA6596	H4FLOW3	0.2209	0.0000	19.3892
XEA1840	LNFLOW3	0.1664	0.0000	-0.1030

POTTF1 - Secchi

Total	0.379386
Homogeneity	0.349862
Season	0.000401
Station	0.369120
Station-Season	0.999120
Trend	0.624625

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	0.1097	0.9332	0.2150	32.1	20.75	10%	NA
XFB1433	CHAA	Annual	0.6412	0.7909	0.0763	26.7	20.75	10%	NA
XEA6596	CHAA	Annual	0.1019	0.1108	-0.1996	29.4	20.75	-10%	NA
XEA1840	CHAA	Annual	**0.0000**	0.5808	-0.4543	29.4	20.75	**-30%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.1369	0.0000	24.4424
XFB1433	LNFLOW3	0.1702	0.0000	-6.4722
XEA6596	LNFLOW3	0.1884	0.0000	-6.8455
XEA1840	H5FLOW3	0.0383	0.0003	14.4794

POTTF1 - CHAA

Total	0.067234
Homogeneity	0.093317
Season	0.003148
Station	0.000071
Station-Season	0.999946
Trend	0.074104

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	**0.0035**	0.5323	0.0148	1.6900	22.33	**20%**	0/217
XFB1433	DIN	Annual	**0.0008**	0.4461	0.0160	1.7195	22.08	**21%**	0/218
XEA6596	DIN	Annual	**0.0004**	0.9119	0.0188	1.3540	22.33	**31%**	0/221
XEA1840	DIN	Annual	**0.0000**	0.8266	0.0237	1.3570	22.75	**40%**	1/227

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2627	0.0000	-0.2886
XFB1433	H5FLOW3	0.0828	0.0000	0.7583
XEA6596	LNFLOW3	0.0314	0.0012	0.0975
XEA1840	LNFLOW3	0.1785	0.0000	0.2437

POTTF1 - DIN

Total	0.000472
Homogeneity	0.923044
Season	0.032720
Station	0.806379
Station-Season	0.999725
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	**0.0001**	0.1404	0.0229	2.206	22.33	**23%**	0/217
XFB1433	TN	Annual	**0.0029**	0.4496	0.0166	2.202	22.08	**17%**	0/217
XEA6596	TN	Annual	**0.0000**	0.7154	0.0234	1.899	22.33	**28%**	1/222
XEA1840	TN	Annual	**0.0000**	0.4518	0.0261	1.576	22.75	**38%**	0/227

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.3588	0.0000	-0.3834
XFB1433	H5FLOW3	0.2102	0.0000	1.2907
XEA6596	H4FLOW7	0.0205	0.0100	18.5827
XEA1840	LNFLOW3	0.1009	0.0000	0.1678

POTTF1 - TN

Total	0.000001
Homogeneity	0.461229
Season	**0.000560**
Station	0.691801
Station-Season	0.999298
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0015**	0.0819	0.0487	9.9	22.08	**10%**	NA
XFB1433	DO_FLD	Annual	0.7259	0.6459	0.0047	10.1	22.08	0%	NA
XEA6596	DO_FLD	Annual	**0.0401**	0.3725	-0.0266	10.0	22.08	**-10%**	NA
XEA1840	DO_FLD	Annual	**0.0000**	0.0197	-0.0668	10.0	22.75	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.2692	0.0000	-5.7295
XFB1433	H5FLOW7	0.1885	0.0000	-4.5026
XEA6596	LNFLOW7	0.1539	0.0000	0.7818
XEA1840	LNFLOW7	0.2069	0.0000	0.9620

POTTF1 - DO_FLD

Total	0.000382
Homogeneity	0.000354
Season	0.000205
Station	0.000011
Station-Season	0.810438
Trend	0.307638

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.0333	0.0285	7.8	21.92	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.1035	0.0229	7.7	21.92	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0000**	0.1679	0.0173	8.0	21.92	**0%**	NA
XEA1840	pH_FLD	Annual	0.6233	0.0332	0.0032	8.0	22.67	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.0465	0.0001	0.0913
XFB1433	LNFLOW7	0.0022	0.3993	0.0206
XEA6596	H5FLOW3	0.0166	0.0194	0.2939
XEA1840	LNFLOW7	0.0142	0.0286	0.0555

POTTF1 - pH_FLD

Total	0.000000
Homogeneity	**0.000060**
Season	**0.000000**
Station	**0.000244**
Station-Season	0.982168
Trend	**0.000000**

NA - Not applicable, measured in the field.

(mid-1970s - Sep 1990) Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	**0.0001**	LIFEREG	-0.0662	0.0800	16.08	**-66%**	**9/143**
XFB1433	PO4W	Annual	**0.0001**	LIFEREG	-0.0649	0.0700	15.83	**-64%**	**12/145**
XEA6596	PO4W	Annual	**0.0001**	LIFEREG	-0.0601	0.0800	16.08	**-62%**	**14/150**
XEA1840	PO4W	Annual	**0.0001**	LIFEREG	-0.0406	0.0500	16.50	**-49%**	**10/152**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.0678	0.0000	0.0086
XFB1433	H5FLOW3	0.0536	0.0000	-0.0633
XEA6596	H5FLOW3	0.0523	0.0000	-0.0424
XEA1840	H5FLOW3	0.0111	0.0392	-0.0238

POTTF1 - PO4W

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0001**	LIFEREG	-0.0410	0.2200	22.75	**-61%**	**48/221**
XDA1177	NH4	Annual	**0.0001**	LIFEREG	-0.0297	0.1100	22.08	**-48%**	**45/220**
XDB3321	NH4	Annual	0.0769	LIFEREG	-0.0216	0.1950	16.50	-30%	26/151

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW3	0.1456	0.0000	-0.2231
XDA1177	LNFLOW3	0.1394	0.0000	0.0358
XDB3321	H5FLOW7	0.1295	0.0000	-0.2371

POTOH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated using Seasonal Kendall test.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	**0.0000**	0.4231	0.0206	0.9760	22.75	**48%**	1/222
XDA1177	NO23	Annual	**0.0000**	0.1223	0.0198	0.8670	22.00	**50%**	0/219
XDB3321	NO23	Annual	**0.0000**	0.4653	0.0301	0.7680	16.50	**65%**	0/152

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.3733	0.0000	0.3084
XDA1177	H5FLOW3	0.4359	0.0000	-1.6489
XDB3321	H5FLOW3	0.4784	0.0000	-1.6701

POTOH - NO23

Total	0.000000
Homogeneity	0.175587
Season	**0.001477**
Station	0.127646
Station-Season	0.996180
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	**0.0009**	0.8204	-0.0015	0.135	22.75	**-25%**	1/218
XDA1177	TP	Annual	**0.0220**	0.9895	-0.0010	0.090	22.08	**-25%**	0/217
XDB3321	TP	Annual	0.1289	0.4308	-0.0009	0.090	16.50	-17%	0/147

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.0151	0.0296	-694.5480
XDA1177	H3FLOW3	0.0375	0.0006	-953.2420
XDB3321	H3FLOW14	0.0033	0.4262	-276.0840

POTOH - TP

Total	0.206106
Homogeneity	0.956655
Season	0.743206
Station	0.584457
Station-Season	0.924211
Trend	**0.000006**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	**0.0237**	0.3967	0.4395	13.0	22.75	**80%**	1/209
XDA1177	TSS	Annual	**0.0274**	0.4640	0.2840	20.0	21.33	**30%**	2/206
XDB3321	TSS	Annual	**0.0192**	0.4508	0.4243	18.0	16.50	**40%**	1/136

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.2856	0.0000	-899460
XDA1177	H3FLOW3	0.2908	0.0000	-1107937
XDB3321	H3FLOW14	0.1654	0.0000	-402781

POTOH - TSS

Total	0.043309
Homogeneity	0.552825
Season	0.036512
Station	0.994125
Station-Season	0.945505
Trend	**0.000017**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	Secchi	Annual	0.3045	0.4865	-0.0029	0.6	21.58	-10%	NA
XDA1177	Secchi	Annual	0.3977	0.8214	-0.0020	0.5	21.58	-10%	NA
XDB3321	Secchi	Annual	0.3146	0.6152	0.0030	0.6	15.33	10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.2826	0.0000	-0.1548
XDA1177	LNFLOW14	0.3141	0.0000	-0.1567
XDB3321	LNFLOW3	0.2705	0.0000	-0.1250

POTOH - Secchi

Total	0.749881
Homogeneity	0.721672
Season	0.376925
Station	0.181427
Station-Season	0.884327
Trend	0.599208

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	0.0690	0.0312	-0.1190	16.0	20.75	-20%	NA
XDA1177	CHAA	Annual	0.2624	0.0857	-0.0592	8.0	20.75	-20%	NA
XDB3321	CHAA	Annual	**0.0006**	0.2271	-0.7200	21.4	14.50	**-50%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.0170	0.0212	-1.9326
XDA1177	H3FLOW3	0.0068	0.1228	82588.8800
XDB3321	H5FLOW3	0.0138	0.0946	11.6137

POTTF1 - CHAA

Total	0.002258
Homogeneity	0.016700
Season	**0.000184**
Station	0.384280
Station-Season	0.742251
Trend	**0.001796**

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	**0.0003**	0.3370	0.0146	1.2160	22.75	**27%**	4/221
XDA1177	DIN	Annual	**0.0001**	0.0424	0.0160	0.9900	22.00	**36%**	4/218
XDB3321	DIN	Annual	**0.0000**	0.5656	0.0328	0.9560	16.50	**57%**	3/151

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW3	0.4030	0.0000	-1.7334
XDA1177	H5FLOW3	0.4572	0.0000	-1.8246
XDB3321	H5FLOW3	0.4966	0.0000	-1.9094

POTOH - DIN

Total	0.000000
Homogeneity	0.115645
Season	**0.000746**
Station	0.220979
Station-Season	0.985046
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	**0.0014**	0.7588	0.0149	1.575	22.75	**22%**	0/220
XDA1177	TN	Annual	**0.0006**	0.5605	0.0156	1.460	22.00	**24%**	0/219
XDB3321	TN	Annual	**0.0000**	0.6725	0.0380	1.370	16.50	**46%**	0/151

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.3196	0.0000	0.3154
XDA1177	H5FLOW3	0.3345	0.0000	-1.6657
XDB3321	H5FLOW3	0.3905	0.0000	-1.7510

POTOH - TN

Total	0.000034
Homogeneity	0.708195
Season	0.040288
Station	0.110927
Station-Season	0.999912
Trend	**0.000000**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.1066	0.2440	-0.0243	9.0	22.75	-10%	NA
XDA1177	DO_FLD	Annual	**0.0040**	0.4696	-0.0350	8.9	22.08	**-10%**	NA
XDB3321	DO_FLD	Annual	0.0596	0.7893	-0.0348	9.2	16.50	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.1540	0.0000	0.7920
XDA1177	LNFLOW7	0.2068	0.0000	0.9447
XDB3321	H5FLOW3	0.2093	0.0000	-5.2476

POTOH - DO_FLD

Total	0.184600
Homogeneity	0.568559
Season	0.064747
Station	0.519126
Station-Season	0.938229
Trend	**0.001199**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	0.0918	0.1073	0.0072	7.8	22.67	0%	NA
XDA1177	pH_FLD	Annual	0.1940	0.0220	0.0048	7.9	21.92	0%	NA
XDB3321	pH_FLD	Annual	0.6467	0.8165	0.0025	7.8	16.42	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW7	0.0203	0.0104	0.0566
XDA1177	LNFLOW7	0.0715	0.0000	0.0993
XDB3321	LNFLOW7	0.0680	0.0002	0.1090

POTOH - pH_FLD

Total	0.074297
Homogeneity	0.095357
Season	0.001227
Station	0.903059
Station-Season	0.843501
Trend	0.109776

NA - Not applicable, measured in the field.

(mid-1970s - Sep 1990)

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	0.2098	0.5277	-0.0006	0.0600	16.50	-17%	6/146
XDA1177	PO4W	Annual	0.2651	0.5937	-0.0006	0.0700	15.83	-14%	4/146
XDB3321	PO4W	Annual	0.1001	0.4020	-0.0007	0.0600	16.50	-19%	5/149

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW14	0.0085	0.0943	-250.6550
XDA1177	H3FLOW14	0.0117	0.0505	-310.7130
XDB3321	LNFLOW7	0.0172	0.0614	-0.0045

POTOH - PO4W

Total	0.380120
Homogeneity	0.657182
Season	0.012993
Station	0.880628
Station-Season	0.999089
Trend	**0.008793**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	**0.0052**	LIFEREG	-0.0209	0.1650	22.75	**-38%**	**34/227**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.0788	0.0000	0.0287

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	**0.0004**	0.1459	0.0103	0.6105	22.75	**38%**	0/226

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5550	0.0000	-1.5610

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	**0.0146**	0.8346	-0.0009	0.090	22.75	**-23%**	0/222

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.0077	0.1123	0.0282

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	0.1205	0.5008	0.1513	18.0	22.75	20%	1/212

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW7	0.1627	0.0000	-677432

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	Secchi	Annual	0.5096	0.2646	0.0015	0.7	21.58	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.2800	0.0000	0.8136

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.4020	0.0475	-0.0702	21.4	20.75	-10%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW7	0.0071	0.1360	120903

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	**0.0168**	0.2310	0.0080	0.7840	22.75	**23%**	3/225

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5353	0.0000	-1.6931

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	0.3003	0.2988	0.0040	1.313	22.75	7%	0/225

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.3089	0.0000	-1.6483

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	**0.0000**	0.2825	-0.0769	10.4	22.75	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.1989	0.0000	1.0569

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	0.9066	0.2218	-0.0009	8.0	22.67	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.0623	0.0000	0.0959

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W*	Annual	**0.0062**	LIFEREG	-0.0211	0.0500	16.50	**-29%**	**9/153**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW7	0.0413	0.0001	-0.0067

*Mid-1970s through September 1990.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NH4	Annual	**0.0000**	0.0281	-0.0106	0.4400	22.08	**-53%**	3/165
XFB1433	NH4	Annual	**0.0001**	LIFEREG	-0.0655	0.5150	22.08	**-76%**	**10/177**
XEA6596	NH4	Annual	**0.0001**	LIFEREG	-0.0440	0.4450	22.08	**-62%**	**12/177**
XEA1840	NH4	Annual	**0.0013**	LIFEREG	-0.0288	0.2900	22.08	**-47%**	**16/181**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H4FLOW3	0.0102	0.0771	4.3102
XFB1433	LNFLOW7	0.0138	0.0354	0.0206
XEA6596	H5FLOW3	0.0509	0.0000	-0.1439
XEA1840	H5FLOW3	0.0258	0.0034	-0.0990

POTTF1 - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated with Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	NO23	Annual	**0.0000**	0.9093	0.0306	1.2020	22.08	**56%**	0/166
XFB1433	NO23	Annual	**0.0145**	0.8691	0.0156	1.0855	22.08	**32%**	0/178
XEA6596	NO23	Annual	**0.0019**	0.9220	0.0219	0.9800	22.08	**49%**	0/180
XEA1840	NO23	Annual	**0.0038**	0.9775	0.0191	1.0210	22.08	**41%**	0/182

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2788	0.0000	-0.2940
XFB1433	LNFLOW3	0.1317	0.0000	-0.1872
XEA6596	LNFLOW3	0.0384	0.0004	0.0997
XEA1840	LNFLOW3	0.1951	0.0000	0.2227

POTTF1 - NO23

Total	0.062065
Homogeneity	0.999106
Season	0.753824
Station	0.565530
Station-Season	0.999375
Trend	**0.000000**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TP	Annual	0.2759	0.1124	-0.0011	0.100	22.08	-24%	1/163
XFB1433	TP	Annual	**0.0224**	0.4957	-0.0020	0.115	22.08	**-38%**	0/176
XEA6596	TP	Annual	0.0571	0.7379	-0.0018	0.130	22.08	-31%	0/175
XEA1840	TP	Annual	0.1226	0.7131	-0.0014	0.100	22.08	-31%	0/179

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.0358	0.0010	-2141
XFB1433	H3FLOW3	0.0867	0.0000	-3962
XEA6596	H3FLOW3	0.0200	0.0141	-1202
XEA1840	H3FLOW3	0.0128	0.0478	-864

POTTF1 - TP

Total	0.167072
Homogeneity	0.601989
Season	0.010504
Station	0.818160
Station-Season	0.981220
Trend	**0.000244**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TSS	Annual	0.4623	0.2380	0.3208	32.0	21.25	20%	1/152
XFB1433	TSS	Annual	0.3095	0.7076	0.5535	29.0	21.33	40%	0/165
XEA6596	TSS	Annual	0.1456	0.2733	0.7397	23.0	21.33	70%	0/166
XEA1840	TSS	Annual	0.8905	0.5765	-0.0737	33.0	21.33	0%	1/169

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H3FLOW3	0.0846	0.0000	-2099689
XFB1433	H3FLOW3	0.0966	0.0000	-3128957
XEA6596	H3FLOW3	0.0781	0.0000	-1109933
XEA1840	H3FLOW3	0.0974	0.0000	-842437

POTTF1 - TSS

Total	0.498121
Homogeneity	0.521838
Season	0.001633
Station	0.794063
Station-Season	0.997231
Trend	0.210159

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	CHAA	Annual	**0.0000**	0.5566	0.5183	32.1	20.75	**30%**	NA
XFB1433	CHAA	Annual	**0.0031**	0.9662	0.4600	49.5	20.75	**20%**	NA
XEA6596	CHAA	Annual	0.4519	0.2324	0.1713	32.1	20.75	10%	NA
XEA1840	CHAA	Annual	0.8666	0.8416	0.0055	24.1	20.75	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.1150	0.0000	18
XFB1433	H5FLOW3	0.1255	0.0000	23
XEA6596	H5FLOW3	0.1359	0.0000	23
XEA1840	H3FLOW7	0.0098	0.0314	99721

POTTF1 - CHAA

Total	0.109902
Homogeneity	0.689987
Season	0.320831
Station	0.059201
Station-Season	0.934054
Trend	**0.000017**

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DIN	Annual	**0.0327**	0.9685	0.0147	1.8370	22.08	**18%**	0/165
XFB1433	DIN	Annual	0.8177	0.8558	0.0007	1.7205	22.08	1%	0/177
XEA6596	DIN	Annual	0.1742	0.9036	0.0082	1.4580	22.08	12%	0/177
XEA1840	DIN	Annual	0.1075	0.9908	0.0104	1.2370	22.08	19%	0/181

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.2767	0.0000	-0.2905
XFB1433	H5FLOW3	0.1002	0.0000	0.8195
XEA6596	LNFLOW3	0.0541	0.0000	0.1277
XEA1840	LNFLOW3	0.2027	0.0000	0.2412

POTTF1 - DIN

Total	0.990026
Homogeneity	0.999668
Season	0.841238
Station	0.570995
Station-Season	0.999586
Trend	**0.006711**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	TN	Annual	0.0648	0.9517	0.0179	2.130	22.08	19%	0/164
XFB1433	TN	Annual	0.5549	0.9959	0.0045	2.088	22.08	5%	0/177
XEA6596	TN	Annual	0.1266	0.9169	0.0100	1.869	22.08	12%	0/177
XEA1840	TN	Annual	**0.0122**	0.7408	0.0170	1.591	22.08	**24%**	0/182

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW3	0.3854	0.0000	-0.4123
XFB1433	H5FLOW7	0.1674	0.0000	1.3445
XEA6596	H3FLOW7	0.0165	0.0215	5119.9880
XEA1840	LNFLOW3	0.1379	0.0000	0.1886

POTTF1 - TN

Total	0.973859
Homogeneity	0.999410
Season	0.602870
Station	0.630865
Station-Season	0.999909
Trend	**0.002459**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	DO_FLD	Annual	**0.0028**	0.1307	0.0433	9.7	22.58	**10%**	NA
XFB1433	DO_FLD	Annual	0.5429	0.2766	0.0116	9.4	22.58	0%	NA
XEA6596	DO_FLD	Annual	0.2102	0.9400	-0.0225	9.8	22.58	-10%	NA
XEA1840	DO_FLD	Annual	**0.0011**	0.0221	-0.0535	8.0	22.75	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.3232	0.0000	-7.1134
XFB1433	H5FLOW3	0.2861	0.0000	-6.1616
XEA6596	LNFLOW7	0.2557	0.0000	1.1453
XEA1840	LNFLOW7	0.2858	0.0000	1.2312

POTTF1 - DO_FLD

Total	0.008934
Homogeneity	0.007033
Season	0.001004
Station	0.000571
Station-Season	0.824421
Trend	0.742204

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	pH_FLD	Annual	**0.0000**	0.1538	0.0230	8.0	22.58	**10%**	NA
XFB1433	pH_FLD	Annual	**0.0000**	0.3833	0.0225	8.0	22.58	**10%**	NA
XEA6596	pH_FLD	Annual	**0.0021**	0.4102	0.0160	8.1	22.58	**0%**	NA
XEA1840	pH_FLD	Annual	0.4796	0.5276	0.0045	8.0	22.67	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	LNFLOW7	0.0798	0.0000	0.1092
XFB1433	LNFLOW7	0.0254	0.0049	0.0660
XEA6596	LNFLOW7	0.0062	0.1613	0.0337
XEA1840	LNFLOW7	0.0502	0.0000	0.0920

POTTF1 - pH_FLD

Total	0.000033
Homogeneity	0.121567
Season	**0.000536**
Station	0.021929
Station-Season	0.994760
Trend	**0.000000**

NA - Not applicable, measured in the field.

(mid 1970s - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XFB2470	PO4W	Annual	**0.0002**	0.9083	-0.0021	0.0700	15.83	**-48%**	2/91
XFB1433	PO4W	Annual	**0.0001**	LIFEREG	-0.0680	0.0800	15.83	**-66%**	**10/104**
XEA6596	PO4W	Annual	**0.0001**	LIFEREG	-0.0680	0.0700	15.83	**-66%**	**8/106**
XEA1840	PO4W	Annual	**0.0001**	LIFEREG	-0.0425	0.0600	15.83	**-49%**	**6/107**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XFB2470	H5FLOW3	0.0398	0.0001	-0.0657
XFB1433	H5FLOW3	0.0489	0.0000	-0.0739
XEA6596	H5FLOW3	0.0257	0.0016	-0.0445
XEA1840	H4FLOW3	0.0029	0.1707	-0.8862

POTTF1 - PO4W

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated with Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NH4	Annual	**0.0001**	LIFEREG	-0.0540	0.1200	22.08	**-70%**	**26/180**
XDA1177	NH4	Annual	**0.0001**	LIFEREG	-0.0439	0.1600	22.08	**-62%**	**34/182**
XDB3321	NH4	Annual	**0.0350**	LIFEREG	-0.0317	0.1400	15.83	**-39%**	**10/107**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.0718	0.0000	0.0341
XDA1177	LNFLOW3	0.1184	0.0000	0.0314
XDB3321	LNFLOW7	0.0680	0.0002	0.0349

POTOH - NH4

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated with Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	NO23	Annual	0.0980	0.5827	0.0085	0.9730	22.08	19%	0/180
XDA1177	NO23	Annual	0.0598	0.1604	0.0085	0.8130	22.08	23%	0/183
XDB3321	NO23	Annual	**0.0023**	0.8172	0.0168	0.5480	15.83	**49%**	0/108

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.4359	0.0000	1.1715
XDA1177	H5FLOW3	0.5557	0.0000	0.9650
XDB3321	H5FLOW3	0.4968	0.0000	-1.3736

POTOH - NO23

Total	0.134664
Homogeneity	0.587127
Season	0.015198
Station	0.656411
Station-Season	0.996460
Trend	**0.000330**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TP	Annual	0.1823	0.9644	-0.0015	0.090	22.08	-37%	0/177
XDA1177	TP	Annual	0.6917	0.6682	-0.0004	0.090	22.08	-10%	0/179
XDB3321	TP	Annual	0.9529	0.3613	-0.0001	0.100	15.83	-2%	0/106

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.0066	0.1677	-654
XDA1177	H3FLOW3	0.0443	0.0001	-1760
XDB3321	H5FLOW14	0.0046	0.3460	0.0301

POTOH - TP

Total	0.866131
Homogeneity	0.889771
Season	0.319334
Station	0.792667
Station-Season	0.955415
Trend	0.197545

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TSS	Annual	0.1823	0.5636	0.7081	43.0	21.33	40%	0/169
XDA1177	TSS	Annual	**0.0269**	0.7888	1.4183	56.0	21.33	**50%**	0/170
XDB3321	TSS	Annual	0.9722	0.4737	0.0917	42.0	15.08	0%	0/95

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW3	0.0848	0.0000	-880176
XDA1177	H3FLOW14	0.0521	0.0000	-1318551
XDB3321	H4FLOW3	0.0159	0.0749	2036

POTOH - TSS

Total	0.498126
Homogeneity	0.685030
Season	0.628172
Station	0.212207
Station-Season	0.677781
Trend	0.027287

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	CHAA	Annual	0.1974	0.2517	0.0654	10.7	20.75	10%	NA
XDA1177	CHAA	Annual	0.9243	0.0313	-0.0064	15.6	20.75	0%	NA
XDB3321	CHAA	Annual	**0.0014**	0.3662	-0.3621	8.0	14.50	**-70%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW14	0.0075	0.1137	0.7111
XDA1177	LNFLOW14	0.0181	0.0149	1.0481
XDB3321	H5FLOW7	0.1103	0.0000	-14.0918

POTTF1 - CHAA

Total	0.023408
Homogeneity	0.019927
Season	0.028923
Station	0.024546
Station-Season	0.278875
Trend	0.484335

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DIN	Annual	0.7346	0.4115	0.0013	1.1115	22.08	3%	1/179
XDA1177	DIN	Annual	0.2993	0.0283	0.0037	0.9230	22.08	9%	1/182
XDB3321	DIN	Annual	**0.0331**	0.3570	0.0123	0.6870	15.83	**28%**	0/107

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.4425	0.0000	0.3580
XDA1177	H5FLOW3	0.5688	0.0000	-1.8416
XDB3321	H5FLOW3	0.5026	0.0000	-1.5196

POTOH - DIN

Total	0.068150
Homogeneity	0.099642
Season	0.000853
Station	0.582450
Station-Season	0.924449
Trend	0.070168

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	TN	Annual	0.2561	0.5196	0.0059	1.567	22.08	8%	0/180
XDA1177	TN	Annual	**0.0417**	0.8272	0.0099	1.460	22.08	**15%**	0/182
XDB3321	TN	Annual	0.4652	0.2118	0.0055	1.478	15.83	6%	0/107

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.3840	0.0000	0.3434
XDA1177	LNFLOW3	0.4481	0.0000	0.3742
XDB3321	H5FLOW3	0.3860	0.0000	-1.5130

POTOH - TN

Total	0.407456
Homogeneity	0.624787
Season	0.167662
Station	0.736635
Station-Season	0.824500
Trend	0.018312

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	DO_FLD	Annual	0.1283	0.0140	-0.0237	8.4	22.75	-10%	NA
XDA1177	DO_FLD	Annual	**0.0057**	0.2171	-0.0385	8.7	22.08	**-10%**	NA
XDB3321	DO_FLD	Annual	**0.0282**	0.5909	-0.0605	8.9	16.50	**-10%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H5FLOW3	0.2171	0.0000	-4.8087
XDA1177	H5FLOW3	0.2424	0.0000	-5.4587
XDB3321	H5FLOW3	0.1711	0.0000	-5.5735

POTOH - DO_FLD

Total	0.006049
Homogeneity	0.071729
Season	**0.000193**
Station	0.756554
Station-Season	0.963459
Trend	**0.000333**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	pH_FLD	Annual	**0.0392**	0.6602	0.0075	7.8	22.67	**0%**	NA
XDA1177	pH_FLD	Annual	**0.0150**	0.1254	0.0093	7.8	20.92	**0%**	NA
XDB3321	pH_FLD	Annual	**0.0274**	0.8124	-0.0166	7.8	16.42	**0%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	LNFLOW3	0.0708	0.0000	0.0941
XDA1177	LNFLOW3	0.0929	0.0000	0.0997
XDB3321	LNFLOW14	0.0220	0.0379	0.0482

POTOH - pH_FLD

Total	0.159511
Homogeneity	0.160152
Season	0.028850
Station	0.003403
Station-Season	0.982349
Trend	0.284643

NA - Not applicable, measured in the field.

(mid-1970s - Sep 1990) Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDA4238	PO4W	Annual	**0.0173**	LIFEREG	-0.0263	0.0700	15.83	**-34%**	**6/107**
XDA1177	PO4W	Annual	**0.0352**	0.1123	-0.0011	0.0700	15.83	**-25%**	5/109
XDB3321	PO4W	Annual	**0.0306**	LIFEREG	-0.0229	0.0600	15.83	**-30%**	**7/107**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDA4238	H3FLOW14	0.0114	0.0476	-356.6810
XDA1177	H3FLOW14	0.0248	0.0031	-555.3730
XDB3321	H5FLOW7	0.0185	0.0486	0.0253

POTOH - PO4W

Total	NA
Homogeneity	NA
Season	NA
Station	NA
Station-Season	NA
Trend	NA

NA - Not applicable, station trends were not calculated with Seasonal Kendall test.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NH4	Annual	**0.0039**	LIFEREG	-0.0269	0.1300	22.08	**-45%**	**23/181**

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW14	0.0256	0.0040	0.0187

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	NO23	Annual	**0.0408**	0.1561	0.0049	0.3330	22.08	**32%**	3/182

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.4896	0.0000	-1.1177

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TP	Annual	0.2783	0.8879	-0.0008	0.090	22.08	-20%	2/176

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW14	0.0032	0.3157	0.0267

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TSS	Annual	**0.0402**	0.5116	0.6367	28.5	21.33	**50%**	1/169

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	LNFLOW21	0.0262	0.0035	5.3042

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	CHAA	Annual	0.3707	0.2182	-0.1196	9.4	20.75	-30%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW14	0.0504	0.0000	-21.1968

NA - Not applicable, concentration is determined by computer.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DIN	Annual	0.5495	0.0495	0.0023	0.4900	22.08	10%	6/181

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.5077	0.0000	-1.2009

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	TN	Annual	0.5365	0.2523	0.0036	1.284	22.08	6%	0/180

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.3507	0.0000	-1.4086

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	DO_FLD	Annual	**0.0024**	0.3526	-0.0553	7.6	22.75	**-20%**	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.1022	0.0000	-4.6861

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	pH_FLD	Annual	**0.0005**	0.1071	0.0096	8.0	22.67	0%	NA

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H3FLOW14	0.0050	0.2076	1687

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
XDC1706	PO4W*	Annual	0.1724	LIFEREG	-0.0148	0.0500	15.83	-21%	10/108

Station	Flow Model	Model RSQUARE	Model p-value	Slope
XDC1706	H5FLOW7	0.0774	0.0000	0.0379

*Mid-1970s through September 1990.

SECTION X

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	NH4	Annual	0.5212	0.4678	-0.0083	0.3950	11.92	-25%	8/118
Gunston 7	NH4	Mar-May	1.0000	0.6803	0.0025	0.3665	11.25	8%	1/34
Gunston 7	NH4	Apr-Jun	0.7733	0.7491	-0.0072	0.2528	11.25	-32%	1/35
Gunston 7	NH4	Jun-Sep	1.0000	0.8050	0.0002	0.1115	11.33	2%	7/46
Gunston 7	NH4	Jul-Sep	0.9316	0.6170	0.0006	0.2023	11.25	3%	7/34
Gunston 7	NH4	Apr-Oct	0.6316	0.8719	-0.0028	0.2528	11.58	-13%	8/79
Gunston 7	NH4	Oct-Dec	0.6081	0.2603	-0.0176	0.5035	10.25	-36%	0/28
Gunston 9	NH4	Annual	0.4630	0.0255	-0.0019	0.1700	11.92	-13%	15/118
Gunston 9	NH4	Mar-May	**0.0006**	0.6757	-0.0196	0.2735	11.25	**-81%**	**5/34**
Gunston 9	NH4	Apr-Jun	**0.0058**	0.2343	-0.0185	0.2453	11.25	**-85%**	**5/35**
Gunston 9	NH4	Jun-Sep	0.0744	0.1913	0.0044	0.0330	11.33	151%	10/46
Gunston 9	NH4	Jul-Sep	0.0228	0.2292	0.0050	0.0225	11.25	250%	8/34
Gunston 9	NH4	Apr-Oct	0.8435	0.0040	-0.0007	0.1255	11.58	-6%	13/79
Gunston 9	NH4	Oct-Dec	0.7050	0.8917	0.0025	0.1585	10.25	16%	0/29

Gunston - NH4

Total	0.062706
Homogeneity	0.087996
Season	0.072214
Station	0.817408
Station-Season	0.225509
Trend	0.095293

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	NO23	Annual	1.0000	0.7249	0.0000	1.0650	10.33	0%	3/100
Gunston 7	NO23	Mar-May	0.8638	0.1444	-0.0025	1.1750	9.25	-2%	0/28
Gunston 7	NO23	Apr-Jun	1.0000	0.3785	0.0000	1.0300	9.25	0%	0/29
Gunston 7	NO23	Jun-Sep	0.8528	0.6168	-0.0029	0.5950	10.08	-5%	3/39
Gunston 7	NO23	Jul-Sep	0.7452	0.7455	0.0142	0.5775	10.08	25%	3/29
Gunston 7	NO23	Apr-Oct	0.8289	0.8569	0.0022	0.9425	10.17	2%	3/67
Gunston 7	NO23	Oct-Dec	0.5257	0.7977	0.0200	1.6975	9.25	11%	0/26
Gunston 9	NO23	Annual	**0.0043**	0.2296	-0.0338	1.8725	10.33	**-19%**	1/100
Gunston 9	NO23	Mar-May	0.7320	0.1423	-0.0100	1.4900	9.25	-6%	0/28
Gunston 9	NO23	Apr-Jun	0.4159	0.0547	-0.0194	1.4900	9.25	-12%	0/29
Gunston 9	NO23	Jun-Sep	**0.0012**	0.8314	-0.0550	1.8000	10.08	**-31%**	0/39
Gunston 9	NO23	Jul-Sep	0.0201	0.9640	-0.0585	1.8800	10.08	-31%	0/29
Gunston 9	NO23	Apr-Oct	0.0195	0.3002	-0.0325	1.7125	10.17	-19%	0/67
Gunston 9	NO23	Oct-Dec	0.7515	0.5627	-0.0119	2.0275	9.25	-5%	0/26

Gunston - NO23

Total	0.115785
Homogeneity	0.260262
Season	0.075839
Station	0.028421
Station-Season	0.982199
Trend	0.020040

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TP	Annual	**0.0000**	0.3756	-0.0044	0.125	11.92	**-42%**	1/119
Gunston 7	TP	Mar-May	**0.0005**	0.6346	-0.0025	0.112	11.25	**-25%**	0/34
Gunston 7	TP	Apr-Jun	**0.0011**	0.5130	-0.0025	0.118	11.25	**-24%**	0/35
Gunston 7	TP	Jun-Sep	**0.0000**	0.5131	-0.0083	0.208	11.33	**-45%**	0/46
Gunston 7	TP	Jul-Sep	**0.0000**	0.6870	-0.0115	0.215	11.25	**-60%**	0/34
Gunston 7	TP	Apr-Oct	**0.0000**	0.8176	-0.0050	0.163	11.58	**-36%**	1/79
Gunston 7	TP	Oct-Dec	0.0185	0.7590	-0.0035	0.080	10.25	-45%	1/29
Gunston 9	TP	Annual	0.6716	0.9065	0.0000	0.080	11.92	0%	0/118
Gunston 9	TP	Mar-May	0.6920	0.9664	0.0000	0.071	11.25	0%	0/34
Gunston 9	TP	Apr-Jun	0.5838	0.9808	0.0000	0.078	11.25	0%	0/35
Gunston 9	TP	Jun-Sep	0.6591	0.6803	0.0000	0.090	11.33	0%	0/46
Gunston 9	TP	Jul-Sep	0.4604	0.5859	0.0008	0.085	11.25	11%	0/34
Gunston 9	TP	Apr-Oct	0.8630	0.9264	0.0000	0.071	11.58	0%	0/79
Gunston 9	TP	Oct-Dec	0.3718	0.6397	-0.0003	0.085	10.25	-4%	0/29

Gunston - TP

Total	0.001101
Homogeneity	0.175533
Season	0.841379
Station	**0.000581**
Station-Season	0.455588
Trend	**0.000003**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TSS	Annual	0.0558	0.0960	-0.5917	29.1	11.83	-20%	0/117
Gunston 7	TSS	Mar-May	0.4190	0.0271	-0.5000	30.7	11.25	-20%	033
Gunston 7	TSS	Apr-Jun	0.0402	0.2279	-1.0000	33.0	11.25	-30%	0/34
Gunston 7	TSS	Jun-Sep	0.1170	0.8746	-0.9375	34.8	11.33	-30%	0/46
Gunston 7	TSS	Jul-Sep	0.1970	0.7132	-0.9063	34.8	11.25	-30%	0/34
Gunston 7	TSS	Apr-Oct	**0.0097**	0.6967	-0.8542	33.0	11.58	**-30%**	0/78
Gunston 7	TSS	Oct-Dec	0.1294	0.9447	-0.5000	23.0	10.25	-20%	0/29
Gunston 9	TSS	Annual	0.7651	0.0946	0.0000	20.0	11.83	0%	0/116
Gunston 9	TSS	Mar-May	0.4479	0.1546	-0.4250	21.0	11.25	-20%	0/33
Gunston 9	TSS	Apr-Jun	0.2314	0.4063	-0.4000	21.0	11.25	-20%	0/34
Gunston 9	TSS	Jun-Sep	0.2007	0.4962	0.2143	18.5	11.33	10%	0/46
Gunston 9	TSS	Jul-Sep	0.1547	0.3713	0.2929	16.1	11.25	20%	0/34
Gunston 9	TSS	Apr-Oct	0.4721	0.1311	0.0917	19.5	11.58	10%	0/78
Gunston 9	TSS	Oct-Dec	0.9129	0.0220	0.0000	20.8	10.25	0%	0/29

Gunston - TSS

Total	0.058713
Homogeneity	0.052835
Season	0.039395
Station	0.248198
Station-Season	0.284510
Trend	0.381634

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	Secchi	Annual	**0.0000**	**0.0012**	0.0143	0.3	11.92	**60%**	NA
Gunston 7	Secchi	Mar-May	0.2799	0.0957	-0.0082	0.5	11.17	-20%	NA
Gunston 7	Secchi	Apr-Jun	0.2637	0.2300	0.0087	0.4	11.25	20%	NA
Gunston 7	Secchi	Jun-Sep	**0.0000**	0.7954	0.0203	0.2	11.33	**100%**	NA
Gunston 7	Secchi	Jul-Sep	**0.0000**	0.6744	0.0214	0.2	11.25	**110%**	NA
Gunston 7	Secchi	Apr-Oct	**0.0000**	0.1383	0.0160	0.3	11.58	**70%**	NA
Gunston 7	Secchi	Oct-Dec	**0.0002**	0.6172	0.0285	0.3	10.25	**90%**	NA
Gunston 9	Secchi	Annual	0.2044	0.0536	0.0050	0.5	11.92	10%	NA
Gunston 9	Secchi	Mar-May	0.0888	0.3349	-0.0168	0.8	11.17	-20%	NA
Gunston 9	Secchi	Apr-Jun	0.6185	0.1751	0.0043	0.6	11.25	10%	NA
Gunston 9	Secchi	Jun-Sep	0.0992	0.4235	0.0080	0.5	11.33	20%	NA
Gunston 9	Secchi	Jul-Sep	0.3885	0.4519	0.0048	0.5	11.25	10%	NA
Gunston 9	Secchi	Apr-Oct	0.2937	0.5245	0.0045	0.6	11.58	10%	NA
Gunston 9	Secchi	Oct-Dec	0.0169	0.4194	0.0218	0.4	10.25	50%	NA

Gunston - Secchi

Total	0.000003
Homogeneity	**0.000320**
Season	**0.000017**
Station	0.070703
Station-Season	0.680659
Trend	**0.000074**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	CHAA	Annual	0.7365	0.7656	0.2000	44.2	11.92	10%	NA
Gunston 7	CHAA	Mar-May	0.7120	0.7248	0.4200	23.4	11.17	20%	NA
Gunston 7	CHAA	Apr-Jun	0.8637	0.6628	0.2521	55.4	11.25	10%	NA
Gunston 7	CHAA	Jun-Sep	0.6251	0.3057	-0.6600	125.5	11.33	-10%	NA
Gunston 7	CHAA	Jul-Sep	0.6677	0.1642	-1.2093	141.1	11.25	-10%	NA
Gunston 7	CHAA	Apr-Oct	0.8857	0.5768	-0.0667	90.8	11.58	0%	NA
Gunston 7	CHAA	Oct-Dec	0.5119	0.8566	0.4857	3.0	10.25	170%	NA
Gunston 9	CHAA	Annual	**0.0003**	0.3683	0.8900	9.7	11.92	**110%**	NA
Gunston 9	CHAA	Mar-May	0.2681	0.0953	0.5000	9.7	11.17	60%	NA
Gunston 9	CHAA	Apr-Jun	0.0860	0.1642	1.0781	13.3	11.25	90%	NA
Gunston 9	CHAA	Jun-Sep	0.0387	0.3879	2.3389	21.2	11.33	130%	NA
Gunston 9	CHAA	Jul-Sep	0.0714	0.2205	2.3552	24.7	11.25	110%	NA
Gunston 9	CHAA	Apr-Oct	**0.0021**	0.2443	1.4500	14.8	11.58	**110%**	NA
Gunston 9	CHAA	Oct-Dec	**0.0013**	0.5551	0.5714	1.0	10.25	**590%**	NA

Gunston - CHAA

Total	0.085466
Homogeneity	0.370288
Season	0.163373
Station	0.021620
Station-Season	0.972608
Trend	**0.002245**

NA - Not applicable, concentration is determined by computer.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	DIN	Annual	**0.0026**	0.7643	-0.0905	2.3848	10.33	**-39%**	3/99
Gunston 7	DIN	Mar-May	0.0531	0.8099	-0.0905	2.1568	9.25	-39%	0/28
Gunston 7	DIN	Apr-Jun	0.0110	0.5215	-0.1684	1.8750	9.25	-83%	0/29
Gunston 7	DIN	Jun-Sep	0.1387	0.3405	-0.0545	0.9838	10.08	-56%	3/39
Gunston 7	DIN	Jul-Sep	0.7050	0.7995	-0.0070	0.6160	10.08	-11%	3/29
Gunston 7	DIN	Apr-Oct	**0.0088**	0.5748	-0.0980	1.7665	10.17	**-56%**	3/67
Gunston 7	DIN	Oct-Dec	0.1232	0.3204	-0.1161	3.3130	9.25	-32%	0/25
Gunston 9	DIN	Annual	**0.0010**	0.7151	-0.0506	2.0013	10.33	**-26%**	1/100
Gunston 9	DIN	Mar-May	0.1391	0.1917	-0.0497	1.7555	9.25	-26%	0/28
Gunston 9	DIN	Apr-Jun	0.3042	0.5079	-0.0361	1.7555	9.25	-19%	0/29
Gunston 9	DIN	Jun-Sep	0.0125	0.9113	-0.0607	1.9190	10.08	-32%	0/39
Gunston 9	DIN	Jul-Sep	0.0350	0.7667	-0.0630	1.9190	10.08	-33%	0/29
Gunston 9	DIN	Apr-Oct	0.0162	0.8657	-0.0434	1.8678	10.17	-24%	0/67
Gunston 9	DIN	Oct-Dec	0.4103	0.9066	-0.0237	2.4000	9.25	-9%	0/26

Gunston - DIN

Total	0.024110
Homogeneity	0.878315
Season	0.637307
Station	0.748142
Station-Season	0.833648
Trend	**0.000002**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TN	Annual	**0.0001**	0.7658	-0.1242	3.633	10.33	**-35%**	0/100
Gunston 7	TN	Mar-May	0.0143	0.3917	-0.1400	3.155	9.25	-41%	0/28
Gunston 7	TN	Apr-Jun	**0.0093**	0.3519	-0.1692	3.463	9.25	**-45%**	0/29
Gunston 7	TN	Jun-Sep	**0.0055**	0.6382	-0.1233	3.633	10.08	**-34%**	0/39
Gunston 7	TN	Jul-Sep	0.0584	0.6605	-0.0882	3.310	10.08	-27%	0/29
Gunston 7	TN	Apr-Oct	**0.0006**	0.8000	-0.1254	3.633	10.17	**-35%**	0/67
Gunston 7	TN	Oct-Dec	0.3100	0.5603	-0.1093	4.420	9.25	-23%	0/26
Gunston 9	TN	Annual	0.0880	0.9117	-0.0300	2.875	10.33	-11%	1/100
Gunston 9	TN	Mar-May	0.6490	0.4802	-0.0250	2.343	9.25	-10%	0/28
Gunston 9	TN	Apr-Jun	0.9138	0.7773	-0.0108	2.343	9.25	-4%	0/29
Gunston 9	TN	Jun-Sep	0.1501	0.9099	-0.0367	2.890	10.08	-13%	0/39
Gunston 9	TN	Jul-Sep	0.1752	0.7875	-0.0577	2.988	10.08	-20%	0/29
Gunston 9	TN	Apr-Oct	0.3139	0.9233	-0.0219	2.765	10.17	-8%	0/67
Gunston 9	TN	Oct-Dec	0.7515	0.9570	-0.0062	3.015	9.25	-2%	0/26

Guston - TN

Total	0.079882
Homogeneity	0.894988
Season	0.711299
Station	0.144277
Station-Season	0.943080
Trend	**0.000017**

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	DO	Annual	0.0667	0.1424	0.0667	11.1	11.92	10%	NA
Gunston 7	DO	Mar-May	0.0810	0.0780	0.1000	10.4	11.17	10%	NA
Gunston 7	DO	Apr-Jun	0.1265	0.0848	0.0500	9.9	11.25	10%	NA
Gunston 7	DO	Jun-Sep	0.9418	0.3664	0.0000	11.0	11.33	0%	NA
Gunston 7	DO	Jul-Sep	0.6984	0.2973	0.0264	11.0	11.25	0%	NA
Gunston 7	DO	Apr-Oct	0.1746	0.2206	0.0408	10.7	11.58	0%	NA
Gunston 7	DO	Oct-Dec	0.0396	0.4242	0.1578	10.7	10.25	20%	NA
Gunston 9	DO	Annual	**0.0021**	0.4366	0.1000	8.6	11.92	**10%**	NA
Gunston 9	DO	Mar-May	**0.0015**	0.4974	0.1667	9.2	11.17	**20%**	NA
Gunston 9	DO	Apr-Jun	**0.0034**	0.4050	0.1500	7.4	11.25	**20%**	NA
Gunston 9	DO	Jun-Sep	0.6880	0.8651	0.0226	7.2	11.33	0%	NA
Gunston 9	DO	Jul-Sep	1.0000	0.8524	0.0000	7.2	11.25	0%	NA
Gunston 9	DO	Apr-Oct	0.0138	0.3353	0.0933	7.2	11.58	20%	NA
Gunston 9	DO	Oct-Dec	0.0147	0.9585	0.1708	10.5	10.25	20%	NA

Gunston - DO

Total	0.017338
Homogeneity	0.227059
Season	0.016883
Station	0.415755
Station-Season	0.972647
Trend	**0.000290**

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	pH	Annual	0.1268	0.3688	-0.0167	8.6	11.92	0%	NA
Gunston 7	pH	Mar-May	0.3885	0.4737	-0.0437	8.5	11.25	-10%	NA
Gunston 7	pH	Apr-Jun	0.1374	0.6187	-0.0500	8.8	11.25	-10%	NA
Gunston 7	pH	Jun-Sep	0.0173	0.9901	-0.0414	9.5	11.33	0%	NA
Gunston 7	pH	Jul-Sep	0.0276	0.9781	-0.0559	9.7	11.25	-10%	NA
Gunston 7	pH	Apr-Oct	0.0138	0.8964	-0.0414	9.0	11.58	-10%	NA
Gunston 7	pH	Oct-Dec	0.4407	0.8319	0.0118	7.7	10.25	0%	NA
Gunston 9	pH	Annual	0.1183	0.7824	0.0143	8.0	11.92	0%	NA
Gunston 9	pH	Mar-May	0.2798	0.2763	0.0218	8.0	11.25	0%	NA
Gunston 9	pH	Apr-Jun	0.1265	0.3334	0.0250	8.0	11.25	0%	NA
Gunston 9	pH	Jun-Sep	0.7980	0.7560	0.0028	8.1	11.42	0%	NA
Gunston 9	pH	Jul-Sep	0.7627	0.9047	-0.0061	8.3	11.25	0%	NA
Gunston 9	pH	Apr-Oct	0.2345	0.5860	0.0200	8.0	11.58	0%	NA
Gunston 9	pH	Oct-Dec	0.0910	0.9855	0.0155	7.7	10.25	0%	NA

Gunston - pH

Total	0.504055
Homogeneity	0.486949
Season	0.185951
Station	0.064384
Station-Season	0.963369
Trend	0.398848

NA - Not applicable, measured in the field.

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TALK	Annual	0.1496	0.8473	-0.5000	69.3	11.92	-10%	0/118
Gunston 7	TALK	Mar-May	0.6549	0.8670	-0.6071	69.0	11.17	-10%	0/33
Gunston 7	TALK	Apr-Jun	0.6799	0.9225	-0.5000	74.0	11.25	-10%	0/35
Gunston 7	TALK	Jun-Sep	0.2007	0.8167	-0.4393	69.7	11.33	-10%	0/46
Gunston 7	TALK	Jul-Sep	0.2443	0.6321	-0.4000	69.7	11.25	-10%	0/34
Gunston 7	TALK	Apr-Oct	0.1490	0.9249	-0.5000	69.7	11.50	-10%	0/79
Gunston 7	TALK	Oct-Dec	0.5116	0.4821	-0.5357	72.0	10.25	-10%	0/29
Gunston 9	TALK	Annual	0.9208	0.4437	0.0000	69.0	11.92	0%	0/117
Gunston 9	TALK	Mar-May	0.5307	0.9151	-0.9167	71.0	11.17	-10%	0/33
Gunston 9	TALK	Apr-Jun	0.7725	0.9844	-0.4286	80.5	11.25	-10%	0/35
Gunston 9	TALK	Jun-Sep	0.8265	0.1502	0.0625	70.0	11.33	0%	0/46
Gunston 9	TALK	Jul-Sep	0.7627	0.0709	0.2054	70.0	11.25	0%	0/34
Gunston 9	TALK	Apr-Oct	0.9099	0.4731	0.0000	70.0	11.58	0%	0/79
Gunston 9	TALK	Oct-Dec	0.3848	0.9682	0.5000	70.5	10.25	10%	0/29

Gunston - TALK

Total	0.750683
Homogeneity	0.728441
Season	0.200700
Station	0.282319
Station-Season	0.993618
Trend	0.479591

Station (surface)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	PO4	Annual	0.6729	0.8698	0.0000	0.0090	12.25	0%	29/119
Gunston 7	PO4	Mar-May	0.3612	0.3859	0.0005	0.0037	11.25	153%	5/34
Gunston 7	PO4	Apr-Jun	0.1680	0.4319	0.0006	0.0032	11.25	213%	8/35
Gunston 7	PO4	Jun-Sep	0.8523	0.5037	0.0000	0.0070	11.33	0%	15/46
Gunston 7	PO4	Jul-Sep	0.6911	0.5148	0.0000	0.0083	11.25	0%	11/34
Gunston 7	PO4	Apr-Oct	0.6455	0.4778	0.0000	0.0038	11.58	0%	24/79
Gunston 7	PO4	Oct-Dec	0.5844	0.8784	-0.0002	0.0160	10.25	-13%	9/29
Gunston 9	PO4	Annual	0.0610	0.8475	-0.0005	0.0200	11.92	-30%	14/117
Gunston 9	PO4	Mar-May	0.4984	0.9235	-0.0003	0.0183	11.25	-18%	6/33
Gunston 9	PO4	Apr-Jun	0.5177	0.9209	-0.0003	0.0165	11.25	-20%	7/34
Gunston 9	PO4	Jun-Sep	0.6330	0.4150	-0.0001	0.0158	11.33	-7%	6/46
Gunston 9	PO4	Jul-Sep	0.6020	0.2441	-0.0001	0.0153	11.25	-7%	3/34
Gunston 9	PO4	Apr-Oct	0.1824	0.5906	-0.0004	0.0160	11.58	-29%	11/78
Gunston 9	PO4	Oct-Dec	0.0390	0.7350	-0.0013	0.0290	10.25	-46%	2/29

Gunston - PO4

Total	0.811279
Homogeneity	0.838673
Season	0.549547
Station	0.046794
Station-Season	0.994716
Trend	0.228348

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	NH4	Annual	**0.0078**	0.8450	-0.0417	0.7690	11.00	**-60%**	**8/108**
Gunston 7	NH4	Mar-May	0.5553	0.7502	-0.0399	0.7283	10.25	-56%	2/31
Gunston 7	NH4	Apr-Jun	0.2224	0.4613	-0.0278	0.5589	10.25	-51%	3/32
Gunston 7	NH4	Jun-Sep	0.0967	0.8606	-0.0307	0.3841	10.33	-83%	5/42
Gunston 7	NH4	Jul-Sep	0.3026	0.9222	-0.0306	0.3841	10.25	-82%	4/31
Gunston 7	NH4	Apr-Oct	0.0333	0.7389	-0.0349	0.5610	10.58	-66%	8/72
Gunston 7	NH4	Oct-Dec	0.0663	0.3372	-0.0745	1.3933	9.25	-49%	1/26
Gunston 9	NH4	Annual	0.0184	0.2373	-0.0059	0.1913	11.00	-34%	13/107
Gunston 9	NH4	Mar-May	**0.0051**	0.9530	-0.0173	0.1913	10.25	**-93%**	**5/31**
Gunston 9	NH4	Apr-Jun	**0.0065**	0.9839	-0.0177	0.2429	10.25	**-75%**	**5/32**
Gunston 9	NH4	Jun-Sep	0.8679	0.0950	0.0003	0.0548	10.33	6%	7/42
Gunston 9	NH4	Jul-Sep	0.2013	0.3666	0.0050	0.0485	10.25	106%	6/31
Gunston 9	NH4	Apr-Oct	0.2868	0.1339	-0.0025	0.1343	10.58	-20%	12/72
Gunston 9	NH4	Oct-Dec	0.1452	0.6707	-0.0075	0.3490	9.25	-20%	1/26

Gunston - NH4

Total	0.057999
Homogeneity	0.725995
Season	0.355906
Station	.
Station-Season	0.840399
Trend	**0.000034**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	NO23	Annual	0.6193	0.4647	0.0100	1.1625	10.33	9%	3/100
Gunston 7	NO23	Mar-May	0.9544	0.1130	0.0000	1.1750	9.25	0%	0/28
Gunston 7	NO23	Apr-Jun	0.7854	0.2720	0.0064	1.0400	9.25	6%	0/29
Gunston 7	NO23	Jun-Sep	0.7457	0.6926	-0.0120	0.7050	10.08	-17%	3/39
Gunston 7	NO23	Jul-Sep	0.8711	0.8121	0.0080	0.5950	10.08	14%	3/29
Gunston 7	NO23	Apr-Oct	0.6921	0.8036	0.0086	0.9625	10.17	9%	3/67
Gunston 7	NO23	Oct-Dec	0.1452	0.5563	0.0442	1.6900	9.25	24%	0/26
Gunston 9	NO23	Annual	**0.0010**	0.2235	-0.0425	1.8450	10.33	**-24%**	0/100
Gunston 9	NO23	Mar-May	0.7329	0.7366	-0.0050	1.2925	9.25	-4%	0/28
Gunston 9	NO23	Apr-Jun	0.2136	0.1706	-0.0300	1.4775	9.25	-19%	0/29
Gunston 9	NO23	Jun-Sep	**0.0000**	0.8417	-0.0700	1.9025	10.08	**-37%**	0/39
Gunston 9	NO23	Jul-Sep	**0.0007**	0.6726	-0.0831	1.9425	10.08	**-43%**	0/29
Gunston 9	NO23	Apr-Oct	**0.0014**	0.2424	-0.0477	1.7750	10.17	**-27%**	0/67
Gunston 9	NO23	Oct-Dec	0.9495	0.6217	-0.0040	2.0500	9.25	-2%	0/26

Gunston - NO23

Total	0.033338
Homogeneity	0.076341
Season	0.080407
Station	0.004400
Station-Season	0.815764
Trend	0.028815

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TP	Annual	**0.0007**	0.5005	-0.0036	0.110	11.00	**-36%**	0/108
Gunston 7	TP	Mar-May	0.0528	0.8497	-0.0036	0.117	10.25	-32%	0/31
Gunston 7	TP	Apr-Jun	0.0139	0.9212	-0.0038	0.117	10.25	-33%	0/32
Gunston 7	TP	Jun-Sep	**0.0013**	0.8710	-0.0067	0.170	10.58	**-42%**	0/42
Gunston 7	TP	Jul-Sep	**0.0057**	0.7025	-0.0083	0.200	10.25	**-43%**	0/31
Gunston 7	TP	Apr-Oct	**0.0001**	0.9888	-0.0050	0.145	10.58	**-37%**	0/72
Gunston 7	TP	Oct-Dec	0.6048	0.2859	-0.0003	0.055	9.25	-5%	0/26
Gunston 9	TP	Annual	0.3686	0.6576	0.0000	0.088	11.00	0%	0/107
Gunston 9	TP	Mar-May	0.8813	0.9500	0.0000	0.071	10.25	0%	0/31
Gunston 9	TP	Apr-Jun	0.4777	0.5519	-0.0007	0.080	10.25	-9%	0/32
Gunston 9	TP	Jun-Sep	0.5446	0.1317	0.0000	0.093	10.33	0%	0/42
Gunston 9	TP	Jul-Sep	0.9174	0.1082	0.0000	0.090	10.25	0%	0/31
Gunston 9	TP	Apr-Oct	0.5725	0.4278	0.0000	0.083	10.58	0%	0/72
Gunston 9	TP	Oct-Dec	0.2588	0.6000	-0.0009	0.080	9.25	-10%	0/26

Gunston - TP

Total	0.264097
Homogeneity	0.686174
Season	0.740780
Station	0.250058
Station-Season	0.508518
Trend	**0.003277**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TSS	Annual	0.6740	0.8607	-0.2143	29.5	11.00	-10%	0/108
Gunston 7	TSS	Mar-May	0.9608	0.1292	0.1429	23.3	10.25	10%	0/31
Gunston 7	TSS	Apr-Jun	0.1888	0.9225	-1.5000	30.3	10.25	-50%	0/32
Gunston 7	TSS	Jun-Sep	0.5323	0.9038	-0.3819	33.8	10.33	-10%	0/42
Gunston 7	TSS	Jul-Sep	0.8057	0.8759	-0.2143	35.0	10.25	-10%	0/31
Gunston 7	TSS	Apr-Oct	0.2198	0.9858	-0.5000	33.0	10.58	-20%	0/72
Gunston 7	TSS	Oct-Dec	0.8487	0.7255	-0.1181	16.0	9.25	-10%	0/26
Gunston 9	TSS	Annual	0.2973	0.0788	0.2500	21.0	11.00	10%	0/107
Gunston 9	TSS	Mar-May	0.3467	0.0577	0.6667	17.1	10.25	40%	0/31
Gunston 9	TSS	Apr-Jun	0.7776	0.4475	0.1667	19.8	10.25	10%	0/32
Gunston 9	TSS	Jun-Sep	0.1241	0.9629	0.5357	19.5	10.33	30%	0/42
Gunston 9	TSS	Jul-Sep	0.2796	0.9685	0.5000	21.0	10.25	20%	0/31
Gunston 9	TSS	Apr-Oct	0.2444	0.8897	0.3333	19.8	10.58	20%	0/72
Gunston 9	TSS	Oct-Dec	0.3724	0.0383	-0.4500	22.5	9.25	-20%	0/26

Gunston - TSS

Total	0.480330
Homogeneity	0.425551
Season	0.251605
Station	0.413026
Station-Season	0.597113
Trend	0.802409

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	DIN	Annual	**0.0053**	0.7708	-0.0775	2.0935	10.33	**-38%**	3/100
Gunston 7	DIN	Mar-May	0.1722	0.7458	-0.0765	1.9040	9.25	-37%	0/28
Gunston 7	DIN	Apr-Jun	0.0350	0.2857	-0.1475	1.9028	9.25	-72%	0/29
Gunston 7	DIN	Jun-Sep	0.0787	0.3572	-0.0660	1.3088	10.08	-51%	3/39
Gunston 7	DIN	Jul-Sep	0.5520	0.9282	-0.0045	0.9928	10.08	-5%	3/29
Gunston 7	DIN	Apr-Oct	0.0133	0.5889	-0.0757	1.7495	10.17	-44%	3/67
Gunston 7	DIN	Oct-Dec	0.1835	0.3199	-0.0897	3.2583	9.25	-25%	0/26
Gunston 9	DIN	Annual	**0.0007**	0.7729	-0.0525	2.0053	10.33	**-27%**	0/100
Gunston 9	DIN	Mar-May	0.3058	0.7132	-0.0418	1.4963	9.25	-26%	0/28
Gunston 9	DIN	Apr-Jun	0.0937	0.2870	-0.0485	1.7478	9.25	-26%	0/29
Gunston 9	DIN	Jun-Sep	**0.0006**	0.8623	-0.0677	1.9665	10.08	**-35%**	0/39
Gunston 9	DIN	Jul-Sep	**0.0081**	0.8055	-0.0660	2.0053	10.08	**-33%**	0/29
Gunston 9	DIN	Apr-Oct	**0.0023**	0.6594	-0.0538	1.9348	10.17	**-28%**	0/67
Gunston 9	DIN	Oct-Dec	0.6575	0.9316	-0.0214	2.3910	9.25	-8%	0/26

Gunston - DIN

Total	0.044949
Homogeneity	0.901624
Season	0.561668
Station	0.654815
Station-Season	0.932558
Trend	**0.000004**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TN	Annual	**0.0003**	0.6692	-0.1117	3.263	10.33	**-35%**	0/99
Gunston 7	TN	Mar-May	0.2062	0.9035	-0.0875	2.950	9.25	-27%	0/27
Gunston 7	TN	Apr-Jun	0.0169	0.2059	-0.1417	2.950	9.25	-44%	0/28
Gunston 7	TN	Jun-Sep	**0.0055**	0.3329	-0.1267	3.610	10.08	**-35%**	0/39
Gunston 7	TN	Jul-Sep	0.1168	0.6127	-0.0875	3.610	10.08	-24%	0/29
Gunston 7	TN	Apr-Oct	**0.0010**	0.5714	-0.1229	3.338	10.17	**-37%**	0/66
Gunston 7	TN	Oct-Dec	0.1452	0.3237	-0.1030	4.395	9.25	-22%	0/26
Gunston 9	TN	Annual	0.0352	0.9747	-0.0400	2.905	10.33	-14%	0/100
Gunston 9	TN	Mar-May	0.4948	0.8877	-0.0133	2.108	9.25	-6%	0/28
Gunston 9	TN	Apr-Jun	0.3580	0.7515	-0.0307	2.290	9.25	-12%	0/29
Gunston 9	TN	Jun-Sep	0.0263	0.9829	-0.0525	2.983	10.08	-18%	0/39
Gunston 9	TN	Jul-Sep	0.0584	0.9208	-0.0546	3.045	10.08	-18%	0/29
Gunston 9	TN	Apr-Oct	0.0916	0.7973	-0.0335	2.763	10.17	-12%	0/67
Gunston 9	TN	Oct-Dec	0.8493	0.6232	-0.0050	3.060	9.25	-2%	0/26

Gunston - TN

Total	0.124679
Homogeneity	0.939362
Season	0.788815
Station	0.280346
Station-Season	0.919904
Trend	**0.000025**

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	DO	Annual	0.0328	0.4623	0.0900	9.6	11.00	10%	NA
Gunston 7	DO	Mar-May	0.4305	0.1420	0.0400	10.3	10.25	0%	NA
Gunston 7	DO	Apr-Jun	0.0240	0.5084	0.1563	8.1	10.25	20%	NA
Gunston 7	DO	Jun-Sep	0.1695	0.2755	0.1000	8.8	10.33	10%	NA
Gunston 7	DO	Jul-Sep	0.5883	0.2975	0.0500	9.1	10.25	10%	NA
Gunston 7	DO	Apr-Oct	0.0386	0.5023	0.1000	9.1	10.58	10%	NA
Gunston 7	DO	Oct-Dec	0.0756	0.7432	0.1071	10.1	9.25	10%	NA
Gunston 9	DO	Annual	**0.0002**	0.3397	0.1100	7.3	11.00	**20%**	NA
Gunston 9	DO	Mar-May	0.0234	0.4126	0.1125	9.9	10.25	10%	NA
Gunston 9	DO	Apr-Jun	**0.0084**	0.5373	0.1125	6.6	10.25	**20%**	NA
Gunston 9	DO	Jun-Sep	**0.0031**	0.9211	0.1458	6.0	10.33	**30%**	NA
Gunston 9	DO	Jul-Sep	**0.0089**	0.7880	0.1571	6.1	10.25	**30%**	NA
Gunston 9	DO	Apr-Oct	**0.0003**	0.8322	0.1299	6.4	10.58	**20%**	NA
Gunston 9	DO	Oct-Dec	0.1398	0.8390	0.1083	8.9	9.25	10%	NA

Gunston - DO

Total	0.032218
Homogeneity	0.519770
Season	0.081219
Station	0.315359
Station-Season	0.990932
Trend	**0.000054**

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	pH	Annual	0.8866	0.7815	0.0000	8.4	11.00	0%	NA
Gunston 7	pH	Mar-May	0.5883	0.5488	-0.0300	8.2	10.25	0%	NA
Gunston 7	pH	Apr-Jun	0.5725	0.5511	-0.0222	8.4	10.25	0%	NA
Gunston 7	pH	Jun-Sep	0.4027	0.9626	-0.0188	9.3	10.33	0%	NA
Gunston 7	pH	Jul-Sep	0.4002	0.8848	-0.0214	9.3	10.25	0%	NA
Gunston 7	pH	Apr-Oct	0.4176	0.9287	-0.0194	8.9	10.58	0%	NA
Gunston 7	pH	Oct-Dec	0.2452	0.7834	0.0208	7.7	9.25	0%	NA
Gunston 9	pH	Annual	**0.0029**	0.8094	0.0222	7.8	11.00	**0%**	NA
Gunston 9	pH	Mar-May	0.2160	0.1299	0.0250	7.8	10.25	0%	NA
Gunston 9	pH	Apr-Jun	0.0732	0.1298	0.0444	7.8	10.25	10%	NA
Gunston 9	pH	Jun-Sep	0.0328	0.8844	0.0333	8.0	10.33	0%	NA
Gunston 9	pH	Jul-Sep	0.1027	0.7842	0.0333	8.1	10.25	0%	NA
Gunston 9	pH	Apr-Oct	**0.0064**	0.5720	0.0400	7.9	10.58	**10%**	NA
Gunston 9	pH	Oct-Dec	0.0629	0.8779	0.0134	7.7	9.25	0%	NA

Gunston - pH

Total	0.551209
Homogeneity	0.855299
Season	0.462666
Station	0.060723
Station-Season	0.999281
Trend	0.010964

NA - Not applicable, measured in the field.

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	TALK	Annual	0.0674	0.3479	-0.7500	69.0	11.00	-10%	0/108
Gunston 7	TALK	Mar-May	0.2999	0.6697	-1.6667	78.8	10.25	-20%	0/31
Gunston 7	TALK	Apr-Jun	0.1708	0.4479	-1.2500	78.8	10.25	-20%	0/32
Gunston 7	TALK	Jun-Sep	0.0873	0.1471	-0.9000	66.0	10.33	-10%	0/42
Gunston 7	TALK	Jul-Sep	0.3752	0.1184	-0.5000	61.0	10.25	-10%	0/31
Gunston 7	TALK	Apr-Oct	0.0982	0.4295	-0.7500	70.0	10.58	-10%	0/72
Gunston 7	TALK	Oct-Dec	0.9491	0.7982	0.0000	67.0	9.25	0%	0/26
Gunston 9	TALK	Annual	0.7779	0.4108	0.0000	76.0	11.00	0%	0/107
Gunston 9	TALK	Mar-May	0.6558	0.7790	-0.2500	79.5	10.25	0%	0/31
Gunston 9	TALK	Apr-Jun	0.6371	0.7867	-0.4000	89.5	10.25	0%	0/32
Gunston 9	TALK	Jun-Sep	0.8348	0.0344	-0.1429	76.7	10.33	0%	0/42
Gunston 9	TALK	Jul-Sep	0.8438	0.0160	0.2000	71.7	10.25	0%	0/31
Gunston 9	TALK	Apr-Oct	0.9741	0.1402	0.0000	77.0	10.58	0%	0/72
Gunston 9	TALK	Oct-Dec	0.7988	0.7106	0.2361	74.0	9.25	0%	0/26

Gunston - TALK

Total	0.411995
Homogeneity	0.464844
Season	0.022190
Station	0.530422
Station-Season	1.000000
Trend	0.162016

Station (bottom)	Variable	Season	Trend p-value	Homog p-value	Slope	Initial Median	Total Years	Percent Change	No. of BDLs
Gunston 7	PO4	Annual	0.1824	0.7842	0.0002	0.0060	11.00	37%	29/108
Gunston 7	PO4	Mar-May	0.3177	0.6911	0.0005	0.0055	10.25	93%	8/31
Gunston 7	PO4	Apr-Jun	0.2145	0.5678	0.0003	0.0055	10.25	56%	10/32
Gunston 7	PO4	Jun-Sep	0.4244	0.3160	0.0002	0.0055	10.33	38%	15/42
Gunston 7	PO4	Jul-Sep	0.9603	0.3452	0.0000	0.0073	10.25	0%	11/31
Gunston 7	PO4	Apr-Oct	0.2655	0.6596	0.0002	0.0053	10.58	40%	25/72
Gunston 7	PO4	Oct-Dec	0.6088	0.7854	0.0003	0.0053	9.25	53%	6/26
Gunston 9	PO4	Annual	0.6053	0.7855	-0.0001	0.0158	11.00	-7%	11/106
Gunston 9	PO4	Mar-May	0.8345	0.2719	0.0000	0.0120	10.25	0%	4/30
Gunston 9	PO4	Apr-Jun	0.6550	0.4944	-0.0002	0.0173	10.25	-12%	5/31
Gunston 9	PO4	Jun-Sep	0.9667	0.6046	0.0000	0.0117	10.33	0%	5/42
Gunston 9	PO4	Jul-Sep	0.7299	0.5141	-0.0001	0.0077	10.25	-13%	4/31
Gunston 9	PO4	Apr-Oct	0.3699	0.7271	-0.0003	0.0158	10.58	-20%	10/71
Gunston 9	PO4	Oct-Dec	0.4066	0.5099	-0.0009	0.0183	9.25	-46%	2/26

Gunston - PO4

Total	0.874047
Homogeneity	0.855727
Season	0.238582
Station	0.113126
Station-Season	.
Trend	0.534294